

Formosa MS

ZGFM5333B-CF Thru ZGFM5388B-CF

List

List.....	1
Package outline.....	2
Features.....	2
Mechanical data.....	2
Maximum ratings	2
Electrical characteristics.....	3
Rating and characteristic curves.....	4
Pinning information.....	5
Suggested solder pad layout.....	5
Packing information.....	6
Reel packing.....	7
Suggested thermal profiles for soldering processes.....	7

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**5.0W Surface Mount Silicon
Zener Diodes : 3.3V-200V**

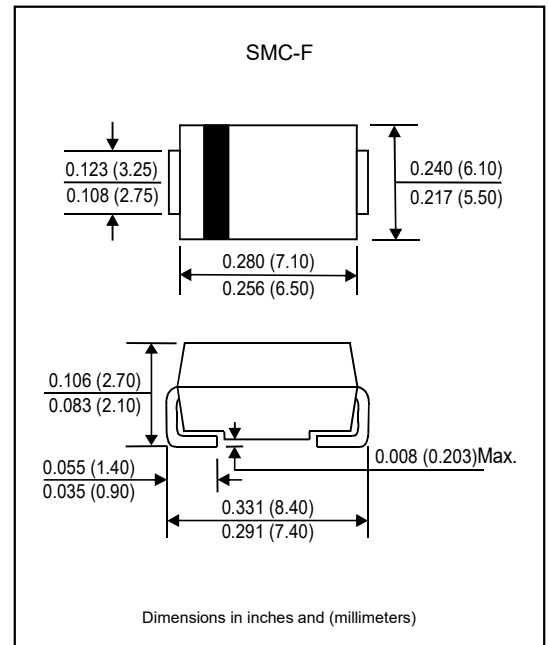
Features

- Wide zener reverse voltage range 3.3V to 200V.
- Glass passivated chip.
- Built-in strain relief.
- Low inductance.
- Low reverse leakage.
- High peak reverse power dissipation.
- For use in stabilizing and clipping with high power rating.
- Lead-free parts meet RoHS requirements.
- Suffix "-H" indicates Halogen-free part, ex.ZGFM5333B-CF-H.

Mechanical data

- Epoxy:UL94-V0 rated flame retardant.
- Case : Molded plastic, DO-214AB / SMC-F
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026.
- Polarity : Indicated by cathode band.
- Mounting Position : Any.

Package outline



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

Parameter	Symbol	Value	Units
Power dissipation (Note 1) ($T_L=75^{\circ}\text{C}$)	P_D	5	W
Forward voltage ($I_F=200\text{mA}$)	V_F	1.2	V
Junction temperature range	T_J	-55 to +150	$^{\circ}\text{C}$
Storage temperature range	T_{STG}	-55 to +150	$^{\circ}\text{C}$

Note: 1. T_L = Lead temperature at 3/8" (9.5mm) from body.

