







NXP ultra-small diodes and transistors for portable applications




















Downsize the footprint, boost the performance

At NXP, our comprehensive portfolio of ultra-small diodes and transistors enables high performance in increasingly small portable electronics. We safeguard sensitive ICs with advanced ESD protection diodes and EMI filter, and guarantee the lowest power losses in battery-driven systems with low-voltage-drop Schottky diodes and low V_{CEsat} (BISS) transistors. We also offer a full range of standard switching, Schottky, and Zener diodes, along with small-signal transistors, MOSFETs and resistor-equipped transistors (RETs).

Ultra-small packages for portable applications

Package outline	Pins	Package size (mm)	Package outline	Pins	Package size (mm)	Package outline	Pins	Package size (mm)
SOD882 	2	1.0 x 0.6 x 0.5	SOT416 (SC-75) 	3	1.6 x 0.8 x 0.77	SOT666 	6	1.6 x 1.2 x 0.55
SOD523 (SC-79) 	2	1.2 x 0.8 x 0.6	SOT665 	5	1.6 x 1.2 x 0.55	SOT983 (HXSON8) 	8	1.7 x 1.35 x 0.5
SOT883 (SC-101) 	3	1.0 x 0.6 x 0.5	SOT891 	6	1.0 x 1.0 x 0.5	SOT984 (HXSON12) 	12	2.5 x 1.35 x 0.5
SOT663 	3	1.6 x 1.2 x 0.55	SOT886 (XSON6) 	6	1.45 x 1.0 x 0.5	SOT985 (HXSON16) 	16	3.3 x 1.35 x 0.5

ESD protection diodes and arrays

Package	Size (mm)	Number of protected lines uni-directional bi-directional		C _{line} typ (pF)	V _{RWM} (V)	ESD rating ¹⁾ max (kV)	I _R @ V _{RWM} max (mA) (V)		Configuration	Type
SOD882	1.0 x 0.6 x 0.5		1	35	5	30	0.1	5		PESD5V0S1BL
				12	5	25	0.1	5		PESD5V0V1BL
				2.9	5	10	0.1	5		PESD5V0U1BL
				0.9	5	9	0.1	5		PESD5V0X1BL
				0.4	5	8	0.1	5		PESD5V0F1BL
		1		150	5	30	1	5		PESD5V0S1UL
				2	5	9	0.1	5		PESD5V0U1UL
				200	3.3	30	2	3.3		PESD3V3S1UL
SOD523 (SC-79)	1.2 x 0.8 x 0.6		1	35	5	30	0.1	5		PESD5V0S1BB
				12	5	25	0.1	5		PESD5V0V1BB
				2.9	5	10	0.1	5		PESD5V0U1BB
		1		152	5	30	1	5		PESD5V0S1UB
				2	5	9	0.1	5		PESD5V0U1UB
				207	3.3	30	2	3.3		PESD3V3S1UB
				38	12	30	0.05	12		PESD12VS1UB
				229	2.5	30	6	2.5		PESD5Z2.5
				172	3.3	30	0.05	3.3		PESD5Z3.3
				89	5	30	0.05	5		PESD5Z5.0
				78	6	30	0.01	6		PESD5Z6.0
				69	7	30	0.01	7		PESD5Z7.0
				35	12	30	0.01	12		PESD5Z12
SOT883 (SC-101)	1.0 x 0.6 x 0.5		2	2.9	5	10	0.1	5		PESD5V0U2BM
				22	3.3	15	0.3	3.3		PESD3V3L2UM
		2	1	16	5	15	0.025	5		PESD5V0L2UM
SOT663	1.6 x 1.2 x 0.55	2	1	35	5	30	0.1	5		PESD3V3S2UQ
				150	5	30	0.3	5		PESD5V0S2UQ
				38	12	30	0.03	12		PESD12VS2UQ
SOT665	1.6 x 1.2 x 0.55		4	2.9	5	10	0.1	5		PESD5V0U4BW
				22	3.3	20	0.3	3.3		PESD3V3L4UW
		4	3	16	5	20	0.025	5		PESD5V0L4UW
				15	3.3	10	0.3	3.3		PESD3V3V4UW
				12	5	10	0.025	5		PESD5V0V4UW
SOT891	1.0 x 1.0 x 0.5	2		1.0	5.5	8	0.1	3		PRTR5V0U2K
		4		1	5.5	8	0.1	3		IP4221CZ6-XS
SOT886 (XSON6)	1.45 x 1.0 x 0.5	2		0.9	5	8	0.001	3		IP4242CZ6
		2		1.0	5.5	8	0.1	3		PRTR5V0U2F
		4	3	2.9	5	10	0.1	5		PESD5V0U4BF
				22	3.3	20	0.3	3.3		PESD3V3L4UF
				16	5	20	0.025	5		PESD5V0L4UF
				15	3.3	10	0.3	3.3		PESD3V3V4UF
		5	4	12	5	10	0.025	5		PESD5V0V4UF
				2.9	5	10	0.1	5		PESD5V0U5BF
				22	3.3	20	0.3	3.3		PESD3V3L5UF
				16	5	20	0.025	5		PESD5V0L5UF
		4		0.6	5.5	8	0.0001	3		IP4286CZ6
		4		1	5.5	8	0.1	3		IP4221CZ6-S
		12		0.7	5.5	8	0.001	3		IP4282CZ6
SOT666	1.6 x 1.2 x 0.55		5	2.9	5	10	0.1	5		PESD5V0U5BV
				22	3.3	20	0.3	3.3		PESD3V3L5UV
		5	4	16	5	20	0.025	5		PESD5V0L5UV



