

ZGFM303V3B-BF THRU ZGFM30200B-BF**List**

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ZGFM303V3B-BF THRU ZGFM30200B-BF

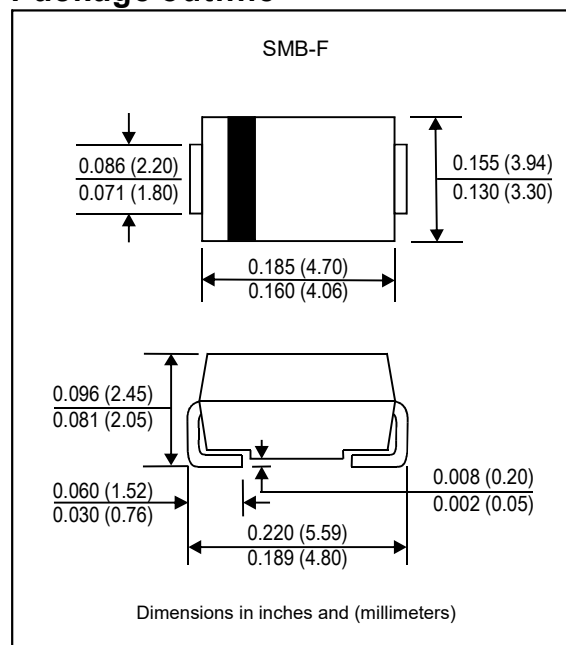
**3.0W Surface Mount
Zener Diodes 3.3V-200V**

Features

- Wide zener reverse voltage range 3.3V to 200V
- Small package size for high density applications
- Ideally suited for automated assembly processes
- Standard zener voltage tolerance $\pm 5\%$
- Lead-free parts meet RoHS requirements
- Suffix "-H" indicates Halogen-free part, ex. ZGFM303V3B-BF-H

Mechanical data

- Epoxy:UL94-V0 rated flame retardant
- Case : Molded plastic, DO-214AA / SMB-F
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026
- Polarity : Indicated by cathode band
- Mounting Position : Any
- Weight : Approximated 0.093 gram

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

PARAMETER	CONDITIONS	Symbol	MIN.	TYP.	MAX.	UNIT
Power dissipation at $T_L=75^\circ\text{C}$ (Note 1)		P_D			3.0	W
Forward voltage	$I_F = 200\text{ mA}$	V_F			1.5	V
Operating junction temperature range		T_J			+150	$^\circ\text{C}$
Storage temperature range		T_{STG}	-65		+150	$^\circ\text{C}$

Note:

1. P.C.B. Mounted on 5.0mm^2 (0.013mm thick) copper areas pads.

ZGFM303V3B-BF THRU ZGFM30200B-BF**Electrical characteristics** (at $T_A=25^{\circ}\text{C}$ unless otherwise noted)

