



1000mW Surface Mount Zener Diodes - 3.3V-43V

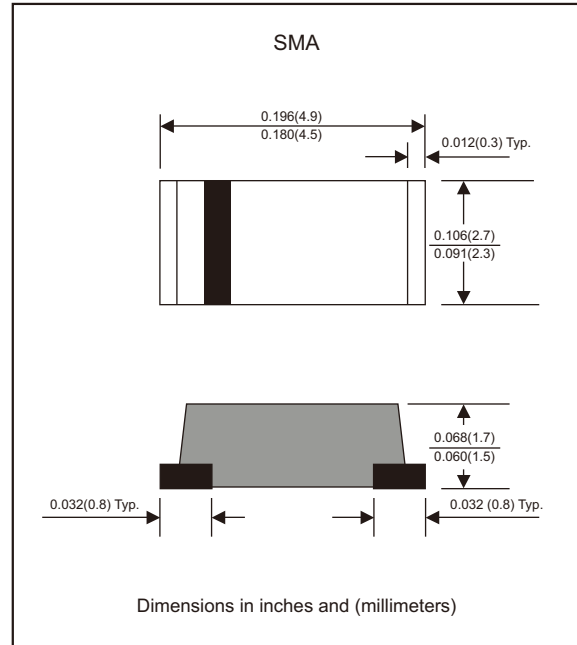
Features

- Batch process design, excellent power dissipation offers better reverse leakage current and thermal resistance.
- Glass passivated chip junction.
- Typical IR less than 0.5uA above 11V.
- Standard zener voltage tolerance $\pm 5\%$.
- Low inductance.
- Low profile package.
- Built-in strain relief.
- Lead-free parts meet environmental standards of MIL-STD-19500 /228
- Suffix "-H" indicates Halogen free parts, ex. ZS4728A-H.

Mechanical data

- Epoxy : UL94-V0 rated flame retardant
- Case : Molded plastic, JEDEC DO-214AC / SMA
- Terminals :Plated terminals, solderable per MIL-STD-750, Method 2026
- Polarity : Indicated by cathode band
- Mounting Position : Any
- Weight : Approximated 0.05 gram

Package outline



Maximum ratings (at $T_A=25C$ unless otherwise noted)

PARAMETER	CONDITIONS	Symbol	MIN.	TYP.	MAX.	UNIT
Forward voltage	$I_F= 200$ mA DC	V_F			1.20	V
Power Dissipation		P_D			1000	mW
Forward surge current	8.3ms single half sine-wave superimposed on rate load (JEDEC methode)	I_{FSM}			100	mA
Thermal resistance	Junction to case Junction to ambient	$R_{\theta JC}$ $R_{\theta JA}$		100 110		$^{\circ}C/W$
Storage temperature		T_{STG}	-65		+175	$^{\circ}C$
Operating temperature		T_J	-55		+150	$^{\circ}C$



Electrical characteristics (at $T_A = 25^\circ\text{C}$ unless otherwise noted)

Part No.	Marking code	Zener voltage	Test current	Zener impedance			Leakage current		Surge current
		$V_Z @ I_{ZT}$	I_{ZT}	$Z_{ZT} @ I_{ZT}$	$Z_{ZK} @ I_{ZK}$	I_{ZK}	I_R	V_R	I_{Surge}
		Volts	mA	OHMs	OHMs	mA	uA	Volts	mA
1N4728AF	Z3V3	3.3	76	10	400	1.00	100	1.0	1380
1N4729AF	Z3V6	3.6	69	10	400	1.00	100	1.0	1260
1N4730AF	Z3V9	3.9	64	9	400	1.00	50	1.0	1190
1N4731AF	Z4V3	4.3	58	9	400	1.00	10	1.0	1070
1N4732AF	Z4V7	4.7	53	8	500	1.00	10	1.0	970
1N4733AF	Z5V1	5.1	49	7	550	1.00	10	1.0	890
1N4734AF	Z5V6	5.6	45	5	600	1.00	10	2.0	810
1N4735AF	Z6V2	6.2	41	2	700	1.00	10	3.0	730
1N4736AF	Z6V8	6.8	37	3.5	700	1.00	10	4.0	660
1N4737AF	Z7V5	7.5	34	4.0	700	0.50	10	5.0	605
1N4738AF	Z8V2	8.2	31	4.5	700	0.50	10	6.0	550
1N4739AF	Z9V1	9.1	28	5	700	0.50	10	7.0	500
1N4740AF	Z10	10	25	7	700	0.25	10	7.6	454
1N4741AF	Z11	11	23	8	700	0.25	5	8.4	414
1N4742AF	Z12	12	21	9	700	0.25	5	9.1	380
1N4743AF	Z13	13	19	10	700	0.25	5	9.9	344
1N4744AF	Z15	15	17	14	700	0.25	5	11.4	304
1N4745AF	Z16	16	15.5	16	700	0.25	5	12.2	285
1N4746AF	Z18	18	14	20	750	0.25	5	13.7	250
1N4747AF	Z20	20	12.5	22	750	0.25	5	15.2	225
1N4748AF	Z22	22	11.5	23	750	0.25	5	16.7	205
1N4749AF	Z24	24	10.5	25	750	0.25	5	18.2	190
1N4750AF	Z27	27	9.5	35	750	0.25	5	20.6	170
1N4751AF	Z30	30	8.5	40	1000	0.25	5	22.8	150
1N4752AF	Z33	33	7.5	45	1000	0.25	5	25.4	135
1N4753AF	Z36	36	7.0	50	1000	0.25	5	27.4	125
1N4754AF	Z39	39	6.5	60	1000	0.25	5	29.7	115
1N4755AF	Z43	43	6.0	70	1500	0.25	5	32.7	105

