

ZGFM206V8B-ASF-Q1 THRU ZGFM20200B-ASF-Q1**List**

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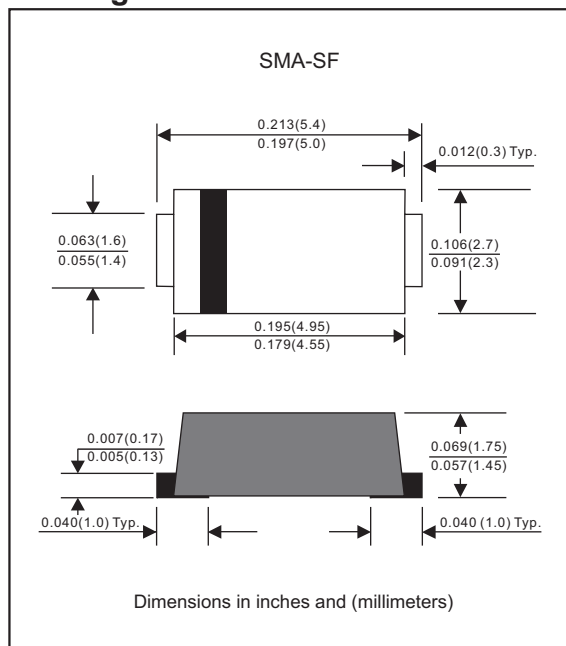
**2.0W Surface Mount Zener
Diodes 6.8V-200V**

Features

- Batch process design, excellent power dissipation offers better reverse leakage current and thermal resistance
- Standard zener voltage tolerance $\pm 5\%$
- Low profile package
- Lead-free parts meet RoHS requirements
- Qualified to AEC-Q101 standards for high reliability
- Suffix "-H" indicates Halogen-free part, ex. ZGFM206V8B-ASF-Q1-H

Mechanical data

- Epoxy:UL94-V0 rated flame retardant
- Case : Molded plastic, SMA-SF
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026
- Polarity : Indicated by cathode band
- Mounting Position : Any
- Weight : Approximated 0.04 gram

Package outline**Maximum ratings** (at $T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Conditions	Symbol	MIN.	TYP.	MAX.	Unit
Forward voltage	$I_F=200\text{mA}$	V_F			1.20	V
Power dissipation	$T_L=75^\circ\text{C}$	P_D			2.0	W
Operating junction temperature range		T_J	-55		+150	$^\circ\text{C}$
Storage temperature range		T_{STG}	-65		+175	$^\circ\text{C}$