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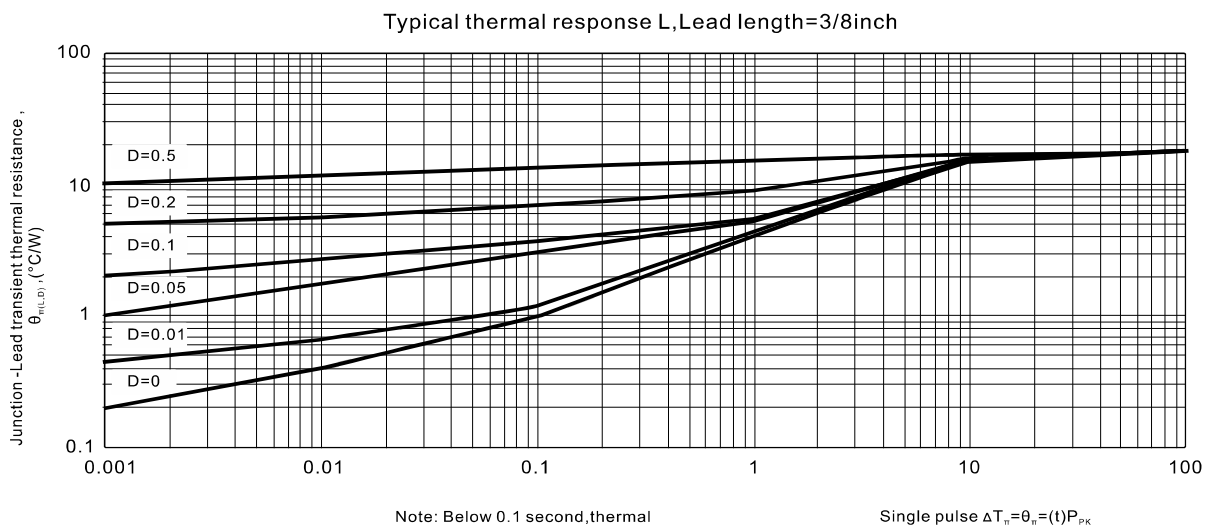
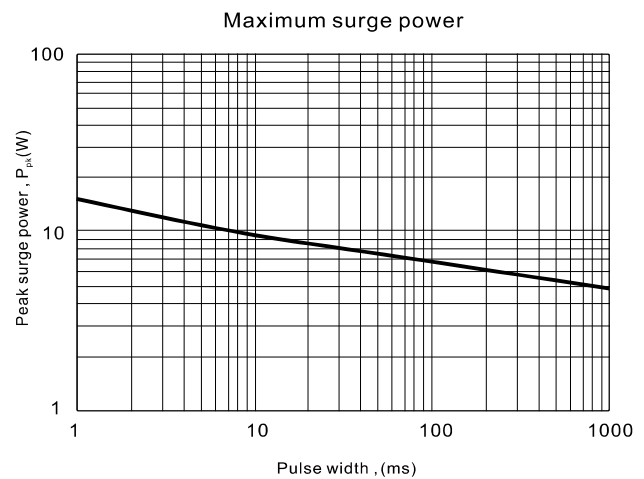
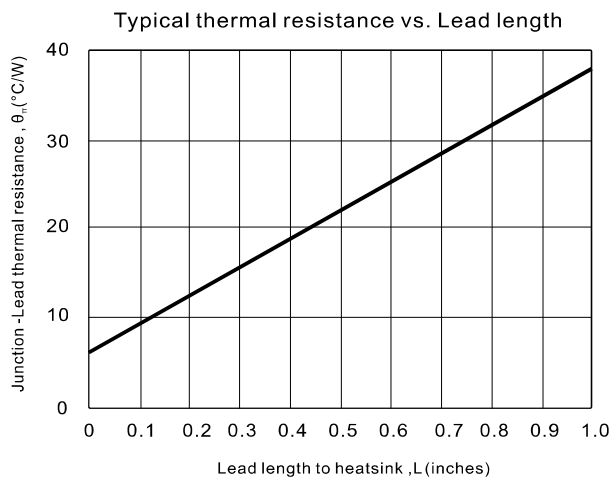
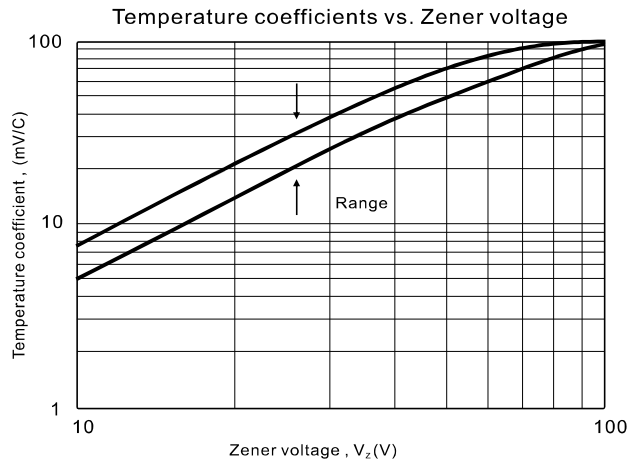
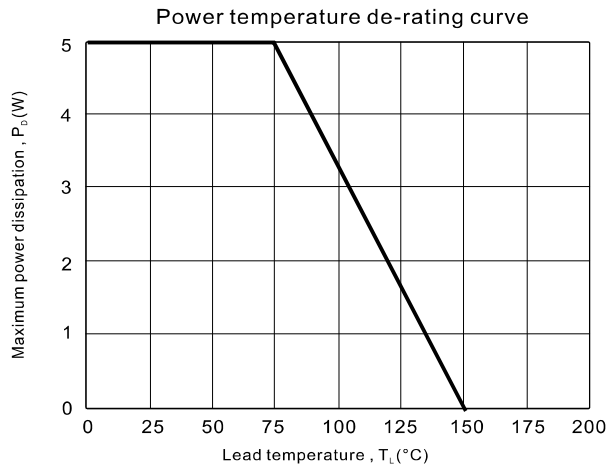
Electrical characteristics (at $T_A=25^{\circ}\text{C}$ unless otherwise noted)

