

TOSHIBA

Small Signal and Logic Devices

Selection Guide 2020

The page features a large abstract graphic on the left side. It consists of a red triangle pointing downwards from the top left corner. Below this, there are several horizontal brushstrokes in shades of blue and grey, overlapping each other. A large blue triangle points upwards from the bottom left corner, meeting the other elements.

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1. MOSFETs

Over 500mA Series MOSFETs (Semi-Power Type)





Package Dimensions (unit: mm)

CST3C	CST3 (SOT-883)	CST3B	VESM (SOT-723)	UFM (SOT-323F)	ES6 (SOT-563)	UF6 (SOT-363F)	WCSP6C
Bottom View	Bottom View	Bottom View					Bottom View
0.8x0.6	1.0x0.6	1.2x0.8	1.2x1.2	2.0x2.1	1.6x1.6	2.0x2.1	1.5x1.0

P-Channel Single MOSFET

Package	Part Number	V _{oss} (V)	V _{ess} (V)	I _o (A)	R _{DS(ON)} max (mΩ)						Q _g typ. (nC)	C _{iss} typ. (pF)	Note
					V _{GS} = -1.2V	V _{GS} = -1.5V	V _{GS} = -1.8V	V _{GS} = -2.5V	V _{GS} = -4V	V _{GS} = -4.5V			
CST3C	SSM3J64CTC ☆ \$	-12	+/-10	-1.0	11300	1310	890	560	-	370	-	50	
	SSM3J65CTC ☆ \$	-20	+/-10	-0.7	11300	1550	1070	700	-	500	-	48	
CST3	SSM3J56ACT \$	-20	+/-8	-1.4	4000	900	660	480	-	390	-	1.6	100
CST3B	SSM3J46CTB ● \$	-20	+/-8	-2.0	-	250	178	133	-	103	-	4.7	290 ⇒ SSM3J377R
VESM	SSM3J66MFV ☆ # \$	-20	+6/-8	-0.8	4000	900	660	480	-	390	-	1.6	100
	SSM3J56MFV \$	-20	+/-8	-0.8	4000	900	660	480	-	390	-	1.6	100
WCSP6C	SSM6J771G \$	-20	+/-12	-5.0	-	-	-	47.5	-	35	34.7(@-8V) 31(@-8.5V)	9.8	870
ES6	SSM6J216FE \$	-12	+/-8	-4.8	-	88.1	56	39.3	-	32	-	12.7	1040
	SSM6J213FE \$	-20	+/-8	-2.6	-	250	178	133	-	103	-	4.7	290
	SSM6J215FE \$	-20	+/-8	-3.4	-	154	104	79	-	59	-	10.4	630
	SSM6J212FE \$	-20	+/-8	-4.0	-	94	65.4	49	-	40.7	-	14.1	970
	SSM6J207FE \$	-30	+/-20	-1.4	-	-	-	-	491	-	251	-	137
	SSM6J214FE \$	-30	+/-12	-3.6	-	-	149.6	77.6	-	57	50	7.9	560
UFM	SSM3J132TU \$	-12	+/-6	-5.4	94	39	29	21	-	17	-	33	2700
	SSM3J135TU \$	-20	+/-8	-3.0	-	260	180	132	-	103	-	4.6	270
	SSM3J145TU ☆ # \$	-20	+6/-8	-3.0	-	260	180	132	-	103	-	4.6	270
	SSM3J134TU \$	-20	+/-8	-3.2	-	240	168	123	-	93	-	4.7	290
	SSM3J144TU ☆ # \$	-20	+6/-8	-3.2	-	240	168	123	-	93	-	4.7	290
	SSM3J120TU ● \$	-20	+/-8	-4.0	-	140	78	49	38	-	-	22.3	1484 ⇒ SSM3J133TU
	SSM3J130TU \$	-20	+/-8	-4.4	-	63.2	41.1	31	-	25.8	-	24.8	1800
	SSM3J140TU ☆ # \$	-20	+6/-8	-4.4	-	63.2	41.1	31	-	25.8	-	24.8	1800
	SSM3J133TU \$	-20	+/-8	-5.5	-	88.4	56	39.7	-	29.8	-	12.8	840
	SSM3J143TU ☆ # \$	-20	+6/-8	-5.5	-	88.4	56	39.7	-	29.8	-	12.8	840
	SSM3J112TU # \$	-30	+/-20	-1.1	-	-	-	-	790	-	390	-	86
	SSM3J118TU # \$	-30	+/-20	-1.4	-	-	-	-	480	-	240	-	137
SSM3J117TU # \$	-30	+/-20	-2.0	-	-	-	-	225	-	117	-	280	
UF6	SSM6J50TU \$	-20	+/-10	-2.5	-	-	205 (@-2V)	100	-	64	-	-	800
	SSM6J422TU ☆ # \$	-20	+6/-8	-4.0	-	99.6	67.8	51.4	-	42.7	-	12.8	840
	SSM6J412TU \$	-20	+/-8	-4.0	-	99.6	67.8	51.4	-	42.7	-	12.8	840
	SSM6J424TU ☆ # \$	-20	+6/-8	-6.0	-	54	36	26	-	22.5	-	23.1	1650
	SSM6J414TU \$	-20	+/-8	-6.0	-	54	36	26	-	22.5	-	23.1	1650
	SSM6J402TU # \$	-30	+/-20	-2.0	-	-	-	-	225	-	117	5.3	280
	SSM6J410TU # \$	-30	+/-20	-2.1	-	-	-	-	393	-	216	2.9	120
	SSM6J401TU # \$	-30	+/-20	-2.5	-	-	-	-	145	-	73	16	730










☆ New Products, ● Recommend Another New Product
 # AEC-Q101 qualified, \$ With protection Zener diode between gate and source

UDFN6B (SOT-1220)	SOT-23F	S-Mini (SOT-346)	TSOP6F
Bottom View 			
2.0x2.0	2.9x2.4	2.9x2.5	2.9x2.8

P-Channel Single MOSFET

Package	Part Number	V _{BS} (V)	V _{GS} (V)	I _D (A)	R _{DS(ON)} max (mΩ)							Q _g typ. (nC)	C _{iss} typ. (pF)	Note
					V _{GS} = -1.2V	V _{GS} = -1.5V	V _{GS} = -1.8V	V _{GS} = -2.5V	V _{GS} = -4V	V _{GS} = -4.5V	V _{GS} = -10V			
UDFN6B	SSM6J512NU	\$ -12	+/-10	-10.0	-	-	40.1	25.7	20.5 (@-3.6V)	18.7	16.2 (@-8V)	19.5	1400	
	SSM6J505NU	\$ -12	+/-6	-12.0	61	30	21	16	-	12	-	37.6	2700	
	SSM6J511NU	\$ -12	+/-10	-14.0	-	-	19.2	13.5	11.5 (@-3.6V)	10	9.1 (@-8V)	47	3350	
	SSM6J503NU	\$ -20	+/-8	-6.0	-	89.6	57.9	41.7	-	32.4	-	12.8	840	
	SSM6J502NU	\$ -20	+/-8	-6.0	-	60.5	38.4	28.3	-	23.1	-	24.8	1800	
	SSM6J501NU	\$ -20	+/-8	-10.0	-	43	26.5	19	-	15.3	-	29.9	2600	
SSM6J507NU	\$ -30	+20/-25	-10.0	-	-	-	-	32	28	20	13.6	1150		
SOT-23F	SSM3J338R	\$ -12	+/-10	-6.0	-	-	45.3	27.9	21.9 (@-3.6V)	20.2	17.6 (@-8V)	19.5	1400	
	SSM3J327R	\$ -20	+/-8	-3.9	-	240	168	123	-	93	-	4.6	290	
	SSM3J377R	# \$ -20	+6/-8	-3.9	-	240	168	123	-	93	-	4.6	290	
	SSM3J331R	\$ -20	+/-8	-4.0	-	150	100	75	-	55	-	10.4	630	
	SSM3J371R	☆ # \$ -20	+6/-8	-4.0	-	150	100	75	-	55	-	10.4	630	
	SSM3J328R	● \$ -20	+/-8	-6.0	-	88.4	56	39.7	-	29.8	-	12.8	840	⇒ SSM3J355R
	SSM3J378R	☆ # \$ -20	+6/-8	-6.0	-	88.4	56	39.7	-	29.8	-	12.8	840	
	SSM3J355R	\$ -20	+/-10	-6.0	-	-	52.3	38.8	-	30.1	-	16.6	1030	
	SSM3J358R	\$ -20	+/-10	-6.0	-	-	49.3	32.8	27.7 (@-3.6V)	25.3	22.1 (@-8V)	38.5	1331	
	SSM3J334R	\$ -30	+/-20	-4.0	-	-	-	-	136	105	71	5.9	280	
	SSM3J374R	☆ # \$ -30	+10/-20	-4.0	-	-	-	-	136	105	71	5.9	280	
	SSM3J340R	\$ -30	+20/-25	-4.0	-	-	-	-	86	73	45	6.2	492	
	SSM3J332R	\$ -30	+/-12	-6.0	-	-	144	72	-	50	42	8.2	560	
	SSM3J372R	☆ # \$ -30	+6/-12	-6.0	-	-	144	72	-	50	42	8.2	560	
	SSM3J356R	# \$ -60	+10/-20	-2.0	-	-	-	-	400	360	300	8.3	330	
SSM3J351R	# \$ -60	+10/-20	-3.5	-	-	-	-	184	164	134	15.1	660		
S-Mini	SSM3J325F	\$ -20	+/-8	-2.0	-	311	231	179	-	150	-	4.6	270	
	SSM3J375F	☆ # \$ -20	+6/-8	-2.0	-	311	231	179	-	150	-	4.6	270	
	SSM3J352F	\$ -20	+/-12	-2.0	-	-	443	199	-	136	110	5.1	210	
	SSM3J353F	\$ -30	+20/-25	-2.0	-	-	-	-	274	232	150	3.4	159	
TSOP6F	SSM6J801R	☆ \$ -20	+6/-8	-6.0	-	88.4	56	39.7	-	32.5	-	12.8	840	
	SSM6J808R	☆ # \$ -40	+10/-20	-7.0	-	-	-	-	52	48	35	24.2	1020	

☆ New Products, ● Recommend Another New Product
AEC-Q101 qualified, \$ With protection Zener diode between gate and source

CST3 (SOT-883)	CST3B	VESM (SOT-723)	SSM (SOT-416)	UFM (SOT-323F)	ES6 (SOT-563)	UF6 (SOT-363F)	UDFN6B (SOT-1220)	WCSP6C
Bottom View  1.0x0.6	Bottom View  1.2x0.8	 1.2x1.2	 1.6x1.6	 2.0x2.1	 1.6x1.6	 2.0x2.1	Bottom View  2.0x2.0	Bottom View  1.5x1.0

N-Channel Single MOSFET

Package	Part Number	V _{oss} (V)	V _{ess} (V)	I _o (A)	R _{DS(ON)} max (mΩ)								Q _g typ. (nC)	C _{iss} typ. (pF)	Note
					V _{GS} = 1.2V	V _{GS} = 1.5V	V _{GS} = 1.8V	V _{GS} = 2.5V	V _{GS} = 4V	V _{GS} = 4.5V	V _{GS} = 10V				
CST3	SSM3K56CT ● \$	20	+/-8	0.8	-	840	480	300	-	235	-	1.0	55	⇒ SSM3K56ACT	
	SSM3K56ACT \$	20	+/-8	1.4	-	840	480	300	-	235	-	1.0	55		
CST3B	SSM3K59CTB ● \$	40	+/-12	2.0	-	-	420	268	238(@3.6V) 231(@4.2V)	228	215 (@8V)	1.1	130	⇒ SSM3K339R	
VESM	SSM3K36MFV # \$	20	+/-10	0.5	-	1520	1140	850	-	660	630 (@5V)	1.23	46		
	SSM3K56MFV \$	20	+/-8	0.8	-	840	480	300	-	235	-	1.0	55		
WCSP6C	SSM6K781G	12	+/-8	7.0	-	124	47.4	23.2	-	18	-	5.4	600		
SSM	SSM3K36FS ● # \$	20	+/-10	0.5	-	1520	1140	850	-	660	630 (@5V)	1.23	46	⇒ SSM3K56FS	
	SSM3K56FS \$	20	+/-8	0.8	-	840	480	300	-	235	-	1.0	55		
ES6	SSM6K204FE \$	20	+/-10	2.0	-	307	214	164	126	-	-	3.4	195		
	SSM6K211FE \$	20	+/-10	3.2	-	118	82	59	-	47	-	10.8	510		
	SSM6K24FE \$	30	+/-12	0.5	-	-	-	180	-	145	-	-	245		
	SSM6K208FE \$	30	+/-12	1.9	-	-	296	177	133	-	-	1.9	123		
	SSM6K202FE \$	30	+/-12	2.3	-	-	145	101	85	-	-	-	270		
UFM	SSM6K217FE \$	40	+/-12	1.8	-	-	400	248	218(@3.6V) 211(@4.2V)	208	195 (@8V) 630 (@5V)	1.1	130		
	SSM3K36TU # \$	20	+/-10	0.5	-	1520	1140	850	-	660	630 (@5V)	1.23	46		
	SSM3K62TU # \$	20	+/-8	0.8	432	139	89	68	-	57	-	2.0	177		
	SSM3K122TU # \$	20	+/-10	2.0	-	304	211	161	123	-	-	3.4	195		
	SSM3K121TU # \$	20	+/-10	3.2	-	140	93	63	48	-	-	5.9	400		
	SSM3K123TU # \$	20	+/-10	4.2	-	66	43	32	28	-	-	13.6	1010		
	SSM3K127TU # \$	30	+/-12	2.0	-	-	286	167	123	-	-	1.5	123		
	SSM3K116TU # \$	30	+/-12	2.2	-	-	-	135	-	100	-	-	245		
	SSM3K131TU #	30	+/-20	6.0	-	-	-	-	-	41.5	27.6	10.1	450		
	SSM3H137TU # \$	34	+/-20	2.0	-	-	-	-	295	280	240	3.0	119	Built-in Active Clamp Zener	
	SSM3K2615TU # \$	60	+/-20	2.0	-	-	-	580 (@3.3V)	440	-	300	6.0	150		
SSM3K341TU ☆ # \$	60	+/-20	6.0	-	-	-	-	69	51	36	9.3	550	Tch=175°C		
SSM3K361TU # \$	100	+/-20	3.5	-	-	-	-	92	69	3.2	430	430	Tch=175°C		
UF6	SSM6K405TU \$	20	+/-10	2.0	-	307	214	164	126	-	-	3.4	195		
	SSM6K404TU # \$	20	+/-10	3.0	-	147	100	70	55	-	-	5.9	400		
	SSM6K403TU # \$	20	+/-10	4.2	-	66	43	32	28	-	-	16.8	1050		
	SSM6K406TU # \$	30	+/-20	4.4	-	-	-	-	-	38.5	25	12.4	490		
	SSM6K407TU # \$	60	+/-20	2.0	-	-	-	-	440	-	300	6.0	150		
UDFN6B	SSM6K518NU ☆	20	+/-8	6.0	-	108	74	45	-	33	-	3.6	410		
	SSM6K517NU ☆	30	+12/-8	6.0	-	-	82	53	-	39.1	-	3.2	310		
	SSM6K504NU # \$	30	+/-20	9.0	-	-	-	-	-	26	19.5	4.8	620		
	SSM6K513NU	30	+/-20	15.0	-	-	-	-	-	12	8.9	7.5	1130		
	SSM6K516NU ☆	30	+20/-12	6.0	-	-	-	-	-	64	46	2.5	280		
	SSM6K514NU	40	+/-20	12.0	-	-	-	-	-	17.3	11.6	7.5	1110		
	SSM6K341NU \$	60	+/-20	6.0	-	-	-	-	69	51	36	9.3	550		
SSM6K361NU \$	100	+/-20	3.5	-	-	-	-	-	92	69	3.2	430			

☆ New Products. ● Recommend Another New Product
AEC-Q101 qualified, \$ With protection Zener diode between gate and source









N-Channel Single MOSFET

Package	Part Number	V _{BS} (V)	V _{ES} (V)	I _D (A)	R _{DS(ON)} max (mΩ)								Q _g typ. (nC)	C _{iss} typ. (pF)	Note
					V _{GS} =1.2V	V _{GS} =1.5V	V _{GS} =1.8V	V _{GS} =2.5V	V _{GS} =4V	V _{GS} =4.5V	V _{GS} =10V				
SOT-23F	SSM3K344R	\$	20	+/-8	3.0	-	232	139	91	-	71	-	2.0	153	
	SSM3K345R	\$	20	+/-8	4.0	-	108	74	45	-	33	-	3.6	410	
	SSM3K329R	\$	30	+/-12	3.5	-	-	289	170	126	-	-	1.5	123	
	SSM3K324R	\$	30	+/-12	4.0	-	-	109	72	-	56	-	2.2	200	
	SSM3K376R	☆ # \$	30	+12/-8	4.0	-	-	109	72	-	56	-	2.2	200	
	SSM3K336R	# \$	30	+/-20	3.0	-	-	-	-	-	140	95	1.7	126	
	SSM3K333R	#	30	+/-20	6.0	-	-	-	-	-	42	28	3.4	436	
	SSM3K335R	# \$	30	+/-20	6.0	-	-	-	-	-	56	38	2.7	340	
	SSM3K347R	# \$	38	+/-20	2.0	-	-	-	-	480	410	340	2.5	86	Built-in Active Clamp Zener
	SSM3K337R	# \$	38	+/-20	2.0	-	-	-	-	200	176	150	3.0	120	Built-in Active Clamp Zener
	SSM3K339R	\$	40	+/-12	2.0	-	-	390	238	208(@3.6V) 201(@4.2V)	198	185(@8V)	1.1	130	
	SSM3K357R	☆ # \$	60	+/-12	0.65	-	-	-	2400(@3V)	-	1800(@5V)	-	1.5	43	Built-in Active Clamp Zener
	SSM3K2615R	# \$	60	+/-20	2.0	-	-	-	580(@3.3V)	440	-	300	6.0	150	
SSM3K318R	# \$	60	+/-20	2.5	-	-	-	-	-	145	107	7.0	235		
SSM3K341R	# \$	60	+/-20	6.0	-	-	-	-	69	51	36	9.3	550	Tch=175°C	
SSM3K361R	# \$	100	+/-20	3.5	-	-	-	-	-	92	69	3.2	430	Tch=175°C	
TSOP6F	SSM6K809R	☆ # \$	60	+/-20	6.0	-	-	-	-	69	51	36	9.3	550	Tch=175°C
	SSM6K810R	☆ # \$	100	+/-20	3.5	-	-	-	-	-	92	69	3.2	430	Tch=175°C
	SSM6K819R	☆ # \$	100	+/-20	10.0	-	-	-	-	-	36.4	25.8	8.5	1110	Tch=175°C

☆ New Products

AEC-Q101 qualified, \$ With protection Zener diode between gate and source

ES6 (SOT-563)	UF6 (SOT-363F)	US6 (SOT-363)	UDFN6 (SOT-1118)	TSOP6F	TCSP6A
			Bottom View 		Bottom View 
1.6x1.6	2.0x2.1	2.0x2.1	2.0x2.0	2.9x2.8	2.14x1.67


