

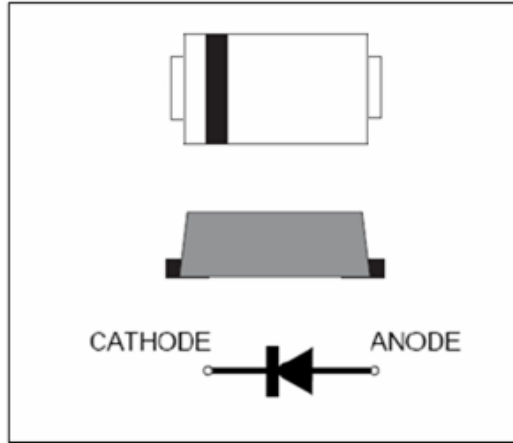
LMBR220FT1G thru LMBR2200FT1G

Schottky Barrier Rectifiers

Reverse Voltage 20 to 200V Forward Current 2.0A

FEATURES

- * Plastic package has Underwriters Laboratory Flammability Classification 94V-0
- * Low power loss, high efficiency
- * For use in low voltage high frequency inverters, free wheeling, and polarity protection applications
- * Guardring for over voltage protection
- * High temperature soldering guaranteed: 260°C/10 seconds at terminals



We declare that the material of product is Halogen free (green epoxy compound)

Mechanical Data

Case: SOD123-FL/MINI SMA

molded plastic over sky die

Terminals: Plated leads, solderable per MIL-STD-750, Method 2026

Polarity: Color band denotes cathode end

Mounting Position: Any

Weight: 0.0155 g

Handling precaution: None

1. Electrical Characteristic

Maximum & Thermal Characteristics Ratings at 25°C ambient temperature unless otherwise specified.

| Parameter Symbol | symbol | LMBR 220FT1G | LMBR 230FT1G | LMBR 240FT1G | LMBR 250FT1G | LMBR 260FT1G | LMBR 280FT1G | LMBR 2100FT1G | LMBR 2150FT1G | LMBR 2200FT1G | Unit |
|--|-----------------|--------------|--------------|--------------|--------------|--------------|--------------|---------------|---------------|---------------|--------------------|
| device marking code | | 22 | 23 | 24 | 25 | 26 | 28 | 210 | 215 | 220 | |
| Maximum repetitive peak reverse voltage | V_{RRM} | 20 | 30 | 40 | 50 | 60 | 80 | 100 | 150 | 200 | V |
| Maximum RMS voltage | V_{RMS} | 14 | 21 | 28 | 35 | 42 | 56 | 70 | 105 | 140 | V |
| Maximum DC blocking voltage | V_{DC} | 20 | 30 | 40 | 50 | 60 | 80 | 100 | 150 | 200 | V |
| Maximum average forward rectified current at $T_C = 75^\circ\text{C}$ | $I_{F(AV)}$ | 2.0 | | | | | | | | | A |
| Peak forward surge current 8.3ms single half sine-wave superimposed on rated load (JEDEC Method) | I_{FSM} | 50 | | | | | | | | | A |
| Typical thermal resistance (Note 1) | $R_{\theta JA}$ | 85 | | | | | | | | | $^\circ\text{C/W}$ |
| Operating junction temperature range | T_J | -55 to +150 | | | | | | | | | $^\circ\text{C}$ |
| storage temperature range | T_{STG} | -65 to +175 | | | | | | | | | $^\circ\text{C}$ |

Electrical Characteristics Ratings at 25°C ambient temperature unless otherwise specified.

| Parameter Symbol | symbol | LMBR 220FT1G | LMBR 230FT1G | LMBR 240FT1G | LMBR 250FT1G | LMBR 260FT1G | LMBR 280FT1G | LMBR 2100FT1G | LMBR 2150FT1G | LMBR 2200FT1G | Unit |
|---|--------|--------------|--------------|--------------|--------------|--------------|--------------|---------------|---------------|---------------|------|
| Maximum instantaneous forward voltage at 2.0A | V_F | 0.50 | | | 0.70 | | 0.85 | | 0.9 | 0.92 | V |
| Maximum DC reverse current at rated DC blocking voltage $T_A = 25^\circ\text{C}$ $T_j = 100^\circ\text{C}$ | I_R | 0.5 20 | | | | | | | | | mA |
| Typical junction capacitance at 4.0V, 1MHz | C_J | 160 | | | | | | | | | PF |

NOTES:

1. 8.0mm² (.013mm thick) land areas

LMBR220FT1G thru LMBR2200FT1G

2. Ratings and Characteristic Curves (TA = 25°C unless otherwise noted)

Fig. 1 - Forward Current Derating Curve

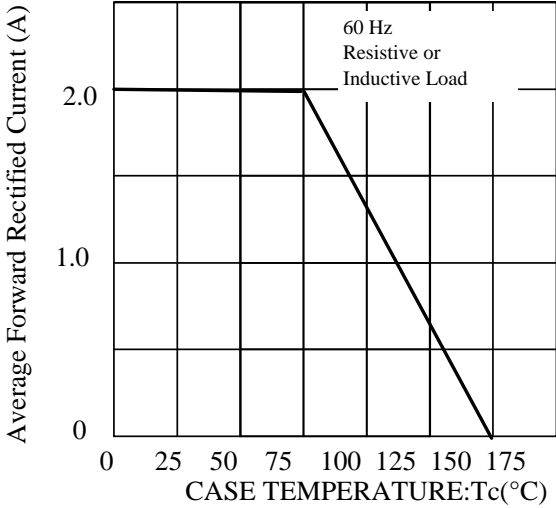


Fig. 2 - Maximum Non-repetitive Peak Forward Surge Current

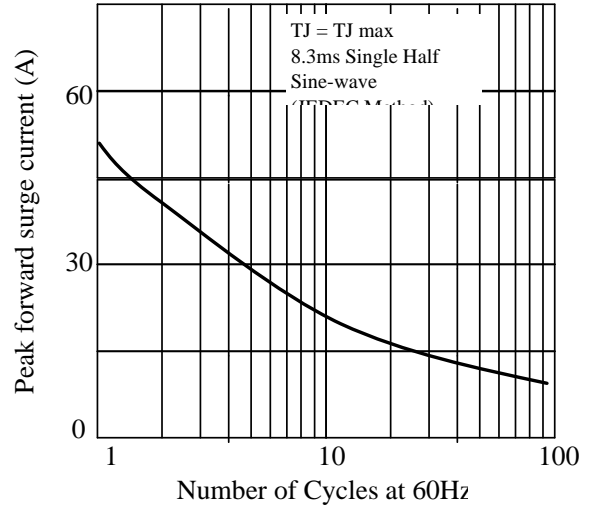


Fig 3. - Typical Instantaneous Forward Characteristics

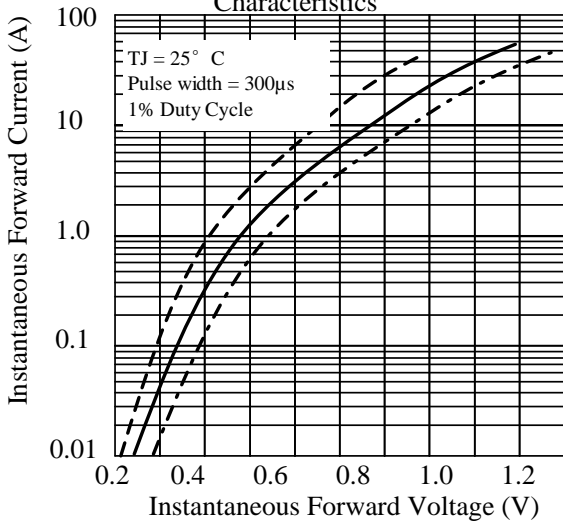


Fig 4. - Typical Reverse Characteristics

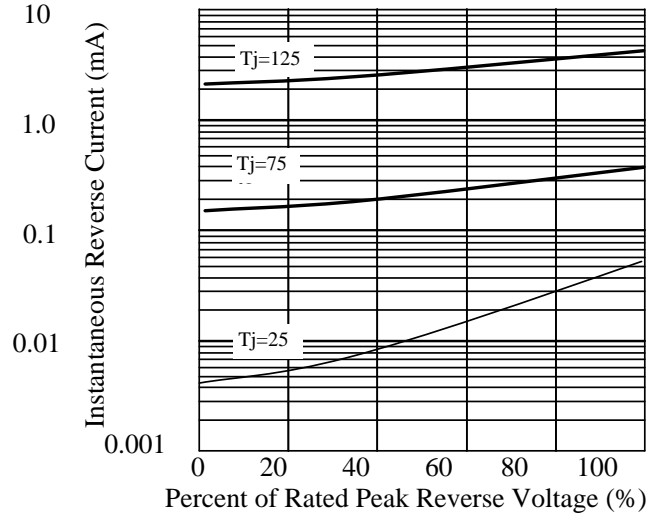


Fig 5. - typical transient thermal impedance

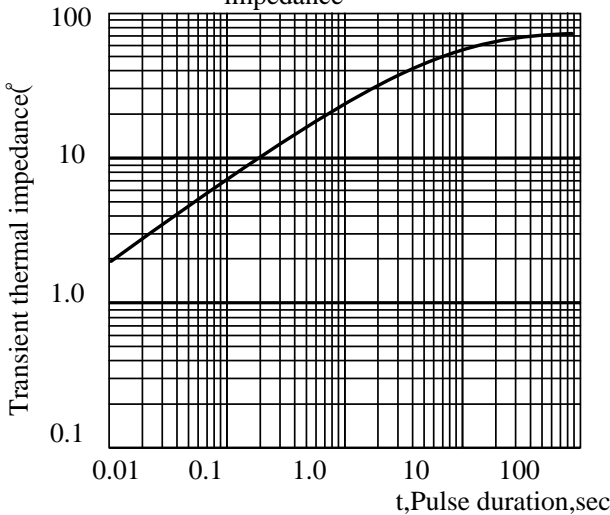
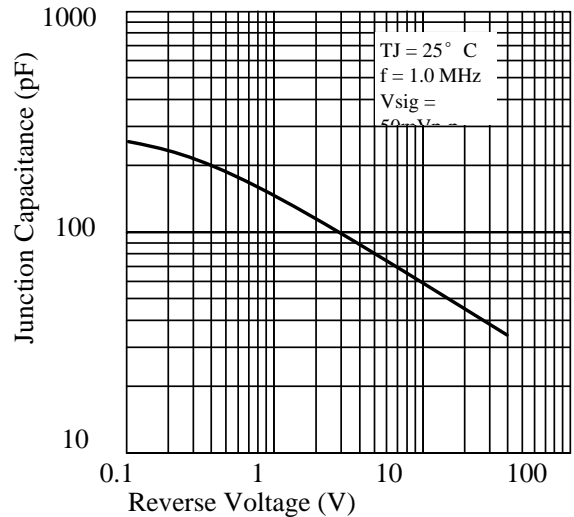