Part No.	Marking code	Zener voltgae			Test current	Zener impedance			Leakage current		Maximum regulator current
		V _Z @ I _{ZT} (V)			I _{ZT}	Z _{ZT} @ I _{ZT}	Z _{ZK} @ I _{ZK}	I _{ZK}	I _R @V _R	V _R	I _{ZM}
		Min.	Nom.	Max.	(mA)	Max(Ω)	Max(Ω)	(mA)	Max(μA)	(V)	(mA)
ZGFM5333B-CF	333A	3.14	3.3	3.47	380	3.0	400	1.0	300	1.0	1437
ZGFM5334B-CF	334A	3.42	3.6	3.78	350	2.5	500	1.0	150	1.0	1317
ZGFM5335B-CF	335A	3.71	3.9	4.10	320	2.0	500	1.0	50	1.0	1216
ZGFM5336B-CF	336A	4.09	4.3	4.52	290	2.0	500	1.0	10	1.0	1103
ZGFM5337B-CF	337A	4.47	4.7	4.94	260	2.0	450	1.0	5	1.0	1009
ZGFM5338B-CF	338A	4.85	5.1	5.36	240	1.5	400	1.0	1.0	1.0	930
ZGFM5339B-CF	339A	5.32	5.6	5.88	220	1.0	400	1.0	1.0	2.0	846
ZGFM5340B-CF	340A	5.70	6.0	6.30	200	1.0	300	1.0	1.0	3.0	790
ZGFM5341B-CF	341A	5.89	6.2	6.51	200	1.0	200	1.0	1.0	3.0	765
ZGFM5342B-CF	342A	6.46	6.8	7.14	175	1.0	200	1.0	10	5.2	700
ZGFM5343B-CF	343A	7.13	7.5	7.88	175	1.5	200	1.0	10	5.7	630
ZGFM5344B-CF	344A	7.79	8.2	8.61	150	1.5	200	1.0	10	6.2	580
ZGFM5345B-CF	345A	8.27	8.7	9.14	150	2.0	200	1.0	10	6.6	545
ZGFM5346B-CF	346A	8.65	9.1	9.56	150	2.0	150	1.0	7.5	6.9	520
ZGFM5347B-CF	347A	9.50	10	10.50	125	2.0	125	1.0	5	7.6	475
ZGFM5348B-CF	348A	10.45	11	11.55	125	2.5	125	1.0	5	8.4	430
ZGFM5349B-CF	349A	11.40	12	12.60	100	2.5	125	1.0	2	9.1	395
ZGFM5350B-CF	350A	12.35	13	13.65	100	2.5	100	1.0	1	9.9	365
ZGFM5351B-CF	351A	13.30	14	14.70	100	2.5	75	1.0	1	10.6	340
ZGFM5352B-CF	352A	14.25	15	15.75	75	2.5	75	1.0	1	11.5	315
ZGFM5353B-CF	353A	15.20	16	16.80	75	2.5	75	1.0	1	12.2	295
ZGFM5354B-CF	354A	16.15	17	17.85	70	2.5	75	1.0	0.5	12.9	280
ZGFM5355B-CF	355A	17.10	18	18.90	65	2.5	75	1.0	0.5	13.7	265
ZGFM5356B-CF	356A	18.05	19	19.95	65	3.0	75	1.0	0.5	14.4	250
ZGFM5357B-CF	357A	19.00	20	21.00	65	3.0	75	1.0	0.5	15.2	237
ZGFM5358B-CF	358A	20.90	22	23.10	50	3.5	75	1.0	0.5	16.7	216
