

# SMD ZENER DIODES

## DESCRIPTION

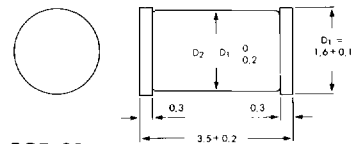
■ Philips Components Zener diodes combine the highest quality standards with state-of-the-art production equipment to fulfill the need for generic, low-cost devices. This family offers a broad range of nominal voltage values, test current limits, and dynamic resistance specifications to address the multitude of circuit requirements. They are offered in a choice of surface mount packages, providing the designer with alternatives for different power requirements, circuit board substrate materials and assembly processing techniques.

## FEATURES

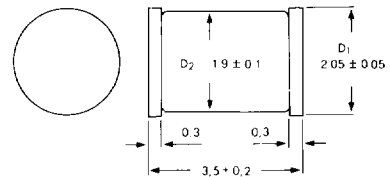
- Nominal voltage ranges from 2.4V to 510V
- Zener voltage tolerances from 1% to 5%
- SOD-87 for up to 2.3W power dissipation rating
- SOD-80 for low-cost, hermetic glass packaging

## MECHANICAL DATA

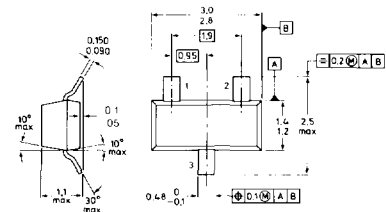
(Dimensions in mm)



