

# 500mW SOD-123 SURFACE MOUNT

## Flat Lead Surface Mount Plastic Package

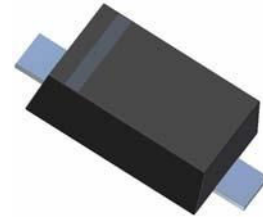
### Zener Voltage Regulators

# Formosa MS

#### Absolute Maximum Ratings $T_A = 25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Value	Units
$P_D$	Power Dissipation	500	mW
$T_{STG}$	Storage Temperature Range	-65 to +150	$^\circ\text{C}$
$T_{OPR}$	Operating Temperature Range	-65 to +150	$^\circ\text{C}$

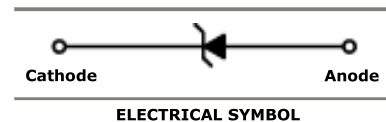
These ratings are limiting values above which the serviceability of the diode may be impaired.



SOD-123 Flat Lead

#### Specification Features:

- Wide Zener Voltage Range Selection, 2.4V to 75V
- VZ Tolerance Selection of  $\pm 5\%$  (C Series)
- Flat Lead SOD-123 Plastic Package
- Surface Device Type Mounting
- RoHS Compliant
- Halogen-free Compliant
- Matte Tin(Sn) Lead Finish
- Band Indicates Cathode



#### Electrical Characteristics $T_A = 25^\circ\text{C}$ unless otherwise noted

Device Type	Device Marking	$V_Z @ I_{ZT}$ (Volts)			$I_{ZT}$ (mA)	$Z_{ZT} @ I_{ZT}$ ( $\Omega$ ) Max	$I_{ZK}$ (mA)	$Z_{ZK} @ I_{ZK}$ ( $\Omega$ ) Max	$I_R @ V_R$ ( $\mu\text{A}$ ) Max	$V_R$ (Volts)
		Min	Nom	Max						
MMSZ2V4CW	2V4Z	2.28	2.4	2.52	5	100	1	564	45	1
MMSZ2V7CW	2V7Z	2.57	2.7	2.84	5	100	1	564	18	1
MMSZ3V0CW	3V0Z	2.85	3.0	3.15	5	100	1	564	9	1
MMSZ3V3CW	3V3Z	3.14	3.3	3.47	5	95	1	564	4.5	1
MMSZ3V6CW	3V6Z	3.42	3.6	3.78	5	90	1	564	4.5	1
MMSZ3V9CW	3V9Z	3.71	3.9	4.10	5	90	1	564	2.7	1
MMSZ4V3CW	4V3Z	4.09	4.3	4.52	5	90	1	564	2.7	1
MMSZ4V7CW	4V7Z	4.47	4.7	4.94	5	80	1	470	2.7	2
MMSZ5V1CW	5V1Z	4.85	5.1	5.36	5	60	1	451	1.8	2
MMSZ5V6CW	5V6Z	5.32	5.6	5.88	5	40	1	376	0.9	2
MMSZ6V2CW	6V2Z	5.89	6.2	6.51	5	10	1	141	2.7	4
MMSZ6V8CW	6V8Z	6.46	6.8	7.14	5	15	1	75	1.8	4
MMSZ7V5CW	7V5Z	7.11	7.5	7.86	5	15	1	75	0.9	5
MMSZ8V2CW	8V2Z	7.79	8.2	8.61	5	15	1	75	0.63	5
MMSZ9V1CW	9V1Z	8.65	9.1	9.56	5	15	1	94	0.45	6
MMSZ10VCW	10VZ	9.50	10	10.50	5	20	1	141	0.18	7
MMSZ11VCW	11VZ	10.45	11	11.55	5	20	1	141	0.09	8
MMSZ12VCW	12VZ	11.40	12	12.60	5	25	1	141	0.09	8
MMSZ13VCW	13VZ	12.35	13	13.65	5	30	1	160	0.09	8
MMSZ15VCW	15VZ	14.25	15	15.75	5	30	1	188	0.045	10.5
MMSZ16VCW	16VZ	15.20	16	16.80	5	40	1	188	0.045	11.2