Bold = New products

¹⁾ acc. to IEC 61000-4-2 (contact discharge)

EMI filter

Package	Size (mm)	Number of protected lines	Line small-signal equivalents		Digital interface clock speed (MHz)	Type
			R _{line}	C _{line}		
SOT883	1 x 0.6 x 0.5	1	100 Ω	30	~ 40	IP4256CZ3-M
SOT665	1.6 x 1.2 x 0.5	2				IP4256CZ5-W
SOT886	1.45 x 1 x 0.5	2				IP4256CZ6-F
SOT983 (HXSON8)	1.7 x 1.35 x 0.5	4	100 Ω	15	~ 50	IP4251CZ8-4
			40 Ω	18	~ 70	IP4252CZ8-4
			100 Ω	45	~ 30	IP4254CZ8-4
			200 Ω	45	~ 30	IP4253CZ8-4
SOT984 (HXSON12)	2.5 x 1.35 x 0.5	6	100 Ω	15	~ 50	IP4251CZ12-6
			40 Ω	18	~ 70	IP4252CZ12-6
			100 Ω	45	~ 30	IP4254CZ12-6
			200 Ω	45	~ 30	IP4253CZ12-6
SOT985 (HXSON16)	3.3 x 1.35 x 0.5	8	100 Ω	15	~ 50	IP4251CZ16-8
			40 Ω	18	~ 70	IP4252CZ16-8
			100 Ω	45	~ 30	IP4254CZ16-8
			200 Ω	45	~ 30	IP4253CZ16-8





Schottky diodes

I _F max (mA)	V _R max (V)	V _F max (mV)	@ I _F (mA)	I _R max (μA)	@ V _R (V)	Package	SOD882	SOD523 (SC-79)	SOT883
						Size (mm)	1.0 x 0.6 x 0.5	1.2 x 0.8 x 0.6	1.0 x 0.6 x 0.5
						P _{tot} (mW)	250	500	250
120	40	500	10	1	30		BAS40L	1PS79SB40	
200	30	400	10	2	25		BAT54L	1PS79SB10	
200	30	300	10	30	10		PMEG3002AEL	1PS79SB31	
200	40	360	10	0.5	25		PMEG4002EL	1PS79SB30	
500	20	440	500	1500	20		PMEG2005AEL		
500	20	480	500	30	10			PMEG2005EB	
500	20	500	500	30	10		PMEG2005EL		
500	30	500	500	500	30		PMEG3005EL	PMEG3005EB	
1000	20	620	1000	1500	20			PMEG2010AEB	
1000	30	680	1000	500	30			PMEG3010EB	
200	30	300	10	30	10				BAT54CM



Low C_d Schottky diodes

V _R max (V)	I _F max (mA)	V _F max (mV) @ I _F (mA)	C _d max (pF) @ V _R = 0 V	Package	SOD882	SOD523 (SC-79)
				Size (mm)	1.0 x 0.6 x 0.5	1.2 x 0.8 x 0.6
				P _{tot} (mW)	500	250
4	30	450	1	1	single	1PS79SB17
15	30	340	1	1	single	1PS10SB82