Dual MOSFET

Package	Polarity	Part Number	V _{oss} (V)	V _{ess} (V)	I _o (A)	R _{DS(on)} max (mΩ)								Q _g typ. (nC)	C _{iss} typ. (pF)	Note
						V _{es} = 1.2V	V _{es} = 1.5V	V _{es} = 1.8V	V _{es} = 2.5V	V _{es} = 4V	V _{es} = 4.5V	V _{es} = 10V				
ES6	P-ch x2	SSM6P41FE	\$	-20	+/-8	-0.72	-	1040	670	440	-	300	-	1.76	110	
		SSM6P56FE ☆	\$	-20	+/-8	-0.8	4000	900	660	480	-	390	-	1.6	100	
	N-ch x2	SSM6N36FE #	\$	20	+/-10	0.5	-	1520	1140	850	-	660	630(@5V)	1.23	46	
		SSM6N56FE	\$	20	+/-8	0.8	-	840	480	300	-	235	-	1.0	55	
	N-ch + P-ch	SSM6L14FE	\$	20	+/-10	0.8	-	600	450	330	-	240	-	2.0	90	
			\$	-20	+/-8	-0.72	-	1040	670	440	-	300	-	1.76	110	
		SSM6L36FE #	\$	20	+/-10	0.5	-	1520	1140	850	-	660	630 (@5V)	1.23	46	
		\$	-20	+/-8	-0.33	-	3600	2700	1600 (@-2.8V)	-	1310	-	1.2	43		
	SSM6L56FE ☆	\$	20	+/-8	0.8	-	840	480	300	-	235	-	1	55		
UDFN6	P-ch x2	SSM6P47NU	\$	-20	+/-8	-4.0	-	242	170	125	-	95	-	4.6	290	
		SSM6P69NU ☆ #	\$	-20	+6/-12	-4.0	-	-	157	76	-	56	45	6.74	480	
		SSM6P49NU	\$	-20	+/-12	-4.0	-	-	157	76	-	56	45	6.74	480	
	N-ch x2	SSM6N61NU #	\$	20	+/-8	4.0	-	108	74	45	-	33	-	3.6	410	
		SSM6N55NU	\$	30	+/-20	4.0	-	-	-	-	64	46	2.5	280		
		SSM6N67NU ☆ #	\$	30	+12/-8	4.0	-	-	82	53	-	39.1	-	3.2	310	
		SSM6N68NU ☆ #	\$	30	+12/-8	4.0	-	-	180	117	-	84	-	1.8	129	
		SSM6N57NU	\$	30	+/-12	4.0	-	-	82	53	-	39.1	-	3.2	310	
		SSM6N58NU	\$	30	+/-12	4.0	-	-	180	117	-	84	-	1.8	129	
	N-ch + P-ch	SSM6L61NU	\$	20	+/-8	4.0	-	108	74	45	-	33	-	3.6	410	
		\$	-20	+/-12	-4.0	-	-	157	76	-	56	45	6.74	480		
UF6	P-ch x2	SSM6P54TU	\$	-20	+/-8	-1.2	-	555	350	228	-	-	-	7.7	331	
		SSM6P39TU #	\$	-20	+/-8	-1.5	-	-	430	294	213	-	-	6.4	250	
		SSM6P40TU #	\$	-30	+/-20	-1.4	-	-	-	-	403	-	226	2.9	120	
	N-ch x2	SSM6N36TU #	\$	20	+/-10	0.5	-	1520	1140	850	-	660	630(@5V)	1.23	46	
		SSM6N62TU #	\$	20	+/-8	0.8	456	173	120	98	-	85	-	2.0	177	
		SSM6N39TU #	\$	20	+/-10	1.6	-	247	190	139	119	-	-	7.5	260	
		SSM6N24TU #	\$	30	+/-12	0.5	-	-	-	180	-	145	-	-	245	
		SSM6N40TU #	\$	30	+/-20	1.6	-	-	-	-	182	-	122	5.1	180	
	N-ch + P-ch	SSM6L36TU #	\$	20	+/-10	0.5	-	1520	1140	850	-	660	630 (@5V)	1.23	46	
			\$	-20	+/-8	-0.33	-	3600	2700	1600 (@-2.8V)	-	1310	-	1.2	43	
		SSM6L39TU #	\$	20	+/-10	1.6	-	247	190	139	119	-	-	7.5	260	
			\$	-20	+/-8	-1.5	-	-	430	294	213	-	-	6.4	250	
	SSM6L12TU #	\$	30	+/-12	0.5	-	-	-	180	-	145	-	-	245		
		\$	-20	+/-12	-0.5	-	-	-	430	260	-	-	-	218		
	SSM6L40TU #	\$	30	+/-20	1.6	-	-	-	-	182	-	122	5.1	180		
		\$	-30	+/-20	-1.4	-	-	-	-	403	-	226	2.9	120		
US6	N-ch x2	SSM6N43FU #	\$	20	+/-10	0.5	-	1520	1140	850	-	660	630(@5V)	1.23	46	
TSOP6F	N-ch x2	SSM6N357R ☆ #	\$	60	+/-12	0.65	-	-	-	2400 (@3V)	-	1800 (@5V)	-	1.5	43	Built-in Active Clamp Zener
		SSM6N815R ☆	\$	100	+/-20	2.0	-	-	-	-	180	142	103	3.1	290	
		SSM6N813R ☆ #	\$	100	+/-20	3.5	-	-	-	-	154	112	3.6	242	T _j =175°C	
	N-ch + P-ch	SSM6L807R ☆	\$	30	+12/-12	4	-	-	82	53	-	39.1	-	3.2	310	
			\$	-20	+12/-12	-4	-	-	157	76	-	56	45	6.74	480	
		SSM6L820R ☆ #	\$	30	+12/-8	4	-	-	82	53	-	39.1	-	3.2	310	
		\$	-20	+6/-12	-4	-	-	157	76	-	56	45	6.74	480		
TCSP6A	N-ch x2	SSM6N951L ☆	\$	12	±8	8	-	-	-	10	-	5.1	-	26	-	Drain common

☆ New Products
AEC-Q101 qualified, \$ With protection Zener diode between gate and source

■ Less than 500mA Series MOSFETs (Standard Type)

Package Dimensions (unit: mm)

CST3C	CST3 (SOT-883)	VESM (SOT-723)	SSM (SOT-416)	UFM (SOT-323F)	USM (SOT-323)	S-Mini (SOT-346)
Bottom View 	Bottom View 					
0.8x0.6	1.0x0.6	1.2x1.2	1.6x1.6	2.0x2.1	2.0x2.1	2.9x2.5

P-Channel Single MOSFET

Package	Part Number	V _{bss} (V)	V _{ess} (V)	I _D (A)	R _{DS(ON)} max (Ω)							Note
					V _{GS} = -1.2V	V _{GS} = -1.5V	V _{GS} = -1.8V	V _{GS} = -2.5V	V _{GS} = -4V	V _{GS} = -4.5V	V _{GS} = -10V	
CST3C	SSM3J35CTC	\$ -20	+/-10	-0.25	20	4	2.9	2.1	-	1.4	-	
CST3	SSM3J35CT	\$ -20	+/-10	-0.1	44	22	-	11	8	-	-	
	SSM3J15CT	\$ -30	+/-20	-0.1	-	-	-	32	12	-	-	
VESM	SSM3J35MFV ● # \$	-20	+/-10	-0.1	44	22	-	11	8	-	-	⇒ SSM3J35AMFV
	SSM3J16FV ● \$	-20	+/-10	-0.1	-	45	-	12	8	-	-	⇒ SSM3J35AMFV
	SSM3J35AMFV ☆ \$	-20	+/-10	-0.25	20	4	2.9	2.1	-	1.4	-	
	SSM3J15FV # \$	-30	+/-20	-0.1	-	-	-	32	12	-	-	
SSM	SSM3J35FS # \$	-20	+/-10	-0.1	44	22	-	11	8	-	-	
	SSM3J35AFS ☆ \$	-20	+/-10	-0.25	20	4	2.9	2.1	-	1.4	-	
	SSM3J36FS # \$	-20	+/-8	-0.33	-	3.6	2.7	1.6(@-2.8V)	-	1.31	-	
	SSM3J15FS # \$	-30	+/-20	-0.1	-	-	-	32	12	-	-	
UFM	SSM3J36TU # \$	-20	+/-8	-0.33	-	3.6	2.7	1.6(@-2.8V)	-	1.31	-	
USM	SSM3J16FU # \$	-20	+/-10	-0.1	-	45	-	12	8	-	-	
	SSM3J15FU # \$	-30	+/-20	-0.1	-	-	-	32	12	-	-	
	SSM3J09FU \$	-30	+/-20	-0.2	-	-	-	6(@-3.3V)	4.2	-	2.7	
S-Mini	SSM3J15F # \$	-30	+/-20	-0.1	-	-	-	32	12	-	-	
	2SJ305 \$	-30	+/-20	-0.2	-	-	-	4	-	-	-	
	2SJ168 ● \$	-60	+/-20	-0.2	-	-	-	-	-	-	2	⇒ SSM3J168F
	SSM3J168F ☆ # \$	-60	+10/-20	-0.4	-	-	-	-	2	1.9	1.55	






☆ New Products, ● Recommend Another New Product
AEC-Q101 qualified, \$ With protection Zener diode between gate and source

CST3C	CST3 (SOT-883)	VESM (SOT-723)	SSM (SOT-416)	USM (SOT-323)	SOT23 (SOT-23)	S-Mini (SOT-346)
Bottom View	Bottom View					
0.8x0.6	1.0x0.6	1.2x1.2	1.6x1.6	2.0x2.1	2.9x2.4	2.9x2.5

N-Channel Single MOSFET

Package	Part Number	V _{oss} (V)	V _{ess} (V)	I _o (A)	R _{DS(on)} max (Ω)								Note	
					V _{es} = 1.2V	V _{es} = 1.5V	V _{es} = 1.8V	V _{es} = 2.5V	V _{es} = 4V	V _{es} = 4.5V	V _{es} = 5V	V _{es} = 10V		
CST3C	SSM3K16CTC	\$	20	+/-10	0.2	-	5.6	4	3	-	2.2	-	-	
	SSM3K35CTC	\$	20	+/-10	0.25	9	3.1	2.4	1.6	-	1.1	-	-	
	SSM3K15ACTC	\$	30	+/-20	0.1	-	-	-	6	3.6	-	-	-	
	SSM3K72CTC	\$	60	+/-20	0.15	-	-	-	5.7(typ.)	-	4.7	4.4	3.9	
CST3	SSM3K16CT	● \$	20	+/-10	0.1	-	15	-	4	3	-	-	-	⇒ SSM3K37CT
	SSM3K35CT	\$	20	+/-10	0.18	20	8	-	4	3	-	-	-	
	SSM3K37CT	\$	20	+/-10	0.2	-	5.6	4.05	3.02	-	2.2	-	-	
	SSM3K15ACT	\$	30	+/-20	0.1	-	-	-	6	3.6	-	-	-	
	SSM3K72KCT	☆ \$	60	+/-20	0.4	-	-	-	-	-	1.75	1.65	1.5	
VESM	SSM3K16FV	● \$	20	+/-10	0.1	-	15	-	4	3	-	-	-	⇒ SSM3K37MFV
	SSM3K35MFV	# \$	20	+/-10	0.18	20	8	-	4	3	-	-	-	
	SSM3K37MFV	\$	20	+/-10	0.25	-	5.6	4.05	3.02	-	2.2	-	-	
	SSM3K35AMFV	\$	20	+/-10	0.25	9	3.1	2.4	1.6	-	1.1	-	-	
	SSM3K15AMFV	\$	30	+/-20	0.1	-	-	-	6	3.6	-	-	-	
	SSM3K44MFV	# \$	30	+/-20	0.1	-	-	-	7	4	-	-	-	
SSM	SSM3K16FS	● # \$	20	+/-10	0.1	-	15	-	4	3	-	-	-	⇒ SSM3K37FS
	SSM3K35FS	● # \$	20	+/-10	0.18	20	8	-	4	3	-	-	-	⇒ SSM3K35AFS
	SSM3K37FS	\$	20	+/-10	0.2	-	5.6	4.05	3.02	-	2.2	-	-	
	SSM3K35AFS	\$	20	+/-10	0.25	9	3.1	2.4	1.6	-	1.1	-	-	
	SSM3K44FS	# \$	30	+/-20	0.1	-	-	-	7	4	-	-	-	
	SSM3K15AFS	\$	30	+/-20	0.1	-	-	-	6	3.6	-	-	-	
	SSM3K72CFFS	\$	60	+/-20	0.17	-	-	-	-	-	4.7	4.4	3.9	
	SSM3K72KFFS	# \$	60	+/-20	0.3	-	-	-	-	-	1.75	1.65	1.5	
USM	SSM3K16FU	# \$	20	+/-10	0.1	-	15	-	4	3	-	-	-	
	SSM3K15FU	# \$	30	+/-20	0.1	-	-	-	7	4	-	-	-	
	SSM3K15AFU	\$	30	+/-20	0.1	-	-	-	6	3.6	-	-	-	
	SSM3K48FU	\$	30	+/-20	0.1	-	-	-	5.4	3.2	-	-	-	
	SSM3K09FU	\$	30	+/-20	0.4	-	-	-	1.7(@3.3V)	1.2	-	-	0.7	
	SSM3K17FU	# \$	50	+/-7	0.1	-	-	-	40	20	-	-	-	
	SSM3K7002CFU	\$	60	+/-20	0.17	-	-	-	-	-	4.7	4.4	3.9	
	SSM3K7002KFU	# \$	60	+/-20	0.4	-	-	-	-	-	1.75	1.65	1.5	
SOT23	T2N7002AK	\$	60	+/-20	0.2	-	-	-	-	-	4.7	4.4	3.9	
	T2N7002BK	\$	60	+/-20	0.4	-	-	-	-	-	1.75	1.65	1.5	
S-Mini	SSM3K15F	# \$	30	+/-20	0.1	-	-	-	7	4	-	-	-	
	2SK2009	\$	30	+/-20	0.2	-	-	-	2	-	-	-	-	
	SSM3K7002KF	# \$	60	+/-20	0.4	-	-	-	-	-	1.75	1.65	1.5	

☆ New Products, ● Recommend Another New Product
 # AEC-Q101 qualified, \$ With protection Zener diode between gate and source

ESV (SOT-553)	ES6 (SOT-563)	USV (SOT-353)	UF6 (SOT-363F)	US6 (SOT-363)
				
1.6x1.6	1.6x1.6	2.0x2.1	2.0x2.1	2.0x2.1




Dual MOSFET

Package	Polarity	Part Number	V _{oss} (V)	V _{ess} (V)	I _b (A)	R _{DS(ON)} max (Ω)								Note		
						V _{es} = 1.2V	V _{es} = 1.5V	V _{es} = 1.8V	V _{es} = 2.5V	V _{es} = 4V	V _{es} = 4.5V	V _{es} = 5V	V _{es} = 10V			
ESV	P-ch x 2	SSM5P16FE	\$	-20	+/-10	-0.1	-	45	-	12	8	-	-	-		
	N-ch x 2	SSM5N16FE	\$	20	+/-10	0.1	-	15	-	4	3	-	-	-		
		SSM5N15FE	\$	30	+/-20	0.1	-	-	-	7	4	-	-	-		
ES6	P-ch x 2	SSM6P35FE	#	-20	+/-10	-0.1	44	22	-	11	8	-	-	-		
		SSM6P35AFE☆	\$	-20	+/-10	-0.25	20	4	2.9	2.1	-	1.4	-	-		
		SSM6P36FE	#	-20	+/-8	-0.33	-	3.6	2.7	1.6(@-2.8V)	-	1.31	-	-		
		SSM6P15FE	#	-30	+/-20	-0.1	-	-	-	32	12	-	-	-		
	N-ch x 2	SSM6N16FE	●	\$	20	+/-10	0.1	-	15	-	4	3	-	-	-	⇒ SSM6N37FE
		SSM6N35FE	#	\$	20	+/-10	0.18	20	8	-	4	3	-	-	-	
		SSM6N37FE	\$	20	+/-10	0.25	-	5.6	4.05	3.02	-	2.2	-	-		
		SSM6N35AFE	\$	20	+/-10	0.25	9	3.1	2.4	1.6	-	1.1	-	-		
		SSM6N44FE	#	\$	30	+/-20	0.1	-	-	-	7	4	-	-	-	
		SSM6N15AFE	\$	30	+/-20	0.1	-	-	-	6	3.6	-	-	-		
	N-ch + P-ch	SSM6L35FE	#	\$	20	+/-10	0.18	20	8	-	4	3	-	-	-	
\$			-20	+/-10	-0.1	44	22	-	11	8	-	-	-			
USV	P-ch x 2	SSM5P15FU	\$	-30	+/-20	-0.1	-	-	-	32	12	-	-	-		
	N-ch x 2	SSM5N16FU	\$	20	+/-10	0.1	-	15	-	4	3	-	-	-		
		SSM5N15FU	\$	30	+/-20	0.1	-	-	-	7	4	-	-	-		
UF6	P-ch x 2	SSM6P36TU	#	-20	+/-8	-0.33	-	3.6	2.7	1.6(@-2.8V)	-	1.31	-	-		
US6	P-ch x 2	SSM6P35FU	#	-20	+/-10	-0.1	44	22	-	11	8	-	-	-		
		SSM6P35AFU☆	\$	-20	+/-10	-0.25	20	4	2.9	2.1	-	1.4	-	-		
		SSM6P15FU	#	-30	+/-20	-0.1	-	-	-	32	12	-	-	-		
	N-ch x 2	SSM6N16FU	●	\$	20	+/-10	0.1	-	15	-	4	3	-	-	-	⇒ SSM6N37FU
		SSM6N35FU	#	\$	20	+/-10	0.18	20	8	-	4	3	-	-	-	
		SSM6N35AFU	\$	20	+/-10	0.25	9	3.1	2.4	1.6	-	1.1	-	-		
		SSM6N37FU	\$	20	+/-10	0.25	-	5.6	4.05	3.02	-	2.2	-	-		
		SSM6N48FU	\$	30	+/-20	0.1	-	-	-	5.4	3.2	-	-	-		
		SSM6N44FU	#	\$	30	+/-20	0.1	-	-	-	7	4	-	-	-	
		SSM6N15AFU	\$	30	+/-20	0.1	-	-	-	6	3.6	-	-	-		
		SSM6N09FU	\$	30	+/-20	0.4	-	-	-	1.7(@3.3V)	1.2	-	-	-	0.7	
		SSM6N17FU	#	\$	50	+/-7	0.1	-	-	-	40	20	-	-	-	
		SSM6N7002CFU	\$	60	+/-20	0.17	-	-	-	-	-	4.7	4.4	3.9		
	SSM6N7002KFU	#	\$	60	+/-20	0.3	-	-	-	-	1.75	1.65	1.5			
N-ch + P-ch	SSM6L35FU	#	\$	20	+/-10	0.18	20	8	-	4	3	-	-	-		
		\$	-20	+/-10	-0.1	44	22	-	11	8	-	-	-			
		\$	30	+/-20	0.4	-	-	-	1.7(@3.3V)	1.2	-	-	-	0.7		
\$	-30	+/-20	-0.2	-	-	-	6(@-3.3V)	4.2	-	-	-	2.7				

☆ New Products, ● Recommend Another New Product
 # AEC-Q101 qualified, \$ With protection Zener diode between gate and source

MOSFET with Diode

Package Dimensions (unit: mm)

ESV (SOT-553)	UFV (SOT-353F)	UDFN6 (SOT-1118)
		Bottom View 
1.6x1.6	2.0x2.1	2.0x2.0

Package	Polarity	Part Number	V _{DSS} (V)	V _{GSS} (V)	I _O (A)	MOSFET							Diode				Note	
						R _{DS(ON)} max (mΩ)							C _{ISS} typ. (pF)	V _R (V)	I _O (A)	V _F max (V)		
						V _{GS} = 1.5V	V _{GS} = 1.8V	V _{GS} = 2.5V	V _{GS} = 4V	V _{GS} = 4.5V	V _{GS} = 5V	V _{GS} = 10V				@I _F (A)		@I _F (A)
ESV	P-ch + SBD	SSM5G06FE	\$ -20	+/-10	-0.1	45000	-	12000	8000	-	-	-	11	12	0.1	0.5	0.1	
	N-ch + SBD	SSM5H06FE	\$ 20	+/-10	0.1	15000	-	4000	3000	-	-	-	9.3	12	0.1	0.5	0.1	
UFV	P-ch + SBD	SSM5G02TU	\$ -12	+/-12	-1.0	-	-	240	160	-	-	-	310	12	0.5	0.43	0.5	
		SSM5G09TU	\$ -12	+/-8	-1.5	-	-	200	130	-	-	-	550	12	0.5	0.43	0.5	
		SSM5G11TU	\$ -30	+/-20	-1.4	-	-	-	403	-	-	226	120	30(¥)	0.7(¥¥)	0.44	0.7(¥¥)	
	N-ch + SBD	SSM5H08TU	\$ 20	+/-12	1.5	-	-	220	160	-	-	-	125	20	0.5	0.43(typ.)	0.5	
		SSM5H01TU	\$ 30	+/-20	1.4	-	-	-	450	-	-	200	106	20	0.5	0.43(typ.)	0.5	
		SSM5H11TU	\$ 30	+/-20	1.6	-	-	-	182	-	-	122	180	30(¥)	0.7(¥¥)	0.44	0.7	
		SSM5H16TU	\$ 30	+/-12	1.9	-	296	177	133	-	-	-	123	30	0.8	0.55	0.8	
		N-ch + Switching Diode	SSM5H90ATU	\$ 20	+/-10	2.4	-	-	89	65	-	-	-	200	80	0.1	1.2	0.1
UDFN6	P-ch + SBD	SSM6G18NU	\$ -20	+/-8	-2.0	261	185	143	-	112	-	-	270	30	1	0.58	1	
	N-ch + SBD	SSM6H19NU	\$ 40	+/-12	2.0	-	390	238	208(@3.6V) 201(@4.2V)	198	-	185(@8V)	130	40	0.5	0.57	0.5	

\$ With protection Zener diode between gate and source, ¥ V_{RRM}, ¥¥ I_{F(AV)}

Part Naming Conventions

Small-Signal MOSFET SSM Series

Ex) SSM 3 K 329 R
 ① ② ③ ④ ⑤

① Small-Signal MOSFET

② Pin count

③ Polarity and internal configuration

K: N-channel, single

J: P-channel, single

N: N-channel, dual

P: P-channel, dual

L: N-channel and P-channel (dual)

E: N-channel and P-channel (pre-wired as a load switch)

H: N-channel and SBD

G: P-channel and SBD

Q: PNP and P-channel

④ Serial number of the products




⑤ Package





3-pin	F: S-Mini	5-pin	F: SMV
	FU: USM		FU: USV
	FS: SSM		FE: ESV
	FV: VESM		TU: UFV
	TU: UFM	6-pin	G: WCSP6C
	CT: CST3		L: TCSP6A
	CTB: CST3B		R: TSOP6F
	CTC: CST3C		FU: US6
	R: SOT-23F		FE: ES6
			TU: UF6
			NU: UDFN6/UDFN6B

