

SMA2Z series
ZENER DIODE



Voltage: 2.7~330 V

P_D: 2 W

Package: SMA

Features

- Low Zener Impedance
- Power Dissipation of 2mW
- High Stability and High Reliability
- Zener Voltage Tolerance: See Table-1

Mechanical Data

- Case: Molded With UL-94 ClassV-0 Recognized, RoHS-Compliant
- Polarity: Look At The Diagram And Polarity On The Right
- Terminals: Tin Plated Leads, Solderable Per J-STD-002 And JESD22-B102
- Mounting Position: Any

Diagram:



Polarity:



Single Phase, Half Wave, 60Hz, Resistive Or Inductive Load. For Capacitive Load, Derate Current By 20%

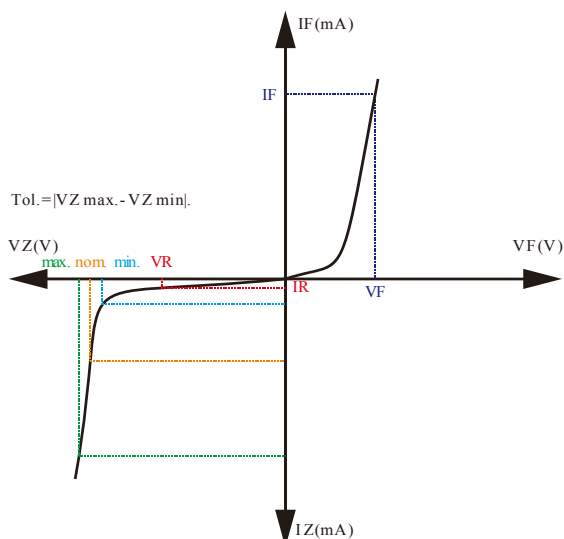
Maximum Ratings (Ta=25°C Unless Otherwise Specified)

Parameter	Symbol	Value	Unit
Power Dissipation	P _D	2	W
Maximum Regulator Current	I _{ZM}	PD/VZ	mA

Thermal Characteristics (Ta=25°C Unless Otherwise Specified)

Parameter	Symbol	Value	Unit
Operating Temperature Range	T _{OPR}	-55 ~ 150	°C
Storage temperature range	T _{STG}	-55 ~ 150	°C

C-V Curve Chart



Symbol Instruction

Symbol	Instruction
I _F	Maximum Average Forward Rectified Current
V _F	Maximum Instantaneous Forward Voltage
V _R	Working Peak Reverse Voltage
I _R	Maximum Reverse Leakage Current @ V _{RWM}
V _Z	The Zener Voltage @ I _Z
I _{ZT}	The Zener Current @ V _Z

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Table-1.ELECTRICAL CHARACTERISTICS (TA=25°C unless otherwise noted)