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**Electrical Characteristics**  $T_A = 25^\circ\text{C}$  unless otherwise noted

Device Type	Device Marking	$V_Z @ I_{ZT}$ (Volts)			$I_{ZT}$ (mA)	$Z_{ZT} @ I_{ZT}$ ( $\Omega$ ) Max	$I_{ZK}$ (mA)	$Z_{ZK} @ I_{ZK}$ ( $\Omega$ ) Max	$I_R @ V_R$ ( $\mu\text{A}$ ) Max	$V_R$ (Volts)
		Min	Nom	Max						
MMSZ18VCW	18VZ	17.10	18	18.90	5	45	1	212	0.045	12.6
MMSZ20VCW	20VZ	19.00	20	21.00	5	55	1	212	0.045	14.0
MMSZ22VCW	22VZ	20.90	22	23.10	5	55	1	235	0.045	15.4
MMSZ24VCW	24VZ	22.80	24	25.20	5	70	1	235	0.045	16.8
MMSZ27VCW	27VZ	25.65	27	28.35	2	80	0.5	282	0.045	18.9
MMSZ30VCW	30VZ	28.50	30	31.50	2	80	0.5	282	0.045	21.0
MMSZ33VCW	33VZ	31.35	33	34.65	2	80	0.5	306	0.045	23.0
MMSZ36VCW	36VZ	34.20	36	37.80	2	90	0.5	329	0.045	25.2
MMSZ39VCW	39VZ	37.05	39	40.95	2	130	0.5	329	0.045	27.3
MMSZ43VCW	43VZ	40.85	43	45.15	2	150	0.5	353	0.045	30.1
MMSZ47VCW	47VZ	44.65	47	49.35	2	170	0.5	353	0.045	33.0
MMSZ51VCW	51VZ	48.45	51	53.55	2	180	0.5	376	0.045	35.7
MMSZ56VCW	56VZ	53.20	56	58.80	2	200	0.5	400	0.045	39.2
MMSZ62VCW	62VZ	58.90	62	65.10	2	215	0.5	423	0.045	43.4
MMSZ68VCW	68VZ	64.60	68	71.40	2	240	0.5	447	0.045	47.6
MMSZ75VCW	75VZ	71.25	75	78.75	2	255	0.5	470	0.045	52.5