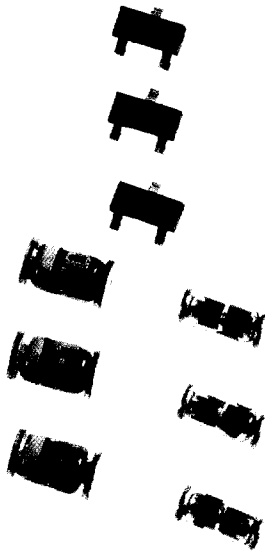
SOD-80



SOD-87



SOT-23 TOP VIEW



## SMD ZENER DIODES

### ELECTRICAL SPECIFICATIONS, 500mW, SOD-80 PACKAGE

TYPE	V <sub>Z</sub> (NOM)*		ZENER IMPEDANCE			TEMPERATURE COEFFICIENT	I <sub>R</sub> (MAX)	
			Z <sub>zt</sub> (MAX)		Z <sub>zk</sub> (MAX) @I <sub>ZK</sub> = 0.25mA (Ω)		ϑ <sub>vz</sub> (MAX) (%/°C)	I <sub>R</sub> (MAX) (μA)
	(V)	@I <sub>Z</sub> (mA)	Ω	@i <sub>ZT</sub> (mA)				
PMLL5225B	3.0	20	29	20	1600	-0.075	50	1.0
PMLL5226B	3.3	20	28	20	1600	-0.070	25	1.0
PMLL5227B	3.6	20	24	20	1700	-0.065	15	1.0
PMLL5228B	3.9	20	23	20	1900	-0.060	10	1.0
PMLL5229B	4.3	20	22	20	2000	±0.055	5.0	1.0
PMLL5230B	4.7	20	19	20	1900	±0.030	5.0	2.0
PMLL5231B	5.1	20	17	20	1600	±0.030	5.0	2.0
PMLL5232B	5.6	20	11	20	1600	+0.038	5.0	3.0
PMLL5233B	6.0	20	7	20	1600	+0.038	5.0	3.5
PMLL5234B	6.2	20	7	20	1000	+0.045	5.0	4.0
PMLL5235B	6.8	20	5	20	750	+0.050	3.0	5.0
PMLL5236B	7.5	20	6	20	500	+0.058	3.0	6.0
PMLL5237B	8.2	20	8	20	500	+0.062	3.0	6.5
PMLL5238B	8.7	20	8	20	600	+0.065	3.0	6.5
PMLL5239B	9.1	20	10	20	600	+0.068	3.0	7.0
PMLL5240B	10	20	17	20	600	+0.075	3.0	8.0
PMLL5241B	11	20	22	20	600	+0.076	2.0	8.4
PMLL5242B	12	20	30	20	600	+0.077	1.0	9.1
PMLL5243B	13	9.5	13	9.5	600	+0.079	0.5	9.9
PMLL5244B	14	9.0	15	9.0	600	+0.082	0.1	10
PMLL5245B	15	8.5	16	8.5	600	+0.082	0.1	11
PMLL5246B	16	7.8	17	7.8	600	+0.083	0.1	12
PMLL5247B	17	7.4	19	7.4	600	+0.084	0.1	13
PMLL5248B	18	7.0	21	7.0	600	+0.085	0.1	14
PMLL5249B	19	6.6	23	6.6	600	+0.086	0.1	14
PMLL5250B	20	6.2	25	6.2	600	+0.086	0.1	15
PMLL5251B	22	5.6	29	5.6	600	+0.087	0.1	17
PMLL5252B	24	5.2	33	5.2	600	+0.088	0.1	18
PMLL5253B	25	5.0	35	5.0	600	+0.089	0.1	19
PMLL5254B	27	4.6	41	4.6	600	+0.090	0.1	21
PMLL5255B	28	4.5	44	4.5	600	+0.091	0.1	21
PMLL5256B	30	4.2	49	4.2	600	+0.091	0.1	23
PMLL5257B	33	3.8	58	3.8	700	+0.092	0.1	25
PMLL5258B	36	3.4	70	3.4	700	+0.093	0.1	27
PMLL5259B	39	3.2	80	3.2	800	+0.094	0.1	30
PMLL5260B	43	3.0	93	3.2	900	+0.095	0.1	33
PMLL5261B	47	2.7	105	2.7	1000	+0.095	0.1	36
PMLL5262B	51	2.5	125	2.5	1100	+0.096	0.1	39
PMLL5263B	56	2.2	150	2.2	1300	+0.096	0.1	43
PMLL5264B	60	2.1	170	2.1	1400	+0.097	0.1	46
PMLL5265B	62	2.0	185	2.0	1400	+0.097	0.1	47
PMLL5266B	68	1.8	230	1.8	1600	+0.097	0.1	52
PMLL5267B	75	1.7	270	1.7	1700	+0.098	0.1	56