Part No.	Marking code	Zener voltage			Test current	Zener impedance			Leakage current		Maximum Regulator current
		Vz @ Izt(V)				Izt	Zzt @ Izt	Zzk @ Izk	Izk	Ir	
		Min.	Nom.	Max.	mA	(Ω)Max	(Ω)Max	mA	(uA)Max	Volts	mA
ZGFM303V3B-BF	SZ553T,3H0	3.14	3.3	3.47	227.3	10.0	500	1.00	100	1.0	817
ZGFM303V6B-BF	SZ553S,3H1	3.42	3.6	3.78	208.3	9.0	500	1.00	100	1.0	749
ZGFM303V9B-BF	SZ553J,3H2	3.71	3.9	4.10	192	4.5	400	1.00	80	1.0	630
ZGFM304V3B-BF	SZ554D,3H3	4.09	4.3	4.52	174	4.5	400	1.00	50	1.0	590
ZGFM304V7B-BF	SZ554H,3H4	4.47	4.7	4.94	160	4.0	500	1.00	50	1.0	550
ZGFM305V1B-BF	SZ555B,3H5	4.85	5.1	5.36	147	3.5	550	1.00	50	1.0	520
ZGFM305V6B-BF	SZ555G,3H6	5.32	5.6	5.88	134	2.5	600	1.00	50	2.0	480
ZGFM306V2B-BF	SZ556C,3A0	5.89	6.2	6.51	121	1.5	700	1.00	50	3.0	435
ZGFM306V8B-BF	SZ556I,3A1	6.46	6.8	7.14	110	2.0	700	1.00	50	4.0	393
ZGFM307V5B-BF	SZ557F,3A2	7.13	7.5	7.88	100	2.0	700	0.50	50	5.0	360
ZGFM308V2B-BF	SZ558C,3A3	7.79	8.2	8.61	91	2.3	700	0.50	50	6.0	330
ZGFM309V1B-BF	SZ559B,3A4	8.65	9.1	9.56	82	2.5	700	0.50	50	7.0	297
ZGFM3010B-BF	SZ5510,3A5	9.50	10	10.50	75	3.5	700	0.30	50	7.6	270
ZGFM3011B-BF	SZ5511,3A6	10.45	11	11.55	68	4.0	700	0.25	50	8.4	225
ZGFM3012B-BF	SZ5512,3A7	11.40	12	12.60	63	4.5	700	0.25	1	9.1	246
ZGFM3013B-BF	SZ5513,3A8	12.35	13	13.65	58	4.5	700	0.25	0.5	9.1	208
ZGFM3014B-BF	SZ5514,3A9	13.30	14	14.70	53	5.0	700	0.25	0.5	10.6	193
ZGFM3015B-BF	SZ5515,3B0	14.25	15	15.75	50	5.5	700	0.25	0.5	11.4	180
ZGFM3016B-BF	SZ5516,3B1	15.20	16	16.80	47	5.5	700	0.25	0.5	12.2	169
ZGFM3017B-BF	SZ5517,3B2	16.15	17	17.85	44	6.0	750	0.25	0.5	13.0	159
ZGFM3018B-BF	SZ5518,3B3	17.10	18	18.90	42	6.0	750	0.25	0.5	13.7	150
ZGFM3019B-BF	SZ5519,3B4	18.05	19	19.95	40	7.0	750	0.25	0.5	14.4	142
ZGFM3020B-BF	SZ5520,3B5	19.00	20	21.00	37	7.0	750	0.25	0.5	15.2	135
ZGFM3022B-BF	SZ5522,3B6	20.90	22	23.10	34	8.0	750	0.25	0.5	16.7	123