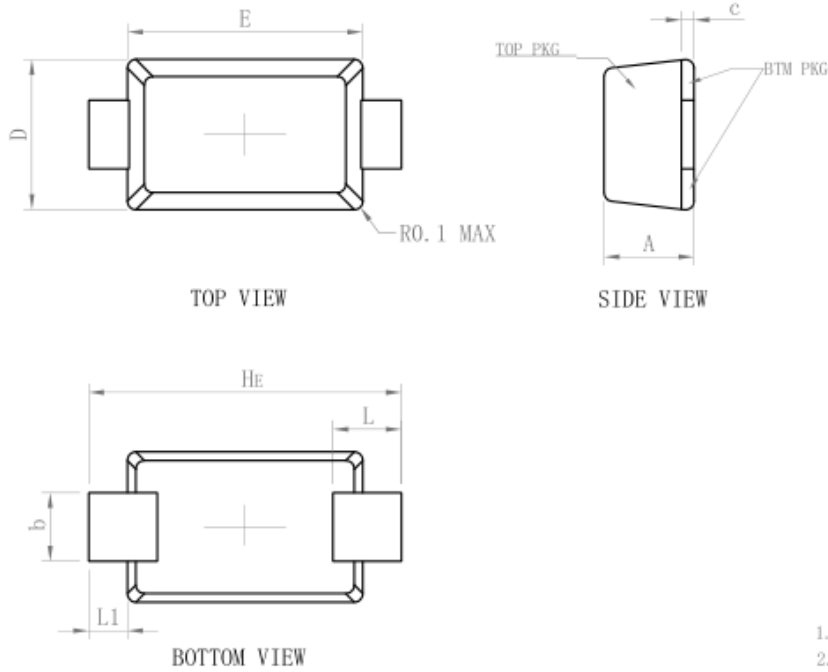


Fig 6. - Typical Junction Capacitance



LMBR220FT1G thru LMBR2200FT1G

3. dimension:



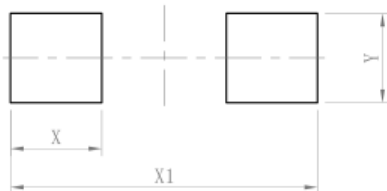
| SOD123FL | | | |
|----------------------|----------|------|------|
| DIM | MIN | NOR | MAX |
| A | 0.90 | 1.05 | 1.15 |
| b | 0.75 | 0.80 | 0.95 |
| L | 0.80REF. | | |
| E | 2.60 | 2.75 | 2.90 |
| D | 1.60 | 1.75 | 1.90 |
| He | 3.50 | 3.65 | 3.80 |
| c | 0.12 | 0.15 | 0.22 |
| L1 | 0.45REF. | | |
| All Dimensions in mm | | | |

GENERAL NOTES

1. Top package surface finish Ra0.4±0.2um
2. Bottom package surface finish Ra0.7±0.2um
3. Side package surface finish Ra0.4±0.2um