2. Bipolar Transistors















■ General-Purpose Transistors



















Package Dimensions (unit: mm)

Classification	$ V_{CE0} $ (V)	$ I_C $ (mA)	CST3 (SOT-883)		VESM (SOT-723)		SSM (SOT-416)	
			Bottom View					
								
			1.0x0.6	1.2x1.2	1.6x1.6			
Part Number								
			NPN	PNP	NPN	PNP	NPN	PNP
General Purpose	50	100	2SC6026CT	2SA2154CT				
	50	150			2SC6026MFV #	2SA2154MFV #	2SC4738 #	2SA1832 #

Classification	$ V_{CE0} $ (V)	$ I_C $ (mA)	USM (SOT-323)		UFM (SOT-323F)		S-Mini (SOT-346)		SOT23 (SOT-23)	
			Bottom View							
										
			2.0x2.1	2.0x2.1	2.9x2.5	2.9x2.4				
Part Number										
			NPN	PNP	NPN	PNP	NPN	PNP	NPN	PNP
General Purpose	30	500		2SA1588 #				2SA1182 #		
	50	150	2SC4116 #	2SA1586 #			2SC2712 #	2SA1162 #	TBC847	TBC857
		200	TTC4116FU	TTA1586FU						TMBT3904
	50	500					2SC3325 # TTC1949	2SA1313 #		
	45							TTA1713		
Low Noise	120	100	2SC4117 #	2SA1587 #			2SC2713 #	2SA1163 #		
Low Saturation	15	800						2SA1362 #		
Muting	20	300	2SC4213				2SC3326 #			
High Current	20	2500				2SA2215 #				
	25	800					2SC3265 #	2SA1298 #		
	50	1000			2SC6135 #					
	50	1700				2SA2195 #				
	50	2500			2SC6100 #					
High Breakdown	300	100						2SA1721		
	600	50					2SC6105			

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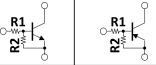

Classification	$ V_{CE0} $ (V)	$ I_C $ (mA)	ESV (SOT-553)		USV (SOT-353)		SMV (SOT-25)	
			 1.6x1.6		 2.0x2.1		 2.9x2.8	
			Part Number					
			Complementary	NPNx2	PNPx2	NPNx2	PNPx2	Complementary
General Purpose	50	150	HN4B01JE 	2SC4944 	2SA1873 	2SC4207 	2SA1618 	
					HN4A56JU 			
Low Noise	120	100				HN4C06J 	HN4A06J 	HN4B06J 
						HN4C51J 	HN4A51J 	



Classification	$ V_{CE0} $ (V)	$ I_C $ (mA)	ES6 (SOT-563)			US6 (SOT-363)			SM6 (SOT-26)		
			 1.6x1.6			 2.0x2.1			 2.9x2.8		
			Part Number								
			NPNx2	PNPx2	Complementary	NPNx2	PNPx2	Complementary	NPNx2	PNPx2	Complementary
General Purpose	50	150	HN1C01FE # 	HN1A01FE # 		HN1C01FU # 	HN1A01FU # 	HN1B01FU # 	HN1C01F 	HN1A01F 	HN1B01F 
					HN1B04FE # 		HN1B04FU # 			HN1C07F 	HN1A07F 
High Current	15	800								HN1A02F 	
Muting	20	300				HN1C03FU # 			HN1C03F 		



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Bias Resistor Built-in Transistors (BRTs)

Package Dimensions (unit: mm)

V _{ce0} (V)	I _c (mA)	Resistance		VESM (SOT-723)		SSM (SOT-416)		USM (SOT-323)		S-Mini (SOT-346)	
											
				1.2x1.2		1.6x1.6		2.0x2.1		2.9x2.5	
											
		R1 (typ.) (kΩ)	R2 (typ.) (kΩ)	NPN	PNP	NPN	PNP	NPN	PNP	NPN	PNP
Part Number											
50	100	4.7	4.7	RN1101MFV #	RN2101MFV #	RN1101 #	RN2101 #	RN1301 #	RN2301 #	RN1401 #	RN2401 #
		10	10	RN1102MFV #	RN2102MFV #	RN1102 #	RN2102 #	RN1302 #	RN2302 #	RN1402 #	RN2402 #
		22	22	RN1103MFV #	RN2103MFV #	RN1103 #	RN2103 #	RN1303 #	RN2303 #	RN1403 #	RN2403 #
		47	47	RN1104MFV #	RN2104MFV #	RN1104 #	RN2104 #	RN1304 #	RN2304 #	RN1404 #	RN2404 #
		2.2	47	RN1105MFV #	RN2105MFV #	RN1105 #	RN2105 #	RN1305 #	RN2305 #	RN1405 #	RN2405 #
		4.7	47	RN1106MFV #	RN2106MFV #	RN1106 #	RN2106 #	RN1306 #	RN2306 #	RN1406 #	RN2406 #
		10	47	RN1107MFV #	RN2107MFV #	RN1107 #	RN2107 #	RN1307 #	RN2307 #	RN1407 #	RN2407 #
		22	47	RN1108MFV #	RN2108MFV #	RN1108 #	RN2108 #	RN1308 #	RN2308 #	RN1408 #	RN2408 #
		47	22	RN1109MFV #	RN2109MFV #	RN1109 #	RN2109 #	RN1309 #	RN2309 #	RN1409 #	RN2409 #
		4.7	∞	RN1110MFV #	RN2110MFV #	RN1110 #	RN2110 #	RN1310 #	RN2310 #	RN1410 #	RN2410 #
		10	∞	RN1111MFV #	RN2111MFV #	RN1111 #	RN2111 #	RN1311 #	RN2311 #	RN1411 #	RN2411 #
		22	∞	RN1112MFV #	RN2112MFV #	RN1112 #	RN2112 #	RN1312 #	RN2312 #	RN1412 #	RN2412 #
		47	∞	RN1113MFV #	RN2113MFV #	RN1113 #	RN2113 #	RN1313 #	RN2313 #	RN1413 #	RN2413 #
		1	10	RN1114MFV #	RN2114MFV #	RN1114 #	RN2114 #	RN1314 #	RN2314 #	RN1414 #	RN2414 #
		2.2	10	RN1115MFV #	RN2115MFV #	RN1115 #	RN2115 #	RN1315 #	RN2315 #	RN1415 #	RN2415 #
		4.7	10	RN1116MFV #	RN2116MFV #	RN1116 #	RN2116 #	RN1316 #	RN2316 #	RN1416 #	RN2416 #
		10	4.7	RN1117MFV #	RN2117MFV #	RN1117 #	RN2117 #	RN1317 #	RN2317 #	RN1417 #	RN2417 #
		47	10	RN1118MFV #	-	RN1118	-	RN1318	RN2318	RN1418 #	RN2418 #
		1	∞	RN1119MFV #	RN2119MFV #	-	-	-	-	-	-
		100	100	RN1130MFV #	RN2130MFV #	-	-	-	-	-	-
100	∞	RN1131MFV #	RN2131MFV #	-	-	-	-	-	-		
200	∞	RN1132MFV #	RN2132MFV #	-	-	-	-	-	-		

V _{ce0} (V)	I _c (mA)	Resistance		SOT23 (SOT-23)	
					
				2.9x2.4	
					
		R1 (typ.) (kΩ)	R2 (typ.) (kΩ)	NPN	PNP
Part Number					
50	100	4.7	4.7	TDTC143E	TDTA143E
		10	10	TDTC144E	TDTA144E
		22	22	TDTC124E	TDTA124E
		47	47	TDTC144E	TDTA144E
		2.2	47	TDTC123J	TDTA123J
		4.7	47	TDTC143Z	TDTA143Z
		10	47	TDTC114Y	TDTA114Y

V _{ce0} (V)	I _c (mA)	Resistance		S-Mini (SOT-346)	
					
				2.9x2.5	
					
		R1 (typ.) (kΩ)	R2 (typ.) (kΩ)	NPN	PNP
Part Number					
50	800	1	1	RN1421	RN2421
		2.2	2.2	RN1422	RN2422
		4.7	4.7	RN1423	RN2423
		10	10	RN1424	RN2424
		0.47	10	RN1425	RN2425
		1	10	RN1426	RN2426
		2.2	10	RN1427	RN2427

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1 MOSFETs

2 Tr./BRTs

3 Diodes

4 Linear ICs




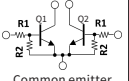
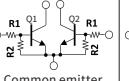
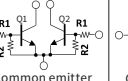
5 Logics


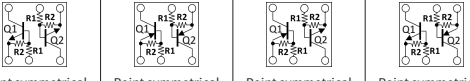
6 Bus Switches

7 Level Shifters


8 RF Devices


9 Packages

V _{ce0} (V)	I _c (mA)	Resistance		ESV (SOT-553)		USV (SOT-353)		SMV (SOT-25)	
									
				1.6x1.6		2.0x2.1		2.9x2.8	
									
R1 (typ.) (kΩ)	R2 (typ.) (kΩ)	NPNx2	PNPx2	NPNx2	PNPx2	NPNx2	PNPx2	NPNx2	PNPx2
Part Number									
50	100	4.7	4.7	RN1701JE	RN2701JE	RN1701 #	RN2701 #	RN1501	RN2501
		10	10	RN1702JE	RN2702JE	RN1702 #	RN2702 #	RN1502	RN2502
		22	22	RN1703JE	RN2703JE	RN1703 #	RN2703 #	RN1503	RN2503
		47	47	RN1704JE	RN2704JE	RN1704 #	RN2704 #	RN1504	RN2504
		2.2	47	RN1705JE	RN2705JE	RN1705 #	RN2705 #	RN1505	RN2505
		4.7	47	RN1706JE	RN2706JE	RN1706 #	RN2706 #	RN1506	RN2506
		10	47	RN1707JE	RN2707JE	RN1707 #	RN2707 #	RN1507	RN2507
		22	47	RN1708JE	RN2708JE	RN1708 #	RN2708 #	RN1508	-
		47	22	RN1709JE	RN2709JE	RN1709 #	RN2709 #	RN1509	-
		4.7	∞	RN1710JE	RN2710JE	RN1710 #	RN2710 #	RN1510	RN2510
		10	∞	RN1711JE	RN2711JE	RN1711 #	RN2711 #	RN1511	RN2511
		22	∞	-	RN2712JE	-	-	-	-
		47	∞	-	RN2713JE	-	-	-	-

V _{ce0} (V)	I _c (mA)	Resistance		ES6 (SOT-563)			
							
				1.6x1.6			
							
R1 (typ.) (kΩ)	R2 (typ.) (kΩ)	NPNx2	PNPx2	PNP+NPN	NPN+PNP	Part Number	
50	100	4.7	4.7	RN1901FE #	RN2901FE #	RN4901FE #	RN4981FE #
		10	10	RN1902FE #	RN2902FE #	RN4902FE #	RN4982FE #
		22	22	RN1903FE #	RN2903FE #	RN4903FE #	RN4983FE #
		47	47	RN1904FE #	RN2904FE #	RN4904FE #	RN4984FE #
		2.2	47	RN1905FE #	RN2905FE #	RN4905FE #	RN4985FE #
		4.7	47	RN1906FE #	RN2906FE #	RN4906FE #	RN4986FE #
		10	47	RN1907FE #	RN2907FE #	RN4907FE #	RN4987FE #
		22	47	RN1908FE #	RN2908FE #	RN4908FE #	RN4988FE #
		47	22	RN1909FE #	RN2909FE #	RN4909FE #	RN4989FE #
		4.7	∞	RN1910FE #	RN2910FE #	RN4910FE #	RN4990FE #
10	∞	RN1911FE #	RN2911FE #	RN4911FE #	RN4991FE #		

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V _{ce(s)} (V)	I _c (mA)	US6 (SOT-363)						
		Resistance		 2.0x2.1				
		R1 (typ.) (kΩ)	R2 (typ.) (kΩ)	Point symmetrical	Point symmetrical	Point symmetrical	Point symmetrical	
50	100			NPNx2	PNPx2	PNP+NPN	NPN+PNP	
		Part Number						
		4.7	4.7	RN1901 #	RN2901 #	RN4901 #	RN4981 #	
		10	10	RN1902 #	RN2902 #	RN4902 #	RN4982 #	
		22	22	RN1903 #	RN2903 #	RN4903 #	RN4983 #	
		47	47	RN1904 #	RN2904 #	RN4904 #	RN4984 #	
		2.2	47	RN1905 #	RN2905 #	RN4905 #	RN4985 #	
		4.7	47	RN1906 #	RN2906 #	RN4906 #	RN4986 #	
		10	47	RN1907 #	RN2907 #	RN4907 #	RN4987 #	
		22	47	RN1908 #	RN2908 #	RN4908 #	RN4988 #	
		47	22	RN1909 #	RN2909 #	RN4909 #	RN4989 #	
		4.7	∞	RN1910 #	RN2910 #	RN4910 #	RN4990 #	
		10	∞	RN1911 #	RN2911 #	RN4911 #	-	
		47	∞	-	-	-	-	
47/2.2	47/47	-	-	-	RN49A2			

V _{ce(s)} (V)	I _c (mA)	SM6 (SOT-26)					
		Resistance		 2.9x2.8			
		R1 (typ.) (kΩ)	R2 (typ.) (kΩ)	Point symmetrical	Point symmetrical	Point symmetrical	
50	100			NPNx2	PNPx2	PNP+NPN	
		Part Number					
		4.7	4.7	RN1601	RN2601	RN4601	
		10	10	RN1602	RN2602	RN4602	
		22	22	RN1603	RN2603	RN4603	
		47	47	RN1604	RN2604	RN4604	
		2.2	47	RN1605	RN2605	RN4605	
		4.7	47	RN1606	RN2606	RN4606	
		10	47	RN1607	RN2607	RN4607	
		22	47	RN1608	RN2608	RN4608	
		47	22	RN1609	-	RN4609	
		4.7	∞	RN1610	RN2610	RN4610	
		10	∞	RN1611	-	RN4611	
		22	∞	-	-	RN4612	

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3. Diodes

■ Schottky Barrier Diodes (SBDs)



























Features	Absolute Maximum Ratings		Electrical Characteristics (Ta=25°C)						SL2 (SOD-962)	CL2E	CST2 (SOD-882)	SOD-923	CST2B	
									Bottom View	Bottom View	Bottom View		Bottom View	
	V _R /V _{RM} * (V)	I _O (A)	V _F			I _R max (μA)		C _T typ. (pF)						
		typ. (V)	max (V)	@I _F (A)		@V _F (V)		0.62x0.32	1.0x0.6	1.0x0.6	1.0x0.6	1.2x0.8		
High-V _F and I _O	60	1.0	0.56	0.62	1.0	40	60	130						
			0.47	0.54	2.0	60	40	300						
		2.0	0.4	0.47	2.0	300	40	290						
	40	1.5	0.45	0.51	1.5	200	40	170						
			0.57	0.63	1.5	50	40	130						
		0.59	0.64	1.5	25	40	130							
		1.0	to 0.63	to 0.70	1.0	20	40	74					CBS10F40	
		0.5	0.74	0.81	0.5	15	40	28			CTS05F40			
	40*	1.5	0.47	0.55	1.5	200	40	170						
		1.0	to 0.48	to 0.55	1.0	150	40	120					CBS10S40	
		0.5	0.56	0.60	0.5	50	40	42			CTS05S40			
		2.0	0.40	0.47	2.0	60	30	380						
		0.34	0.41	2.0	500	30	390							
	30	1.5	0.46	0.52	1.5	50	30	170						
			0.37	0.43	1.5	500	30	200						
		1.0	0.43	0.50	1.0	50	30	170						
		0.8	0.40	0.45	0.8	50	30	170						
		0.5	0.38	0.45	0.5	50	30	to 120					CBS05F30	
30*	0.5	0.38	0.47	0.5	100	20	-							
	1.5	0.39	-	1.5	500	30	200							
	1.0	0.37	0.45	1.0	500	30	135					CBS10S30		
	0.5	0.41	0.47	0.5	300	30	55			CTS05S30				
Standard	40	0.1	0.54	0.60	0.1	5	40	11						
			0.56	0.62	0.1	5	40	15			1SS417CT	1SS417		
	30	0.2	0.52	0.60	0.2	5	30	to 17			CTS520			
			0.45	0.50	0.2	30	30	to 26			CTS521			
		0.38	0.50	0.1	50	30	15			1SS416CT	1SS416			
		0.1	0.51	0.62	0.1	0.7	30	8.2	DSR01S30SL					
		0.41	0.50	0.1	50	30	9.3	DSF01S30SL						
	20	0.3	0.38	0.45	0.3	50	20	46						
0.2		0.42	0.50	0.2	50	20	20							
10	0.1	0.35	0.50	0.1	20	10	20							
Low-I _R High Speed	20	0.05	0.50	0.55	0.05	0.5	20	3.9			1SS413CT	1SS413		
	40	1.0	0.52	0.57	1.0	25	40	130		CLS10F40 ☆				

☆ New Products, # AEC-Q101 qualified


















Package Dimensions (unit: mm)

	CST2C (SOD-963)	ESC (SOD-523)	USC (SOD-323)	US2H (SOD-323HE)	Electrical Characteristics (Ta=25°C)						Absolute Maximum Ratings		Features	
					V _F			I _R		C _T typ. (pF)	V _R / V _{RM} * (V)	I _O (A)		
					typ. (V)	max (V)	@I _R (A)	max (μA)	@V _R (V)					
Bottom View														
	1.6x0.8	1.6x0.8	2.5x1.25	2.5x1.4										
				CUHS10F60 ☆	0.56	0.62	1.0	40	60	130	60	1.0	High-V _e and I _O	
				CUHS20F40 ☆	0.47	0.54	2.0	60	40	300	40	2.0		
				CUHS20S40 ☆	0.4	0.47	2.0	300	40	290		1.5		
				CUHS15S40 ☆	0.45	0.51	1.5	200	40	170				
				CUHS15F40 ☆	0.57	0.63	1.5	50	40	130		40*		1.0
CCS15F40					0.59	0.64	1.5	25	40	130	0.5			
			CUS10F40		to 0.63	to 0.70	1.0	20	40	74	30	1.5		
			CUS05F40		0.74	0.81	0.5	15	40	28		1.0		
			CUS15S40		0.47	0.55	1.5	200	40	170		0.5		
CCS15S40			CUS10S40		to 0.48	to 0.55	1.0	150	40	120		30		1.5
			CUS05S40		0.56	0.60	0.5	50	40	42	1.0			
				CUHS20F30 ☆	0.40	0.47	2.0	60	30	380	30			2.0
				CUHS20S30 ☆	0.34	0.41	2.0	500	30	390				1.5
				CUHS15F30 ☆	0.46	0.52	1.5	50	30	170		1.0		
				CUHS15S30 ☆	0.37	0.43	1.5	500	30	200		0.8		
			CUS10F30		0.43	0.50	1.0	50	30	170	30*	0.5		
			CUS08F30		0.4	0.45	0.8	50	30	170		0.5		
			CUS05F30		0.38	0.45	0.5	50	30	to 120		0.5		
			CUS551V30		0.38	0.47	0.5	100	20	-		1.5		
CCS15S30			CUS15S30		0.39	-	1.5	500	30	200	30*	1.0		
			CUS10S30		0.37	0.45	1.0	500	30	135		0.5		
			CUS05S30		0.41	0.47	0.5	300	30	55		0.1		
		CES388 #	CUS357 #		0.54	0.60	0.1	5	40	11	40	0.1		
					0.56	0.62	0.1	5	40	15				
		CES520 #	CUS520 #		0.52	0.60	0.2	5	30	to 17			30	0.2
		CES521	CUS521 #		0.45	0.50	0.2	30	30	to 26				
					0.38	0.50	0.1	50	30	15				
					0.51	0.62	0.1	0.7	30	8.2	20	0.1		
					0.41	0.50	0.1	50	30	9.3				
			1SS404		0.38	0.45	0.3	50	20	46	20	0.3		
		1SS424			0.42	0.50	0.2	50	20	20		0.2		
		1SS389 #	1SS367 #		0.35	0.50	0.1	20	10	20	10	0.1		
		1SS405 #	1SS406 #		0.50	0.55	0.05	0.5	20	3.9	20	0.05		
					0.52	0.57	1.0	25	40	130	40	1.0	Low-I _R High Speed	




























■ Schottky Barrier Diodes (SBDs)

Features		Absolute Maximum Ratings		Electrical Characteristics (Ta=25°C)					VESM	SSM	USM	S-Mini	SOT23			
									(SOT-723)	(SOT-416)	(SOT-323)	(SOT-346)	(SOT23)			
		V _R /V _{RM} * (V)	I _O (A)	V _F			I _R max (μA)	C _T typ. (pF)								
High-V _F and I _O			typ. (V)	max (V)	@I _F (A)		@V _R (V)		1.2x1.2	1.6x1.6	2.0x2.1	2.9x2.5	2.9x2.4			
Standard	30	1.0	0.47	0.57	1.0	50	30	120								
	40	0.1	0.54	0.6	0.1	5	40	18			1SS322 	1SS294 				
												1SS393 	1SS392 			
			0.56	0.62	0.1	5	40	15		1SS423 			1SS396 # 			
	30	0.2	0.45	0.58	0.1	2	25	-						TBAT54 		
														TBAT54C 		
														TBAT54S 		
														TBAT54A 		
	20	0.1	0.38	0.5	0.1	50	30	15		1SS422 						
											1SS401 					
	10	0.1	0.35	0.5	0.1	20	10	20				1SS395 	1SS394 			
										1SS385FV 	1SS385 	1SS378 	1SS377 			
											1SS372 	1SS374 				
Low-I _R High-Speed	20	0.05	0.5	0.55	0.05	0.5	20	3.9								
	10	0.05	0.63	1	0.05	0.5	10	3.2				1SS321 # 				










