ZGFM3024B-BF	SZ5524,3B7	22.80	24	25.20	31	9.0	750	0.25	0.5	18.2	112
ZGFM3027B-BF	SZ5527,3B8	25.65	27	28.35	28	10	750	0.25	0.5	20.6	100
ZGFM3028B-BF	SZ5528,3G4	26.60	28	29.40	27	12	750	0.25	0.5	21.0	96
ZGFM3030B-BF	SZ5530,3B9	28.50	30	31.50	25	16	1000	0.25	0.5	22.5	90
ZGFM3033B-BF	SZ5533,3C0	31.35	33	34.65	23	20	1000	0.25	0.5	25.1	82
ZGFM3036B-BF	SZ5536,3C1	34.20	36	37.80	21	22	1000	0.25	0.5	27.4	75
ZGFM3039B-BF	SZ5539,3C2	37.05	39	40.95	19	28	1000	0.25	0.5	29.7	69
ZGFM3043B-BF	SZ5543,3C3	40.85	43	45.15	17	33	1500	0.25	0.5	32.7	63
ZGFM3047B-BF	SZ5547,3C4	44.65	47	49.35	16	38	1500	0.25	0.5	35.6	57
ZGFM3051B-BF	SZ5551,3C5	48.45	51	53.55	15	45	1500	0.25	0.5	38.8	53
ZGFM3056B-BF	SZ5556,3C6	53.20	56	58.80	13	50	2000	0.25	0.5	42.6	48
ZGFM3062B-BF	SZ5562,3C7	58.90	62	65.10	12	55	2000	0.25	0.5	47.1	44
ZGFM3068B-BF	SZ5568,3C8	64.60	68	71.40	11	70	2000	0.25	0.5	51.7	40
ZGFM3075B-BF	SZ5575,3C9	71.25	75	78.75	10	80	2000	0.25	0.5	56.0	36
ZGFM3082B-BF	SZ5582,3F0	77.90	82	86.10	9.1	95	3000	0.25	0.5	62.2	33
ZGFM3091B-BF	SZ5591,3F1	86.45	91	95.55	8.2	115	3000	0.25	0.5	69.2	30
ZGFM30100B-BF	SZ55B0,3F2	95.00	100	105.0	7.5	160	3000	0.25	0.5	76.0	27
ZGFM30110B-BF	SZ55B1,3F3	104.5	110	115.5	6.8	225	4000	0.25	0.5	83.6	25
ZGFM30120B-BF	SZ55B2,3F4	114.0	120	126.0	6.3	300	4500	0.25	0.5	91.2	22
ZGFM30130B-BF	SZ55B3,3F5	123.5	130	136.5	5.8	375	5000	0.25	0.5	98.8	21
ZGFM30140B-BF	SZ55B4,3F6	133.0	140	147.0	5.3	475	5000	0.25	0.5	106.4	19
ZGFM30150B-BF	SZ55B5,3F7	142.5	150	157.5	5.0	550	6000	0.25	0.5	114.0	18
ZGFM30160B-BF	SZ55B6,3F8	152.0	160	168.0	4.7	625	6500	0.25	0.5	121.6	17
ZGFM30170B-BF	SZ55B7,3F9	161.5	170	178.5	4.4	650	7000	0.25	0.5	130.4	16
ZGFM30180B-BF	SZ55B8,3G1	171.0	180	189.0	4.2	700	7000	0.25	0.5	136.8	15
ZGFM30190B-BF	SZ55B9,3G2	180.5	190	199.5	4.0	800	8000	0.25	0.5	144.8	14
ZGFM30200B-BF	SZ55D0,3G3	190.0	200	210.0	3.7	875	8000	0.25	0.5	152.0	13