Note : 5% tolerance of Zener voltage



Rating and characteristic curves (1N4728A THRU 1N4755A)

FIG.1A Range for Units to 12 Volts

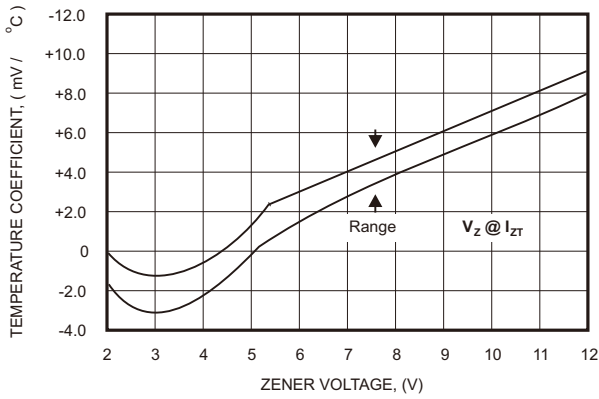


FIG.1B Range for Units to 12 to 100 Volts

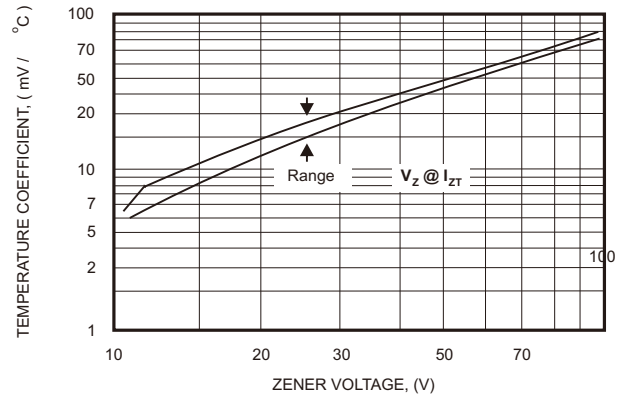


Fig. 2 Temperature Coefficients (-55 °C to +150 °C temperature change;90% of the units are in the ranges indicated.)

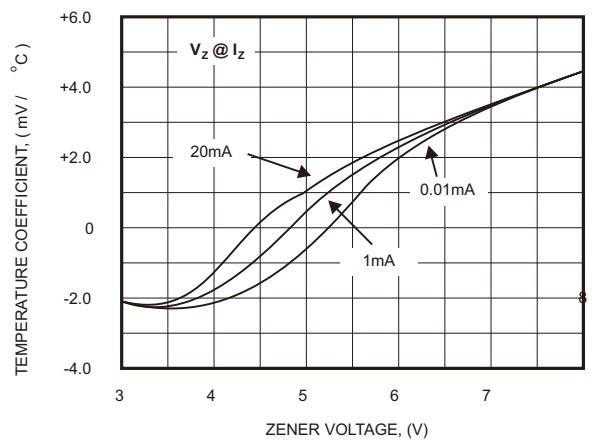
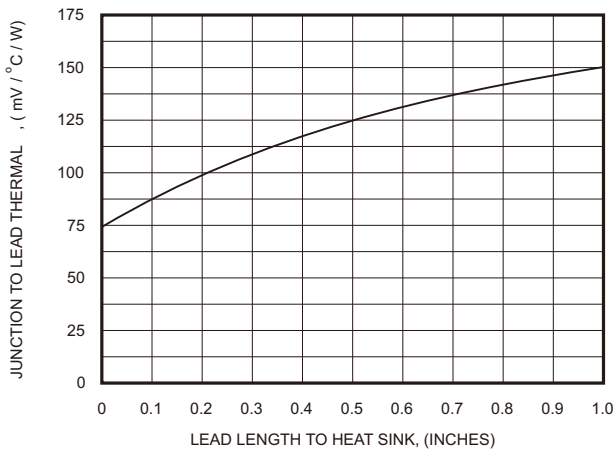