\*Tolerance = ±5%

...continued

## SMD ZENER DIODES

### ELECTRICAL SPECIFICATIONS, 500 mW, SOD-80 PACKAGE (Continued)

TYPE	ZENER VOLTAGE* V <sub>Z</sub> at I <sub>Z</sub>		mA	MAXIMUM DIFFERENTIAL RESISTANCE t <sub>diff</sub> at I <sub>Z</sub>		MAXIMUM TEMPERATURE COEFFICIENT S <sub>Z</sub> at I <sub>Z</sub>		MAXIMUM REVERSE CURRENT I <sub>R</sub> at V <sub>R</sub>	
	V			Ω	mA	mV/°C	mA	μA	V
	MIN	MAX							
BZV55C2V4	2.2	2.6	5	100	5	-3.5	5	50	1
BZV55C2V7	2.5	2.9	5	100	5	-3.5	5	20	1
BZV55C3V0	2.8	3.2	5	95	5	-3.5	5	10	1
BZV55C3V3	3.1	3.5	5	95	5	-3.5	5	5	1
BZV55C3V6	3.4	3.8	5	90	5	-3.5	5	5	1
BZV55C3V9	3.7	4.1	5	90	5	-3.5	5	3	1
BZV55C4V3	4.0	4.6	5	90	5	-3.5	5	3	1
BZV55C4V7	4.4	5.0	5	80	5	-3.5	5	3	2
BZV55C5V1	4.8	5.4	5	60	5	-2.7	5	2	2
BZV55C5V6	5.2	6.0	5	40	5	2.5	5	1	2
BZV55C6V2	5.8	6.6	5	10	5	3.7	5	3	4
BZV55C6V8	6.4	7.2	5	15	5	4.5	5	2	4
BZV55C7V5	7.0	7.9	5	15	5	5.3	5	1	5
BZV55C8V2	7.7	8.7	5	15	5	6.2	5	.700	5
BZV55C9V1	8.5	9.6	5	15	5	7.0	5	.500	6
BZV55C10	9.4	10.6	5	20	5	8.0	5	.200	7
BZV55C11	10.4	11.6	5	20	5	9.0	5	.100	8
BZV55C12	11.4	12.7	5	25	5	10.0	5	.100	8
BZV55C13	12.4	14.1	5	30	5	11.0	5	.100	8
BZV55C15	13.8	15.6	5	30	5	13.0	5	.050	0.7 V <sub>Z</sub> nom
BZV55C16	15.3	17.1	5	40	5	14.0	5	.050	0.7 V <sub>Z</sub> nom
BZV55C18	16.8	19.1	5	45	5	16.0	5	.050	0.7 V <sub>Z</sub> nom
BZV55C20	18.8	21.2	5	55	5	18.0	5	.050	0.7 V <sub>Z</sub> nom
BZV55C22	20.8	23.3	5	55	5	20.0	5	.050	0.7 V <sub>Z</sub> nom
BZV55C24	22.8	25.6	5	70	5	22.0	5	.050	0.7 V <sub>Z</sub> nom
BZV55C27	25.1	28.9	2	80	2	25.3	2	.050	0.7 V <sub>Z</sub> nom
BZV55C30	28.0	32.0	2	80	2	29.4	2	.050	0.7 V <sub>Z</sub> nom
BZV55C33	31.0	35.0	2	80	2	33.4	2	.050	0.7 V <sub>Z</sub> nom
BZV55C36	34.0	38.0	2	90	2	37.4	2	.050	0.7 V <sub>Z</sub> nom
BZV55C39	37.0	41.0	2	130	2	41.2	2	.050	0.7 V <sub>Z</sub> nom
BZV55C43	40.0	46.0	2	150	2	46.6	2	.050	0.7 V <sub>Z</sub> nom
BZV55C47	44.0	50.0	2	170	2	51.8	2	.050	0.7 V <sub>Z</sub> nom
BZV55C51	48.0	54.0	2	180	2	57.2	2	.050	0.7 V <sub>Z</sub> nom
BZV55C56	52.0	60.0	2	200	2	63.8	2	.050	0.7 V <sub>Z</sub> nom
BZV55C62	58.0	66.0	2	215	2	71.6	2	.050	0.7 V <sub>Z</sub> nom
BZV55C68	64.0	72.0	2	240	2	79.8	2	.050	0.7 V <sub>Z</sub> nom
BZV55C75	70.0	79.0	2	255	2	88.6	2	.050	0.7 V <sub>Z</sub> nom

\*E24 Logarithmic Range (tolerance 5%)