Switching diodes

V _R max (V)	V _F max (mV)	@ I _F (mA)	I _R max (μA)	@ V _R (V)	t _{RR} max (ns)	Package	SOT416 (SC-75)	SOD523 (SC-79)	SOD882	SOT883 (SC-101)
						Size (mm)	1.6 x 0.8 x 0.77	1.2 x 0.8 x 0.6	1.0 x 0.6 x 0.5	1.0 x 0.6 x 0.5
						P _{tot} (mW)	170	500	250	250
90	1	50	500	80	4		BAW56T			BAW56M
100	1	50	500	80	4		BAS16T			
100	1	50	500	80	4		BAV70T			BAV70M
100	1	50	500	80	4			BAS516	BAS16L	
300	1.1	100	150	250	50			BAS521		

Zener diodes

I _F max (mA)	P _{ZSM} (W)	V _Z nom (V)	V _Z tolerance	Note	Package	SOD882	SOD523 (SC-79)	SOT663
					Size (mm)	1.0 x 0.6 x 0.5	1.2 x 0.8 x 0.6	1.6 x 1.2 x 0.55
					P _{tot} (mW)	250	300	350
200	40	2.4~75	B, C	Eur		BZX884 series	BZX585 series	
200	40	2.4~36	B, B2	Jap		PZUxB2L series		
200	40	2.4~15	C	Eur				BZB984 series

Notes:
Jap: B selection: app. 5 % V_Z tolerance, B1, B2, B3 selections: app. 2 % V_Z tolerance in sequential intervals
Eur: A selection: app. 1 % V_Z tolerance, B selection: app. 2 % V_Z tolerance, C selection: app. 5 % V_Z tolerance; the selections are in overlapping intervals

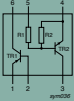
Low V_{CEsat} (BISS) transistors

Polarity	V _{CEO} (V)	I _C (A)	I _{CM} (A)	h _{FE} min/ typ	@ I _C (A)	@ V _{CE} (V)	R _{CEsat} typ (mΩ) @ I _C ; I _C /I _B = 10	V _{CEsat} typ (mV) @ I _C = 0.5 A; I _B = 0.05 A	V _{CEsat} max (mV)	@ I _C (A)	@ I _B (A)	Type	Package	Size (mm)	P _{tot} (mW) ¹⁾
NPN	15	0.5	1.0	200/325	0.01	2	360	-	250	0.5	0.05	PBSS2515M	SOT883 (SC-101)	1.0 x 0.6 x 0.5	250
	40	0.5	1.0	200/550	0.01	2	380	-	250	0.5	0.05	PBSS2540M			
	20	2.0	4.0	220/410	0.5	2	140	70	350	2	0.2	PBSS4220V	SOT666	1.6 x 1.2 x 0.55	500
	40	1.0	3.0	300/-	0.5	5	150	70	440	2	0.2	PBSS4140V			
		2.0	3.0	300/400	0.5	5	150	70	400	2	0.2	PBSS4240V			
	60	1.0	2.0	200/400	0.5	5	200	110	250	1	0.1	PBSS4160V	SOT416 (SC-75)	1.6 x 0.8 x 0.77	250
	15	0.5	1.0	200/425	0.01	2	300	200	250	0.5	0.05	PBSS2515E			
40	0.5	1.0	200/350	0.01	2	380	200	250	0.5	0.05	PBSS2540E	SOT883 (SC-101)	1.0 x 0.6 x 0.5	250	
PNP	15	0.5	1.0	200/260	0.01	2	300	150	250	0.5	0.05	PBSS3515M	SOT883 (SC-101)	1.0 x 0.6 x 0.5	250
	40	0.5	1.0	200/380	0.01	2	440	220	350	0.5	0.05	PBSS3540M			
	20	2.0	4.0	220/440	0.1	2	140	75	390	2	0.2	PBSS5220V	SOT666	1.6 x 1.2 x 0.55	500
	40	1.0	2.0	300/-	0.1	5	200	120	310	1	0.1	PBSS5140V			
		1.8	3.0	300/450	0.1	5	185	100	530	2	0.2	PBSS5240V			
	60	1.0	2.0	150/250	0.5	5	220	120	330	1	0.1	PBSS5160V	SOT416 (SC-75)	1.6 x 0.8 x 0.77	250
	15	0.5	1.0	200/325	0.01	2	300	130	250	0.5	0.05	PBSS3515E			
40	0.5	1.0	200/380	0.01	2	440	230	350	0.5	0.05	PBSS3540E	SOT666	1.6 x 1.2 x 0.55	500	
2 x PNP	15	0.5	1.0	200/-	0.01	2	300	170 ²⁾	250	0.5	0.05				PBSS3515VS
NPN/PNP			1.0	200/-	0.01	2	300	170 ²⁾	250	0.5	0.05				PBSS2515VPN
2 x NPN			1.0	200/-	0.01	2	300	170 ²⁾	250	0.5	0.05	PBSS2515VS			