Device	MARK	Zener Voltage Range				Maximum Zener Impedance			Maximum Reverse Current	
		Vz@Izt			Izt	Zzt @Izt	Zzk @Izk	Izk	IR	VR
		Nom(V)	Min(V)	Max(V)	mA	Ω		mA	uA	V
SMA2Z2.7A	2H0	2.7	2.56	2.84	180.0	10.0	400	1.00	100.0	1.0
SMA2Z3.0A	2H1	3.0	2.85	3.15	160.0	8.0	400	1.00	100.0	1.0
SMA2Z3.3A	2H2	3.3	3.14	3.47	145.0	8.0	400	1.00	100.0	1.0
SMA2Z3.6A	2H3	3.6	3.42	3.78	139.0	5.0	400	1.00	100.0	1.0
SMA2Z3.9A	2H4	3.9	3.71	4.10	128.0	5.0	400	1.00	50.0	1.0
SMA2Z4.3A	2H5	4.3	4.09	4.52	116.0	4.5	400	1.00	50.0	1.0
SMA2Z4.7A	2H6	4.7	4.47	4.94	106.0	4.5	550	1.00	10.0	1.0
SMA2Z5.1A	2H7	5.1	4.85	5.36	98.0	3.5	600	1.00	10.0	1.0
SMA2Z5.6A	2H8	5.6	5.32	5.88	89.5	2.5	500	1.00	10.0	2.0
SMA2Z6.2A	2A0	6.2	5.89	6.51	80.5	1.5	700	1.00	10.0	3.0
SMA2Z6.8A	2A1	6.8	6.46	7.14	73.5	2.0	700	1.00	10.0	4.0
SMA2Z7.5A	2A2	7.5	7.13	7.88	66.5	2.0	700	0.50	10.0	5.0
SMA2Z8.2A	2A3	8.2	7.79	8.61	61.0	2.3	700	0.50	10.0	6.0
SMA2Z9.1A	2A4	9.1	8.65	9.56	55.0	2.5	700	0.50	10.0	7.0
SMA2Z10A	2A5	10.0	9.50	10.50	50.0	3.5	700	0.25	10.0	7.6
SMA2Z11A	2A6	11.0	10.45	11.55	45.5	4.0	700	0.25	1.0	8.4
SMA2Z12A	2A7	12.0	11.40	12.60	41.5	4.5	700	0.25	1.0	9.1
SMA2Z13A	2A8	13.0	12.35	13.65	38.5	5.0	700	0.25	0.5	9.9
SMA2Z14A	2A9	14.0	13.30	14.70	35.7	5.5	700	0.25	0.5	10.6
SMA2Z15A	2B0	15.0	14.25	15.75	33.4	7.0	700	0.25	0.5	11.4
SMA2Z16A	2B1	16.0	15.20	16.80	31.2	8.0	700	0.25	0.5	12.2
SMA2Z17A	2B2	17.0	16.15	17.85	29.4	9.0	750	0.25	0.5	13.0
SMA2Z18A	2B3	18.0	17.10	18.90	27.8	10.0	750	0.25	0.5	13.7
SMA2Z19A	2B4	19.0	18.05	19.95	26.3	11.0	750	0.25	0.5	14.4
SMA2Z20A	2B5	20.0	19.00	21.00	25.0	11.0	750	0.25	0.5	15.2
SMA2Z22A	2B6	22.0	20.90	23.10	22.8	12.0	750	0.25	0.5	16.7
SMA2Z24A	2B7	24.0	22.80	25.20	20.8	13.0	750	0.25	0.5	18.2
SMA2Z27A	2B8	27.0	25.65	28.35	18.5	18.0	750	0.25	0.5	20.6
SMA2Z30A	2B9	30.0	28.50	31.50	16.6	20.0	1000	0.25	0.5	22.5
SMA2Z33A	2C0	33.0	31.35	34.65	15.1	23.0	1000	0.25	0.5	25.1
SMA2Z36A	2C1	36.0	34.20	37.80	13.9	25.0	1000	0.25	0.5	27.4
SMA2Z39A	2C2	39.0	37.05	40.95	12.8	30.0	1000	0.25	0.5	29.7
SMA2Z43A	2C3	43.0	40.85	45.15	11.6	35.0	1500	0.25	0.5	32.7
SMA2Z47A	2C4	47.0	44.65	49.35	10.6	40.0	1500	0.25	0.5	35.8
SMA2Z51A	2C5	51.0	48.45	53.55	9.8	48.0	1500	0.25	0.5	38.8
SMA2Z56A	2C6	56.0	53.20	58.80	9.0	55.0	2000	0.25	0.5	42.6
SMA2Z62A	2C7	62.0	58.90	65.10	8.1	60.0	2000	0.25	0.5	47.1
SMA2Z68A	2C8	68.0	64.60	71.40	7.4	75.0	2000	0.25	0.5	51.7
SMA2Z75A	2C9	75.0	71.25	78.75	6.7	90.0	2000	0.25	0.5	56.0
SMA2Z82A	2F0	82.0	77.90	86.10	6.1	100.0	3000	0.25	0.5	62.2
SMA2Z91A	2F1	91.0	86.45	95.55	5.5	125.0	3000	0.25	0.5	69.2

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Table-1.ELECTRICAL CHARACTERISTICS (TA=25°C unless otherwise noted)