Rating and characteristic curves (ZGFM303V3B-BF THRU ZGFM30200B-BF)

FIG.1 TYPICAL THERMAL RESPONSE L

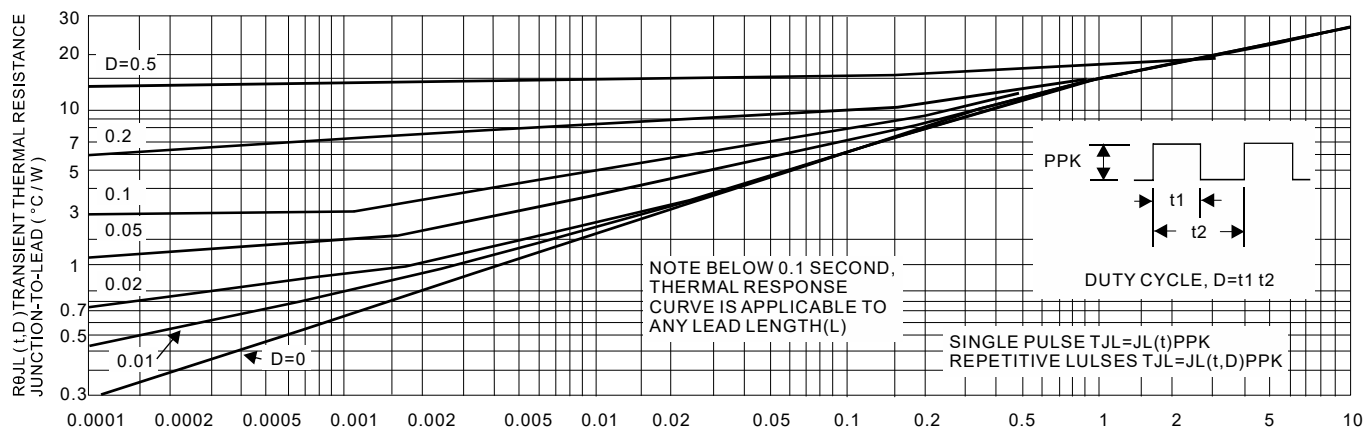


FIG.2 MAXIMUM SURGE POWER

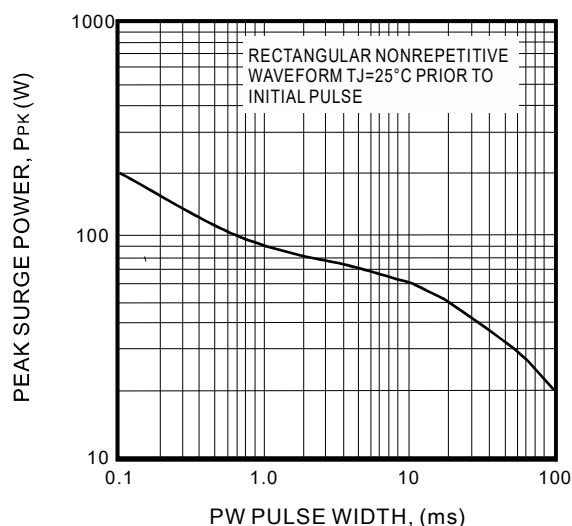


FIG.3 STEADY STATE POWER DERATING

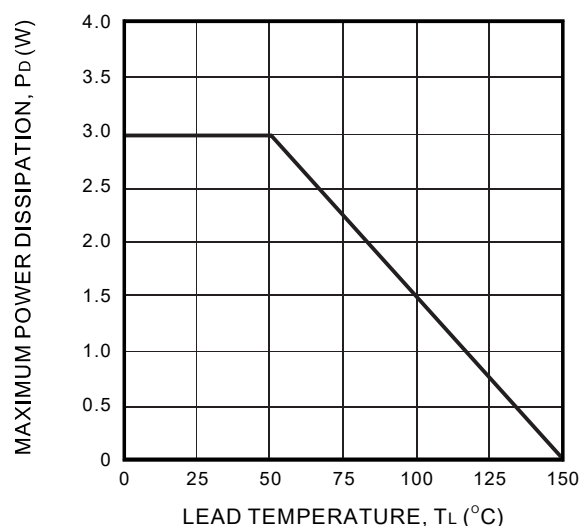


FIG.4 UNIT TO 12 VOLTS

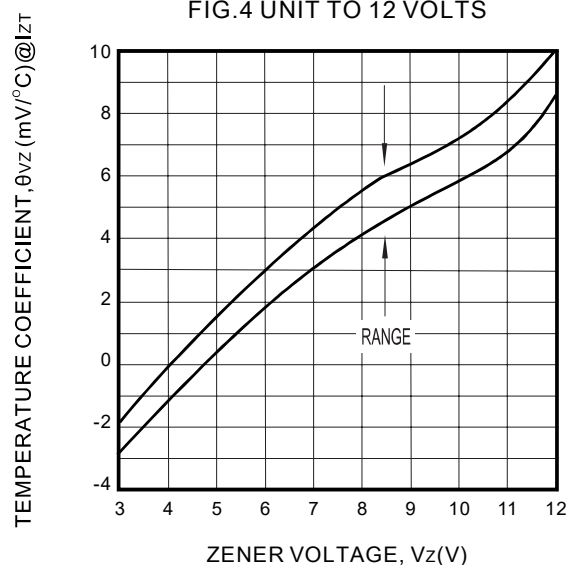
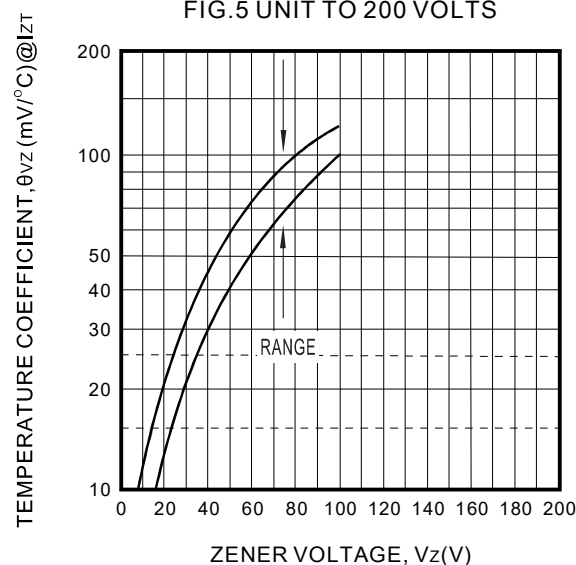
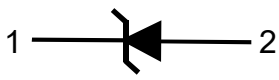