ZGFM5359B-CF	359A	22.80	24	25.20	50	3.5	100	1.0	0.5	18.2	198
ZGFM5360B-CF	360A	23.75	25	26.25	50	4.0	110	1.0	0.5	19.0	190
ZGFM5361B-CF	361A	25.65	27	28.35	50	5.0	120	1.0	0.5	20.6	176
ZGFM5362B-CF	362A	26.60	28	29.40	50	6.0	130	1.0	0.5	21.2	170
ZGFM5363B-CF	363A	28.50	30	31.50	40	8.0	140	1.0	0.5	22.8	158
ZGFM5364B-CF	364A	31.35	33	34.65	40	10.0	150	1.0	0.5	25.1	144
ZGFM5365B-CF	365A	34.20	36	37.80	30	11.0	160	1.0	0.5	27.4	132
ZGFM5366B-CF	366A	37.05	39	40.95	30	14.0	170	1.0	0.5	29.7	122
ZGFM5367B-CF	367A	40.85	43	45.15	30	20.0	190	1.0	0.5	32.7	110
ZGFM5368B-CF	368A	44.65	47	49.35	25	25.0	210	1.0	0.5	35.8	100
ZGFM5369B-CF	369A	48.45	51	53.55	25	27.0	230	1.0	0.5	38.8	93
ZGFM5370B-CF	370A	53.20	56	58.80	20	35	280	1.0	0.5	42.6	86
ZGFM5371B-CF	371A	57.00	60	63.00	20	40	350	1.0	0.5	42.5	79
ZGFM5372B-CF	372A	58.90	62	65.10	20	42	400	1.0	0.5	47.1	76
ZGFM5373B-CF	373A	64.60	68	71.40	20	44	500	1.0	0.5	51.7	70
ZGFM5374B-CF	374A	71.25	75	78.75	20	45	620	1.0	0.5	56.0	63
ZGFM5375B-CF	375A	77.90	82	86.10	15	65	720	1.0	0.5	62.2	58
ZGFM5376B-CF	376A	82.65	87	91.35	15	75	760	1.0	0.5	66.0	54.5
ZGFM5377B-CF	377A	86.45	91	95.55	15	75	760	1.0	0.5	69.2	52.5
ZGFM5378B-CF	378A	95.00	100	105.0	12	90	800	1.0	0.5	76.0	47.5
ZGFM5379B-CF	379A	104.5	110	115.5	12	125	1000	1.0	0.5	83.6	43.0
ZGFM5380B-CF	380A	114.0	120	126.0	10	170	1150	1.0	0.5	91.2	39.5
ZGFM5381B-CF	381A	123.5	130	136.5	10	190	1250	1.0	0.5	98.8	36.6
ZGFM5382B-CF	382A	133.0	140	147.0	8	230	1500	1.0	0.5	106.0	34
ZGFM5383B-CF	383A	142.5	150	157.5	8	330	1500	1.0	0.5	114.0	31.6
ZGFM5384B-CF	384A	152.0	160	168.0	8	350	1650	1.0	0.5	122.0	29.4
ZGFM5385B-CF	385A	161.5	170	178.5	8	380	1750	1.0	0.5	129.0	28.0
ZGFM5386B-CF	386A	171.0	180	189.0	5	430	1750	1.0	0.5	137.0	26.4
ZGFM5387B-CF	387A	180.5	190	199.5	5	450	1850	1.0	0.5	144.0	25
ZGFM5388B-CF	388A	190.0	200	210.0	5	480	1850	1.0	0.5	152.0	23.6