Device	MARK	Zener Voltage Range				Maximum Zener Impedance			Maximum Reverse Current	
		Vz@Izt			Izt	Zzt @Izt	Zzk @Izk	Izk	IR	VR
		Nom(V)	Min(V)	Max(V)	mA	Ω		mA	uA	V
SMA2Z100A	2F2	100.0	95.00	105.00	5.0	175.0	3000	0.25	0.5	76.0
SMA2Z110A	2F3	110.0	104.50	115.50	4.5	250.0	4000	0.25	0.5	83.6
SMA2Z120A	2F4	120.0	114.00	126.00	4.2	325.0	4500	0.25	0.5	91.2
SMA2Z130A	2F5	130.0	123.50	136.50	3.8	400.0	5000	0.25	0.5	98.8
SMA2Z140A	2F6	140.0	133.00	147.00	3.6	500.0	5500	0.25	0.5	106.4
SMA2Z150A	2F7	150.0	142.50	157.50	3.3	575.0	6000	0.25	0.5	114.0
SMA2Z160A	2F8	160.0	152.00	168.00	3.1	650.0	6500	0.25	0.5	121.6
SMA2Z170A	2F9	170.0	161.50	178.50	2.9	675.0	7000	0.25	0.5	130.4
SMA2Z180A	2G1	180.0	171.00	189.00	2.8	725.0	7000	0.25	0.5	136.8
SMA2Z190A	2G2	190.0	180.50	199.50	2.6	825.0	8000	0.25	0.5	144.8
SMA2Z200A	2G3	200.0	190.00	210.00	2.5	1900.0	9990	0.25	0.5	152.0
SMA2Z220A	2G4	220.0	209.00	231.00	2.0	2000.0	8500	0.25	0.5	167.0
SMA2Z270A	2G5	270.0	256.50	283.50	1.6	2200.0	8500	0.25	0.5	205.0
SMA2Z300A	2G6	300.0	285.00	315.00	1.5	2200.0	9000	0.25	0.5	228.0
SMA2Z330A	2G7	330.0	313.50	346.50	1.4	2300.0	9000	0.25	0.5	250.0

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Typical Characteristics Curves

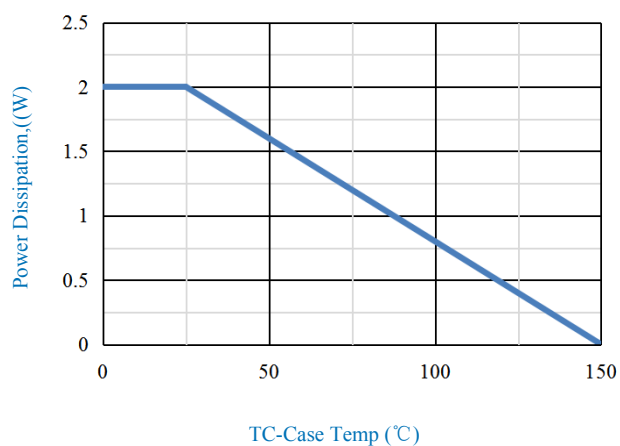


Fig.1-Power Dissipation Vs. Case Temp.