FIG.5 UNIT TO 200 VOLTS

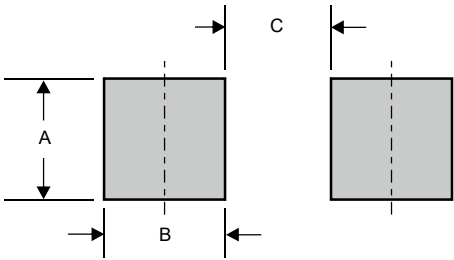


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Pinning information

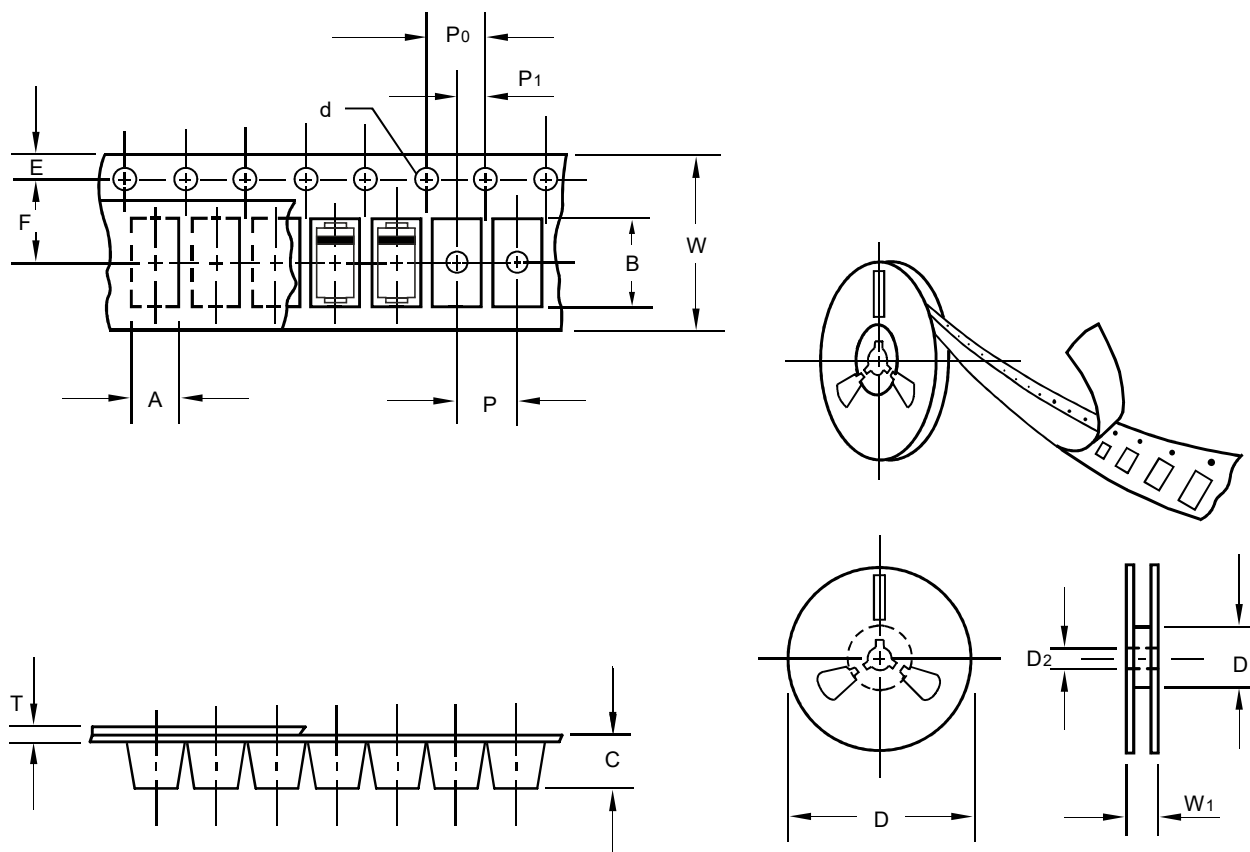
Pin	Simplified outline	Symbol
Pin1 cathode Pin2 anode		

