

CMZ5913B THRU CMZ5956B
SURFACE MOUNT SILICON
ZENER DIODES
1.5 WATT, 3.3 THRU 200 VOLT
± 5% TOLERANCE



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SMA CASE

DESCRIPTION:

The CENTRAL SEMICONDUCTOR CMZ5913B series 1.5 Watt surface mount silicon Zener diodes are highly reliable components designed for use in all types of commercial, industrial, entertainment, computer, and automotive applications where small size is required. The SMA case occupies 30% less board space than the SMB case.

MARKING: SEE MARKING CODE ON ELECTRICAL CHARACTERISTIC TABLE

FEATURES:

- Super miniature case
- 200 Watts of TVS power
- ± 5% Tolerance
- High reliability
- “C” bend construction provides strain relief when mounted on pc board

MAXIMUM RATINGS: ($T_A=25^\circ\text{C}$ unless otherwise noted)

Peak Forward Surge Current, $t_p=8.3\text{ms}$

Power Dissipation ($T_L=75^\circ\text{C}$)

Power Dissipation (Note 1)

Peak Power Dissipation, $t_p=10\times 1000\mu\text{s}$ ($T_L<25^\circ\text{C}$)

Peak Power Dissipation, $t_p=8\times 20\mu\text{s}$ ($T_L<25^\circ\text{C}$)

Operating and Storage Junction Temperature

Thermal Resistance

Thermal Resistance (Note 1)

Note 1: Mounted on 2 inch square FR-4 PCB with minimum recommended SMA copper pad area.

SYMBOL

UNITS

I_{FSM}	10	A
P_D	1.5	W
P_D	0.5	W
P_{PK}	200	W
P_{PK}	1000	W
T_J, T_{stg}	-65 to +150	$^\circ\text{C}$
θ_{JL}	50	$^\circ\text{C/W}$
θ_{JA}	250	$^\circ\text{C/W}$

ELECTRICAL CHARACTERISTICS: ($T_A=25^\circ\text{C}$) $V_F=1.5\text{V MAX @ } I_F=200\text{mA}$ (for all types)

TYPE	ZENER VOLTAGE V _Z @ I _{ZT}			TEST CURRENT	MAXIMUM ZENER IMPEDANCE			MAXIMUM REVERSE CURRENT		MAXIMUM ZENER CURRENT (T _L =75°C)	MARKING CODE
	MIN	NOM	MAX	I _{ZT}	Z _{ZT} @ I _{ZT}	Z _{ZK} @ I _{ZK}		I _R @ V _R		I _{ZM}	
	V	V	V	mA	Ω	Ω	mA	μA	V	mA	
CMZ5913B*	3.135	3.3	3.465	113.6	10	500	1.0	100	1.0	454	C5913B
CMZ5914B*	3.420	3.6	3.780	104.2	9.0	500	1.0	75	1.0	416	C5914B
CMZ5915B*	3.705	3.9	4.095	96.1	7.5	500	1.0	25	1.0	384	C5915B
CMZ5916B*	4.085	4.3	4.515	87.2	6.0	500	1.0	5.0	1.0	348	C5916B
CMZ5917B*	4.465	4.7	4.935	79.8	5.0	500	1.0	5.0	1.5	319	C5917B
CMZ5918B*	4.845	5.1	5.355	73.5	4.0	350	1.0	5.0	2.0	294	C5918B
CMZ5919B	5.320	5.6	5.880	66.9	2.0	250	1.0	5.0	3.0	267	C5919B
CMZ5920B	5.890	6.2	6.510	60.5	2.0	200	1.0	5.0	4.0	241	C5920B
CMZ5921B	6.460	6.8	7.140	55.1	2.5	200	1.0	5.0	5.2	221	C5921B
CMZ5922B	7.125	7.5	7.875	50.0	3.0	400	0.5	5.0	6.0	200	C5922B
CMZ5923B	7.790	8.2	8.610	45.7	3.5	400	0.5	5.0	6.5	183	C5923B
CMZ5924B	8.645	9.1	9.555	41.2	4.0	500	0.5	5.0	7.0	165	C5924B
CMZ5925B	9.500	10	10.50	37.5	4.5	500	0.25	5.0	8.0	150	C5925B
CMZ5926B	10.45	11	11.55	34.1	5.5	550	0.25	1.0	8.4	136	C5926B

*Available on special order; minimum quantity may apply; consult factory.