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

Part No.	Marking code	Zener voltage			Test current	Zener impedance			Leakage current	
		V _Z (Volts) @ I _{ZT}			I _{ZT}	Z _{ZT} @ I _{ZT}	Z _{ZK} @ I _{ZK}	I _{ZK}	I _R	V _R
		Min.	Nom.	Max.	mA	(Ω)Max	(Ω)Max	mA	(μA)Max	Volts
ZGFM206V8B-ASF-Q1	2Z6V8	6.46	6.8	7.14	73.5	2.0	700	1.00	5.0	4.0
ZGFM207V5B-ASF-Q1	2Z7V5	7.13	7.5	7.88	66.5	2.0	700	0.50	5.0	5.0
ZGFM208V2B-ASF-Q1	2Z8V2	7.79	8.2	8.61	61	2.0	700	0.50	5.0	6.0
ZGFM208V7B-ASF-Q1	2Z8V7	8.27	8.7	9.14	58	2.0	700	0.50	4.0	6.6
ZGFM209V1B-ASF-Q1	2Z9V1	8.65	9.1	9.56	55	3.0	700	0.50	3.0	7.0
ZGFM2010B-ASF-Q1	2Z10	9.50	10	10.50	50	4.0	700	0.50	3.0	7.6
ZGFM2011B-ASF-Q1	2Z11	10.45	11	11.55	45.5	4.0	700	0.25	1.0	8.4
ZGFM2012B-ASF-Q1	2Z12	11.40	12	12.60	41.5	4.5	700	0.25	1.0	9.1
ZGFM2013B-ASF-Q1	2Z13	12.35	13	13.65	38.5	5.0	700	0.25	0.5	9.9
ZGFM2015B-ASF-Q1	2Z15	14.25	15	15.75	33.4	7.0	700	0.25	0.5	11.4
ZGFM2016B-ASF-Q1	2Z16	15.20	16	16.80	31.2	8.0	700	0.25	0.5	12.2
ZGFM2018B-ASF-Q1	2Z18	17.10	18	18.90	27.8	10.0	750	0.25	0.5	13.7
ZGFM2020B-ASF-Q1	2Z20	19.00	20	21.00	25.0	11.0	750	0.25	0.5	15.2
ZGFM2022B-ASF-Q1	2Z22	20.90	22	23.10	22.8	12.0	750	0.25	0.5	16.7
ZGFM2024B-ASF-Q1	2Z24	22.80	24	25.20	20.8	13.0	750	0.25	0.5	18.2
ZGFM2027B-ASF-Q1	2Z27	25.65	27	28.35	18.5	18.0	750	0.25	0.5	20.6
ZGFM2030B-ASF-Q1	2Z30	28.50	30	31.50	16.6	20.0	1000	0.25	0.5	22.8
ZGFM2033B-ASF-Q1	2Z33	31.35	33	34.65	15.1	23.0	1000	0.25	0.5	25.4
ZGFM2036B-ASF-Q1	2Z36	34.20	36	37.80	13.9	25.0	1000	0.25	0.5	27.4
ZGFM2039B-ASF-Q1	2Z39	37.05	39	40.95	12.8	30.0	1500	0.25	0.5	29.7
ZGFM2043B-ASF-Q1	2Z43	40.85	43	45.15	11.6	35.0	1500	0.25	0.5	32.7
ZGFM2047B-ASF-Q1	2Z47	44.65	47	49.35	10.6	40.0	1500	0.25	0.5	35.8
ZGFM2051B-ASF-Q1	2Z51	48.45	51	53.55	9.8	48.0	1500	0.25	0.5	38.8
ZGFM2056B-ASF-Q1	2Z56	53.20	56	58.80	9.0	55.0	2000	0.25	0.5	42.6
ZGFM2062B-ASF-Q1	2Z62	58.90	62	65.10	8.1	60.0	2000	0.25	0.5	47.1
ZGFM2068B-ASF-Q1	2Z68	64.60	68	71.40	7.4	75.0	2000	0.25	0.5	51.7
ZGFM2075B-ASF-Q1	2Z75	71.25	75	78.75	6.7	90.0	2000	0.25	0.5	56.0
ZGFM2082B-ASF-Q1	2Z82	77.90	82	86.10	6.1	100	3000	0.25	0.5	62.2
ZGFM2091B-ASF-Q1	2Z91	86.45	91	95.55	5.5	125	3000	0.25	0.5	69.2
ZGFM20100B-ASF-Q1	2Z100	95.00	100	105.0	5.0	175	3000	0.25	0.5	76.0
ZGFM20110B-ASF-Q1	2Z110	104.50	110	115.5	4.5	250	4000	0.25	0.5	83.6
ZGFM20120B-ASF-Q1	2Z120	114.00	120	126.0	4.2	325	4500	0.25	0.5	91.2
ZGFM20130B-ASF-Q1	2Z130	123.50	130	136.5	3.8	400	5000	0.25	0.5	98.8
ZGFM20150B-ASF-Q1	2Z150	142.50	150	157.5	3.3	575	6000	0.25	0.5	114.0
ZGFM20160B-ASF-Q1	2Z160	152.00	160	168.0	3.1	650	6500	0.25	0.5	121.6
ZGFM20180B-ASF-Q1	2Z180	171.00	180	189.0	2.8	725	7000	0.25	0.5	136.8
ZGFM20200B-ASF-Q1	2Z200	190.00	200	210.0	2.5	900	8000	0.25	0.5	152.0

Note : 5% tolerance of Zener voltage for suffix "B" ex: ZGFM206V8B-ASF-Q1 is 6.8V 5%

Rating and characteristic curves (ZGFM206V8B-ASF-Q1 THRU ZGFM20200B-ASF-Q1)