FIG.3 Typical Thermal Resistance versus Lead

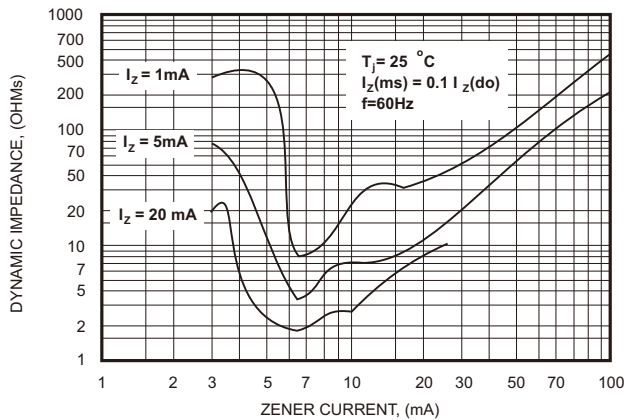
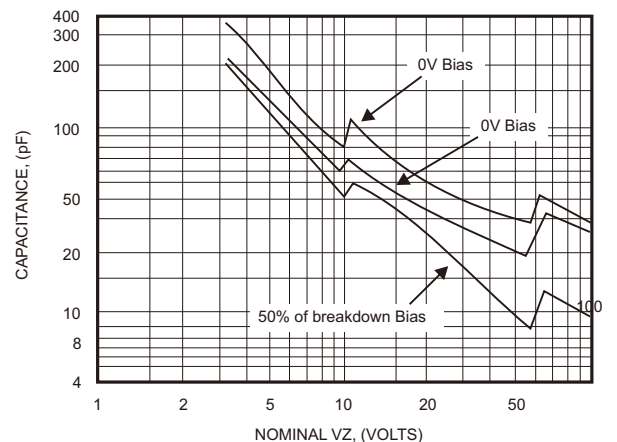