$V_F$  Forward Voltage = 900mV Maximum @  $I_F = 10$  mA for all types

**Notes:**

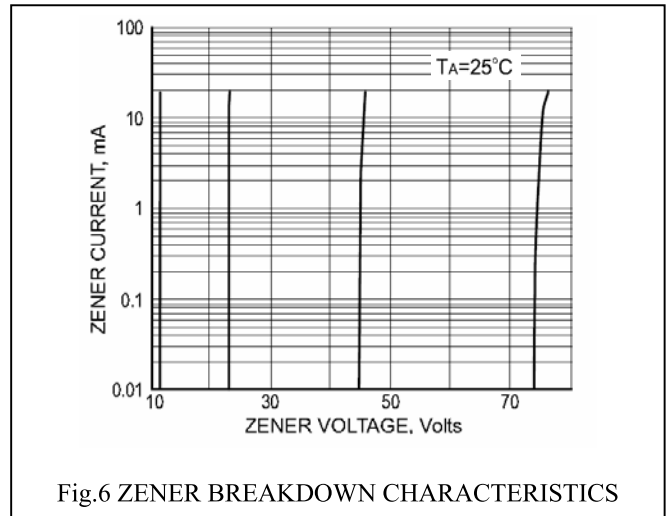
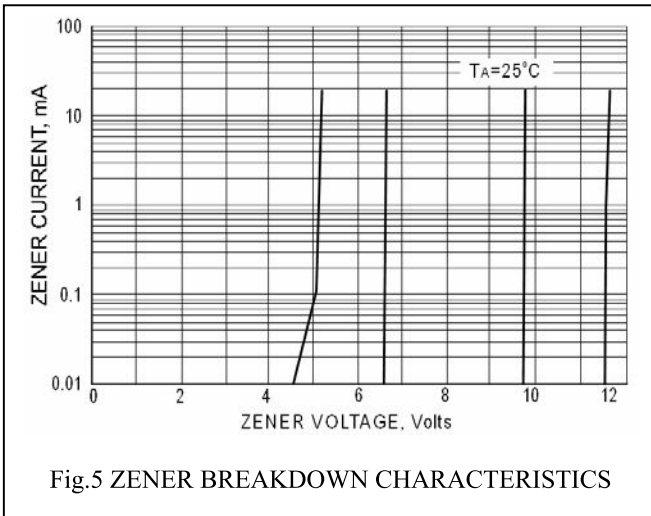
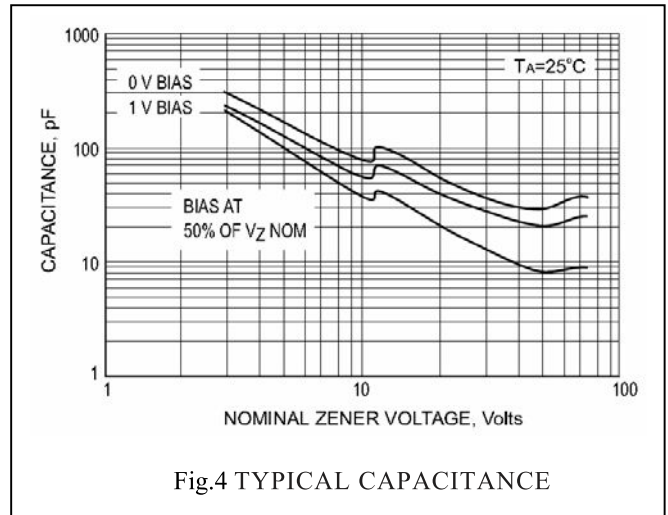
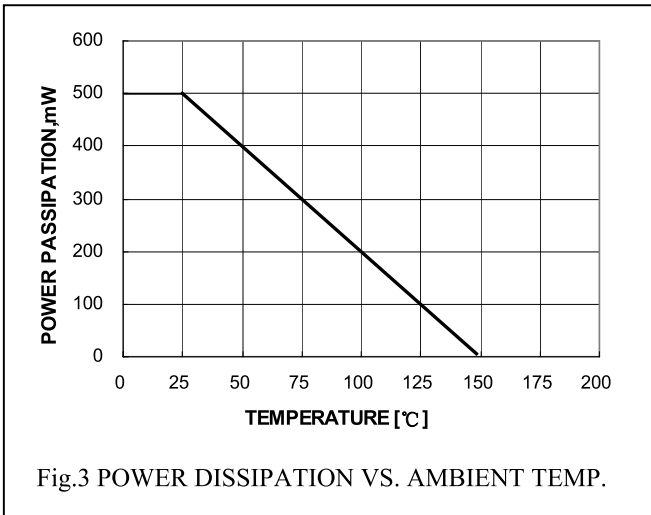
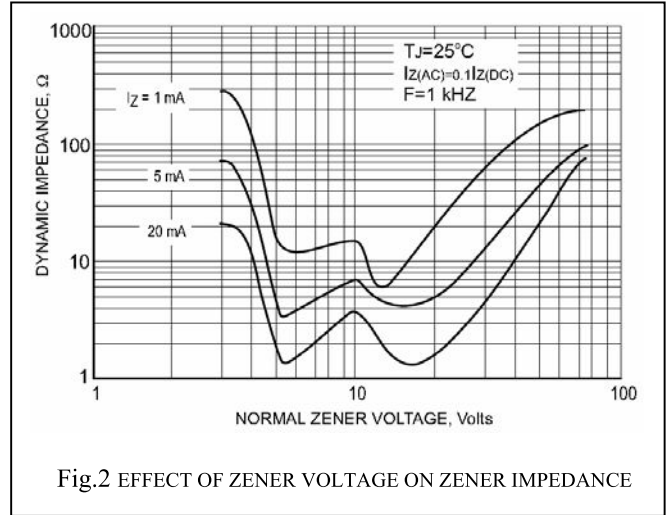
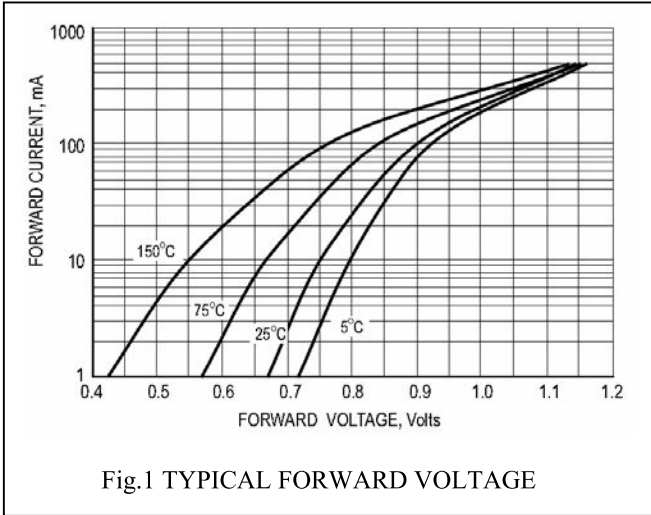
1. The Zener Voltage ( $V_Z$ ) is tested under pulse condition of 10mS.
2. The device numbers listed have a standard tolerance on the nominal zener voltage of  $\pm 5\%$ .
3. The zener impedance is derived from the 60-cycle ac voltage, which results when an ac current having an rms value equal to 10% of the dc zener current ( $I_{ZT}$  or  $I_{ZK}$ ) is superimposed to  $I_{ZT}$  or  $I_{ZK}$ .