Fig. 1 Typical Thermal Response L

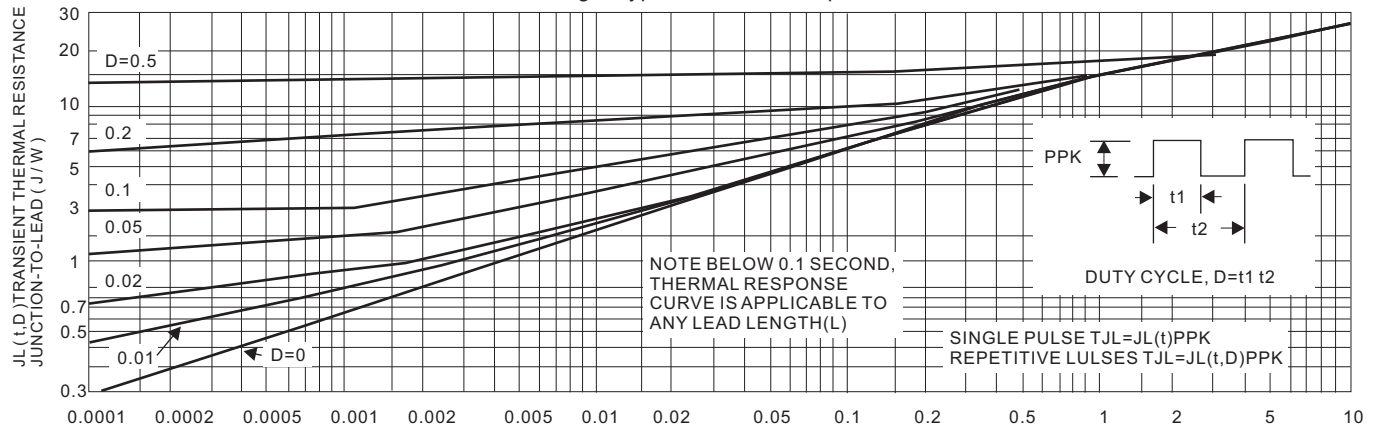


Fig. 2 Maximum Surge Power

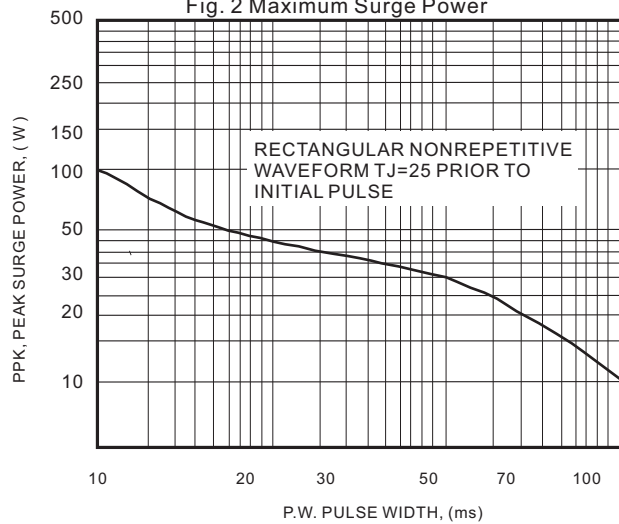


Fig. 3 Units To 200 Volts

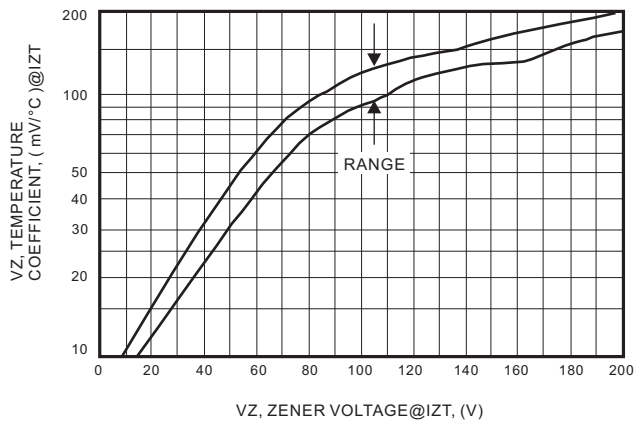
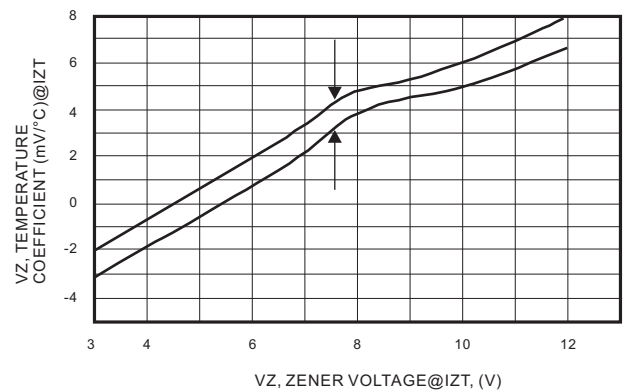


Fig 4. Units To 12 Volts



Rating and characteristic curves (ZGFM206V8B-ASF-Q1 THRU ZGFM20200B-ASF-Q1)