Suggested solder pad layout



Dimensions in inches and (millimeters)

PACKAGE	A	B	C
SMB-F	0.091 (2.30)	0.098 (2.50)	0.071(1.80)

ZGFM303V3B-BF THRU ZGFM30200B-BF**Packing information**

unit:mm

Item	Symbol	Tolerance	SMB-F
Carrier width	A	0.1	3.86
Carrier length	B	0.1	5.65
Carrier depth	C	0.1	2.75
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	8.00
Sprocket hole pitch	P0	0.1	4.00
Embossment center	P1	0.1	2.00
Overall tape thickness	T	0.1	0.25
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.

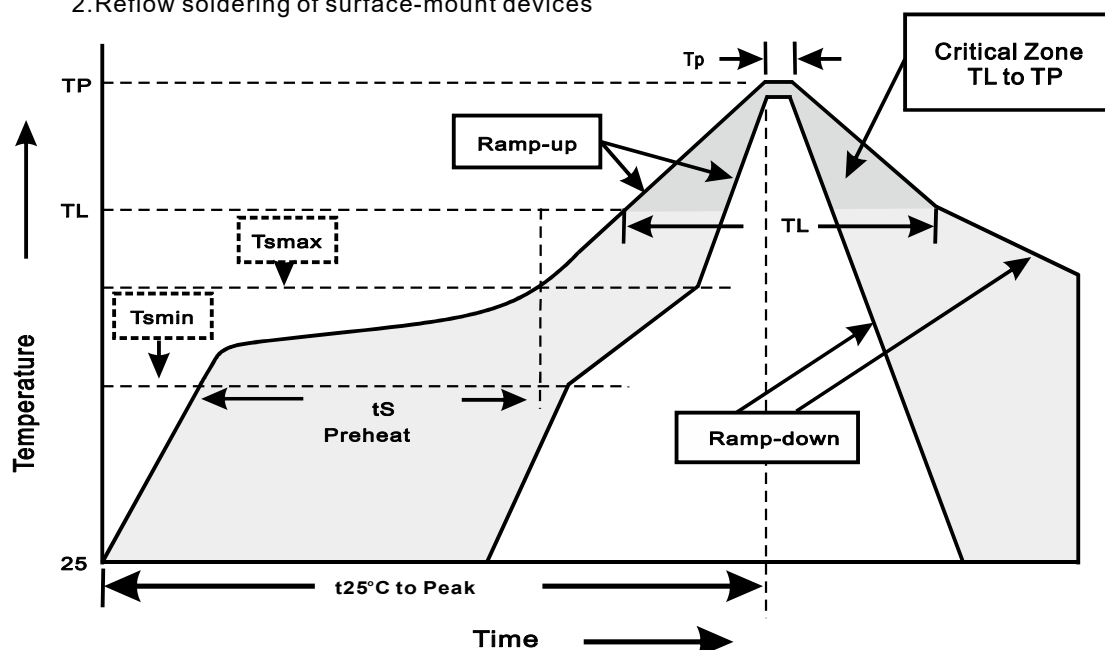
ZGFM303V3B-BF THRU ZGFM30200B-BF

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)
SMB-F	13"	3,000	8.0	6,000	337*337*37	330	350*330*360	48,000	12.40

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 _{smmin}) -Temperature Max(T _{smmax}) -Time(min to max)(t _s)	150°C 200°C 60~120sec
T _{smmax} 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

ZGFM303V3B-BF THRU ZGFM30200B-BF**High reliability test capabilities**

Item Test	Conditions	Reference
1. Solder Resistance	at $260 \pm 5^\circ\text{C}$ for 10 ± 2 sec.	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	$V_z = V_{z\text{Nom}} * 80\%$ at $T_J = 150^\circ\text{C}$ for 168 hrs.	MIL-STD-750D METHOD-1038
4. Pressure Cooker	$15P_{\text{SIG}}$ 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. Humidity	at $T_A = 85^\circ\text{C}$, RH=85% for 1000hrs.	MIL-STD-750D METHOD-1021
7. High Temperature Storage Life	at 175°C for 1000 hrs.	MIL-STD-750D METHOD-1031