Fig 4. Effect of Zener Current

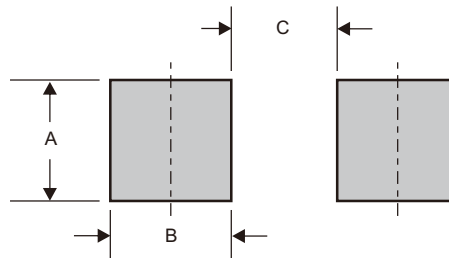




Pinning information

Pin	Simplified outline	Symbol
Pin1 cathode Pin2 anode		

Suggested solder pad layout

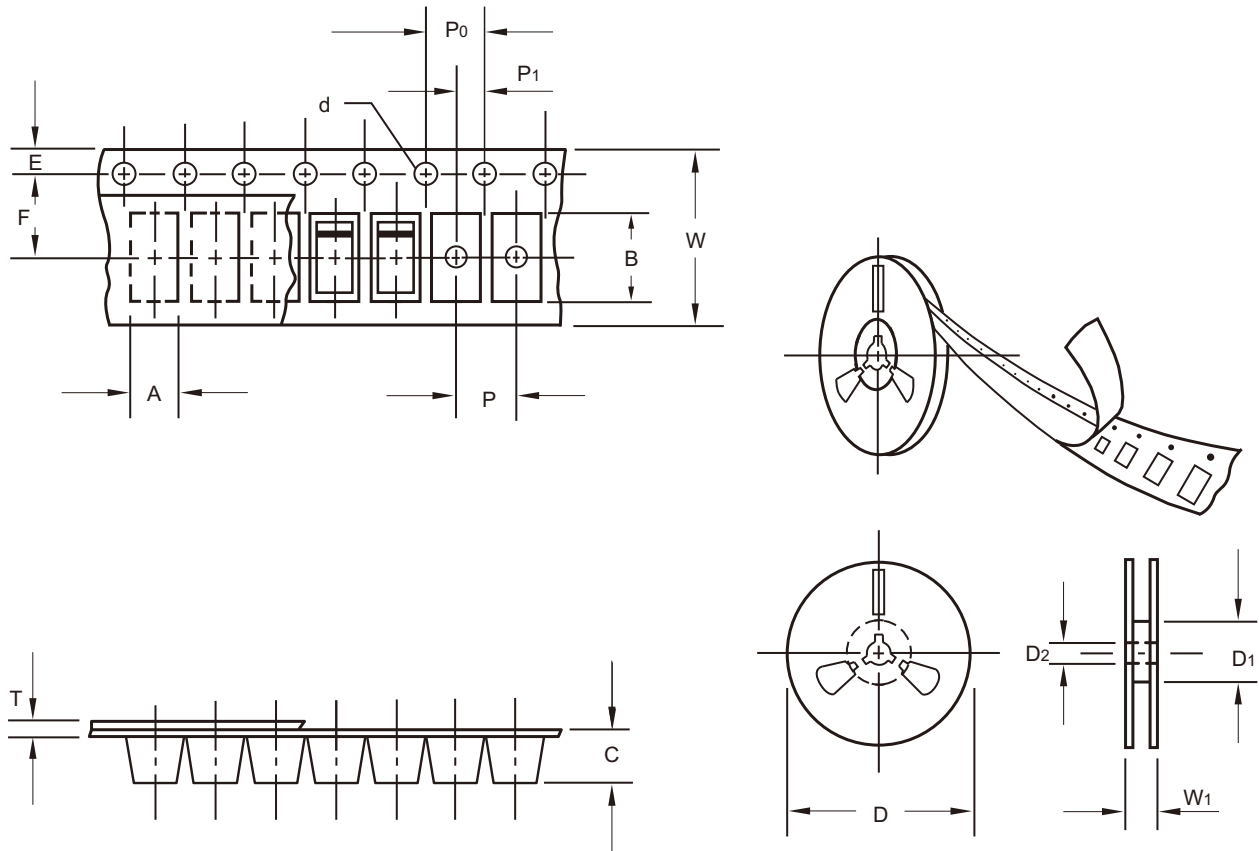


Dimensions in inches and (millimeters)

PACKAGE	A	B	C
SMA	0.110 (2.80)	0.063 (1.60)	0.087 (2.20)



Packing information



unit:mm

Item	Symbol	Tolerance	SMA
Carrier width	A	0.1	2.80
Carrier length	B	0.1	5.00
Carrier depth	C	0.1	1.90
Sprocket hole	d	0.1	1.50
13" Reel outside diameter	D	2.0	330.00
13" Reel inner diameter	D ₁	min	50.00
7" Reel outside diameter	D	2.0	178.00
7" Reel inner diameter	D ₁	min	62.00
Feed hole diameter	D ₂	0.5	13.00
Sprocket hole position	E	0.1	1.75
Punch hole position	F	0.1	5.50
Punch hole pitch	P	0.1	4.00
Sprocket hole pitch	P ₀	0.1	4.00
Embossment center	P ₁	0.1	2.00
Overall tape thickness	T	0.1	0.23
Tape width	W	0.3	12.00
Reel width	W ₁	1.0	18.00

Note: Devices are packed in accordance with EIA standard RS-481-A and specifications listed above.