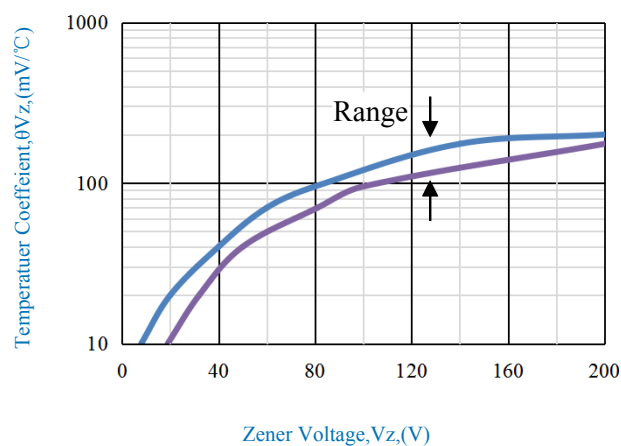


Fig.2-Temperature Coefficient Vs. Zener Voltage

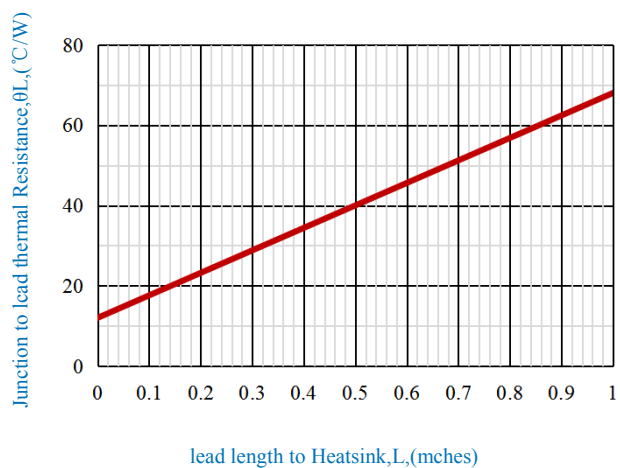


Fig.3-Typical thermal Resistance Vs. lead length

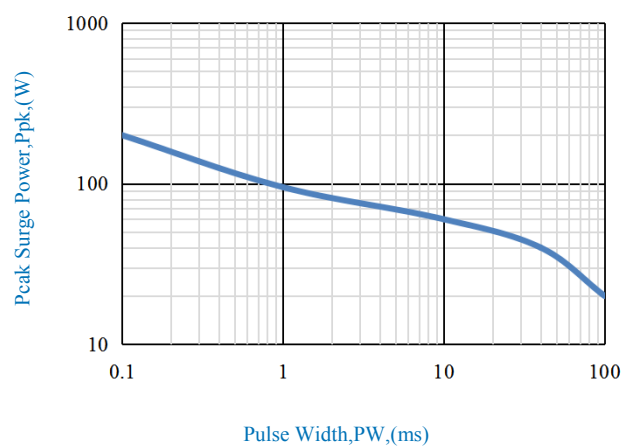
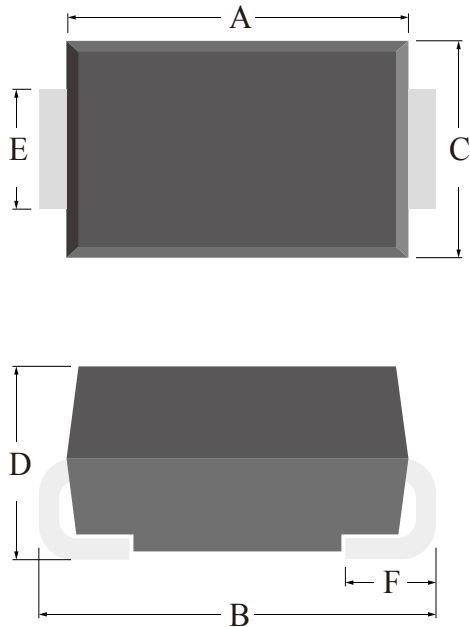


Fig.4-Maximum Surge Power

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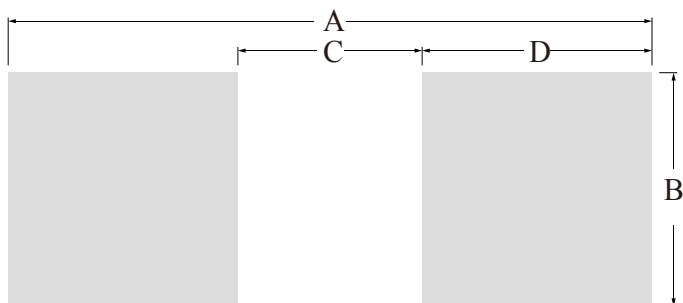
OUTLINE DRAWINGS



SMA

OUTLINE DIMENSIONS						
Dim.	Milimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.00	-	4.60	0.1575	-	1.8110
B	4.70	-	5.28	1.8504	-	2.0787
C	2.40	-	2.85	0.9449	-	1.1220
D	1.90	-	2.58	0.7480	-	1.0157
E	1.30	-	1.60	0.5118	-	0.6299
F	0.76	-	1.52	0.2992	-	0.5984