AEC-Q101 qualified

	USQ (SOT-343)	SMQ (SOT-24)	ESV (SOT-553)	UFV (SOT-353F)	US6 (SOT-363)	SM6 (SOT-26)	Electrical Characteristics (Ta=25°C)					Absolute Maximum Ratings		Features						
	 2.0x2.1	 2.9x2.9	 1.6x1.6	 2.0x2.1	 2.0x2.1	 2.9x2.8	V _F			I _R max (μA) @V _R	C _T typ. (pF)	V _R / V _{RM} * (V)	I _O (A)							
							typ. (V)	max (V)	@I _F (A)											
				CVJ10F30 			0.47	0.57	1.0	50	30	120	30	1.0	High-V _F and I _O					
	1SS383 	1SS319 	HN2S02JE 		HN2S02FU 		0.54	0.6	0.1	5	40	18	40	0.1	Standard					
						0.56										0.62	0.1	5	40	15
						0.45										0.58	0.1	2	25	-
						0.38	0.5	0.1	50	30	15	0.1								
						0.38	0.45	0.3	50	20	46	0.3								
					HN2S04FU 	0.36	0.42	0.2	50	20	46	20	0.2							
	1SS384 				HN2S01FU 	HN2S01F 	0.35	0.5	0.1	20	10	20	10	0.1						
	1SS402 				HN2S03FU 		0.5	0.55	0.05	0.5	20	3.9	20	0.05		Low-I _R High-Speed				
							0.63	1	0.05	0.5	10	3.2	10	0.05						










Switching Diodes

Absolute Maximum Ratings		Electrical Characteristics (Ta=25°C)		CST2 (SOD-882)	SOD-923	ESC (SOD-523)	USC (SOD-323)	CST3 (SOT-883)	VESM (SOT-723)	SSM (SOT-416)	USM (SOT-323)	SOT23 (SOT-23)	
V _R (V)	I _o (mA)	C _T typ. (pF)	t _{rr} typ. (ns)	Bottom View		Bottom View		Bottom View		Bottom View		Bottom View	
													
30	100	3	-	1.0x0.6	1.0x0.6	1.6x0.8	2.5x1.25	1.0x0.6	1.2x1.2	1.6x1.6	2.0x2.1	2.9x2.4	
80	100	0.5	1.6							1SS362 			
		0.3	1.6		1SS427								
	0.5	1.6	1SS387CT		1SS387 #	1SS352 #							
	0.9	1.6						1SS361CT 	1SS361FV # 	1SS361 # 	1SS301 # 		
									1SS362FV # 		1SS302A # 	TBAV99 	
	2	-				1SS307E #							
	2.2	1.6											
									1SS360 # 	1SS300 # 			
3.0	-												
Q1/2=0.9 Q3/4=2.2		1.6											
215	0.9	1.6										TBAS16 	
												TBAW56 	
												TBAV70 	
100	150	0.9	4 (max)								BAV99W 		
	215	0.9	4 (max)									BAV70 	
	215	0.9	3 (max)									BAV99 	
	250	0.35	3 (max)			BASS16	BAS316						
200	100	1.5	10				1SS403 #				1SS370 		
			60 (max)			1SS403E ☆							
		30											
400	100	2.5	0.5								1SS397 		

☆ New Products, # AEC-Q101 qualified

	S-Mini (SOT-346)	USQ (SOT-343)	SMQ (SOT-24)	ESV (SOT-553)	USV (SOT-353)	SMV (SOT-25)	ES6 (SOT-563)	US6 (SOT-363)	SM6 (SOT-26)	Electrical Characteristics (Ta=25°C)		Absolute Maximum Ratings	
	 2.9x2.5	 2.0x2.1	 2.9x2.9	 1.6x1.6	 2.0x2.1	 2.9x2.8	 1.6x1.6	 2.0x2.1	 2.9x2.8	C _T typ. (pF)	t _r typ. (ns)	V _R (V)	I _O (mA)
	 1SS307									3	-	30	100
								HN2D01FU # 	HN2D01F 	0.5	1.6	80	100
								HN2D02FU # 		0.3	1.6		
				HN2D01JE 						0.5	1.6	80	100
	1SS184 # 				HN4D02JU 	1SS309 				0.9	1.6		
	1SS226 # 						HN1D02FE 	HN1D02FU # 	HN1D02F 				
	1SS196 # 									0.9	1.6		
	1SS193 # 												
		1SS382 	1SS272 							2	-	80	100
	1SS190 # 				HN4D01JU 	1SS308 							
	1SS187 # 						HN1D01FE 	HN1D01FU # 	HN1D01F 	2.2	1.6		
	1SS181 # 												
	1SS379 # 									3.0	-		
								HN1D03FU # 	HN1D03F 	Q1/2=0.9 Q3/4=2.2	1.6	215	100
										0.9	1.6		
										0.9	4 (max)	150	100
										0.9	4 (max)	215	
										0.9	3 (max)	215	
										0.35	3 (max)	250	
	1SS250 									1.5	10	200	100
											60 (max)		
			1SS306 								30		
	1SS398 		1SS399 						HN2D03F 	2.5	0.5	400	100













■ TVS Diodes (ESD Protection Diodes)

Application	Absolute Maximum Ratings		Electrical Characteristics (Ta=25°C)			SL2 (SOD-962)	CST2 (SOD-882)	CST2C (SOD-963)	SOD-923	ESC (SOD-523)	USC (SOD-323)	
						Bottom View	Bottom View	Bottom View				
												
								1.0x0.6	1.6x0.8	2.5x1.25		
	V _{ESD} IEC61000 -4.2 (kV)	I _{PP} tp=8/20μs (A)	V _{RWM} max (V)	C _T typ. (pF)	R _{DYN} typ. (Ω)							
Bi-directional	USB3.1/ Thunderbolt/ RF antenna (NFC)	±20	2.5	3.3	0.3	0.5	DF2B5M5SL ☆					
		±20	2.5	5.0	0.3	0.5	DF2B6M5SL ☆					
		±20	2.0	3.6	0.2	0.5 to 0.8	DF2B5M4SL	DF2B5M4CT				
		±20	2.0	5.5	0.2	0.5 to 0.8	DF2B6M4SL	DF2B6M4CT				
		±16	2.0	3.6	0.15	0.7	DF2B5M4ASL ☆					
		±15	2.0	5.5	0.15	0.7	DF2B6M4ASL ☆					
		±15	1.0	11.0	0.2	0.65	DF2B12M4SL ☆					
		±15	0.5	18.5	0.2	0.2	DF2B20M4SL					
		±15	0.5	24.0	0.2	0.2	DF2B26M4SL ☆					
		±12	2.5	5.5	0.1	0.7	DF2B7M3SL					
		±12	2.0	5.0	0.2	1.0	DF2B7M2SL ●					
		±12	2.5	5.5	0.2	1.0						
	±12	2.5	5.0	0.3	0.8		DF2B6.8M1ACT					
	±8	-	5.0	0.3	0.9							
	±8	-	8.0	0.3	2.5							
USB2.0	±10	1.5	5.5	1.5	0.25	DF2B6USL						
General Purpose/ Audio/ SIM Card	±30	27.0	5.5	45.0	0.10		DF2B7PCT ☆					
	±30	4.0	5.5	8.5	0.2	DF2B7ASL	DF2B7ACT	DF2B7AFS	DF2B7AE #	DF2B7AFU		
	±30	7.3	5.5	12	0.2	DF2B7BSL ☆						
	±30	27.0	3.6	41	0.1		DF2B5PCT ☆					
	±17	3.0	5.3	6	0.3	DF2B7SL						
	±17	5.5	3.3	9	0.25	DF2B5SL ☆						
	±23	7.5	3.6	11	0.2	DF2B5BSL ☆						
Automotive's CAN/LIN	±8	-	5.0	15	-				DF2B6.8E #			
	±30	2.5	12	9	0.8					DF2B18FU #		
	±25	3.0	24	9	1.1					DF2B29FU #		
	±20	2.5	28	6.5	1.5					DF2B36FU #		
Uni-directional	USB3.1/ Thunderbolt/ RF antenna (NFC)	±20	2.0	3.6	0.35 to 0.45	0.3 to 0.35	DF2S5M4SL	DF2S5M4CT	DF2S5M4FS ☆ #			
		±20	2.0	5.5	0.35 to 0.45	0.3 to 0.35	DF2S6M4SL	DF2S6M4CT	DF2S6M4FS ☆ #			
		±20	2.5	3.3	0.6	0.3	DF2S5M5SL ☆					
		±20	2.5	5.0	0.6	0.3	DF2S6M5SL ☆					
	USB2.0	±12	3.0	5.0	to 0.5	0.35	DF2S7MSL ●			DF2S6.8MFS		
		±8	-	5.0	0.5	-						
		±8	-	5.0	1.6	0.3		DF2S6.8UCT	DF2S6.8UFS			
		±8	-	5.0	2.5 (max)	-						
		±8	-	19	1.6	0.5		DF2S24UCT				
	General Purpose/ Audio/ SIM Card	±30	2.5	1.5	45	0.2	DF2S5.1ASL					
		±30	2.5	3.5	40	0.25	DF2S5.6ASL					
		±30	2.5	5.0	32	0.3	DF2S6.2ASL					
		±30	2.5	5.0	25	0.5	DF2S6.8ASL					
		±30	2.5	6.5	20	0.8	DF2S8.2ASL					
	Power Supply USB_V _{BUS}	±30	80	5.5	600	0.08		DF2S6P2CTC ☆			DF2S6P2FU ☆	
±30		60	10	280	0.08		DF2S12P2CTC ☆			DF2S12P2FU ☆		
±30		50	12.6	270	0.08		DF2S14P2CTC ☆			DF2S14P2FU ☆		
±30		14	21	160	0.13		DF2S23P2CTC ☆			DF2S23P2FU ☆		
±30		110	22	-	0.01							

☆ New Products, ★ Under Development (The specification is subject to change without notice.), # AEC-Q101 qualified

● Recommend Another New Product

DF2S7MSL → DF2S6M4SL, DF2B7M2SL → DF2B6M4SL

UDFN6B (SOT-1220)	SSM (SOT-416)	USM (SOT-323)	DFN5	DFN6	DFN10	Electrical Characteristics (Ta=25°C)			Absolute Maximum Ratings		Application
 2.0x2.0	 1.6x1.6	 2.0x2.1	Bottom View  1.3x0.8	Bottom View  1.25x1.0	Bottom View  2.5x1.0	V _{RWM} max (V)	C _t typ. (pF)	R _{DYN} typ. (Ω)	V _{ESD} IEC61000 -4-2 (kV)	I _{PP} tp= 8/20μs (A)	
						3.3	0.3	0.5	±20	2.5	Bi-directional
						5.0	0.3	0.5	±20	2.5	
			DF5G5M4N ☆	DF6D5M4N ☆	DF10G5M4N	3.6	0.2	0.5 to 0.8	±20	2.0	
			DF5G6M4N ☆	DF6D6M4N ☆	DF10G6M4N	5.5	0.2	0.5 to 0.8	±20	2.0	
						3.6	0.2	0.7	±16	2.0	
						5.5	0.2	0.7	±15	2.0	
						11.0	0.2	0.65	±15	1.0	
						18.5	0.2	0.2	±15	0.5	
						24.0	0.2	0.2	±15	0.5	
						5.5	0.1	0.7	±12	2.5	
						5.0	0.2	1.0	±12	2.0	
			DF5G7M2N			5.5	0.2	1.0	±12	2.5	
						5.0	0.3	0.8	±12	2.5	
				DF6D7M1N	DF10G7M1N	5.0	0.3	0.9	±8	-	
						8.0	0.3	2.5	±8	-	
						5.5	1.5	0.25	±10	1.5	
						5.5	45.0	0.10	±30	27.0	
						5.5	8.5	0.2	±30	4.0	
						5.5	12	0.3	±30	7.3	
						3.6	41	0.1	±30	27.0	
						5.3	6	0.3	±17	3.0	
						3.3	9	0.25	±17	5.5	
						3.6	11	0.2	±23	7.5	
						5.0	15	-	±8	-	
		DF3D18FU #				12	9	0.8	±30	2.5	
		DF3D29FU #				24	9	1.1	±25	3.0	
		DF3D36FU #				28	6.5	1.5	±20	2.5	
						3.6	0.35 to 0.45	0.3 to 0.35	±20	2.0	
						5.5	0.35 to 0.45	0.3 to 0.35	±20	2.0	
						3.3	0.6	0.3	±20	2.5	
						5.0	0.6	0.3	±20	2.5	
						5.0	to 0.5	0.35	±12	3.0	
		DF3D6.8MS				5.0	0.5	-	±8	-	
						5.0	1.6	0.3	±8	-	
		DF3A6.8UFU				5.0	2.5 (max)	-	±8	-	
						19	1.6	0.5	±8	-	
						1.5	45	0.2	±30	2.5	
						3.5	40	0.25	±30	2.5	
						5.0	32	0.3	±30	2.5	
						5.0	25	0.5	±30	2.5	
						6.5	20	0.8	±30	2.5	
						5.5	600	0.08	±30	80	
						10	280	0.08	±30	60	
						12.6	270	0.08	±30	50	
						21	160	0.13	±30	14	
DF6S25P3NU ★						22	-	0.01	±30	110	

Bi-directional

Uni-directional

- ① MOSFETs
- ② Tr./BJT's
- ③ Diodes
- ④ Linear ICs
- ⑤ Logic's
- ⑥ Bus Switches
- ⑦ Level Shifters
- ⑧ RF Devices
- ⑨ Packages

TVS Diodes (ESD Protection Diodes)

Package Dimensions (unit: mm)









Application	Absolute Maximum Ratings	Electrical Characteristics (Ta=25°C)			CST2	SOD-923	USC	
					(SOD-882)	(SOD-323)	(SOD-323)	
					Bottom View			
				1.0x0.6	1.0x0.6	2.5x1.25		
	V _{ESD} IEC61000 -4-2 (kV)	V _Z min (V)	C _T typ. (pF)	Z _Z max (Ω)				
Uni-directional	±30	4.8	45	70		DF2S5.1FS		
	±30	5.3	40	30	DF2S5.6CT	DF2S5.6FS		
	±30	5.8	32	30	DF2S6.2CT	DF2S6.2FS		
	±30	6.4	25	30	DF2S6.8CT	DF2S6.8FS		
	±30	7.7	20	30	DF2S8.2CT	DF2S8.2FS		
	±30	9.4	16	30		DF2S10FS		
	General-Purpose/ SIM Card/ Power-Supply	±20	11.4	15	10 (typ.)			DF2S12FU
		±20	11.4	15	25		DF2S12FS	
		±12	15.3	10	35	DF2S16CT	DF2S16FS	
		±12	18.8	9	to 55	DF2S20CT	DF2S20FS	
±10		22.8	8.5	70		DF2S24FS		
±8		28	7.2	75	DF2S30CT			
	±8	28	7	150		DF2S30FS		

Application	Absolute Maximum Ratings	Electrical Characteristics (Ta=25°C)			CST3	VESM	USM	S-Mini	ESV	USV	SMV	US6
					(SOT-883)	(SOT-723)	(SOT-323)	(SOT-346)	(SOT-553)	(SOT-353)	(SOT-25)	(SOT-363)
					Bottom View							
				1.0x0.6	1.2x1.2	2.0x2.1	2.9x2.5	1.6x1.6	2.0x2.1	2.9x2.8	2.0x2.1	
	V _{ESD} IEC61000 -4-2 (kV)	V _Z min (V)	C _T typ. (pF)	Z _Z max (Ω)								
Uni-directional	±8	5.3	8	50			DF3A5.6LFU		DF5A5.6LJE	DF5A5.6LFU		
	±8	5.3	8	3 (typ.)		DF3A5.6LFV#						
	±8	5.9	6.5	50		DF3A6.2LFV#	DF3A6.2LFU		DF5A6.2LJE	DF5A6.2LFU		
	±8	6.5	to 6	50	DF3A6.8LCT	DF3A6.8LFV#	DF3A6.8LFU		DF5A6.8LJE	DF5A6.8LFU	DF5A6.8LF	
	±30	5.3	29	40					DF5A5.6CJE	DF5A5.6CFU		
	±30	5.8	25	30					DF5A6.2CJE	DF5A6.2CFU		
	±25	6.4	23	25					DF5A6.8CJE	DF5A6.8CFU		
	±30	5.3	65	40	DF3A5.6CT	DF3A5.6FV#	DF3A5.6FU	DF3A5.6F	DF5A5.6JE	DF5A5.6FU	DF5A5.6F	
	±30	5.8	55	30	DF3A6.2CT	DF3A6.2FV#	DF3A6.2FU	DF3A6.2F	DF5A6.2JE	DF5A6.2FU	DF5A6.2F	
	±30	6.4	45	25	DF3A6.8CT	DF3A6.8FV#	DF3A6.8FU	DF3A6.8F	DF5A6.8JE	DF5A6.8FU	DF5A6.8F	

AEC-Q101 qualified

ESD Protection Zener Diodes

Package Dimensions (unit: mm)

Application	Electrical Characteristics (Ta=25°C)		ESC (SOD-523)	USC (SOD-323)	USM (SOT-323)	S-Mini (SOT-346)
						
			1.6x0.8 Po=150mW	2.0x1.25 Po=200mW	2.0x2.1 Po=150mW	2.9x2.5 Po=200mW
Uni-directional General-Purpose/ SIM Card/ Power-Supply	Vz (V)	Iz(mA)				
		5.6	5	CEZ5V6 ★	CUZ5V6 ★	MUZ5V6 ★
	6.2	5	CEZ6V2 ★	CUZ6V2 ★	MUZ6V2 ★	MSZ6V2 ★
	6.8	5	CEZ6V8 ★	CUZ6V8 ★	MUZ6V8 ★	MSZ6V8 ★
	8.2	5	CEZ8V2 ★	CUZ8V2 ★	MUZ8V2 ★	MSZ8V2 ★
	12	2	CEZ12V ★	CUZ12V ★	MUZ12V ★	MSZ12V ★
	16	2	CEZ16V ★	CUZ16V ★	MUZ16V ★	MSZ16V ★
	20	2	CEZ20V ★	CUZ20V ★	MUZ20V ★	MSZ20V ★
	24	2	CEZ24V ★	CUZ24V ★	MUZ24V ★	MSZ24V ★
	30	2	CEZ30V ★	CUZ30V ★	MUZ30V ★	MSZ30V ★
	36	2	CEZ36V ★	CUZ36V ★	MUZ36V ★	MSZ36V ★

★ Under Development (The specification is subject to change without notice.)

① MOSFETs

② Tr./BRTs

③ Diodes

④ Linear ICs

⑤ Logics

⑥ Bus Switches

⑦ Level Shifters

⑧ RF Devices

⑨ Packages

■ Part Naming Conventions

Diode (JEITA Registration Products)

1 S S 181

- Serial number: JEITA registration number.
- The kind of diode
 - S: Diode of general-purpose use, detection use, frequency conversion use, and switching use
 - V: Variable capacitance and PIN diode
- S stands for Semiconductor
- The value that subtracted 1 from the total number of terminals

Schottky Barrier Diodes

New Naming Conventions

CU S 05 F 30 A

- Revision or function category (A to Z)
- Voltage rating
 - ex.) 30: 30V
- Device type
 - ex.) S: Super Low forward voltage F: Low forward voltage, R: Low leakage current
- Current rating
 - ex.) 05: 0.5A
- Pin count
 - ex.) S: 2pin
- Package
 - ex.) CU: USC, CE: ESC, CB: CST2B, CE: CL2E

Old Naming Conventions

DS F 07 S 30 A U

- Package style: This letter shows the package style.
- Revision
- Voltage rating
 - ex.) 30: 30V, 15: 15V
- Circuit configuration and number of pins
- Current rating
 - ex.) 07: 0.7A, 10: 1A
- Device feature: This letter shows the feature of a device.
 - F: Low forward voltage type.
 - R: Low leakage current type.
- Schottky barrier diode.