R12 (05-June 2023)

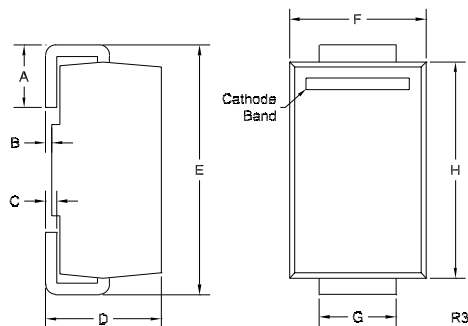
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ELECTRICAL CHARACTERISTICS - Continued: ($T_A=25^\circ\text{C}$) $V_F=1.5\text{V MAX @ } I_F=200\text{mA}$ (for all types)

TYPE	ZENER VOLTAGE V _Z @ I _{ZT}			TEST CURRENT I _{ZT}	MAXIMUM ZENER IMPEDANCE			MAXIMUM REVERSE CURRENT		MAXIMUM ZENER CURRENT (T _L =75°C) I _{ZM}	MARKING CODE
	MIN	NOM	MAX		Z _{ZT} @ I _{ZT}	Z _{ZK} @ I _{ZK}		I _R @ V _R			
	V	V	V		Ω	Ω	mA	μA	V		
CMZ5927B	11.40	12	12.60	31.2	6.5	550	0.25	1.0	9.1	125	C5927B
CMZ5928B	12.35	13	13.65	28.8	7.0	550	0.25	1.0	9.9	115	C5928B
CMZ5929B	14.25	15	15.75	25.0	9.0	600	0.25	1.0	11.4	100	C5929B
CMZ5930B	15.20	16	16.80	23.4	10	600	0.25	1.0	12.2	94	C5930B
CMZ5931B	17.10	18	18.90	20.8	12	650	0.25	1.0	13.7	83	C5931B
CMZ5932B	19.00	20	21.00	18.7	14	650	0.25	1.0	15.2	75	C5932B
CMZ5933B	20.90	22	23.10	17.0	17.5	650	0.25	1.0	16.7	68	C5933B
CMZ5934B	22.80	24	25.20	15.6	19	700	0.25	1.0	18.2	63	C5934B
CMZ5935B	25.65	27	28.35	13.9	23	700	0.25	1.0	20.6	56	C5935B
CMZ5936B	28.50	30	31.50	12.5	26	750	0.25	1.0	22.8	50	C5936B
CMZ5937B	31.35	33	34.65	11.4	33	800	0.25	1.0	25.1	45	C5937B
CMZ5938B	34.20	36	37.80	10.4	38	850	0.25	1.0	27.4	42	C5938B
CMZ5939B	37.05	39	40.95	9.6	45	900	0.25	1.0	29.7	38	C5939B
CMZ5940B	40.85	43	45.15	8.7	53	950	0.25	1.0	32.7	35	C5940B
CMZ5941B	44.65	47	49.35	8.0	67	1000	0.25	1.0	35.8	32	C5941B
CMZ5942B	48.45	51	53.55	7.3	70	1100	0.25	1.0	38.8	29	C5942B
CMZ5943B	53.20	56	58.80	6.7	86	1300	0.25	1.0	42.6	27	C5943B
CMZ5944B	58.90	62	65.10	6.0	100	1500	0.25	1.0	47.1	24	C5944B
CMZ5945B	64.60	68	71.40	5.5	120	1700	0.25	1.0	51.7	22	C5945B
CMZ5946B	71.25	75	78.75	5.0	140	2000	0.25	1.0	56.0	20	C5946B
CMZ5947B	77.90	82	86.10	4.6	160	2500	0.25	1.0	62.2	18	C5947B
CMZ5948B	86.45	91	95.55	4.1	200	3000	0.25	1.0	69.2	16	C5948B
CMZ5949B	95.00	100	105.0	3.7	250	3100	0.25	1.0	76.0	15	C5949B
CMZ5950B	104.5	110	115.5	3.4	300	4000	0.25	1.0	83.6	13	C5950B
CMZ5951B	114.0	120	126.0	3.1	360	4500	0.25	1.0	91.2	12	C5951B
CMZ5952B	123.5	130	136.5	2.9	450	5000	0.25	1.0	98.8	11	C5952B
CMZ5953B	142.5	150	157.5	2.5	600	6000	0.25	1.0	114.0	10	C5953B
CMZ5954B	152.0	160	168.0	2.3	700	6500	0.25	1.0	121.6	9.0	C5954B
CMZ5955B	171.0	180	189.0	2.1	900	7000	0.25	1.0	136.8	8.0	C5955B
CMZ5956B	190.0	200	210.0	1.9	1200	8000	0.25	1.0	152.0	7.0	C5956B

SMA CASE - MECHANICAL OUTLINE



SYMBOL	DIMENSIONS			
	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.030	0.060	0.76	1.52
B	0.002	0.008	0.05	0.20
C	0.006	0.012	0.15	0.30
D	0.078	0.103	1.98	2.62
E	0.188	0.220	4.78	5.59
F	0.090	0.115	2.29	2.92
G	0.050	0.070	1.27	1.78
H	0.157	0.181	3.99	4.60

SMA (REV:R3)

R12 (05-June 2023)

A black rectangular device with the word "Central" printed in white on its top surface. A small white tab is visible on the right side.