RECOMMEDND LAYOUT DRAWINGS



SMA

OUTLINE DIMENSIONS						
Dim.	Milimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	-	5.80	-	-	2.2835	-
B	-	2.06	-	-	0.8110	-
C	-	1.66	-	-	0.6535	-
D	-	2.07	-	-	0.8150	-

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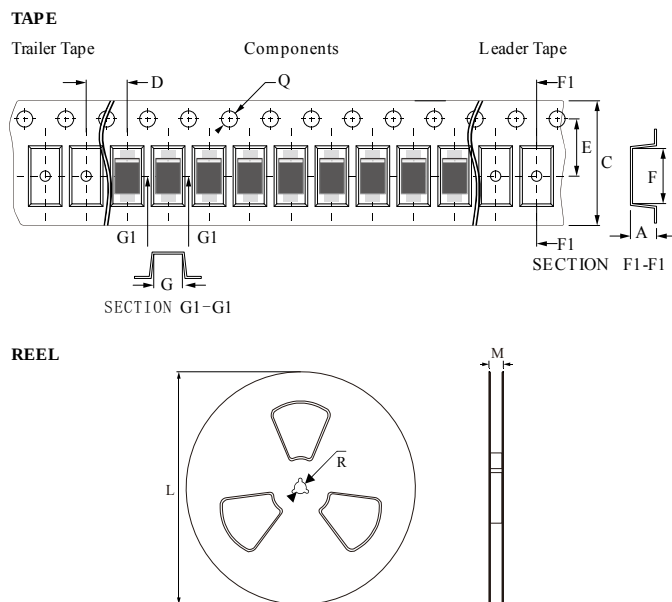
MARKING



MARKING INSTRUCTION

NH=Niuhan Trademark
FF=Product Line Code,According To Actual Changes
YWW=Date Code,According To Actual Changes
xxx=mark,XX=See Table-1
White band denotes cathode

PACKAGING



SMA

OUTLINE DIMENSIONS						
Dim.	Milimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
TAPE						
A	2.45	-	2.65	0.0965	-	0.1043
C	11.70	-	12.30	0.4606	-	0.4843
D	3.80	-	4.20	0.1496	-	0.1654
E	5.30	-	5.70	0.2087	-	0.2244
F	5.13	-	5.53	0.2020	-	0.2177
G	2.69	-	2.89	0.1059	-	0.1138
Q Φ	1.40	-	1.60	0.0551	-	0.0630
REEL						
L	328.00	-	332.00	12.913	-	13.071
R	12.00	-	14.00	0.4724	-	0.5512
M	15.00	-	17.00	0.5906	-	0.6693

PACKING INFORMATION

Package Type	Package Code	Product Weight Approx(g/Pcs)	Package Method	Quantity (Pcs/Min. Pack.)	Quantity (Pcs/Inner Box)	Quantity (Pcs/Carton)
SMA	P1	FALSE	13" Reel	5000	10000	80000
SMA	P2	FALSE	13" Reel	5000	10000	100000

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Recommended wave soldering condition

Product	Peak Temperature	Soldering Time
Pb-free devices	260 +0/-5 °C	5 +1/-1 seconds

Recommended temperature profile for IR reflow

	Profile feature	Sn-Pb eutectic Assembly	Pb-free Assembly
	Average ramp-up rate (T _{smax} to T _p)	3°C/second max.	3°C/second max.
	Preheat-Temperature Min (T _S min) -Temperature Max (T _S max) -Time(ts min to ts max)	100°C 150°C 60-120 seconds	150°C 200°C 60-180 seconds
	Time maintained above: -Temperature (T _L) - Time (t _L)	183°C 60-150 seconds	217°C 60-150 seconds
	Peak Temperature(T _P)	240 +0/-5 °C	260 +0/-5 °C
	Time within 5°C of actual peak temperature (t _p)	10-30 seconds	20-40 seconds
	Ramp down rate	6°C/second max.	6°C/second max.
	Time 25 °C to peak temperature	6 minutes max.	8 minutes max.

Note : All temperatures refer to topside of the package, measured on the package body surface.

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Specification Revision History

Rev.	Date	Changed Items	Pre-Changed Content	Changed Content
A/1	2014-10-20	First Issue		
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