¹⁾ Device mounted on an FR4 PCB, single-sided copper, tin-plated, mounting pad for collector 1 cm²







²⁾ @ $I_C = 0.5$ A; $I_B = 0.025$ A

Low V_{CEsat} (BISS) loadswitches

Package					SOT666	
Size (mm)					1.6 x 1.2 x 0.55	
P_{tot} (mW)					300 ¹⁾	
V_{CE0} (V)	I_C (A)	V_{CEsat} max (mV) @ $I_C = 0.5$ A		R1, R2 (k Ω)		
15	0.5	250		2.2		PBLS1501V
				4.7		PBLS1502V
				10		PBLS1503V
				22		PBLS1504V
40	0.5	350		2.2		PBLS4001V
				4.7		PBLS4002V
				10		PBLS4003V
				22		PBLS4004V
				47		PBLS4005V

¹⁾ Device mounted on an FR4 PCB, single-sided copper, tin-plated and standard footprint

Matched pair transistors

Package							SOT666	
Size (mm)							1.6 x 1.2 x 0.55	
P_{tot} (mW)							300	
Polarity	V_{CE0} (V)	I_C (mA)	h_{FE} min	h_{FE} max	h_{FE1}/h_{FE2}	$V_{BE1}-V_{BE2}$ (mV)	Configuration	
NPN	45	100	200	450	0.9 ¹⁾	2		BCM847BV
					0.95	2		PMP4501V
					0.98	2		PMP4201V
PNP	45	100	200	450	0.9 ¹⁾	2		BCM857BV
					0.95	2		PMP5501V
					0.98	2		PMP5201V

¹⁾ I_{C1}/I_{E2}

Single switching transistors

Package							SOT666		SOT883 (SC-101)
Size (mm)							1.6 x 1.2 x 0.55		1.0 x 0.6 x 0.5
P_{tot} (mW)							300		250
Polarity	V_{CE0} (V)	I_C (mA)	h_{FE} min	h_{FE} max	f_T min (MHz)	t_{OFF} (ns)			
NPN	40	200	100	300	300	250	PMBT3904VS		
PNP	40	200	100	300	250	300	PMBT3906VS		
PNP	40	200	100	300	300/250	250/300	PMBT3946VPN		

Bold = New products

General purpose transistors

Package						SOT416 (SC-75)	SOT883 (SC-101)	SOT666
Size (mm)						1.6 x 0.8 x 0.77	1.0 x 0.6 x 0.5	1.6 x 1.2 x 0.55
P _{tot} (mW)						150	250	300
Polarity	V _{CE0} (V)	I _C (mA)	h _{FE} min	h _{FE} max	f _T min (MHz)			
NPN	40	100	120 - 270	270 - 560	100		2PC4617QM / RM	
	45	100	110 - 420	220 - 800	100	BC847T / AT / BT / CT	BC847AM / BM / CM	
	65	100	110 - 200	220 - 450	100	BC846T / AT / BT		
	50	150	120 - 270	270 - 560	100	2PC4617Q / R		
PNP	40	100	120 - 270	270 - 560	100		2PA1774QM / RM / SM	
	45	100	125 - 420	250 - 800	100	BC857T / AT / BT / CT	BC857AM / BM / CM	
	65	100	125 - 200	250 - 475	100	BC856T / AT / BT		
	50	150	120 - 270	270 - 560	100	2PA1774Q / R / S		
Double NPN	40	100	120	450	100			PEMX1
	45	100	200	450	100			BC847BV
Double PNP	40	100	120	450	100			PEMT1
	45	100	200	450	100			BC857BV
NPN/PNP	40	100	120	450	100			PEMZ1
	45	100	200	450	100			BC847BVN
	12	500	200	-	250/100			PEMZ7

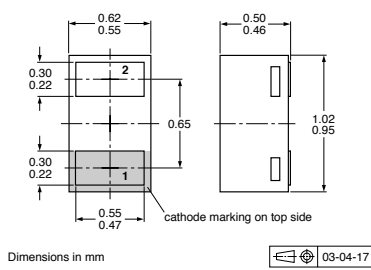
Resistor-equipped transistors (RETs)