Note: Also available in E24: 3% tolerance, reference BZV55F series

2% tolerance, reference BZV55B series

1% tolerance, reference BZV55A series

## SMD ZENER DIODES

### ELECTRICAL SPECIFICATIONS, 2.3W, SOD-87 PACKAGE

TYPE	ZENER VOLTAGE $V_Z$ at $I_Z$			MAXIMUM DIFFERENTIAL RESISTANCE $r_{diff}$ at $I_Z$		MAXIMUM TEMPERATURE COEFFICIENT $S_Z$ at $I_Z$		MAXIMUM REVERSE CURRENT $I_R$ at $V_R$	
	(V)		(mA)	( $\Omega$ )	(mA)	(%/°C)	(mA)	( $\mu$ )	(V)
	MIN	MAX							
BZD27C7V5	7.0	7.9	100	2	100	0.07	100	50	3
BZD27C8V2	7.7	8.7	100	2	100	0.08	100	10	3
BZD27C9V1	8.5	9.6	50	4	50	0.08	50	5	5
BZD27C10	9.4	10.6	50	4	50	0.09	50	7	7.5
BZD27C11	10.4	11.6	50	7	50	0.10	50	3	8.2
BZD27C12	11.4	12.7	50	7	50	0.10	50	2	9.1
BZD27C13	12.4	14.1	50	10	50	0.10	50	2	10
BZD27C15	13.8	15.6	50	10	50	0.10	50	1	11
BZD27C16	15.3	17.1	25	15	25	0.11	25	1	12
BZD27C18	16.8	19.1	25	15	25	0.11	25	1	13
BZD27C20	18.8	21.2	25	15	25	0.11	25	1	15
BZD27C22	20.8	23.3	25	15	25	0.11	25	1	16
BZD27C24	22.8	25.6	25	15	25	0.11	25	1	18
BZD27C27	25.1	28.9	25	15	25	0.11	25	1	20
BZD27C30	28	32	25	15	25	0.11	25	1	22
BZD27C33	31	35	25	15	25	0.11	25	1	24
BZD27C36	34	38	10	40	10	0.11	10	1	27
BZD27C39	37	41	10	40	10	0.11	10	1	30
BZD27C43	40	46	10	45	10	0.12	10	1	33
BZD27C47	44	50	10	45	10	0.12	10	1	36
BZD27C51	48	54	10	60	10	0.12	10	1	39
BZD27C56	52	60	10	60	10	0.12	10	1	43
BZD27C62	58	66	10	80	10	0.13	10	1	47
BZD27C68	64	72	10	80	10	0.13	10	1	51
BZD27C75	70	79	10	100	10	0.13	10	1	56
BZD27C82	77	87	10	100	10	0.13	10	1	62
BZD27C91	85	96	5	200	5	0.13	5	1	68
BZD27C100	94	106	5	200	5	0.13	5	1	75
BZD27C110	104	116	5	250	5	0.13	5	1	82
BZD27C120	114	127	5	250	5	0.13	5	1	91
BZD27C130	124	141	5	300	5	0.13	5	1	100
BZD27C150	138	156	5	300	5	0.13	5	1	110
BZD27C160	153	171	5	350	5	0.13	5	1	120
BZD27C180	168	191	5	400	5	0.13	5	1	130
BZD27C200	188	212	5	500	5	0.13	5	1	150
BZD27C220	208	233	2	750	2	0.13	2	1	160
BZD27C240	228	256	2	850	2	0.13	2	1	180
BZD27C270	251	289	2	1000	2	0.13	2	1	200