Fig.5 VZ = 3.9 Thru 10 Volts

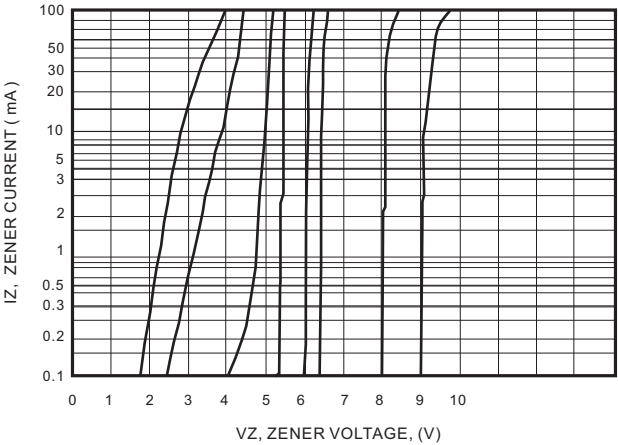


Fig.6 VZ = 12 Thru 82 Volts

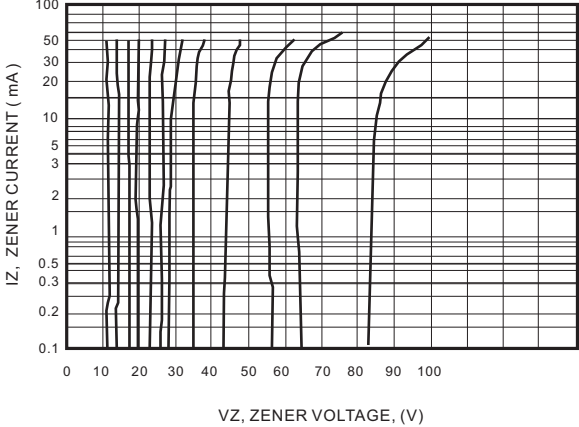


Fig. 7 VZ = 100 Thru 200 Volts

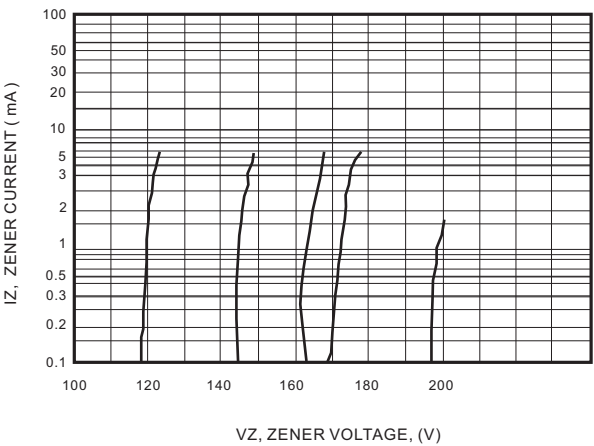
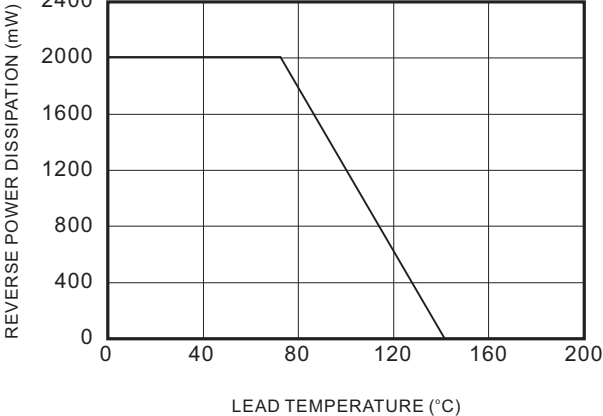