Package					SOT416 (SC-75)		SOT883 (SC-101)		SOT666		
Size (mm)					1.6 x 0.8 x 0.77		1.0 x 0.6 x 0.5		1.6 x 1.2 x 0.55		
P _{tot} (mW)					150		250		300		
V _{CE0} (V)	I _C (mA)		R1 (kΩ)	R2 (kΩ)	NPN	PNP	NPN	PNP	NPN/NPN	NPN/PNP	PNP/PNP
50	100		2.2	2.2	PDTC123EE	PDTA123EE	PDTC123EM	PDTA123EM	PEMH20	PEMD20	PEMB20
			4.7	4.7	PDTC143EE	PDTA143EE	PDTC143EM	PDTA143EM	PEMH15	PEMD15	PEMB15
			10	10	PDTC114EE	PDTA114EE	PDTC114EM	PDTA114EM	PEMH11	PEMD3	PEMB11
			22	22	PDTC124EE	PDTA124EE	PDTC124EM	PDTA124EM	PEMH1	PEMD2	PEMB1
			47	47	PDTC144EE	PDTA144EE	PDTC144EM	PDTA144EM	PEMH2	PEMD12	PEMB2
			100	100	PDTC115EE	PDTA115EE	PDTC115EM	PDTA115EM	PEMH24	PEMD24	PEMB24
			2.2	10	PDTC123YE	PDTA123YE	PDTC123YM	PDTA123YM			
			2.2	47	PDTC123JE	PDTA123JE	PDTC123JM	PDTA123JM	PEMH10	PEMD10	PEMB10
			4.7	10	PDTC143XE	PDTA143XE	PDTC143XM	PDTA143XM	PEMH18	PEMD18	PEMB18
			4.7	47	PDTC143ZE	PDTA143ZE	PDTC143ZM	PDTA143ZM	PEMH13	PEMD13	PEMB13
			10	47	PDTC114YE	PDTA114YE	PDTC114YM	PDTA114YM	PEMH9	PEMD9	PEMB9
			22	47	PDTC124XE	PDTA124XE	PDTC124XM	PDTA124XM	PEMH16	PEMD16	PEMB16
			47	10	PDTC144VE	PDTA144VE	PDTC144VM	PDTA144VM	PEMH17	PEMD17	PEMB17
			47	22	PDTC144WE	PDTA144WE	PDTC144WM	PDTA144WM			
			2.2	-	PDTC123TE	PDTA123TE	PDTC123TM	PDTA123TM	PEMH30	PEMD30	PEMB30
			4.7	-	PDTC143TE	PDTA143TE	PDTC143TM	PDTA143TM	PEMH7	PEMD6	PEMB3
			10	-	PDTC114TE	PDTA114TE	PDTC114TM	PDTA114TM	PEMH4	PEMD4	PEMB4
			22	-	PDTC124TE	PDTA124TE	PDTC124TM	PDTA124TM	PEMH19	PEMD19	PEMB19
			47	-	PDTC144TE	PDTA144TE	PDTC144TM	PDTA144TM	PEMH14	PEMD14	PEMB14
			100	-	PDTC115TE	PDTA115TE	PDTC115TM	PDTA115TM			

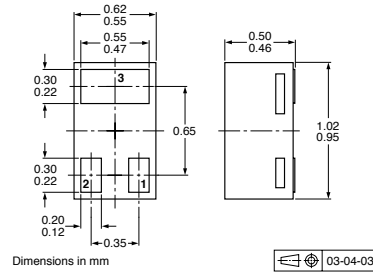
Small-signal MOSFETs N-channel single

V _{DS} (V)	V _{GS} (V)	I _D (A)	V _{GS(th)} min (V)	V _{GS(th)} max (V)	t _{ON} typ (ns)	t _{OFF} typ (ns)	Q _G typ (nC)	ESD protection	R _{DS(on)} typ (mOhm) @V _{GS} =				SOT416 (SC-75)	SOT883 (SC-101)
													1.6 x 0.8 x 0.77	1.0 x 0.6 x 0.5
									10V	4.5V	2.5V	1.8V	150	250
20	8	2.28	0.45	0.95	14.5	23.5	0.89	-		250		420		PMZ250UN
		1	0.45	1	14.5	23.5	0.89	-		280		460		PMR280UN
	12	2.15	0.5	1.5	16	17	0.72	-		270	440			PMZ270XN
		1	0.5	1.5	16	17	0.72	-		290	460			PMR290XN
30	8	1.78	0.45	0.95	11.5	22.5	0.89	-		390		550		PMZ390UN
		0.8	0.45	1	11.5	22.5	0.89	-		400		580		PMR400UN
	12	1.87	0.5	1.5	16	19.5	0.65	-		350	520			PMZ350XN
		0.9	0.5	1.5	16	19.5	0.65	-		370	550			PMR370XN
60	20	0.55	1	3	6	7.2	1.05	-	780	1100				PMR780SN
		1.22	1	3	6	7.2	1.05	-	760	1100				PMZ760SN