## SMD ZENER DIODES

### ELECTRICAL SPECIFICATIONS, 350MW, SOT-23 PACKAGE

TYPE	ZENER VOLTAGE* $V_Z$ at $I_Z$			MAXIMUM DIFFERENTIAL RESISTANCE $r_{diff}$ at $I_Z$		MAXIMUM TEMPERATURE COEFFICIENT $S_Z$ at $I_Z$		MAXIMUM REVERSE CURRENT $I_R$ at $V_R$		PINOUT
	(V)			( $\Omega$ )	(mA)	(mV/ $^{\circ}$ C)	(mA)	( $\mu$ A)	(V)	
	MIN	MAX	(mA)							
BZX84C2V4	2.2	2.6	5	100	5	-3.5	5	50	1	H
BZX84C2V7	2.5	2.9	5	100	5	-3.5	5	20	1	H
BZX84C3V0	2.8	3.2	5	95	5	-3.5	5	10	1	H
BZX84C3V3	3.1	3.5	5	95	5	-3.5	5	5	1	H
BZX84C3V6	3.4	3.8	5	90	5	-3.5	5	5	1	H
BZX84C3V9	3.7	4.1	5	90	5	-3.5	5	3	1	H
BZX84C4V3	4.0	4.6	5	90	5	-3.5	5	3	1	H
BZX84C4V7	4.4	5.0	5	80	5	-3.5	5	3	2	H
BZX84C5V1	4.8	5.4	5	60	5	-2.7	5	2	2	H
BZX84C5V6	5.2	6.0	5	40	5	2.5	5	1	2	H
BZX84C6V2	5.8	6.6	5	10	5	3.7	5	3	4	H
BZX84C6V8	6.4	7.2	5	15	5	4.5	5	2	4	H
BZX84C7V5	7.0	7.9	5	15	5	5.3	5	1	5	H
BZX84C8V2	7.7	8.7	5	15	5	6.2	5	.700	5	H
BZX84C9V1	8.5	9.6	5	15	5	7.0	5	.500	6	H
BZX84C10	9.4	10.6	5	20	5	8.0	5	.200	7	H
BZX84C11	10.4	11.6	5	20	5	9.0	5	.100	8	H
BZX84C12	11.4	12.7	5	25	5	10.0	5	.100	8	H
BZX84C13	12.4	14.1	5	30	5	11.0	5	.100	8	H
BZX84C15	13.8	15.6	5	30	5	13.0	5	.050	0.7 $V_Z$ nom	H
BZX84C16	15.3	17.1	5	40	5	14.0	5	.050	0.7 $V_Z$ nom	H
BZX84C18	16.8	19.1	5	45	5	16.0	5	.050	0.7 $V_Z$ nom	H
BZX84C20	18.8	21.2	5	55	5	18.0	5	.050	0.7 $V_Z$ nom	H
BZX84C22	20.8	23.3	5	55	5	20.0	5	.050	0.7 $V_Z$ nom	H
BZX84C24	22.8	25.6	5	70	5	22.0	5	.050	0.7 $V_Z$ nom	H
BZX84C27	25.1	28.9	2	80	2	25.3	2	.050	0.7 $V_Z$ nom	H
BZX84C30	28.0	32.0	2	80	2	29.4	2	.050	0.7 $V_Z$ nom	H
BZX84C33	31.0	35.0	2	80	2	33.4	2	.050	0.7 $V_Z$ nom	H
BZX84C36	34.0	38.0	2	90	2	37.4	2	.050	0.7 $V_Z$ nom	H
BZX84C39	37.0	41.0	2	130	2	41.2	2	.050	0.7 $V_Z$ nom	H
BZX84C43	40.0	46.0	2	150	2	46.6	2	.050	0.7 $V_Z$ nom	H
BZX84C47	44.0	50.0	2	170	2	51.8	2	.050	0.7 $V_Z$ nom	H
BZX84C51	48.0	54.0	2	180	2	57.2	2	.050	0.7 $V_Z$ nom	H
BZX84C56	52.0	60.0	2	200	2	63.8	2	.050	0.7 $V_Z$ nom	H
BZX84C62	58.0	66.0	2	215	2	71.6	2	.050	0.7 $V_Z$ nom	H
BZX84C68	64.0	72.0	2	240	2	79.8	2	.050	0.7 $V_Z$ nom	H
BZX84C75	70.0	79.0	2	255	2	88.6	2	.050	0.7 $V_Z$ nom	H

\*E24 Logarithmic range (tolerance 5%)

Note: also available in E24: 3% tolerance, reference BZX84F Series.

2% tolerance, reference BZX84B Series.

1% tolerance, reference BZX84A Series.