TVS Diodes (ESD Protection Diodes)

DF 5 A 6.2 L FU

- Package suffix
- Series name
 - ex.) L: Ultra-high-speed
- Clamp voltage (V_{cl})
- Internal configuration
 - ex.) A: Common anode
- Pin count
 - Note) The digit 7 denotes a 6-pin package
- TVS Diodes (ESD Protection Diodes)

ESD Protection Zener Diodes

CU Z 6V8











- Zener voltage
 - ex.) 6V8: 6.8 V
- The kind of diode
 - Z: Zener Diode (uni-directional type)
- Package

CU: CUS	MS: S-Mini
CUH: US2H	MK: SOT23
CE: ESC	MU: USM

4. Linear ICs

Low Dropout Regulators (LDO)

Package Dimensions (unit: mm)

WCSP4E	WCSP4F	WCSP4	SDFN4	DFN4	DFN5B	ESV (SOT-553)	UFV (SOT-353F)	SMV (SOT-25)	WCSP6F
Bottom View  0.645x0.645	Bottom View  0.645x0.645	Bottom View  0.79x0.79	Bottom View  0.8x0.8	Bottom View  1.0x1.0	Bottom View  1.2x1.2	 1.6x1.6	 2.0x2.1	 2.9x2.8	Bottom View  1.2x0.8

CMOS LDO Regulators

Series Name / Part Number	Package	V _{OUT} (typ.) (V)	V _{IN} (V)	I _{OUT} (mA)	I _B (typ.) (μA)	Function							
						Over current protection	Auto discharge	Fast load transient response circuit	Thermal shutdown	Inrush current protection	Under voltage lockout	High PSRR	Control pin connection
TCR2DGxxx	WCSP4	1.2 to 3.6	2.0 to 5.5	200	45	✓		✓	✓	✓		✓	Pull down
TCR2ENxxx	SDFN4	1.0 to 3.6	1.5 to 5.5	200	35	✓	✓	✓					Pull down
TCR2LNxxx		0.8 to 3.6	1.5 to 5.5	200	1	✓	✓						Pull down
TCR2EExxx	ESV	1.0 to 5.0	1.5 to 5.5	200	35	✓	✓	✓					Pull down
TCR2LExxx		0.8 to 3.6	1.5 to 5.5	200	1	✓	✓						Pull down
TCR2EFxxx	SMV	1.0 to 5.0	1.5 to 5.5	200	35	✓	✓	✓					Pull down
TCR2LFxxx		0.8 to 3.6	1.5 to 5.5	200	1	✓	✓						Pull down
TCR3DGxxx	WCSP4E	1.0 to 4.5	1.75 to 5.5	300	65	✓	✓	✓	✓	✓			Pull down
TCR3DMxxx	DFN4	1.0 to 4.5	1.75 to 5.5	300	65	✓	✓	✓	✓	✓			Pull down
TCR3DFxxx	SMV	1.0 to 4.5	1.8 to 5.5	300	65	✓	✓	✓	✓	✓			Pull down
TCR3UGxxxA ☆	WCSP4F	0.8 to 5.0	1.5 to 5.5	300	0.34	✓	✓	✓	✓	✓			Pull down
TCR3UGxxxB ☆			1.5 to 5.5	300	0.34	✓	✓	✓	✓	✓			Pull down
TCR3UMxxxA ☆	DFN4	0.8 to 5.0	1.5 to 5.5	300	0.34	✓	✓	✓	✓	✓			Pull down
TCR3UFxxxA ☆			1.5 to 5.5	300	0.34	✓	✓	✓	✓	✓			Pull down
TCR3UFxxxB ☆	SMV	0.8 to 5.0	1.5 to 5.5	300	0.34	✓	✓	✓	✓	✓			Pull down
TCR3UFxxxB ☆			1.5 to 5.5	300	0.34	✓	✓	✓	✓	✓			Pull down
TCR3RMxxxA ★	DFN4	0.9 to 4.5	1.8 to 5.5	300	7	✓	✓	✓	✓	✓		✓	Pull down
TCR5RGxxxA ★	WCSP4F	0.9 to 5.0	1.8 to 5.5	500	10	✓	✓	✓	✓	✓		✓	Pull down
TCR4DGxxx ☆	WCSP4E	1.0 to 4.5	V _{OUT} +V _{DO} to 5.5	420	65	✓	✓	✓	✓	✓			Pull down
TCR5BMxxxA ☆	DFN5B	0.8 to 3.6	V _{OUT} +V _{DO} to V _{BIAS}	500	19	✓	✓	✓	✓	✓	✓	✓	Pull down
TCR8BMxxxA ☆			V _{OUT} +V _{DO} to V _{BIAS}	800	20	✓	✓	✓	✓	✓	✓	✓	Pull down
TCR13AGADJ	WCSP6F	0.55 to 3.6 adjustable	V _{OUT} +0.1V to V _{BIAS}	1300	56	✓	✓	✓	✓	✓	✓	✓	Pull down
TCR15AGxxx ☆	WCSP6F	0.65 to 3.6	V _{OUT} +V _{DO} to V _{BIAS}	1500	25	✓	✓	✓	✓	✓	✓	✓	Pull down
TCR15AGADJ ☆	WCSP6F	0.6 to 3.6 adjustable	V _{OUT} +V _{DO} to V _{BIAS}	1500	25	✓	✓	✓	✓	✓	✓	✓	Pull down







Bipolar LDO Regulators

Series Name	Package	V _{OUT} (typ.) (V)	V _{IN} (V)	I _{OUT} (mA)	I _B (typ.) (μA)	Function				
						Over current protection	Auto discharge	Fast load transient response circuit	Thermal shutdown	Control pin connection
TAR5SxxU	UFV	1.5 to 5.0	2.4 to 15	200	170	✓			✓	
TAR5Sxx	SMV	1.5 to 5.0	2.4 to 15	200	170	✓			✓	
TAR5SBxx						✓			✓	

☆ New Products, ★ Under Development (The specification is subject to change without notice.)

Load Switch ICs

Package Dimensions (unit: mm)

WCSP4D	WCSP4C	SMV (SOT-25)	WCSP6C	WCSP6E	DFN4A
Bottom View  0.79x0.79	Bottom View  0.9x0.9	 2.9x2.8	Bottom View  1.5x1.0	Bottom View  1.2x0.8	Bottom View  1.2x1.2

Part Number	Package	Operating voltage range (V)	Output current (A)	R _{DS(on)} (1) typ. (mΩ)	R _{DS(on)} (2) typ. (mΩ)	Function					Note	
						Inrush current reduction (Slew Rate control)	Thermal shutdown	Over current protection	Auto discharge	Under voltage lockout		Reverse current block
TCK106AG	WCSP4D	1.1 to 5.5	1	176 @1.1V, -0.2A	34 @5.0V, -0.5A	✓						Pull down (H)
TCK107AG						✓		✓				Pull down (H)
TCK108AG						✓		✓				Open (L)
TCK106AF	SMV	1.1 to 5.5	1	223 @1.1V, -0.2A	63 @5.0V, -0.5A	✓						Pull down (H)
TCK107AF						✓		✓				Pull down (H)
TCK108AF						✓		✓				Open (L)
TCK111G	WCSP6C	1.1 to 5.5	3	8.5 @1.1V, -1.5A	8.3 @5.0V, -1.5A	✓	✓				True Reverse Current Blocking	Pull down (H)
TCK112G						✓	✓		✓			Pull down (H)
TCK22921G	WCSP6E	1.1 to 5.5	2	136 @1.1V, -0.5A	25 @5.0V, -0.5A	4.5μs	✓		✓		✓	Pull down(H)
TCK22922G						666μs	✓		✓		✓	Pull down(H)
TCK22923G						1364μs	✓		✓		✓	Pull down(H)
TCK22925G						3380μs	✓		✓		✓	Pull down(H)
TCK22971G						4.5μs	✓		✓		✓	Pull down(H)
TCK22972G						666μs	✓		✓		✓	Pull down(H)
TCK22973G						1364μs	✓		✓		✓	Pull down(H)
TCK22974G						3380μs	✓		✓		✓	Pull down(H)
TCK22975G	666μs	✓		✓		✓	Open(L)					
TCK22910G	WCSP6E	1.1 to 5.5	2	179 @1.1V, -0.15A	31 @5.0V, -0.15A	1400μs	✓			✓	True Reverse Current Blocking	Open(L)
TCK22911G						1400μs	✓		✓	✓		Open(L)
TCK22912G						1400μs	✓		✓	✓		Pull down(H)
TCK22913G						1400μs	✓		✓	✓		Pull down(H)
TCK22946G	WCSP6E	1.1 to 5.5	0.4	179 @1.1V, -0.15A	31 @5.0V, -0.15A	50μs	✓	400mA	✓	✓	True Reverse Current Blocking	Pull down (H)
TCK22951G						50μs	✓	740mA	✓	✓		Pull down (H)
TCK2065G		1.11	50μs			✓	110mA	✓	✓	Pull down (H)		
TCK1024G		1.54	50μs			✓	1540mA	✓	✓	Pull down (H)		
TCK22891G		1.4 to 5.5	0.4			50μs	✓	400mA	✓	Pull down (H)		
TCK22892G		0.74	50μs			✓	740mA	✓		Pull down (H)		
TCK22893G		1.11	50μs			✓	110mA	✓		Pull down (H)		
TCK22894G		1.54	50μs			✓	1540mA	✓		Pull down (H)		
TCK206G	WCSP4C	0.75 to 3.6	2	18.4 @0.75V, -1.5A	18.1 @3.3V, -1.5A	✓					✓	Pull down (H)
TCK207G						✓		✓		✓	Pull down (H)	
TCK208G						✓		✓		✓	Open (L)	
TCK207AN ☆	DFN4A			21.5 @0.75V, -1.5A	21.5 @3.3V, -1.5A	✓					✓	Pull down (H)

☆ New Products

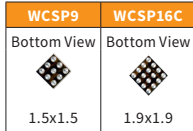
FET driver ICs with OVP function

Package Dimensions (unit: mm)



Part Number	Package	Operating voltage range (V)	Input quiescent current (ON state)	Gate drive voltage (1)	Gate drive voltage (2)	Function						Note
						Inrush current reduction	Thermal shutdown	Over voltage protection	Auto discharge	Under voltage lockout	Reverse current block	
TCK401G ☆	WCSP6E	2.7 to 28	121µA typ. @V _{IN} =5V	4.0V typ. @V _{IN} =3V	6.5V typ. @V _{IN} =5V	✓		✓ (Over 28V)	✓	✓ (Under 2.7V)	Option (with external Back to Back MOSFET)	Pull down (H)
TCK402G ☆												Pull down (L)

Power Multiplexer ICs



Part Number	Package	Operating voltage range (V)	Output current (A)	R _{DS(on)} typ. (mΩ) @Ta=25°C	R _{DS(on)} max (mΩ) @Ta=40 to 85°C	Function						Flag Operation Monitored input	Note	
						Inrush current reduction	Thermal shutdown	Over voltage lockout	Auto discharge	Under voltage lockout	Reverse current block			Control pin connection (Active Level)
TCK301G	WCSP9	2.3 to 28	3	73 @4.5V, -1.0A	140 @4.5V, -1.0A	✓	✓	6.6V			✓	Pull up (H)	-	Single input Single output
TCK302G						✓	✓	10.5V			✓		-	
TCK303G						✓	✓	15.5V			✓		-	
TCK304G						✓	✓	6.6V		✓	✓	Pull down (L)	-	
TCK305G						✓	✓	10.5V		✓	✓		-	
TCK321G	WCSP16C	2.3 to 36	2	98 @4.5V, -1.0A	170 @4.5V, -1.0A	✓	✓	V _{INA} =V _{INB} =12V		✓	✓	Pull down	V _{INA}	Dual input
TCK322G						✓	✓	V _{INA} =V _{INB} =15V		✓	✓		V _{INA}	Single output
TCK323G						✓	✓	V _{INA} =V _{INB} =15V		✓	✓		V _{INB}	Single output

eFuse ICs










Part Number	Package	Operating voltage range (V)	Output current (A)	R _{DS(on)} typ. (mΩ) @Ta=25°C	R _{DS(on)} max (mΩ) @Ta=-40 to 85°C	Function								
						Inrush current reduction	Thermal shutdown	Over voltage Clamp	Auto discharge	Under voltage lockout	Reverse current blocking support*	Fault Response	Over current protection	
TCKE805NA ☆	WS0N10B	4.4 to 18	5	28 @5V, -1.5A	38 @5V, -1.5A	Slew rate control by External Capacitance	✓	✓	6.04V typ.	✓	✓	✓	Auto-retry	Adjustable
TCKE805NL ☆							✓	✓	6.04V typ.	✓	✓	✓	Latched	Adjustable
TCKE812NA ☆							✓	✓	15.1V typ.	✓	✓	✓	Auto-retry	Adjustable
TCKE812NL ☆							✓	✓	15.1V typ.	✓	✓	✓	Latched	Adjustable
TCKE800NA ☆							✓	✓	None	✓	✓	✓	Auto-retry	Adjustable
TCKE800NL ☆							✓	✓	None	✓	✓	✓	Latched	Adjustable

☆ New Products, * This function is supported when N-ch MOSFET is attached to the external terminal.

■ Operational Amplifiers, Comparators and Magnetic Sensors

Package Dimensions (unit: mm)

MP6C	ESV (SOT-353)	USV (SOT-353)	UFV (SOT-353F)	SMV (SOT-25)	US8 (SOT-765)	SM8 (SOT-505)
Bottom View 						
1.45x1.0	1.6x1.6	2.0x2.1	2.0x2.1	2.9x2.8	2.0x3.1	2.9x4.0

Operational Amplifiers

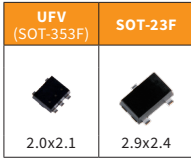
		Bipolar	
Package	Type	Standard	Low Noise Wide Band
	Single	SMV	TA75S01F
Dual	SM8	TA75W01FU	TA75W558FU
$V_{CC}, V_{EE} / V_{DD}, V_{SS}$		± 6 or 12V	± 18 V
I_{CC} / I_{DD} (max)		0.8mA@Single 1.2mA@Dual	4.0mA@Single 6.0mA@Dual
V_{IO} (max)		7mV	6mV
I_{SINK} (typ.)		20mA	40mA
I_{SOURCE} (typ.)		40mA	40mA
G_V (typ.)		100dB	100dB
V_{NH} (typ.)			2.5 μ Vrms
SR (typ.)			1.0V/ μ s
f_r (typ.)		0.3MHz	3.0MHz

		CMOS							
Package	Type	Low Voltage Operation	Standard	Low I_{DD}	Low I_{DD} I/O Full range	Ultra Low I_{DD} I/O Full range	Low Noise	Ultra Low Noise	
	Single	ESV				TC75S103FE ★	TC75S102FE ★		
USV		TC75S51FU	TC75S54FU	TC75S55FU					
UFV					TC75S103TU ★	TC75S102TU ★	TC75S63TU	TC75S67TU	
Dual	SMV	TC75S51F	TC75S54F	TC75S55F	TC75S103F ★	TC75S102F ☆			
	US8	TC75W51FK	TC75W54FK	TC75W55FK					
	SM8	TC75W51FU	TC75W54FU	TC75W55FU					
$V_{CC}, V_{EE} / V_{DD}, V_{SS}$		7.0V	7.0V	7.0V	6.0V	6.0V	6.0V	6.0V	
I_{CC} / I_{DD} (max)		200 μ A@Single 400 μ A@Dual	200 μ A@Single 400 μ A@Dual	20 μ A@Single 40 μ A@Dual	105 μ A (typ.)	0.27 μ A (typ.)	650 μ A	700 μ A	
V_{IO} (max)		10mV	10mV	10mV	1.7mV	1.3mV	7mV	3mV	
I_{SINK} (typ.)			700 μ A	450 μ A	10mA	0.4mA	1.5mA (min)	3.5mA	
I_{SOURCE} (typ.)			200 μ A	20 μ A	10mA	0.6mA	1.5mA (min)	2.5mA	
G_V (typ.)		70dB	70dB	70dB	125dB	139dB	100dB	100dB	
V_{NH} (typ.)					60nV/ \sqrt{Hz}	2700nV/ \sqrt{Hz}	7.8nV/ \sqrt{Hz}	6.0nV/ \sqrt{Hz}	
SR (typ.)		0.5V/ μ s	0.7V/ μ s	0.08V/ μ s	0.4V/ μ s	0.37V/ms	1.0V/ μ s	1.0V/ μ s	
f_r (typ.)		0.6MHz	0.9MHz	0.16MHz	0.36MHz	0.5 kHz	3.5MHz	3.5MHz	

Comparators

		Bipolar	CMOS				
Package	Type	Standard	Push pull		Open drain		
			Full-range input/output	Low I_{DD}	High speed	Low I_{DD}	High speed
Single	MP6C		TC75S70L6X				
	USV			TC75S56FU	TC75S57FU	TC75S58FU	TC75S59FU
	SMV	TA75S393F		TC75S56F	TC75S57F	TC75S58F	TC75S59F
Dual	US8			TC75W56FK	TC75W57FK	TC75W58FK	TC75W59FK
	SM8	TA75W393FU		TC75W56FU	TC75W57FU	TC75W58FU	TC75W59FU
$V_{CC}, V_{EE} / V_{DD}, V_{SS}$		± 18 or 36V	± 3 or 6V	± 3.5 or 7V	± 3.5 or 7V	± 3.5 or 7V	± 3.5 or 7V
I_{CC} / I_{DD} (max)		0.8mA@Single 2mA@Dual	35 μ A	22 μ A@Single 44 μ A@Dual	220 μ A@Single 440 μ A@Dual	220 μ A@Single 440 μ A@Dual	220 μ A@Single 440 μ A@Dual
I_{SINK} (typ.)		16mA	18mA	25mA	25mA	25mA	25mA
I_{SOURCE} (typ.)			15mA	21mA	21mA	21mA	21mA
G_V (typ.)		200V/mV		94dB	94dB	94dB	94dB
t_{RSP}, t_{PLH} (typ.)		1.3 μ s	400ns	680ns	140ns	80ns	200ns

☆ New Products, ★ Under Development (The specification is subject to change without notice.)



Magnetic Sensors

		TCS40DPR	TCS40DLR	TCS30DPU	TCS30DLU	TCS30SPU	TCS30NPU
		Push pull	Open drain	Push pull	Open drain	Push pull	
Package		SOT-23F		UFV			
Detective Polarity		S&N		S&N		S	N
Electrical Characteristics	Supply Voltage		2.3 to 5.5 V		2.3 to 3.6 V		
	Magnetic Flux Density	Operating Point ($V_{CC}=2.3$ to 3.6 V)	$B_{ON} = 3.4$ mT (typ.)		$B_{ON} = 1.8$ mT (typ.)		
		Releasing Point ($V_{CC}=2.3$ to 3.6 V)	$B_{OFF} = 2.0$ mT (typ.)		$B_{OFF} = 0.8$ mT (typ.)		
		Hysteresis ($V_{CC}=2.3$ to 5.0 V)	$B_H = 1.4$ mT (typ.)		$B_H = 1.0$ mT (typ.)		
	Supply Current *	Average Current ($V_{CC}=2.3$ V)	7.3 μ A (typ.)		8.5 μ A (typ.)		
	Operating Frequency ($V_{CC}=2.3$ to 5.0 V)		25Hz(typ.)		25Hz(typ.)		

* Supply current is pulsed periodically by internal circuit.