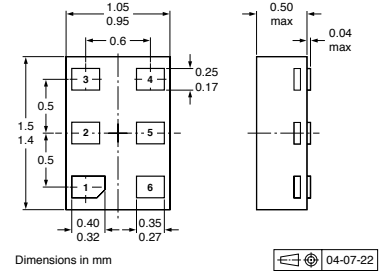
Package outlines



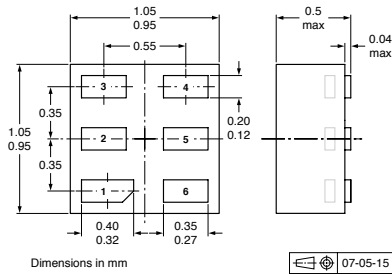
SOD882



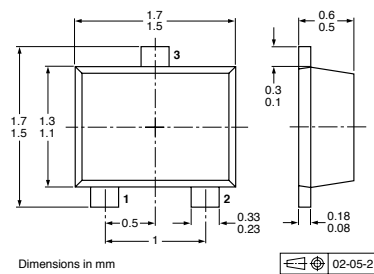
SOT883 (SC-101)



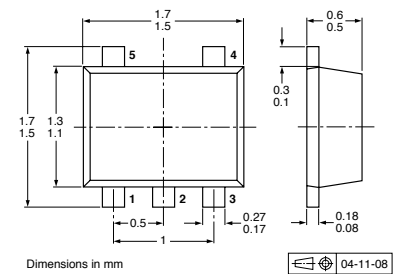
SOT886 (XSON6)



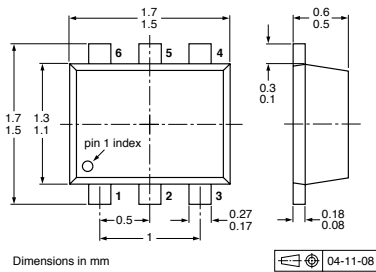
SOT891



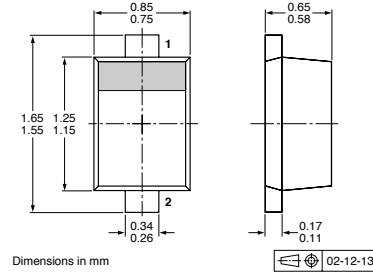
SOT663



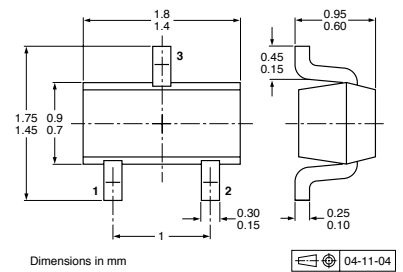
SOT665



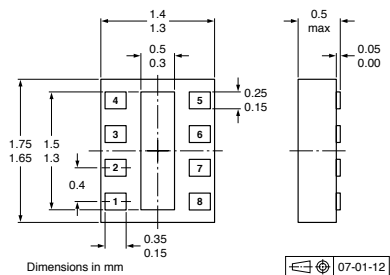
SOT666



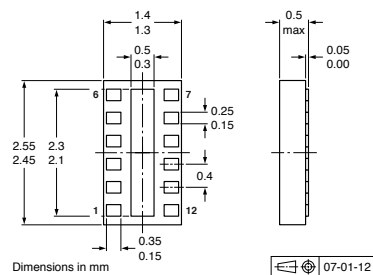
SOD523 (SC-79)



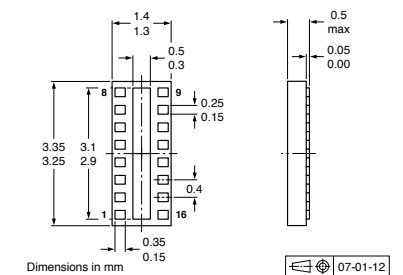
SOT416 (SC-75)



SOT983 (HXS0N8)



SOT984 (HXS0N12)



SOT985 (HXS0N16)

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