...continued

## SMD ZENER DIODES

### ELECTRICAL SPECIFICATIONS, 350MW, SOT-23 PACKAGE (continued)

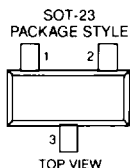
TYPE	V <sub>Z</sub> (NOM)*		ZENER IMPEDANCE			TEMPERATURE COEFFICIENT	I <sub>R</sub> (MAX)		PINOUT
			Z <sub>ZL</sub> (MAX)		Z <sub>ZK</sub> (MAX)		∅v <sub>Z</sub> (MAX) (%/°C)	I <sub>R</sub> (MAX) (μA)	
	Ω	@I <sub>ZT</sub> (mA)	@I <sub>ZK</sub> =0.25mA (Ω)						
PMBZ5226B	3.3	20	28	20	1600	-0.070	25	1.0	H
PMBZ5227B	3.6	20	24	20	1700	-0.065	15	1.0	H
PMBZ5228B	3.9	20	23	20	1900	-0.060	10	1.0	H
PMBZ5229B	4.3	20	22	20	2000	±0.055	5.0	1.0	H
PMBZ5230B	4.7	20	19	20	1900	±0.030	5.0	2.0	H
PMBZ5231B	5.1	20	17	20	1600	±0.030	5.0	2.0	H
PMBZ5232B	5.6	20	11	20	1600	+0.038	5.0	3.0	H
PMBZ5233B	6.0	20	7	20	1600	+0.038	5.0	3.5	H
PMBZ5234B	6.2	20	7	20	1000	+0.045	5.0	4.0	H
PMBZ5235B	6.8	20	5	20	750	+0.050	3.0	5.0	H
PMBZ5236B	7.5	20	6	20	500	+0.058	3.0	6.0	H
PMBZ5237B	8.2	20	8	20	500	+0.062	3.0	6.5	H
PMBZ5238B	8.7	20	8	20	600	+0.065	3.0	6.5	H
PMBZ5239B	9.1	20	10	20	600	+0.068	3.0	7.0	H
PMBZ5240B	10	20	17	20	600	+0.075	3.0	8.0	H
PMBZ5241B	11	20	22	20	600	+0.076	2.0	8.4	H
PMBZ5242B	12	20	30	20	600	+0.077	1.0	9.1	H
PMBZ5243B	13	9.5	13	9.5	600	+0.079	0.5	9.9	H
PMBZ5244B	14	9.0	15	9.0	600	+0.082	0.1	10	H
PMBZ5245B	15	8.5	16	8.5	600	+0.082	0.1	11	H
PMBZ5246B	16	7.8	17	7.8	600	+0.083	0.1	12	H
PMBZ5247B	17	7.4	19	7.4	600	+0.084	0.1	13	H
PMBZ5248B	18	7.0	21	7.0	600	+0.085	0.1	14	H
PMBZ5249B	19	6.6	23	6.6	600	+0.086	0.1	14	H
PMBZ5250B	20	6.2	25	6.2	600	+0.086	0.1	15	H
PMBZ5251B	22	5.6	29	5.6	600	+0.087	0.1	17	H
PMBZ5252B	24	5.2	33	5.2	600	+0.088	0.1	18	H
PMBZ5253B	25	5.0	35	5.0	600	+0.089	0.1	19	H
PMBZ5254B	27	4.6	31	4.6	600	+0.090	0.1	21	H
PMBZ5255B	28	4.5	44	4.5	600	+0.091	0.1	21	H
PMBZ5256B	30	4.2	49	4.2	600	+0.091	0.1	23	H
PMBZ5257B	33	3.8	58	3.8	700	+0.092	0.1	25	H