5. Logic Devices

■ One-Gate Logic (L-MOS)

Package Dimensions (unit: mm)

VHS Series

General Specification	
Supply voltage range	: 2.0V to 5.5V
Output current	: $\pm 8\text{mA}$ (@ $V_{CC}=4.5\text{V}$)
Propagation delay time	: 3.7nsec typ. (@ $V_{CC}=5.0\text{V}$)
Quiescent supply current	: $2\mu\text{A}$ max (@ $V_{CC}=5.5\text{V}$, $T_a=25^\circ\text{C}$)
Operating temperature	: $T_{opr} = -40$ to 125°C








USV (SOT-353)	SMV (SOT-25)	US8 (SOT-765)	SM8 (SOT-505)
			
2.0x2.1	2.9x2.8	2.0x3.1	2.9x4.0

Function			Part Number					
			USV		SMV		US8	SM8
			-	TTL Input	-	TTL Input		
Gates/ Buffers	NAND		TC7SH00FU †	TC7SET00FU †	TC7SH00F †	TC7SET00F †	TC7WH00FK † Dual-gate	TC7WH00FU Dual-gate
	AND		TC7SH08FU †	TC7SET08FU †	TC7SH08F †	TC7SET08F †	TC7WH08FK † Dual-gate	TC7WH08FU Dual-gate
		Open-drain	TC7SH09FU †		TC7SH09F †			
	NOR		TC7SH02FU †	TC7SET02FU †	TC7SH02F †	TC7SET02F †	TC7WH02FK † Dual-gate	TC7WH02FU Dual-gate
	OR		TC7SH32FU †	TC7SET32FU †	TC7SH32F †	TC7SET32F †	TC7WH32FK † Dual-gate	TC7WH32FU Dual-gate
	Exclusive-OR		TC7SH86FU †		TC7SH86F †			
	Inverter		TC7SH04FU †	TC7SET04FU †	TC7SH04F †	TC7SET04F †	TC7WH04FK † Triple-gate	TC7WH04FU Triple-gate
		Unbuffered	TC7SHU04FU †		TC7SHU04F †		TC7WHU04FK † Triple-gate	TC7WHU04FU Triple-gate
		Schmitt	TC7SH14FU †	TC7SET14FU †	TC7SH14F †	TC7SET14F †	TC7WH14FK † Triple-gate	TC7WH14FU Triple-gate
	Buffers	Schmitt	TC7SH17FU †	TC7SET17FU †	TC7SH17F †	TC7SET17F †	TC7WH17FK † Triple-gate	TC7WH17FU Triple-gate
		Non-Inverter	TC7SH34FU †	TC7SET34FU †	TC7SH34F †	TC7SET34F †	TC7WH34FK † Triple-gate	TC7WH34FU Triple-gate
	3-state Buffers		TC7SH125FU †	TC7SET125FU †	TC7SH125F †	TC7SET125F †	TC7WH125FK † Dual-gate	TC7WH125FU Dual-gate
		TC7SH126FU †	TC7SET126FU †	TC7SH126F †	TC7SET126F †	TC7WH126FK † Dual-gate	TC7WH126FU Dual-gate	
D-Type Flip-Flop	Preset and Clear					TC7WH74FK †	TC7WH74FU	
Multiplexers	Digital					TC7WH157FK †	TC7WH157FU	

† This device is compliant with the reliability requirements of AEC-Q100

SHS Series

General Specification	
Supply voltage range	: 1.65V to 5.5V 1.8V to 5.5V
Output current	: ± 24mA (@ V _{CC} =3.0V)
Propagation delay time	: 2.4nsec typ. (@ V _{CC} =3.3V)
Quiescent supply current	: 1μA max (@ V _{CC} =5.5V, T _a =25°C)
Operating temperature	: T _{opr} = -40 to 125°C




fSV (SOT-953)	ESV (SOT-553)	USV (SOT-353)	SMV (SOT-25)	US6 (SOT-363)	US8 (SOT-765)	SM8 (SOT-505)
						
1.0x1.0	1.6x1.6	2.0x2.1	2.9x2.8	2.0x2.1	2.0x3.1	2.9x4.0

Function		Part Number							
Package	fSV	ESV	USV	SMV	US6	US8	SM8		
Gates/ Buffers	NAND	TC7SZ00AFS	TC7SZ00FE †	TC7SZ00FU †	TC7SZ00F †		TC7WZ00FK † Dual-gate	TC7WZ00FU Dual-gate	
	AND	TC7SZ08AFS	TC7SZ08FE †	TC7SZ08FU †	TC7SZ08F †		TC7WZ08FK † Dual-gate	TC7WZ08FU Dual-gate	
	NOR	TC7SZ02AFS	TC7SZ02FE †	TC7SZ02FU †	TC7SZ02F †		TC7WZ02FK † Dual-gate	TC7WZ02FU Dual-gate	
	OR	TC7SZ32AFS	TC7SZ32FE †	TC7SZ32FU †	TC7SZ32F †		TC7WZ32FK † Dual-gate	TC7WZ32FU Dual-gate	
	Exclusive-OR	TC7SZ86AFS	TC7SZ86FE †	TC7SZ86FU †	TC7SZ86F †		TC7WZ86FK † Dual-gate	TC7WZ86FU Dual-gate	
	Inverter		TC7SZ04AFS	TC7SZ04FE †	TC7SZ04FU †	TC7SZ04F †	TC7PZ04FU † Dual-gate	TC7WZ04FK † Triple-gate	TC7WZ04FU Triple-gate
		Unbuffered	TC7SZU04AFS	TC7SZU04FE †	TC7SZU04FU †	TC7SZU04F †		TC7WZU04FK † Triple-gate	TC7WZU04FU Triple-gate
		Open-drain	TC7SZ05AFS	TC7SZ05FE †	TC7SZ05FU †	TC7SZ05F †	TC7PZ05FU † Dual-gate	TC7WZ05FK † Triple-gate	TC7WZ05FU Triple-gate
		Schmitt	TC7SZ14AFS	TC7SZ14FE †	TC7SZ14FU †	TC7SZ14F †	TC7PZ14FU † Dual-gate	TC7WZ14FK † Triple-gate	TC7WZ14FU Triple-gate
	Buffers	Open-drain	TC7SZ07AFS	TC7SZ07FE †	TC7SZ07FU †	TC7SZ07F †	TC7PZ07FU † Dual-gate	TC7WZ07FK † Triple-gate	TC7WZ07FU Triple-gate
		Schmitt	TC7SZ17AFS	TC7SZ17FE †	TC7SZ17FU †	TC7SZ17F †	TC7PZ17FU † Dual-gate	TC7WZ17FK † Triple-gate	TC7WZ17FU Triple-gate
	Non-Inverter		TC7SZ34AFS	TC7SZ34FE †	TC7SZ34FU †	TC7SZ34F †	TC7PZ34FU † Dual-gate	TC7WZ34FK † Triple-gate	TC7WZ34FU Triple-gate
	3-state Buffers		TC7SZ125AFS	TC7SZ125FE †	TC7SZ125FU †	TC7SZ125F †		TC7WZ125FK † Dual-gate	TC7WZ125FU Dual-gate
			TC7SZ126AFS	TC7SZ126FE †	TC7SZ126FU †	TC7SZ126F †		TC7WZ126FK † Dual-gate	TC7WZ126FU Dual-gate
D-Type Flip-Flop	Preset and Clear						TC7WZ74FK †	TC7WZ74FU	

† This device is compliant with the reliability requirements of AEC-Q100

7UL1Gxx Series



General Specification	
Supply voltage range	: 0.9V to 3.6V
Output current	: $\pm 8\text{mA}$ (@ $V_{CC}=3.0\text{V}$)
Propagation delay time	: 2.5nsec typ. (@ $V_{CC}=3.3\text{V}$)
Quiescent supply current	: $1\mu\text{A}$ max (@ $V_{CC}=3.6\text{V}$, $T_a=25^\circ\text{C}$)

f5V (SOT-953)	USV (SOT-353)	US8 (SOT-765)
		
1.0x1.0	2.0x2.1	2.0x3.1

Function	Part Number				
	Package	f5V	USV	US8	
Gates/ Buffers	NOR Gate	7UL1G02FS ☆	7UL1G02FU ☆		
	Inverter		7UL1G04FS ☆	7UL1G04FU ☆	
		Unbuffered		7UL1G04FU ☆	
	AND Gate	7UL1G08FS ☆	7UL1G08FU ☆		
	Schmitt Buffer	7UL1G17FS ☆			
	OR Gate	7UL1G32FS ☆	7UL1G32FU ☆		
	Buffer		7UL1G34FS ☆	7UL1G34FU ☆	
		Open drain		7UL1G07FU ★	
	Exclusive-OR		7UL1G86FU ☆		
	3-State Buffer(/G)		7UL1G125FU ☆	7UL2G125FK ☆	
3-State Buffer(G)	7UL1G126FS ☆	7UL1G126FU ☆	7UL2G126FK ☆		

7UL1Txx Series

General Specification	
Supply voltage range	: 2.3V to 3.6V
Output level up to supply V_{CC} CMOS level	: 1.65V to 3.6V ($V_{CC} = 3.6\text{V}$)
Output level down to supply V_{CC} CMOS level	: 3.6V to 2.3V ($V_{CC} = 2.3\text{V}$)
Quiescent supply current	: $1\mu\text{A}$ max (@ $V_{CC}=3.6\text{V}$, $T_a=25^\circ\text{C}$)

USV (SOT-353)	US8 (SOT-765)
	
2.0x2.1	2.0x3.1

Function	Part Number		
	Package	USV	US8
Gates/ Buffers	NOR Gate	7UL1T02FU ☆	
	AND Gate	7UL1T08FU ☆	
	OR Gate	7UL1T32FU ☆	
	Buffer	7UL1T34FU ☆	
	3-State Buffer(/G)	7UL1T125FU ☆	7UL2T125FK ☆
3-State Buffer(G)	7UL1T126FU ☆	7UL2T126FK ☆	

☆ New Products

★ Under Development (The specification is subject to change without notice.)

Standard Logic 74VHC Series (TSSOP14B/16B/20B Package Products)

Package Dimensions (unit: mm)

TSSOP14B	TSSOP16B	TSSOP20B
		
5.0x6.4	5.0x6.4	6.5x6.4

Features

- Compliant with the reliability requirements of AEC-Q100 Operating temperature: Available -40 to 125°C products (‡ Requirement temperature of this device is -40 to 85°C.)
- Compatible standard TSSOP package

Series name				VHC	VHCT (TTL Input)	VHCV (Schmitt Input)	VHC9 (Schmitt Input)			
Characteristics and Features				Supply voltage range	2.0 to 5.5V	4.5 to 5.5V	2.0 to 5.5V 4.5 to 5.5V (VHC9)			
				Output current @V _{CC} =4.5V	±8mA			±16mA	±8mA	
				Power down protection on inputs	No			Yes		
				Power down protection on outputs	No			Yes		
Function		Pin								
Gate/ Buffer	NAND	Quad		14	74VHC00FT †	74VHC00AFT †				
			Dual 4-input	14	74VHC20FT †					
			Open-drain	14	74VHC03FT †					
			Schmitt	14	74VHC132FT †					
	AND	Quad		14	74VHC08FT †	74VHC08AFT †				
			Dual 4-input	14	74VHC21FT †					
	NOR	Quad		14	74VHC02FT †					
			Dual 4-input	14	74VHC27FT †					
	OR	Quad		14	74VHC32FT †	74VHC32AFT †				
	Exclusive-OR	Quad		14	74VHC86FT †					
	Inverter	Hex		14	74VHC04FT †	74VHC04AFT †				
			Open-drain	14	74VHC05FT †		74VHCV05FT †			
			Schmitt	14	74VHC14FT †	74VHC14AFT †	74VHCV14FT †			
	Buffer	Hex		14			74VHCV17FT †			
			Open-drain	14			74VHCV07FT †			
		Dual 3-bit	Pull-down resistor	20				74VHC9363FT ☆		
			Pull-up resistor	20				74VHC9364FT ☆		
		9-bit		20				74VHC9151FT †		
	3-state	Quad	Non-inverted		14	74VHC125FT †	74VHC125AFT †			
					14	74VHC126FT †	74VHC126AFT †			
5-Bit Universal Schmitt Buffer			14				74VHC9125FT †			
				14			74VHC9125AFT †			
				14			74VHC9126FT †			
Octal		Inverted		20	74VHC240FT †	74VHC240AFT †	74VHCV240FT †			
				20	74VHC540FT †	74VHC540AFT †	74VHCV540FT †			
	Non-inverted		20	74VHC244FT †	74VHC244AFT †	74VHCV244FT †				
			20	74VHC541FT †	74VHC541AFT †	74VHCV541FT †				
Universal Schmitt Buffer		20				74VHC9541FT †				
Transceiver	Octal		20	74VHC245FT †	74VHC245AFT †	74VHCV245FT †				
Flip-Flop	Dual		14	74VHC74FT †						
		Hex	16	74VHC174FT †						
		Octal	20	74VHC273FT †		74VHC9273FT †				
	3-state	Octal		20	74VHC374FT †		74VHC9273FT †			
				20	74VHC574FT †	74VHC574AFT †	74VHCV574FT †			
Latch	3-state	Octal		20	74VHC373FT †		74VHC9373FT †			
				20	74VHC573FT †	74VHC573AFT †	74VHCV573FT †			
Multi-vibrator	Dual		16	74VHC123AFT †						
Decoder	3 to 8 line	Single		16	74VHC138FT †	74VHC138AFT †				
				16	74VHC238FT †					
				16	74VHC139FT †					
Shift Register	8bit	S-in/P-out	14	74VHC164FT †						
		S-in/P-out, P-in/S-out	16			74VHC9164FT †				
		P-in/S-out	16	74VHC165FT †						
		3-state	16	74VHC595FT †		74VHC9595FT †				
Counter	Binary	Single 4bit with	Async. Clear	16	74VHC161FT †					
			Sync. Clear	16	74VHC163FT †					
		Dual	4bit	14	74VHC393FT †					
		Single	14-stage	16	74VHC4020FT †					
		12-stage	16	74VHC4040FT †						
Multi-plexer	Digital	Dual-4ch.	16	74VHC153FT †						
		Quad-2ch.	16	74VHC157FT †						
	Analog	Single-8ch.	16	74VHC4051AFT †						
		Dual-4ch.	16	74VHC4052AFT †						
		Triple-2ch.	16	74VHC4053AFT †						
Other	Analog switch	Quad	14	74VHC4066AFT †						

☆ New Products

‡‡ This device is compliant with the reliability requirements of AEC-Q100

■ Standard Logic 74HC Series, 74LCX Series (TSSOP14B/16B/20B Package Products)

Package Dimensions (unit: mm)

TSSOP14B	TSSOP16B	TSSOP20B
 5.0x6.4	 5.0x6.4	 6.5x6.4




Features
<ul style="list-style-type: none"> Compliant with the reliability requirements of AEC-Q100 Operating temperature: Available -40 to 125°C products (‡ Operation temperature of this device is -40 to 85°C.) Compatible standard TSSOP package

Series name				HC	HCT (TTL input)	LCX		
Characteristics and Features		Supply voltage range		2.0 to 6.0V	4.5 to 5.5V	1.65V to 3.6V to 5.5V <small>(05 and 07)</small>		
		Output current @V _{CC} =4.5V (3.0V)		±4 or ±6mA (±24mA)				
		Power down protection on inputs		No Yes				
		Power down protection on outputs		No Yes				
Function		Pin	-	-	-			
Gate/ Buffer	NAND	Quad	14			74LCX00FT †		
	AND	Quad	14			74LCX08FT †		
	NOR	Quad	14			74LCX02FT †		
	OR	Quad	14			74LCX32FT †		
	Exclusive-OR Inverter	Quad	Hex	14			74LCX86FT †	
				16	TC74HC4049AFT &		74LCX04FT †	
		Unbuffer Open-drain Schmitt	Hex	14		TC74HC4049AFT &		
				14				74LCX05FT †
				14				74LCX14FT †
				16	TC74HC4050AFT &			
	Buffer	Hex	16		TC74HC4050AFT &			
			14				74LCX07FT †	
	3-state	Quad	Non-inverted	14			74LCX125FT †	
				14			74LCX126FT †	
Octal		Inverted	20			74LCX240FT ‡		
			20			74LCX540FT ‡		
		Non-inverted	20			74LCX244FT ‡		
			20			74LCX541FT ‡		
Transceiver	Octal	20			74LCX245FT ‡			
Flip-Flop		Dual	14			74LCX74FT †		
		Octal	20			74LCX273FT †		
	3-state	Octal	20			74LCX374FT ‡		
			20			74LCX574FT ‡		
Latch	3-state	Octal	20			74LCX373FT ‡		
			20			74LCX573FT ‡		
Multivibrator	Dual	Retriggerable/ Resettable	16	74HC4538FT ☆				
Decoder	3 to 8 line	Single	16			74LCX138FT †		
Multi-plexer	Digital	Quad-2ch.	16			74LCX157FT †		
			16			74LCX257FT †		
	Analog	Single-8ch.	16	74HC4051FT ☆	74HCT4051FT ☆			
		Dual-4ch.	16	74HC4052FT ☆	74HCT4052FT ☆			
		Triple-2ch.	16	74HC4053FT ☆	74HCT4053FT ☆			
Other	Analog switch	Quad	14	74HC4066FT ☆				

☆ New Products
 †† This device is compliant with the reliability requirements of AEC-Q100
 ‡ Operation temperature is -40 to 85°C
 & The package for this product is TSSOP14/16.

Standard Logic 74VHC Series (US14/16/20 Package Products)

Package Dimensions (unit: mm)

US14	US16	US20
		
4.0x4.0	4.0x4.0	5.0x4.0

Features
• Small mounting area and thin package

Series name			VHC	VHCT (TTL Input)	VHCV (Schmitt Input)	VHC9 (Schmitt Input)		
Characteristics and Features	Supply voltage range		2.0 to 5.5V	4.5 to 5.5V	1.8 to 5.5V	2.0 to 5.5V 4.5 to 5.5V (VHC9)		
	Output current @V _{CC} =4.5V		±8mA		±16mA	±8mA		
	Power down protection on inputs		Yes					
	Power down protection on outputs		No	Yes				
Function			Pin					
Gate/ Buffer	NAND	Quad	14	TC74VHC00FK	TC74VHCT00AFK			
			Dual 4-input	14	TC74VHC20FK			
			Open-drain	14	TC74VHC03FK			
			Schmitt	14	TC74VHC132FK			
	AND	Quad	14	TC74VHC08FK	TC74VHCT08AFK			
			Dual 4-input	14	TC74VHC21FK			
	NOR	Quad	14	TC74VHC02FK				
			Dual 4-input	14	TC74VHC27FK			
	OR	Quad	14	TC74VHC32FK	TC74VHCT32AFK			
	Exclusive-OR	Quad	14	TC74VHC86FK				
	Inverter	Hex	14	TC74VHC04FK	TC74VHCT04AFK			
			Open-drain	14	TC74VHC05FK		TC74VHCV05FK	
			Schmitt	14	TC74VHC14FK	TC74VHCT14AFK	TC74VHCV14FK	
	Buffer	Hex	14			TC74VHCV17FK		
			Open-drain	14			TC74VHCV07FK	
			9-bit	20				TC74VHC9152FK
	3-state Buffer	Quad	Non-inverted	14	TC74VHC125FK	TC74VHCT125AFK		
				14	TC74VHC126FK	TC74VHCT126AFK		
		5-Bit Universal Schmitt Buffer		14				TC74VHC9125FK TC74VHCT9125AFK TC74VHC9126FK TC74VHCT9126AFK
				14				
20				TC74VHC240FK	TC74VHCT240AFK	TC74VHCV240FK		
		Octal	Inverted	20	TC74VHC540FK	TC74VHCT540AFK	TC74VHCV540FK	
				20	TC74VHC244FK	TC74VHCT244AFK	TC74VHCV244FK	
	20		TC74VHC541FK	TC74VHCT541AFK	TC74VHCV541FK			
	Universal Schmitt Buffer	20				TC74VHC9541FK TC74VHCT9541AFK		
Flip-Flop	Transceiver	Octal	20	TC74VHC245FK	TC74VHCT245AFK	TC74VHCV245FK		
			Dual	14	TC74VHC74FK			
			Hex	16	TC74VHC174FK			
	3-state	Octal	20	TC74VHC273FK			TC74VHC9273FK TC74VHCT9273FK	
			20	TC74VHC374FK		TC74VHCV374FK		
Latch	3-state	Octal	20	TC74VHC574FK	TC74VHCT574AFK	TC74VHCV574FK		
			20	TC74VHC373FK		TC74VHCV373FK		
			20	TC74VHC573FK	TC74VHCT573AFK	TC74VHCV573FK		
Multi-vibrator		Dual	16	TC74VHC123AFK				
Decoder	3 to 8 line	Single	16	TC74VHC221AFK				
			16	TC74VHC138FK	TC74VHCT138AFK			
			16	TC74VHC238FK				
Shift Register	2 to 4 line 8bit	Dual	16	TC74VHC139FK				
			S-in/P-out	14	TC74VHC164FK			
			S-in/P-out,P-in/S-out	16			TC74VHC9164FK	
			P-in/S-out	16	TC74VHC165FK			
Counter	Binary	Single 4bit with Sync. Clear	16	TC74VHC595FK		TC74VHC9595FK		
			16	TC74VHC161FK				
		Dual Single	4bit	14	TC74VHC393FK			
			14-stage 12-stage	16	TC74VHC4020FK TC74VHC4040FK			
Multi-plexer	Digital	Dual-4ch.	16	TC74VHC153FK				
		Quad-2ch.	16	TC74VHC157FK				
	Analog	Single-8ch.	16	TC74VHC4051AFK				
		Dual-4ch.	16	TC74VHC4052AFK				
		Triple-2ch.	16	TC74VHC4053AFK				
Other	Analog switch	Quad	14	TC74VHC4066AFK				

1 MOSFETS

2 Tr./BRTS

3 Diodes

4 Linear ICs

5 Logics

6 Bus Switches




7 Level Shifters

8 RF Devices

9 Packages







■ Standard Logic 74LCX Series, 74VCX Series (US14/16/20 Package Products)

Package Dimensions (unit: mm)

US14		US16		US20		Features		
						• Small mounting area and thin package		
4.0x4.0		4.0x4.0		5.0x4.0				
Series name				LCX		VCX		
Characteristics and Features				Supply voltage range		1.65V to 3.6V to 5.5V <small>(05 and 07)</small>		
				Output current @V _{CC} =3.0V		±24mA		
				Power down protection on inputs		Yes		
				Power down protection on outputs		Yes		
Function			Pin					
Gate/ Buffer	NAND	Quad		14	TC74LCX00FK	TC74VCX00FK		
	AND	Quad		14	TC74LCX08FK	TC74VCX08FK		
	NOR	Quad		14	TC74LCX02FK	TC74VCX02FK		
	OR	Quad		14	TC74LCX32FK	TC74VCX32FK		
	Exclusive-OR	Quad		14	TC74LCX86FK			
	Inverter	Hex			14	TC74LCX04FK	TC74VCX04FK	
			Open-drain		14	TC74LCX05FK		
			Schmitt		14	TC74LCX14FK	TC74VCX14FK	
			Open-drain		14	TC74LCX07FK		
	3-state Buffer	Quad			14	TC74LCX125FK	TC74VCX125FK	
					14	TC74LCX126FK		
			Serial register		14		TC74VCX2125FK	
			Octal		Inverted	20	TC74LCX240FK	
					20	TC74LCX540FK		
					20	TC74LCX244FK	TC74VCX244FK	
					20	TC74LCX541FK	TC74VCX541FK	
		Serial register	20		TC74VCX2244FK			
Transceiver	Octal			20	TC74LCX245FK	TC74VCX245FK		
				14	TC74LCX74FK			
				20	TC74LCX273FK			
				20	TC74LCX374FK			
				20	TC74LCX574FK	TC74VCX574FK		
Flip-Flop	Dual			14	TC74LCX74FK			
				20	TC74LCX273FK			
	3-state			20	TC74LCX374FK			
				20	TC74LCX574FK	TC74VCX574FK		
Latch	3-state	Octal			20	TC74LCX373FK		
					20	TC74LCX573FK		
					20	TC74LCX373FK		
Decoder	3 to 8 line	Single			16	TC74LCX138FK	TC74VCX138FK	
Multi- plexer	Digital	Quad-2ch.			16	TC74LCX157FK	TC74VCX157FK	
			3-state		16	TC74LCX257FK	TC74VCX257FK	