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Rating and characteristic curves



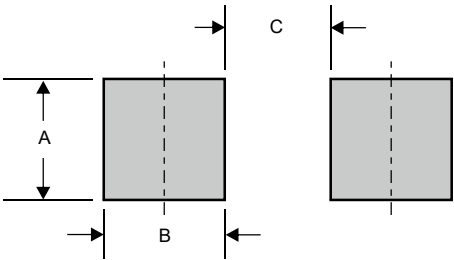
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Pinning information

Pin	Simplified outline	Symbol
Pin1 Cathode Pin2 Anode		

Suggested solder pad layout



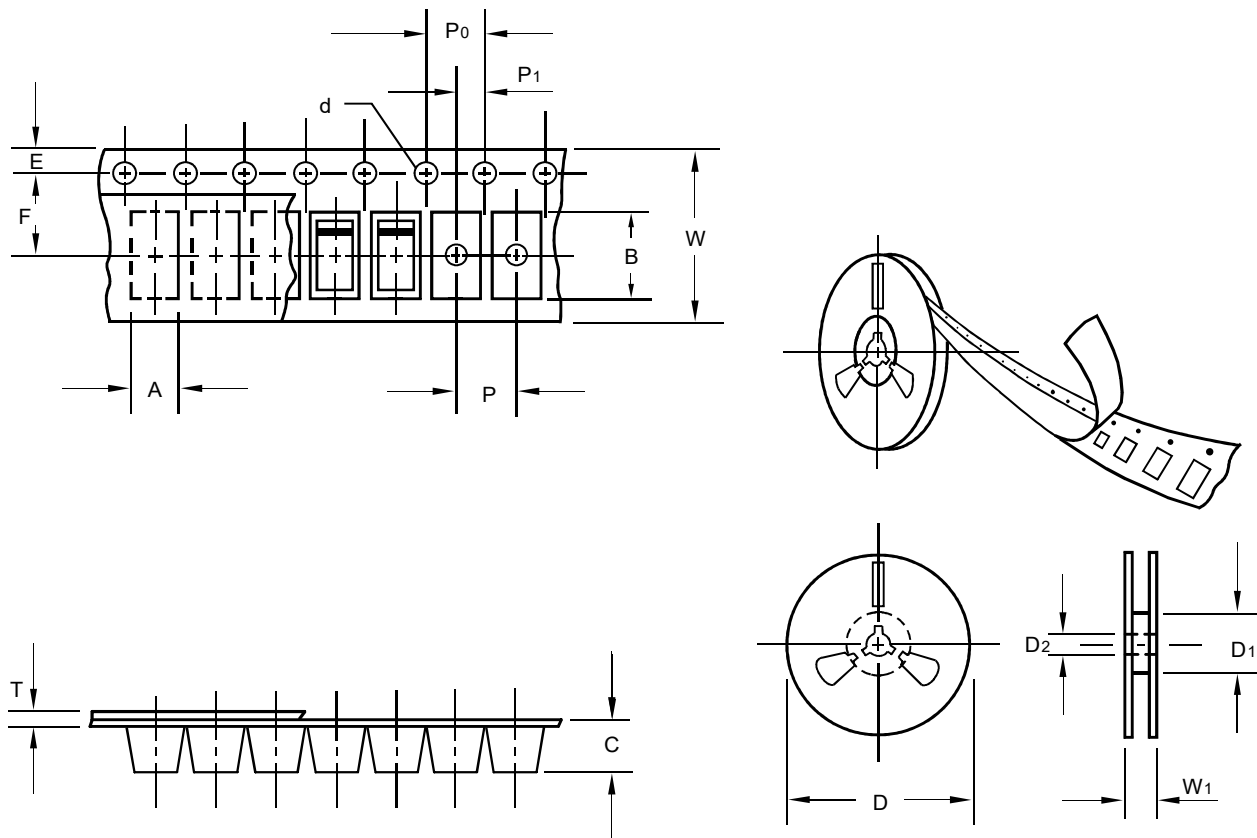
Dimensions in inches and (millimeters)