# SMD ZENER DIODES

## PINOUT DIAGRAMS

PINOUT H: SOT-23

PIN 1 N.C.    PIN 2 A    PIN 3 K



## MARKING CODES

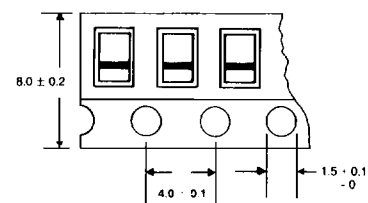
Type No.	Code	Type No.	Code	Type No.	Code	Type No.	Code
BZD27 Series	*	BZX84C12	Y2	BZX84C68	Y20	PMBZ5242B	8S
BZV55 Series	*	BZX84C13	Y3	BZX84C75	Y21	PMBZ5243B	8T
BZX84C2V4	Z11	BZX84C15	Y4	PMBZ5226B	8A	PMBZ5244B	8U
BZX84C2V7	Z12	BZX84C16	Y5	PMBZ5227B	8B	PMBZ5245B	8V
BZX84C3V0	Z13	BZX84C18	Y6	PMBZ5228B	8C	PMBZ5246B	8W
BZX84C3V3	Z14	BZX84C20	Y7	PMBZ5229B	8D	PMBZ5247B	8X
BZX84C3V6	Z15	BZX84C22	Y8	PMBZ5230B	8E	PMBZ5248B	8Y
BZX84C3V9	Z16	BZX84C24	Y9	PMBZ5231B	8F	PMBZ5249B	8Z
BZX84C4V3	Z17	BZX84C27	Y10	PMBZ5232B	8G	PMBZ5250B	81A
BZX84C4V7	Z1	BZX84C30	Y11	PMBZ5233B	8H	PMBZ5251B	81B
BZX84C5V1	Z2	BZX84C33	Y12	PMBZ5234B	8J	PMBZ5252B	81C
BZX84C5V6	Z3	BZX84C36	Y13	PMBZ5235B	8K	PMBZ5253B	81D
BZX84C6V2	Z4	BZX84C39	Y14	PMBZ5236B	8L	PMBZ5254B	81E
BZX84C6V8	Z5	BZX84C43	Y15	PMBZ5237B	8M	PMBZ5255B	81F
BZX84C7V5	Z6	BZX84C47	Y16	PMBZ5238B	8N	PMBZ5256B	81G
BZX84C8V2	Z7	BZX84C51	Y17	PMBZ5239B	8P	PMBZ5257B	81H
BZX84C9V1	Z8	BZX84C56	Y18	PMBZ5240B	8Q		
BZX84C10	Z9	BZX84C62	Y19	PMBZ5241B	8R		
BZX84C11	Y1						

\*See individual device data sheet.

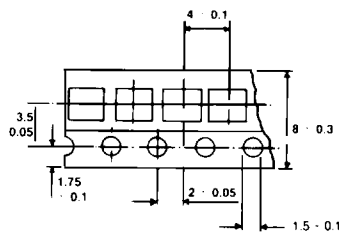
## TAPE AND REEL SPECIFICATIONS

(Dimensions in mm)

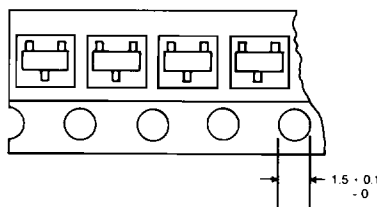
SM Package	Devices per reel	Reel Size (in)	Tape Width (mm)	Ordering Suffix
SOT-23	3K	7	8	TRL
	10K	13	8	TRL 13
SOD-80	2.5K	7	8	TRL
	10K	13	8	TRL 13
SOD-87	2K	7	8	TRL



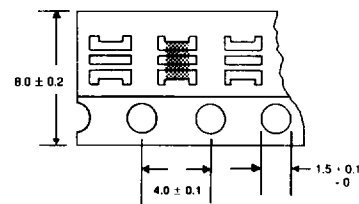
**SOD-87**  
TAPE DIMENSIONS  
AND ORIENTATION  
(STANDARD DIODE ORIENTATION IS  
CATHODE BAND AT SPROCKET HOLE SIDE)



**SOT-23**  
TAPE DIMENSIONS



**SOT-23**  
ORIENTATION



**SOD-80**  
TAPE DIMENSIONS  
AND ORIENTATION