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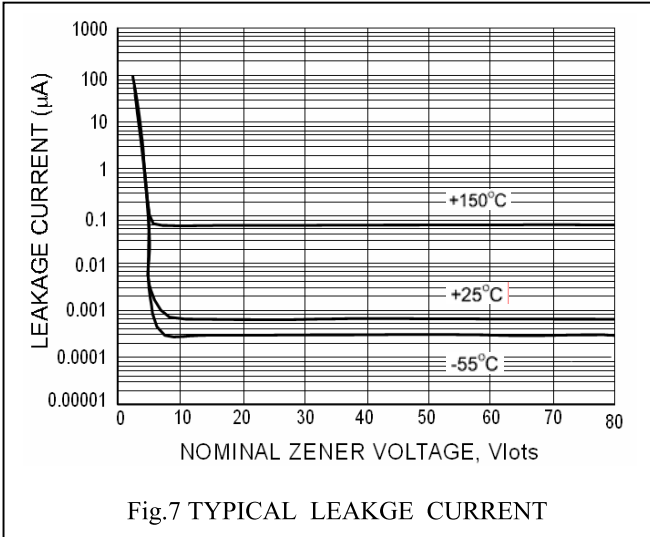
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**RATING AND CHARACTERISTIC CURVES**

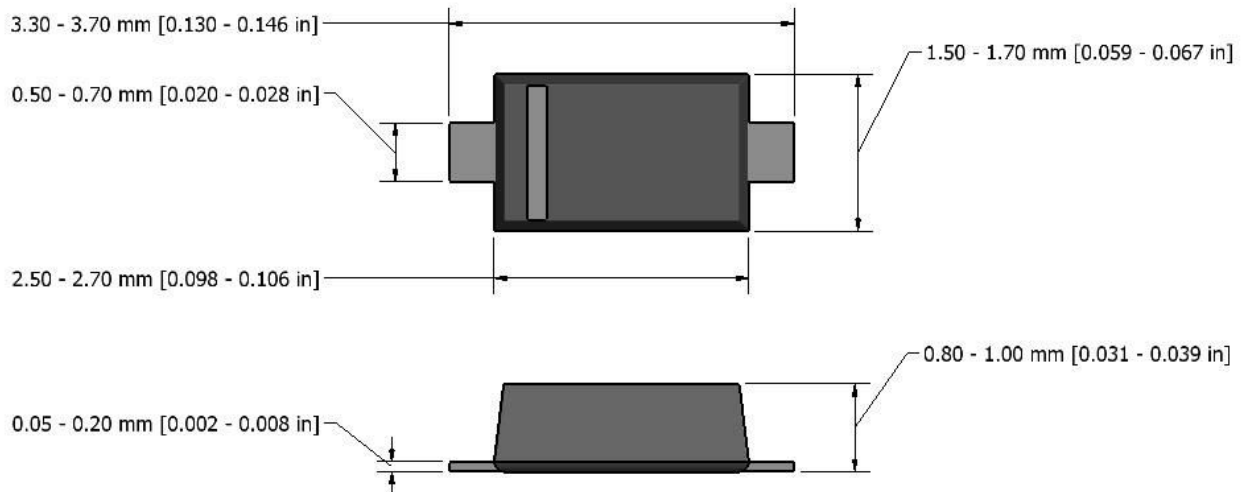


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**Flat Lead SOD-123 Package Outline**