Fig.8-TOTAL POWER DISSIPATION VS. LEAD TEMPERATURE

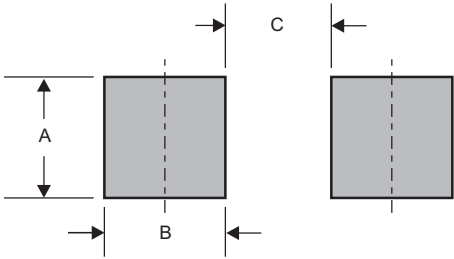


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Pinning information

Pin	Simplified outline	Symbol
Pin1 cathode Pin2 anode		

Suggested solder pad layout

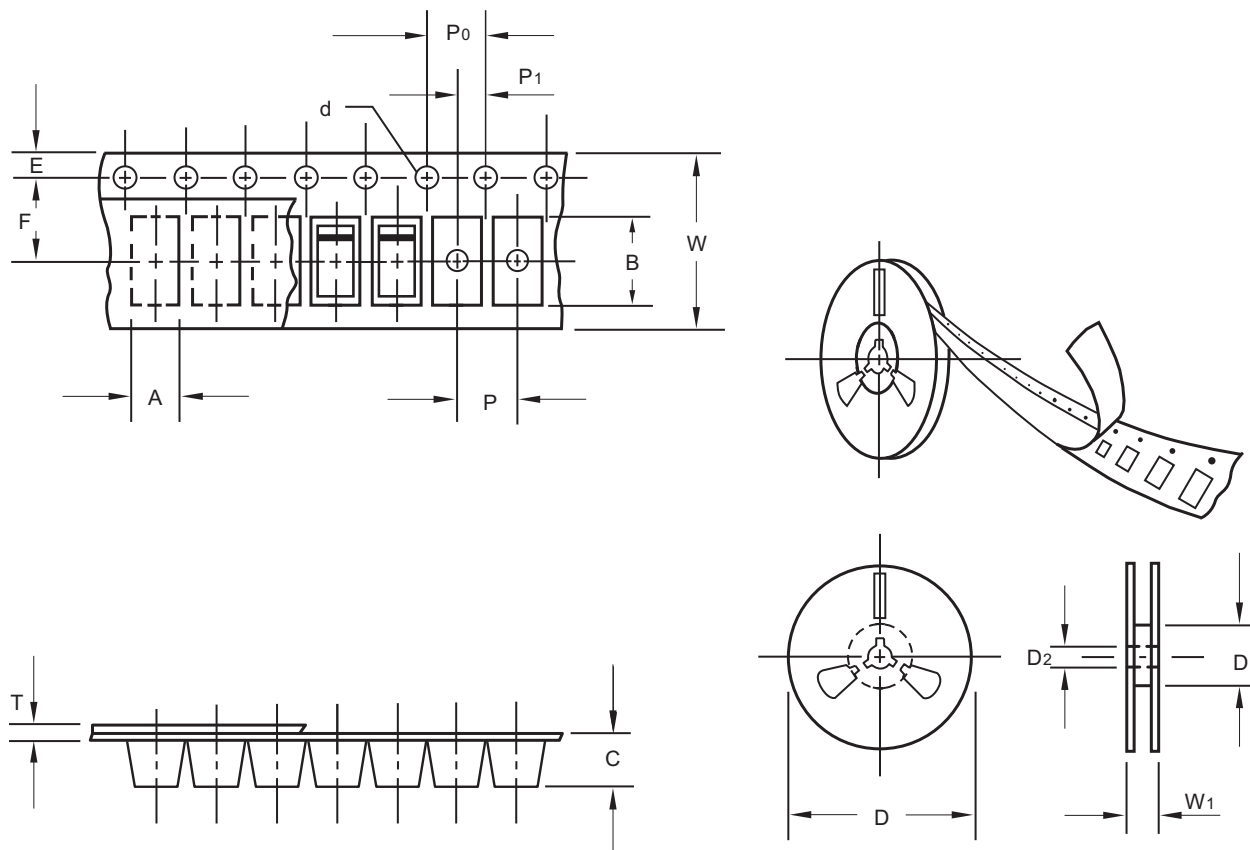


Dimensions in inches and (millimeters)

PACKAGE	A	B	C
SMA-SF	0.063 (1.60)	0.059 (1.50)	0.110 (2.80)

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Packing information



unit:mm

Item	Symbol	Tolerance	SMA-SF
Carrier width	A	0.1	2.90
Carrier length	B	0.1	5.50
Carrier depth	C	0.1	2.10
Sprocket hole	d	0.1	1.50
13" Reel outside diameter	D	2.0	330.00
13" Reel inner diameter	D1	min	50.00
7" Reel outside diameter	D	2.0	178.00
7" Reel inner diameter	D1	min	62.00
Feed hole diameter	D2	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	P0	0.1	4.00
Embossment center	P1	0.1	2.00
Overall tape thickness	T	0.1	0.23
Tape width	W	0.3	12.00
Reel width	W1	1.0	18.00