Standard Logic 74HC Series, TC4000B Series (SOIC14/16/20, SOP14/16/20 Package Products)

Package Dimensions (unit: mm)

SOIC14	SOIC16	SOIC20	SOP14	SOP16	SOP20
					
8.65x6.0	9.9x6.0	12.8x10.3	10.3x7.8	10.3x7.8	12.8x7.8

Series name				SOIC Package		SOP Package				
				HC	HCT (TTL Input)	HC	HCT (TTL Input)	Standard series		
Characteristics and Features		Supply voltage range		2.0 to 6.0V	4.5 to 5.5V	2.0 to 6.0V	4.5 to 5.5V	3V to 18V		
		Output current @V _{CC} =4.5V		±4 or ±6mA	±4 or ±6mA	±4 or ±6mA	±4 or ±6mA	±0.51mA (@V _{CC} =5V)		
		Power down protection on inputs		No		No		No		
		Power down protection on outputs		No		No		No		
Function				-	-	-	-	-		
Gate/Buffer	NAND	Quad	Dual 4-input	14	74HC00D †		TC74HC00AF	TC4011BF		
			Open-drain	14	74HC03D †		TC74HC20AF			
			Schmitt	14	74HC132D †		TC74HC132AF			
				14	74HC08D †		TC74HC08AF			
	AND	Quad	Dual 4-input	14	74HC21D †		TC74HC21AF	TC4093BF TC4081BF		
				14	74HC02D †		TC74HC02AF			
	NOR	Quad		14	74HC32D †		TC74HC32AF	TC4001BF		
	OR	Quad		14	74HC86D †		TC74HC86AF	TC4071BF		
	Exclusive-OR Inverter	Quad		14	74HC04D †	74HCT04D †	TC74HC04AF	TC74HCT04AF	TC4069UBF	
				16	74HC4049D †		TC74HC4049AF		TC4049BF	
			Unbuffer	14	74HCU04D †		TC74HCU04AF			
			Open-drain	14	74HC05D †		TC74HC05AF			
	Buffer	Hex		14	74HC14D †	74HCT14D †	TC74HC14AF		TC4584BF	
				16	74HC4050D †		TC74HC4050AF		TC4050BF	
			Open-drain	14			TC74HC07AF			
				14	74HC125D †		TC74HC125AF			
	3-state	Quad	Non-inverted		14	74HC126D †		TC74HC126AF	TC74HCT7007AF TC74HCT1240AF TC74HCT540AF	
					14			TC74HC365AF		
			Universal		14			TC74HC366AF		
					14					
		Octal	Inverted		20	74HC240D †	74HCT240D †	TC74HC240AF		TC74HCT240AF
					20	74HC540D †	74HCT540D †	TC74HC540AF		TC74HCT540AF
			Non-inverted		20			TC74HC241AF		TC74HCT241AF
					20	74HC244D †	74HCT244D †	TC74HC244AF		TC74HCT244AF
Transceiver	Octal	Inverted		20	74HC541D	74HCT541D	TC74HC541AF	TC74HCT541AF		
				20	74HC541D	74HCT541D	TC74HC541AF	TC74HCT541AF		
		Non-inverted		20			TC74HC640AF			
				20	74HC245D †	74HCT245D †	TC74HC245AF			
Flip-Flop	Dual		14	74HC74D †		TC74HC74AF	TC4013BF			
			16	74HC175D †		TC74HC175AF				
			20	74HC273D †		TC74HC273AF				
	3-state	Octal		20	74HC374D †			TC74HC374AF		
			20	74HC574D †		TC74HC574AF				
Latch	8-Bit Addressable Latch			16	74HC259D †					
	3-state	Octal		20	74HC373D †		TC74HC373AF			
Multi-vibrator	Dual Monostable			20	74HC573D †		TC74HC573AF			
				16	74HC123D †		TC74HC123AF			
			Retriggerable		16			TC74HC423AF		
			Retriggerable/Resettable		16	74HC4538D †		TC74HC4538AF	TC4538BF	
Decoder	3 to 8 line	Single		16			TC74HC424AF			
				16	74HC138D †		TC74HC138AF			
				16	74HC238D †					
				16	74HC237D †					
Shift Register	3 to 8 line /Latch			16						
	BCD-to-Seven Segment Latch/Decoder/Driver			16			TC4511BF			
	8bit	S-in/P-out		14	74HC164D †					
		P-in/S-out		16	74HC165D †		TC74HC165AF	TC4021BF		
		P-in/S-out with Clear		16	74HC166D †					
		With Output Register		16	74HC594D †					
		Latch (3-state)		16	74HC595D †		TC74HC595AF			
		8-Stage Shift-and-Store		16				TC4094BF		
Counter	Binary	Dual 4bit		14	74HC393D †					
		Single	14-stage		16		TC74HC4020AF	TC4020BF		
			12-stage		16		TC74HC4040AF	TC4040BF		
		Single 14-Stage/Oscillator		16		TC74HC4060AF				
	Single Decade Counter/Divider		16				TC4017BF			
	Dual Binary Up Counter		16				TC4520BF			
	Programmable Divider/Timer		16			TC74HCT292AF				
	Multiplexer	Digital	Single-8ch.		16	74HC151D †		TC74HC151AF		
Single-8ch. 3-state				16		TC74HC251AF				
Dual-4ch.				16	74HC153D †		TC74HC153AF			
Dual-4ch. 3-state				16		TC74HC253AF				
Analog		Quad-2ch.		16	74HC157D †		TC74HC157AF			
		Single-8ch.		16	74HC4051D †	74HCT4051D †	TC74HC4051AF	TC4051BF		
		Dual-4ch.		16	74HC4052D †	74HCT4052D †	TC74HC4052AF	TC4052BF		
		Triple-2ch.		16	74HC4053D †	74HCT4053D †	TC74HC4053AF	TC4053BF		
Other	Analog switch Quad			14	74HC4066D †		TC74HC4066AF	TC4066BF		

† Operating temperature: Topr = -40 to 125°C

■ Standard Logic TC74VCX Series, TC74LCX Series (TSSOP14/16/20/48 Package Products)

Package Dimensions (unit: mm)

TSSOP14	TSSOP16	TSSOP20	TSSOP48
			
5.4x6.4	5.4x6.4	6.9x6.4	12.8x8.1

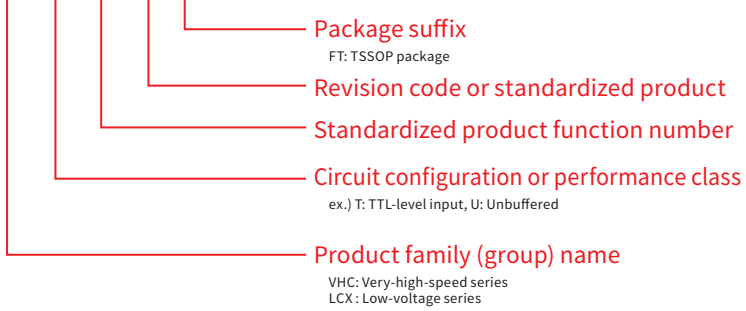
Series name				TSSOP Package		
				TC74VCX	TC74LCX	
Characteristics and Features	Supply voltage range			1.2 to 3.6V	1.65 to 3.6V	
	Output current @V _{CC} =3.0V			±24mA	±24mA	
	Power down protection on inputs			Yes		
	Power down protection on outputs			Yes		
		Function	Pin	-	-	
Gate/ Buffer	NAND	Quad	14	TC74VCX00FT †		
		Quad	14	TC74VCX08FT †		
	AND	Quad	14	TC74VCX02FT †		
		Quad	14	TC74VCX32FT †		
	Inverter	Hex	14	TC74VCX04FT †		
		Schmitt	14	TC74VCX14FT †		
	3-state Buffer	Quad		14	TC74VCX125FT †	
			Serial register	14	TC74VCX2125FT †	
		Octal		20	TC74VCX244FT †	
				20	TC74VCX541FT †	
			Serial register	20	TC74VCX2244FT †	
				20	TC74VCX2541FT †	
		16bit	48		TC74LCX16244 †	
	Transceiver	Octal	20	TC74VCX245FT †		
16bit		48	TC74VCX16245 †	TC74LCX16245 †		
Bus hold		48	TC74VCXH16245 †			
Serial register		48	TC74VCXR162245 †			
Flip-Flop	3-state	Octal	14	TC74VCX574FT †		
		Serial register	20	TC74VCX2574FT †		
Decoder	3 to 8 line	Single	16	TC74VCX138FT †		
Multi- plexer	Digital	Quad-2ch.	16	TC74VCX157FT †		
		3-state	16	TC74VCX257FT †		

† Operating temperature: Topr = -40 to 125°C

■ Part Naming Conventions

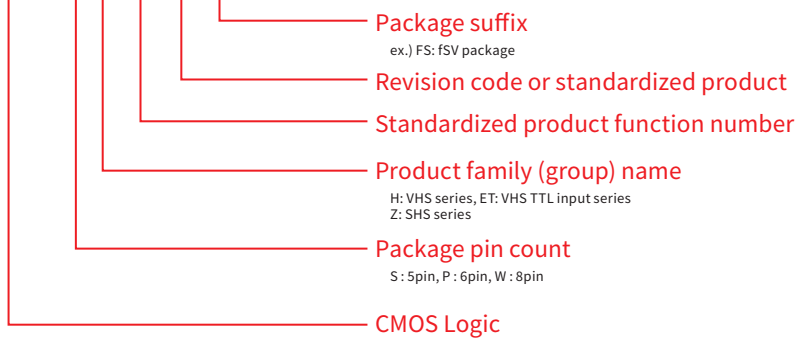
Standard Logic

74 VHC T 244 A FT

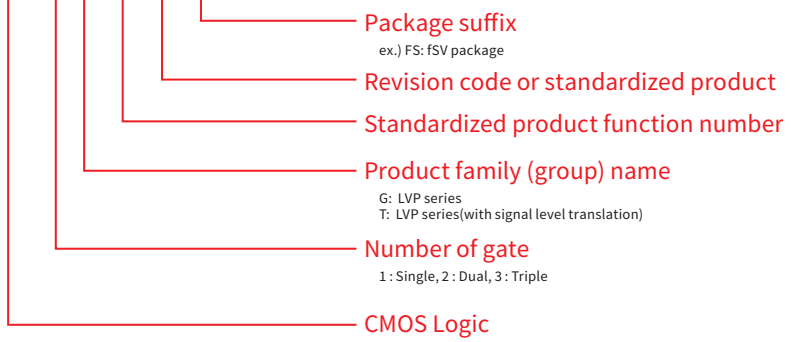


One-Gate Logic

TC 7 S Z 00 FS



7UL 1 G 00 FS








6. Bus Switches

■ High-Speed Transmission Type


Package Dimensions (unit: mm)





High-Speed Transmission Type

WCSP20	TQFN20
Bottom View  1.6x2.0	Bottom View  4.5x2.5

Recommended application	Part Number	Package	Number of lane	Specification			Pin Assignment	Switch function
				Supply Voltage Range	Band width @-3dB (typ.)	Quiescent Supply Current (max)		
PCI-ex 3.0, USB3.0 and others	TC7PCI3212MT	TQFN20	1 lane	3.0 to 3.6V	11.5 GHz @V _{cc} =3.3V	500 μA @V _{cc} =3.6V		SPDT
	TC7PCI3215MT							
	TC7USB3212WBG	WCSP20	1 lane	1.65 to 1.95V	8 GHz @V _{cc} =1.8V	200 μA @V _{cc} =1.95V		



for USB2.0 and others

UQFN10B	TSSOP14
Bottom View  1.8x1.4	 5.0x6.4

Recommended application	Part Number	Package	Number of circuit	Specification			Pin Assignment	Switch function
				Supply Voltage Range	Band width @-3dB (typ.)	Quiescent Supply Current (max)		
USB2.0, MHL and others	TC7USB40MU	UQFN10B	2	2.3 to 4.3V	1.5 GHz @V _{cc} =3.3V	1 μA @V _{cc} =4.3V		SPDT
	TC7USB42MU							
	TC7USB40FT	TSSOP14						
	TC7USB42FT							

General Purpose Bus Switches

Package Dimensions (unit: mm)

USV (SOT-353)	MP6D	US6 (SOT-363)	US8 (SOT-765)	TSSOP14	TSSOP16	TSSOP20
 2.0x2.1	Bottom View  1.45x1.0	 2.0x2.1	 2.0x3.1	 5.0x6.4	 5.0x6.4	 6.5x6.4

5V Bus Switch

Switch function	Part Number	Package	Number of circuit	Switch type	Specification			
					Supply Voltage Range	Switch I/O Capacitance @ Switch OFF (typ.)	Switch ON Resistance @ $V_{CC}=4.5V$, $V_{IS}=0V$ (typ.)	Quiescent Supply Current (max)
SPST	TC7SB66CFU †	USV	1	Pch+Nch	1.65 to 5.5V	5 pF @ $V_{CC}=5V$	4 Ω @ $I_{IS}=30mA$	10 μA @ $V_{CC}=5.5V$
	TC7SB67CFU †							
	TC7WB66CFK †	US8	2					
	TC7WB67CFK †							
SPDT	TC7SB3157CFU †	US6	1	Pch+Nch	1.65 to 5.5V	5 pF @ $V_{CC}=5V$	4 Ω @ $I_{IS}=30mA$	10 μA @ $V_{CC}=5.5V$
	TC7SB3157DL6X	MP6D						







Low-Voltage Bus Switch

Switch function	Part Number	Package	Number of circuit	Switch type	Specification			
					Supply Voltage Range	Switch I/O Capacitance	Switch ON Resistance @ $V_{CC}=3V$, $V_{IS}=0V$ (typ.)	Quiescent Supply Current
SPST	TC7SBL66CFU	USV	1	Pch+Nch	1.65 to 3.6V	3.5 pF @ $V_{CC}=3V$	6 Ω @ $I_{IS}=30mA$	10 μA @ $V_{CC}=3.6V$
	TC7SBL384CFU							
	TC7WBL3305CFK	US8	2					
	TC7WBL3306CFK							
	TC7MBL3125CFT	TSSOP14	4					
	TC7MBL3126CFT							
TC7MBL3245CFT	TSSOP20	8						
SPDT	TC7MBL3257CFT	TSSOP16	4	Pch+Nch	1.65 to 3.6V	5 pF @ $V_{CC}=3V$, A-port	8.5 Ω @ $I_{IS}=30mA$	10 μA @ $V_{CC}=3.6V$
SP4T	TC7MBL3253CFT	TSSOP16	2	Pch+Nch	1.65 to 3.6V	9 pF @ $V_{CC}=3V$, A-port	9 Ω @ $I_{IS}=30mA$	10 μA @ $V_{CC}=3.6V$

† This device is compliant with the reliability requirements of AEC-Q100 (Operating temperature: $T_{opr} = -40$ to $125^{\circ}C$)

7. Level Shifters

Package Dimensions (unit: mm)

MP6C	UF6 (SOT-363F)	US8 (SOT-765)	US14	US16	US20	TSSOP14	TSSOP16	TSSOP20	TSSOP48
Bottom View 									
1.45x1.0	2.0x2.1	2.0x3.1	4.0x4.0	4.0x4.0	5.0x4.0	5.0x6.4	5.0x6.4	6.5x6.4	12.8x8.1

Bus Buffer Type

Direction	Part Number	Package	Bit Count	Control Input	Function				
					Supply Voltage Range		Sleep Mode	Low Noise	Series Resistor
					V _{CCA} (V)	V _{CCB} (V)			
Bidirectional	TC7MP3125FK	US16	4	Active-Low(A side)	1.1 to 2.7	1.65 to 3.6	✓		
	TC7MP3125FT	TSSOP16					✓		
	TC7MPN3125FK	US16					✓	✓	
	TC7MPN3125FT	TSSOP16					✓	✓	
	TC74VCX163245FT †	TSSOP48	16	Active-Low(A side)	2.3 to 3.6	1.65 to 2.7			
	TC74VCX164245FT †			Active-Low(B side)	1.65 to 2.7	2.3 to 3.6			
	TC74LCX163245FT †			Active-Low(A side)	4.5 to 5.5	2.3 to 3.6			✓
	TC74LCX164245FT †			Active-Low(B side)	2.3 to 3.6	4.5 to 5.5			✓
Unidirectional	TC7SPN334L6X	MP6C	1	None	1.1 to 2.7	1.65 to 3.6	✓	✓	
	TC7SP3125TU	UF6		Active-Low(A side)			✓		
	TC7SPN3125TU						✓	✓	
	TC7WP3125FK ☆	US8	2	Active-Low(A side)	✓				
	TC7WPN3125FK ☆				✓	✓			
	74LV4T125FT ☆ †	TSSOP16	4	Active-Low	1.65 to 5.5	(Single Supply)			
	74LV4T125FK ☆ †	US16							
	74LV4T126FT ☆ †	TSSOP16		Active-High					
74LV4T126FK ☆ †	US16								

Bus Switch Type

Switch function	Part Number	Package	Bit Count	Control Input	Specification				
					Supply Voltage Range		Switch I/O Capacitance @ Switch OFF (typ.)	Switch ON Resistance @V _{CCA} =3 V, V _{CCB} =4.5 V, V _{IS} =0 V (max)	
					V _{CCA} (V)	V _{CCB} (V)			
SPST	TC7SPB9306TU	UF6	1	Active-High(A side)	1.65 to 5.0	2.3 to 5.5	7 pF @V _{CCA/B} =3.3 V	8 mΩ @I _S =30 mA	
	TC7SPB9307TU			Active-Low(A side)					
	TC7WPB9306FK †	US8	2	Active-High(A side)					
	TC7WPB9307FK †			Active-Low(A side)					
	TC7QPB9306FK	US14	4	Active-High(A side)					
	TC7QPB9306FT †	TSSOP14		Active-Low(A side)					
	TC7QPB9307FK	US14							
	TC7QPB9307FT †	TSSOP14							
SPDT	TC7MPB9307FK	US20	8	Active-Low(A side)	1.65 to 5.0	2.3 to 5.5	7 pF @V _{CCA/B} =3.3 V	8 mΩ @I _S =30 mA	
	TC7MPB9307FT †	TSSOP20							
	TC7MPB9326FK	US14	2	Active-High(A side)					
	TC7MPB9326FT †	TSSOP14							
	TC7MPB9327FK	US14							Active-Low(A side)
	TC7MPB9327FT †	TSSOP14							

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† This device is compliant with the reliability requirements of AEC-Q100 (Operating temperature: Topr = -40 to 125°C)

‡ Operation temperature is -40 to 125°C

8. Radio-Frequency Devices

RF Diodes

Package Dimensions (unit: mm)








ESC (SOD-523)	USC (SOD-323)
	
1.6x0.8	2.5x1.25

Variable Capacitance Diodes

Application	Part Number	Structure	Package	Absolute Maximum Ratings	Electrical Characteristics (Ta=25°C)							
					V _R (V)	C _T upper (pF)	@V _R (V)	C _T lower (pF)	@V _R (V)	C _T upper/ C _T lower	r _s typ. (Ω)	@V _R (V)
VCO	1SV285	Single	ESC	10	4.5	1	2	4	2.3	0.42	1	
	1SV277	Single	USC	10	4.5	1	2	4	2.3	0.42	1	
	1SV311	Single	ESC	10	9.7 to 11.1	1	4.45 to 5.45	4	2.1	0.28	1	
	1SV310	Single	USC	10	9.7 to 11.1	1	4.45 to 5.45	4	2.1	0.28	1	
	1SV281	Single	ESC	10	16	1	8	4	2.0	0.28	1	
	1SV270	Single	USC	10	16	1	8	4	2.0	0.28	1	
	1SV305	Single	ESC	10	18.3	1	6.1	4	3.0	0.27	1	
	1SV304	Single	USC	10	18.3	1	6.1	4	3.0	0.27	1	
	1SV323	Single	ESC	10	26.5 to 29.5	1	6 to 7.1	4	4.3	0.4	4	
	1SV322	Single	USC	10	26.5 to 29.5	1	6 to 7.1	4	4.3	0.4	4	
	1SV325	Single	ESC	10	44 to 49.5	1	9.2 to 12	4	4.3	0.4	4	
	1SV324	Single	USC	10	44 to 49.5	1	9.2 to 12	4	4.3	0.4	4	
	JDV2S36E	Single	ESC	10	44 to 49.5	1	5.4 to 7.3	6	7.5	0.4	4	
	1SV280	Single	ESC	15	3.8 to 4.7	2	1.5 to 2.0	10	2.4	0.44	1	
	1SV239	Single	USC	15	4.25	2	1.75	10	2.4	0.44	1	
	1SV279	Single	ESC	15	14 to 16	2	5.5 to 6.5	10	2.5	0.2	5	
1SV229	Single	USC	15	14 to 16	2	5.5 to 6.5	10	2.5	0.2	5		