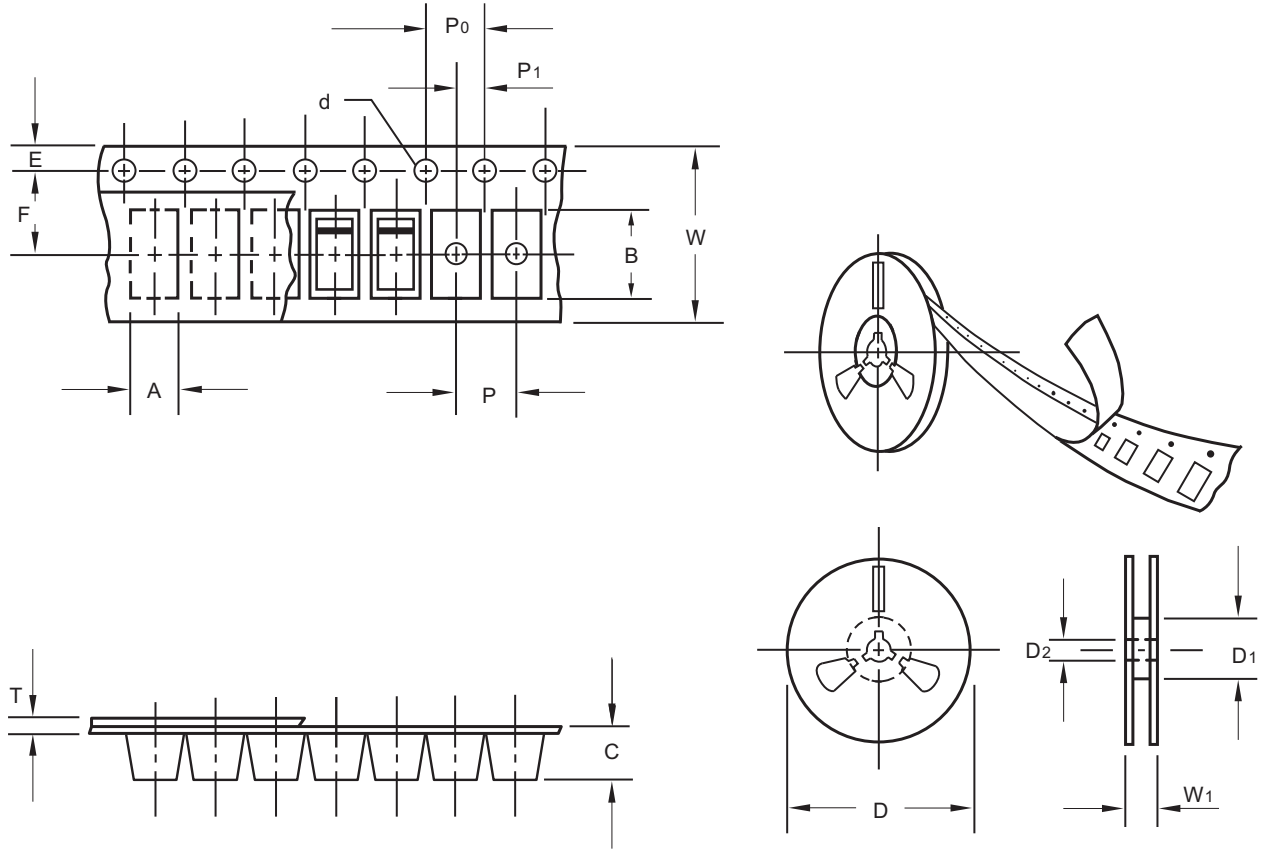


**Note:** Dimensions are exclusive of Burrs, Mold Flash & Tie Bar extrusions.

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**Packing information**



unit:mm

Item	Symbol	Tolerance	SOD-123FL
Carrier width	A	0.1	2.00
Carrier length	B	0.1	3.85
Carrier depth	C	0.1	1.10
Sprocket hole	d	0.1	1.50
13" Reel outside diameter	D	2.0	-
13" Reel inner diameter	D1	min	-
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	3.50
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	8.00
Reel width	W1	1.0	11.40

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

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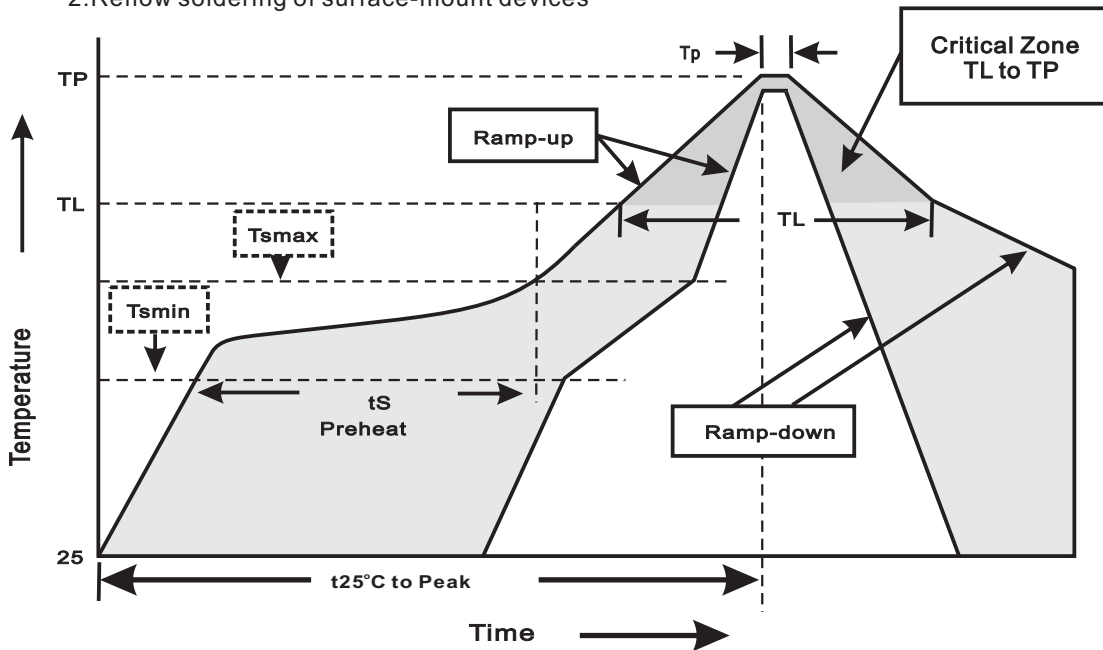
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**Reel packing**

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)	APPROX. GROSS WEIGHT (kg)
SOD-123	7"	3,000	4.0	30,000	183*183*123	178	382*262*387	240,000	9.5

**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(TL to TP)	<3°C/sec
Preheat -Temperature Min(Tsmin) -Temperature Max(Tsmax) -Time(min to max)(ts)	150°C 200°C 60~120sec
Tsmax to TL -Ramp-upRate	<3°C/sec
Time maintained above: -Temperature(TL) -Time(tL)	217°C 60~260sec
Peak Temperature(TP)	255°C-0/+5°C
Time within 5°C of actual Peak Temperature(tp)	10~30sec
Ramp-down Rate	<6°C/sec
Time 25°C to Peak Temperature	<6minutes

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