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

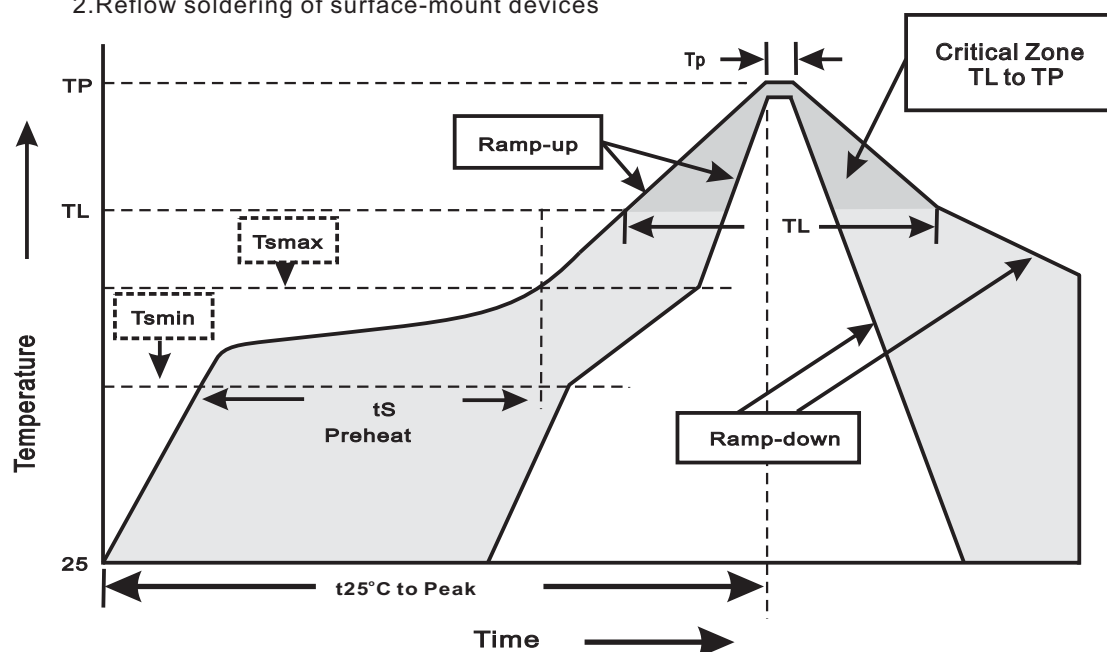
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Reel packing

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-SF	7"	2,000	4.0	20,000	183*155*183	178	382*356*392	160,000	12.0
	13"	7,500	4.0	15,000	335*335*38	330	350*330*360	120,000	11.5

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_{smin}) -Temperature Max(T_{smax}) -Time(min to max)(t_s)	150°C 200°C 60~120sec
T_{smax} to T_L -Ramp-upRate	<3°C/sec
Time maintained above: -Temperature(T_L) -Time(t_L)	217°C 60~260sec
Peak Temperature(T_P)	255°C-0/+5°C
Time within 5°C of actual Peak Temperature(t_P)	10~30sec
Ramp-down Rate	<6°C/sec
Time 25°C to Peak Temperature	<6minutes

ZGFM206V8B-ASF-Q1 THRU ZGFM20200B-ASF-Q1**High reliability test capabilities**

Item Test	Conditions	Reference
1. MSL Preconditioning	24hr bake@125°C+168hrs@85°C /85%RH+3xIR@260°C+1flux immersion+alcohol+DI H2O rinse	JESD22-A113
2. High Temperature Reverse Bias	Vz=Vz Nom*100% (T _{Jmax} =150°C) Test Duration:1000hrs	JESD22-A108
3. High Temperature Storage Life	Ta=Storage temperature range device specified maximum temperature) Test Duration:1000hrs	JESD22 A-103
4. Temperature Cycle	-55°C(15min) to 150°C(15min) Test Cycles:1000cycles	JESD22 A-104
5. Autoclave	P=2atm Ta=121°C RH=100% Test Duration:96hrs	JESD22 A-102
6. Solderability	245±5°C for 5sec	J-STD-002
7. Moisture Resistance	Ta=85°C/85% Relative humidity Test Duration:1000hrs	MIL-STD-750E METHOD 1021.2
8. Resistance To Solder Heat	260±5°C for 10sec	JESD22 B-106
9. High Temperature High Humidity Reverse Bias	Ta=85°C, 85%RH, with device reverse biased at 80% of rated breakdown voltage up to a maximum of 100V or limit of chamber Test Duration:1000hrs	JESD22-A101