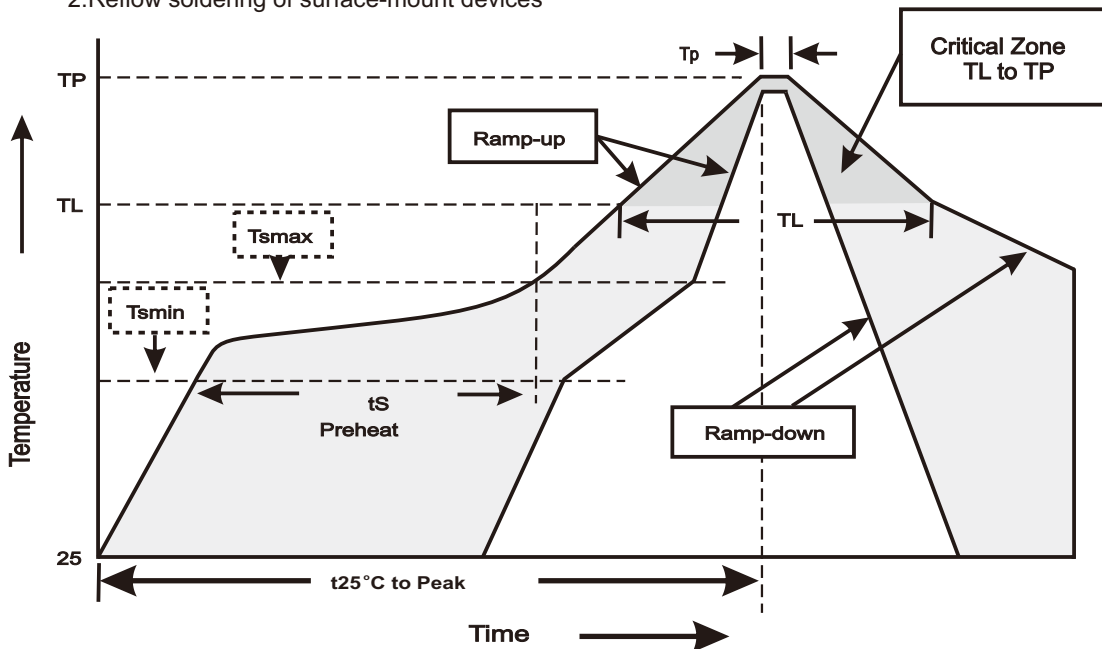


Reel packing

PACKAGE	REEL SIZE	REEL (pcs)	COMPONENT SPACING (m/m)	BOX (pcs)	INNER BOX (m/m)	REEL DIA, (m/m)	CARTON SIZE (m/m)	CARTON (pcs)	APPROX. GROSS WEIGHT (kg)
SMA	7"	2,000	4.0	20,000	183*170*183	178	382*356*387	160,000	16.0
SMA	13"	7,500	4.0	15,000	337*337*37	330	350*330*360	120,000	14.2

Suggested thermal profiles for soldering processes

- 1.Storage environment: Temperature=5 °C~40°C Humidity=55%±25%
- 2.Reflow soldering of surface-mount devices



3.Reflow soldering

Profile Feature	Soldering Condition
Average ramp-up rate(T _L to T _P)	<3 °C/sec
Preheat -Temperature Min(T _{sin}) -Temperature Max(T _{smax}) -Time(min to max)(t _s)	150C ° 200C ° 60~120sec
T _{smax} to T _L -Ramp-upRate	<3C/sec
Time maintained above: -Temperature(T _L) -Time(t _L)	217C ° 60~260sec
Peak Temperature(T _P)	255C-0/+5C °
Time within 5C of actual Peak Temperature(t _p)	10~30sec
Ramp-down Rate	<6C/sec
Time 25C to Peak Temperature	<6minutes

**High reliability test capabilities**

Item Test	Conditions	Reference
1. Solder Resistance	at $260 \pm 5^\circ\text{C}$ for $10 \pm 2\text{sec.}$ immerse body into solder $1/16'' \pm 1/32''$	MIL-STD-750D METHOD-2031
2. Solderability	at $245 \pm 5^\circ\text{C}$ for 5 sec.	MIL-STD-202F METHOD-208
3. High Temperature Reverse Bias	$V_R = V_z$ rate at $T_j = 150^\circ\text{C}$ for 168 hrs.	MIL-STD-750D METHOD-1026
4. Pressure Cooker	$15P_{SIG}$ at $T_A = 121^\circ\text{C}$ for 4 hrs.	JESD22-A102
5. Temperature Cycling	-55°C to $+125^\circ\text{C}$ dwelled for 30 min. and transferred for 5min. total 10 cycles.	MIL-STD-750D METHOD-1051
6. Thermal Shock	0°C for 5 min. rise to 100°C for 5 min. total 10 cycles.	MIL-STD-750D METHOD-1056
7. Humidity	at $T_A = 85^\circ\text{C}$, RH=85% for 1000hrs.	MIL-STD-750D METHOD-1038
8. High Temperature Storage Life	at 175°C for 1000 hrs.	MIL-STD-750D METHOD-1031