RF Diodes

Package Dimensions (unit: mm)

SL2 (SOD-962)	ESC (SOD-523)	USC (SOD-323)	VESM (SOT-723)	SSM (SOT-416)	USM (SOT-323)	S-Mini (SOT-346)
Bottom View 						
0.62x0.32	1.6x0.8	2.5x1.25	1.2x1.2	1.6x1.6	2.0x2.1	2.9x2.5

Schottky Barrier Diodes




Feature	Part Number	Structure	Package	Absolute Maximum Ratings		Electrical Characteristics (Ta=25°C)					
				V _R (V)	I _F (mA)	V _F typ. (V)	@I _F (mA)	I _R max (μA)	@V _R (V)	C _T typ. (pF)	@V _R (V)
Low VF	JDH2S02SL	Single	SL2	10	10	0.24	1	25	0.5	0.25	0.2
Standard	1SS315	Single	USC	5	30	0.25	2	25	0.5	0.6	0.2
	1SS154	Single	S-Mini	6	30	0.5	10	0.5	5	0.8	0
	JDH3D01FV	Series	VESM	4	25	0.25	2	25	0.5	0.6	0.2
	JDH3D01S	Series	SSM	4	25	0.25	2	25	0.5	0.6	0.2
	1SS295	Series	S-Mini	4	30	0.25	2	25	0.5	0.6	0.2
	1SS271	Series	S-Mini	6	30	0.5	10	0.5	5	0.8	0

Switching Diodes

Feature	Part Number	Structure	Package	Absolute Maximum Ratings		Electrical Characteristics (Ta=25°C)					
				V _R (V)	I _F (mA)	V _F typ. (V)	@I _F (mA)	C _T typ. (pF)	@V _R (V)	r _s typ. (Ω)	@I _F (mA)
Standard PIN diode	1SV308	Single	ESC	30	50	0.95	50	0.3	1	1	10
	1SV307	Single	USC	30	50	0.95	50	0.3	1	1	10
	JDP3C02AU	Cathode com.	USM	30	50	0.89	50	0.28	1	1	10
RF switching diode	1SS381	Single	ESC	30	100	0.85 (max)	2	0.7	6	0.6	2
	1SS314	Single	USC	30	100	0.85 (max)	2	0.7	6	0.5	2
	1SS364	Cathode com.	SSM	30	50	0.85 (max)	2	0.85	6	0.6	2
	1SS312	Cathode com.	USM	30	50	0.85 (max)	2	0.8	6	0.6	2
	1SS313	Anode com.	USM	30	50	0.85 (max)	2	0.8	6	0.6	2
	1SS268	Cathode com.	S-Mini	30	50	0.85 (max)	2	0.8	6	0.6	2
	1SS269	Anode com.	S-Mini	30	50	0.85 (max)	2	0.8	6	0.6	2

RF MOSFETs

Package Dimensions (unit: mm)

USQ (SOT-343)	PW-Mini	PW-X
		
2.0x2.1	4.6x4.2	6.1x6.3

Power MOSFETs

Application	Part Number	Package	Absolute Maximum Ratings			Electrical Characteristics (Ta=25°C)			
			V _{DSS} (V)	I _D (A)	P _D (W)	P _o min (W)	Test Condition		
							V _{DSS} (V)	f (MHz)	P _i (W)
UHF/VHF Professional radio Amateur radio	RFM08U9X	PW-X	36	5	20	7.5	9.6	520	0.5
	2SK3075	PW-X	30	5	20	7.5	9.6	520	0.5
	2SK3074	PW-Mini	30	1	3	0.63	9.6	520	0.02
	RFM12U7X	PW-X	20	4	20	11.5	7.2	520	1
	RFM07U7X	PW-X	16	3	20	7	7.2	520	0.5
	2SK3476	PW-X	20	3	20	7	7.2	520	0.5
	RFM01U7P	PW-Mini	20	1	3	1	7.2	520	0.1
	2SK3475	PW-Mini	20	1	3	0.63	7.2	520	0.02
RFM06U3X ☆	PW-X	16	5	20	5	3.6	520	0.5	
FRS/GMRS	RFM04U6P	PW-Mini	16	2	7	3.5	6.0	470	0.2
	2SK3078	PW-Mini	10	0.5	3	0.5	4.8	915	0.03
	2SK3078A	PW-Mini	10	0.5	3	0.63	4.5	470	0.1
	2SK3756	PW-Mini	7.5	1	3	1.26	4.5	470	0.1
	RFM03U3P	PW-Mini	16	2.5	7	2.3	3.6	470	0.1







Small Signal MOSFETs

Application	Part Number	Package	Absolute Maximum Ratings		Electrical Characteristics (Ta=25°C)					
			V _{DSS} (V)	I _D (mA)	G _{PS} typ. (dB)	NF typ. (dB)	Test Condition			
							V _{DSS} (V)	I _D (mA)	V _{G2S} (V)	f (MHz)
VHF RF, MIX	3SK294	USQ	12.5	30	26	1.4	6	10	4.5	500
UHF RF, MIX	3SK293	USQ	12.5	30	22.5	1.5	6	10	4.5	800

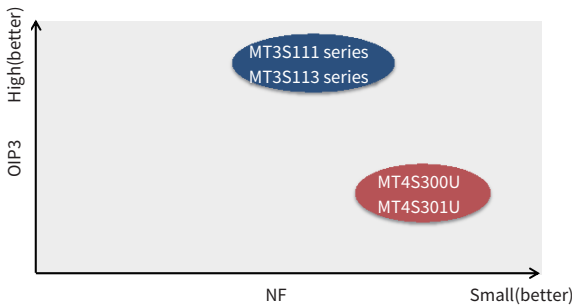
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RF Transistors

Package Dimensions (unit: mm)

SSM (SOT-416)	USM (SOT-323)	UFM (SOT-323F)	S-Mini (SOT-346)	PW-Mini	USQ (SOT-343)
					
1.6x1.6	2.0x2.1	2.0x2.1	2.9x2.5	4.6x4.2	2.0x2.1

Application	Part Number	Package	Absolute Maximum Ratings		Electrical Characteristics(Ta=25°C)										
			V _{CEO} (V)	I _c (mA)	f _t typ. (GHz)	Test Condition		S ₂₁ ² typ. (dB)	Test Condition			NF typ. (dB)	Test Condition		
						V _{CE} (V)	I _c (mA)		V _{CC} (V)	I _c (mA)	f (GHz)		V _{CC} (V)	I _c (mA)	f (GHz)
FM band Amplifier	2SC2714	S-Mini	30	20	0.55	6	1	23	6	1	0.1	2.5	6	1	0.1
	2SC4215	USM	30	20	0.55	6	1	23	6	1	0.1	2.0	6	1	0.1
	2SC4915	SSM	30	20	0.55	6	1	23	6	1	0.1	2.3	6	1	0.1
LNA for GPS, Satellite radio and DAB Sys.	MT4S300U	USQ	4	50	26.5	3	20	16.9	3	20	2	0.55	3	10	2
	MT4S301U	USQ	4	35	27.5	3	15	18.1	3	15	2	0.57	3	7	2
LNA for TV tuner, Automotive TV tuner, FM tuner, DAB system and Low distortion application.	MT3S111TU	UFM	6	100	10	5	30	12.5	5	30	1	0.85	5	30	1
	MT3S111	S-Mini	6	100	11.5	5	30	12	5	30	1	0.9	5	30	1
	MT3S111P	PW-Mini	6	100	8	5	30	10.5	5	30	1	0.95	5	30	1
	MT3S113TU	UFM	5.3	100	11.2	5	50	12.5	5	50	1	1.15	5	50	1
	MT3S113	S-Mini	5.3	100	12.5	5	50	11.8	5	50	1	1.15	5	50	1
MT3S113P	PW-Mini	5.3	100	7.7	5	50	10.5	5	50	1	1.15	5	50	1	



Part Naming Conventions

Radio-Frequency Diode (EIAJ registration products)

Ex) 1 S S 181
① ② ③ ④

- The value that subtracted 1 from the total number of terminals
- S stands for Semiconductor
- The kind of diode
This section shows the kind of the diode being used.
(It is omitted in certain cases.)
S: diode of general-purpose use, detection use, frequency conversion use, and switching use
V: variable capacitance diode, PIN diode
Z: zener diode
- Serial number

Radio-Frequency Diode (EIAJ un-registration products)

Ex) JD P 2 S 01 T
① ② ③ ④ ⑤ ⑥

- JD means High-frequency diode
- The kind of devices
This section shows the kind of the devices being used.
It is classified into H, P, S, and V by the devices being loaded.
H: schottky barrier diode
P: PIN diode
S: band switching diode
V: variable capacitance diode
- The number of terminals
- Internal connection
This section shows the kind of the internal connection of a product.
S: single
C: cathode common
P: parallel
- Serial number
- Package type

(No mark)	S-MINI
U	USC, USQ
T	TESC, TESQ
E	ESC
S	sESC
FS	fSC
CT	CST3, CST4
SC	SC2
FV	VESM

Radio-Frequency Transistor (EIAJ registration products)

Ex) 2 S C 3547 B
① ② ③ ④ ⑤

- The value that subtracted 1 from the total number of terminals
- S stands for Semiconductor
- The kind of circuit
This section shows the kind of the circuit of a product.
It is classified into form A to K by the circuit of a product.
A: a transistor of high-frequency and PNP structure
B: a transistor of low-frequency and PNP structure
C: a transistor of high-frequency and NPN structure
D: a transistor of low-frequency and NPN structure
J: a transistor of effective transistor (FET)
K: an Nch field effective transistor (FET)
- Serial number
EIAJ registration numbers.
- Changes
The additional symbol which shows some changes.

Radio-Frequency Transistor (Microwave transistor)

Ex) MT 3 S 03 A T
① ② ③ ④ ⑤ ⑥

- Microwave transistor
- The number of terminals
- Internal connection
This section shows the kind of the internal connection of a product.
S: Single
C: Cascade arrangement
P: Parallel arrangement
L: Lateral arrangement
- Serial number
- Changes
The additional symbol which shows some changes
- Package type

(No mark)	S-MINI, SMQ
U	USM, USQ, US6
S	SSM, sES6
T	TESM, TU6, TESQ
E	ES6
FS	fSM, fS6
CT	CST3

Radio-Frequency Power Transistor (EIAJ registration products)

Ex) 2 S C 2230 A
① ② ③ ④ ⑤

- The value that subtracted 1 form the total number of terminals
- S stands for Semiconductor
- The kind of circuit
This section shows the kind of the circuit of a product.
It is classified into from A to K by the circuit being used.
A: a transistor of high-frequency and PNP structure
B: a transistor of low-frequency and PNP structure
C: a transistor of high-frequency and NPN structure
D: a transistor of low-frequency and NPN structure
J: a P-ch field effective transistor (FET)
K: an N-ch field effective transistor (FET)
- Serial number
EIAJ registration numbers
- Changes
The additional symbol which shows some changes.

Radio-Frequency Power Transistor (RF-MOSFET)

Ex) RFM 07 U 7 X
① ② ③ ④ ⑤

- RF-MOSFET.
- This section shows the output power(W) of a product.
00: 0.1W
07: 7.0W
12: 11.5W
- This section shows the operating frequency(MHz) of a product.
U: 400 to 520MHz
- This section shows the operating voltage(V) of a product.
3: 3.6V
7: 7.2V
- Package type
U: USQ
P: PW-MINI
X: PW-X

9. Device Packages

2 Pin packages

<p>SL2 (SOD-962) (0.62x0.32)</p> <p>Package dimension unit: mm</p>	<p>CL2E (1.0x0.6)</p> <p>Package dimension unit: mm</p>	<p>SOD-923 (1.0x0.6)</p> <p>Package dimension unit: mm</p>
<p>Land pattern example unit: mm</p>	<p>Land pattern example unit: mm</p>	<p>Land pattern example unit: mm</p>
<p>fSC (SOD-923) (1.0x0.6)</p> <p>Package dimension unit: mm</p>	<p>CST2 (SOD-882) (1.0x0.6)</p> <p>Package dimension unit: mm</p>	<p>CST2B (1.2x0.8)</p> <p>Package dimension unit: mm</p>
<p>Land pattern example unit: mm</p>	<p>Land pattern example unit: mm</p>	<p>Land pattern example unit: mm</p>
<p>CST2C (SOD-963) (1.6x0.8)</p> <p>Package dimension unit: mm</p>	<p>ESC (SOD-523) (1.6x0.8)</p> <p>Package dimension unit: mm</p>	<p>USC (SOD-323) (2.5x1.25)</p> <p>Package dimension unit: mm</p>
<p>Land pattern example unit: mm</p>	<p>Land pattern example unit: mm</p>	<p>Land pattern example unit: mm</p>

3 Pin packages

US2H (SOD-323HE) (2.5x1.4)	S-FLAT™ (1.6x3.5)	CST3C (0.8x0.6)
<p>Package dimension unit : mm</p>	<p>Package dimension unit : mm</p>	<p>Package dimension unit : mm</p>
<p>Land pattern example unit : mm</p>	<p>Land pattern example unit : mm</p>	<p>Land pattern example unit : mm</p>
CST3 (SOT-883) (1.0x0.6)	CST3B (1.2x0.8)	VESM (SOT-723) (1.2x1.2)
<p>Package dimension unit : mm</p>	<p>Package dimension unit : mm</p>	<p>Package dimension unit : mm</p>
<p>Land pattern example unit : mm</p>	<p>Land pattern example unit : mm</p>	<p>Land pattern example unit : mm</p>
SSM (SOT-416) (1.6x1.6)	USM (SOT-323) (2.0x2.1)	UFM (SOT-323F) (2.0x2.1)
<p>Package dimension unit : mm</p>	<p>Package dimension unit : mm</p>	<p>Package dimension unit : mm</p>
<p>Land pattern example unit : mm</p>	<p>Land pattern example unit : mm</p>	<p>Land pattern example unit : mm</p>

3 Pin packages

S-Mini (SOT-346) (2.9x2.5)	SOT23 (SOT-23) (2.9x2.4)	SOT-23F (2.9x2.4)
<p>Package dimension unit: mm</p>	<p>Package dimension unit: mm</p>	<p>Package dimension unit: mm</p>
<p>Land pattern example unit: mm</p>	<p>Land pattern example unit: mm</p>	<p>Land pattern example unit: mm</p>

4 Pin packages

PW-Mini (4.6x4.2)	WCSP4E (0.645x0.645)	WCSP4F (0.645x0.645)
<p>Package dimension unit: mm</p>	<p>Package dimension unit: mm</p>	<p>Package dimension unit: mm</p>
<p>Land pattern example unit: mm</p>	<p>Land pattern example unit: mm</p>	<p>Land pattern example unit: mm</p>
WCSP4D (0.79x0.79)	WCSP4 (0.79x0.79)	WCSP4C (0.9x0.9)
<p>Package dimension unit: mm</p>	<p>Package dimension unit: mm</p>	<p>Package dimension unit: mm</p>
<p>Land pattern example unit: mm</p>	<p>Land pattern example unit: mm</p>	<p>Land pattern example unit: mm</p>

SDFN4 (0.8x0.8)	DFN4 (1.0x1.0)	DFN4A (1.2x1.2)
<p>Package dimension unit : mm</p>	<p>Package dimension unit : mm</p>	<p>Package dimension unit : mm</p>
<p>Land pattern example unit : mm</p>	<p>Land pattern example unit : mm</p>	<p>Land pattern example unit : mm</p>

USQ (SOT-343) (2.0x2.1)	SMQ (SOT-24) (2.9x2.9)	PW-X (6.1x6.3)
<p>Package dimension unit : mm</p>	<p>Package dimension unit : mm</p>	<p>Package dimension unit : mm</p>
<p>Land pattern example unit : mm</p>	<p>Land pattern example unit : mm</p>	<p>Land pattern example unit : mm</p>

5 Pin packages

DFN5B (1.2x1.2)	DFN5 (1.3x0.8)	fSV (SOT-953) (1.0x1.0)
<p>Package dimension unit : mm</p>	<p>Package dimension unit : mm</p>	<p>Package dimension unit : mm</p>
<p>Land pattern example unit : mm</p>	<p>Land pattern example unit : mm</p>	<p>Land pattern example unit : mm</p>

5 Pin packages

ESV (SOT-553) (1.6x1.6)	UFV (SOT-353F) (2.0x2.1)	USV (SOT-353) (2.0x2.1)
<p>Package dimension unit : mm</p>	<p>Package dimension unit : mm</p>	<p>Package dimension unit : mm</p>
<p>Land pattern example unit : mm</p>	<p>Land pattern example unit : mm</p>	<p>Land pattern example unit : mm</p>

6 Pin packages

SMV (SOT-25) (2.9x2.8)	WCSP6E (1.2x0.8)	WCSP6F (1.2x0.8)
<p>Package dimension unit : mm</p>	<p>Package dimension unit : mm</p>	<p>Package dimension unit : mm</p>
<p>Land pattern example unit : mm</p>	<p>Land pattern example unit : mm</p>	<p>Land pattern example unit : mm</p>
<p>DFN6 (1.25x1.0)</p> <p>Package dimension unit : mm</p>	<p>Package dimension unit : mm</p>	<p>Package dimension unit : mm</p>
<p>Land pattern example unit : mm</p>	<p>Land pattern example unit : mm</p>	<p>Land pattern example unit : mm</p>

<p>WCSP6C (1.5x1.0)</p> <p>Package dimension unit : mm</p>	<p>UDFN6 (SOT-1118) (2.0x2.0)</p> <p>Package dimension unit : mm</p>	<p>UDFN6B (SOT-1220) (2.0x2.0)</p> <p>Package dimension unit : mm</p>
<p>Land pattern example unit : mm</p>	<p>Land pattern example unit : mm</p>	<p>Land pattern example unit : mm</p>
<p>TCSP6A (2.14x1.67)</p> <p>Package dimension unit : mm</p>	<p>ES6 (SOT-563) (1.6x1.6)</p> <p>Package dimension unit : mm</p>	<p>UF6 (SOT-363F) (2.0x2.1)</p> <p>Package dimension unit : mm</p>
<p>Land pattern example unit : mm</p>	<p>Land pattern example unit : mm</p>	<p>Land pattern example unit : mm</p>
<p>US6 (SOT-363) (2.0x2.1)</p> <p>Package dimension unit : mm</p>	<p>SM6 (SOT-26) (2.9x2.8)</p> <p>Package dimension unit : mm</p>	<p>TSOP6F (2.9x2.8)</p> <p>Package dimension unit : mm</p>
<p>Land pattern example unit : mm</p>	<p>Land pattern example unit : mm</p>	<p>Land pattern example unit : mm</p>

16 Pin packages

SOIC14 (8.65x6.0)	SOP14 (10.3x7.8)	WCSP16C (1.9x1.9)
<p>Package dimension unit : mm</p>	<p>Package dimension unit : mm</p>	<p>Package dimension unit : mm</p>
<p>Land pattern example unit : mm</p>	<p>Land pattern example unit : mm</p>	<p>Land pattern example unit : mm</p>

US16 (4.0x4.0)	TSSOP16 (5.0x6.4)	TSSOP16B (5.0x6.4)
<p>Package dimension unit : mm</p>	<p>Package dimension unit : mm</p>	<p>Package dimension unit : mm</p>
<p>Land pattern example unit : mm</p>	<p>Land pattern example unit : mm</p>	<p>Land pattern example unit : mm</p>

20 Pin packages

SOIC16 (9.9x6.0)	SOP16 (10.3x7.8)	TQFN20 (4.5x2.5)
<p>Package dimension unit : mm</p>	<p>Package dimension unit : mm</p>	<p>Package dimension unit : mm</p>
<p>Land pattern example unit : mm</p>	<p>Land pattern example unit : mm</p>	<p>Land pattern example unit : mm</p>

20 Pin packages

WCSP20 (1.6x2.0)	US20 (5.0x4.0)	TSSOP20 (6.5x6.4)
<p>Package dimension unit : mm</p>	<p>Package dimension unit : mm</p>	<p>Package dimension unit : mm</p>
<p>Land pattern example unit : mm</p>	<p>Land pattern example unit : mm</p>	<p>Land pattern example unit : mm</p>
TSSOP20B (6.5x6.4)	SOIC20 (12.8x10.3)	SOP20 (12.8x7.8)
<p>Package dimension unit : mm</p>	<p>Package dimension unit : mm</p>	<p>Package dimension unit : mm</p>
<p>Land pattern example unit : mm</p>	<p>Land pattern example unit : mm</p>	<p>Land pattern example unit : mm</p>

48 Pin packages

TSSOP48 (12.5x8.1)
<p>Package dimension unit : mm</p>
<p>Land pattern example unit : mm</p>

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