DIMENSIONS				
SYMBOL	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.030	0.060	0.76	1.52
B	0.002	0.008	0.05	0.20
C	0.006	0.012	0.15	0.30
D	0.078	0.103	1.98	2.62
E	0.188	0.220	4.78	5.59
F	0.090	0.115	2.29	2.92
G	0.050	0.070	1.27	1.78
H	0.157	0.181	3.99	4.60

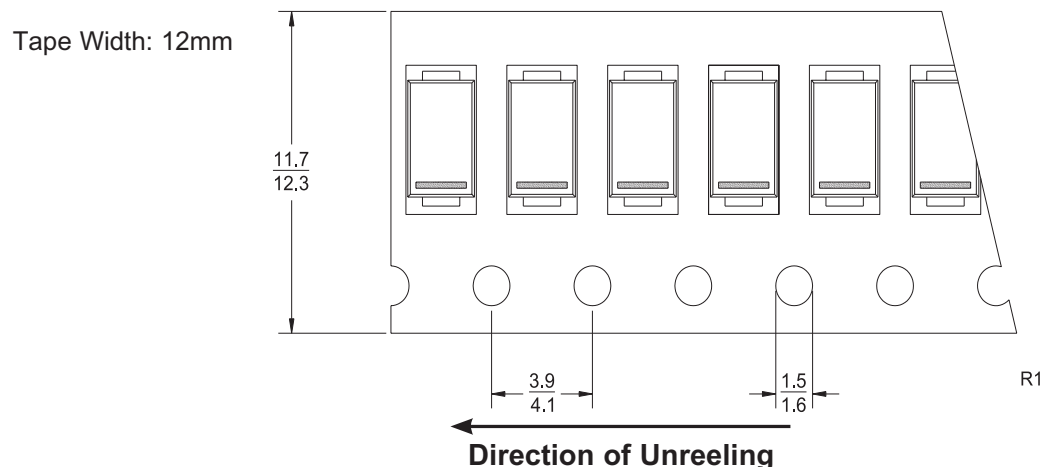
Part Marking: 4-6 Character Alpha/Numeric Code

Package Details

SMA Case



Tape Dimensions and Orientation (Dimensions in mm)



Devices are taped in accordance with Electronic Industries Association Standard EIA-481-D

Packaging Base

13" Reel = 5,000 pcs.

Reel Labeling Information

Each reel is labeled with the following information:

Central Part Number, Customer Part Number, Purchase Order Number, Quantity, Lot Number, Date Code and Ship Date.

Reel Packing Information

Reel Size	Reels per Box (Maximum)	Parts per Box (Maximum)	Box Dimensions		Shipping Weight (Max.)	
			INCH	CM	LB	KG
13"	5	25,000	15x4x15	38x10x38	9	5
	14	70,000	15x15x9	38x38x23	23	11
	26	130,000	15x15x18	38x38x46	42	20

Ordering Information

- For devices taped and reeled on 13" reels, add TR13 suffix to part number.
- All SMDs are available in small quantities for prototype and manual placement applications.

R4(26-June 2023)

Material Composition Specification

SMA Case



Device average mass 67.9 mg

Fluctuation margin +/-10%

Component	Material	Material		Substance	CAS No.	Substance		
		(%wt)	(mg)			(%wt)	(mg)	(ppm)
active device	doped Si	1.12%	0.76	Si	7440-21-3	1.12%	0.76	11,193
leadframe	copper	40.64%	27.59	Cu	7440-50-8	40.64%	27.59	406,351
die attach	high temperature solder paste	3.31%	2.25	Pb	7439-92-1	3.06%	2.081	30,649
				Sn	7440-31-5	0.17%	0.113	1,664
				Ag	7440-22-4	0.08%	0.056	825
encapsulation*	EMC	54.04%	36.69	silica	7631-86-9	36.75%	24.95	367,468
				epoxy resin	29690-82-2	10.81%	7.338	108,075
				phenol resin	9003-35-4	5.4%	3.669	54,038
				Sb ₂ O ₃	1309-64-4	0.54%	0.367	5,405
				Br	7726-95-6	0.54%	0.367	5,405
	EMC GREEN	54.04%	36.69	silica (fused)	60676-86-0	41.61%	28.253	416,116
				epoxy resin	29690-82-2	5.4%	3.669	54,038
				phenol resin	9003-35-4	5.24%	3.559	52,418
				carbon black	1333-86-4	0.16%	0.11	1,620
				metal hydroxide	1309-42-8	1.62%	1.1	16,201
plating**	tin/lead process	0.89%	0.61	Sn	7440-31-5	0.71%	0.485	7,143
				Pb	7439-92-1	0.18%	0.121	1,782
	matte tin	0.89%	0.61	Sn	7440-31-5	0.89%	0.606	8,925

*EMC GREEN molding compound is Halogen-Free.

**For Lead Free plating, add suffix "PB FREE" to part number.

For Tin/Lead plating, add suffix "TIN/LEAD" to part number.

No suffix designation allows for the supply of either lead-free or tin/lead plated product depending on availability.

Disclaimer

The information provided in this Material Composition data sheet is, to the best of our knowledge, correct. However, there is no guarantee to completeness or accuracy, as some information is derived from data sources outside the company.

R5 (16-July 2018)

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