PACKAGE	A	B	C
SMC-F	0.132 (3.30)	0.100 (2.50)	0.176(4.40)

Formosa MS

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Packing information



unit:mm

Item	Symbol	Tolerance	SMC-F
Carrier width	A	0.15	6.00
Carrier length	B	0.2	8.25
Carrier depth	C	0.1	2.36
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	7.50
Punch hole pitch	P	0.1	8.00
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	16.00
Reel width	W ₁	1.0	18.00

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

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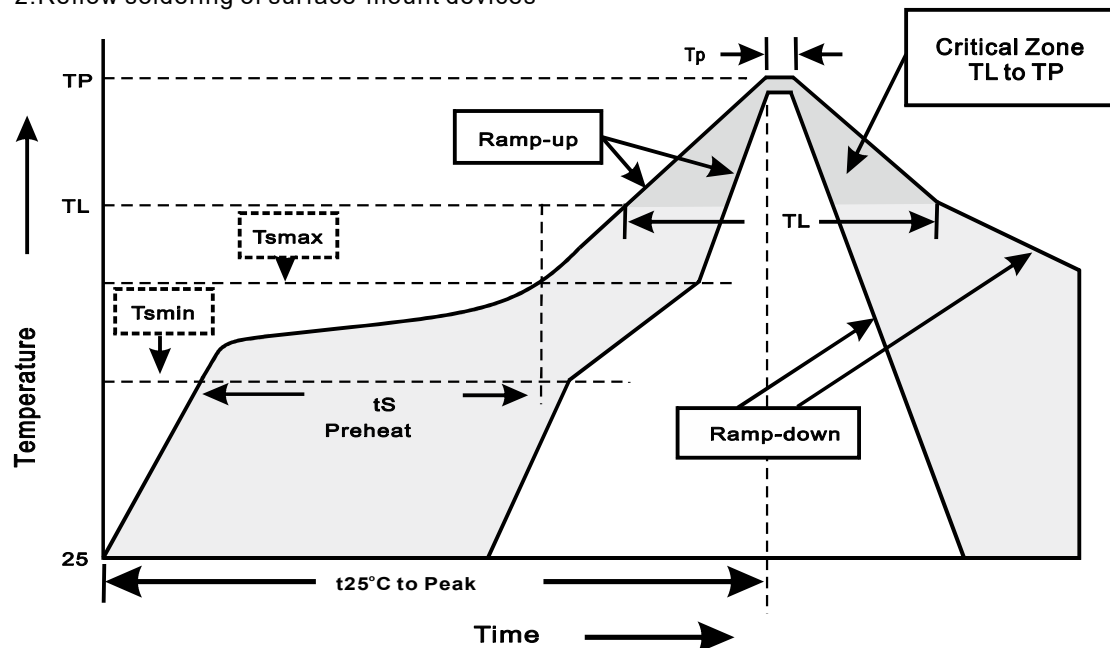
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Reel packing

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)
SMC-F	7"	500	8.0	5,000	183*155*183	178	382*356*392	40,000
	13"	3,000	8.0	6,000	335*335*38	330	350*330*360	48,000

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