Suggested solder pad layout

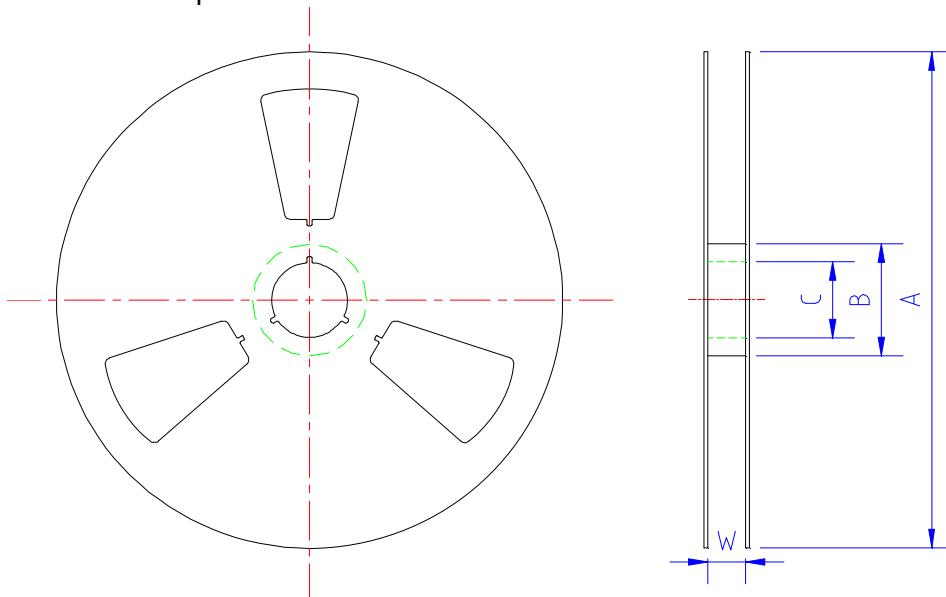
SOD123FL



| SOD123FL | |
|----------|------|
| DIM | (mm) |
| X | 1.25 |
| Y | 1.22 |
| X1 | 4.20 |

5.1 、 SMD Packing Reel Spec & Packing Quantity

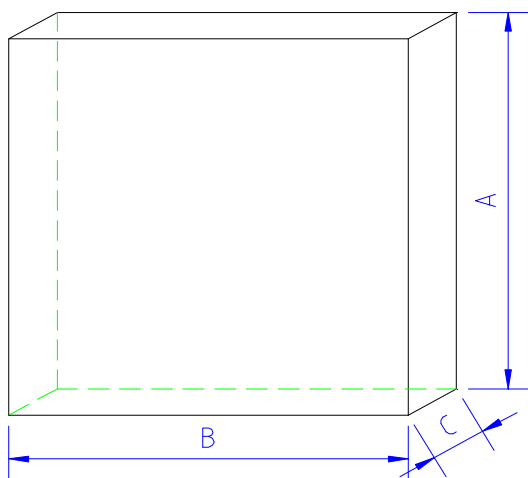
5.1.1 Reel Packing
A. Reel Spec



unit: mm

| SPEC | A | B | C | W | Quantity/Reel |
|------------------|-----------|----------|----------|----------|---------------|
| SMA 7" reel | 177.0±2.0 | 54.0±0.5 | 13.0±0.5 | 13.2±0.2 | 2K |
| SMA13" reel | 330.0±2.0 | 75.0±0.5 | 13.0±0.5 | 13.2±0.2 | 5K |
| SMA-FL13" reel | 330.0±2.0 | 75.0±0.5 | 13.0±0.5 | 13.2±0.2 | 5K |
| TO277 13" reel | 330.0±2.0 | 75.0±0.5 | 13.0±0.5 | 13.2±0.2 | 5K |
| SMB13" reel | 330.0±2.0 | 75.0±0.5 | 13.0±0.5 | 13.5±0.5 | 3K |
| SMC13" reel | 330.0±2.0 | 75.0±0.5 | 13.0±0.5 | 17.0±0.5 | 3K |
| SOD123FL 7" reel | 177.0±2.0 | 50.0±0.5 | 13.0±0.5 | 9.4±1.5 | 3K |
| SOD323HE 7" reel | 177.0±2.0 | 50.0±0.5 | 13.0±0.5 | 9.4±1.5 | 3K |
| SMB-FL 13" reel | 330.0±2.0 | 75.0±0.5 | 13.0±0.5 | 13.2±0.2 | 5K |

B. 13" reel packing box



unit: mm

| size | A | B | C |
|------|---------|---------|--------|
| | 335±5.0 | 335±2.0 | 40±1.0 |

as per above packing

| Spec | Q' ty/Box |
|-----------------|-----------|
| SMA13" reel | 10K |
| SMB13" reel | 6K |
| SMC13" reel | 6K |
| TO277 13" reel | 10K |
| SMB-FL 13" reel | 10K |

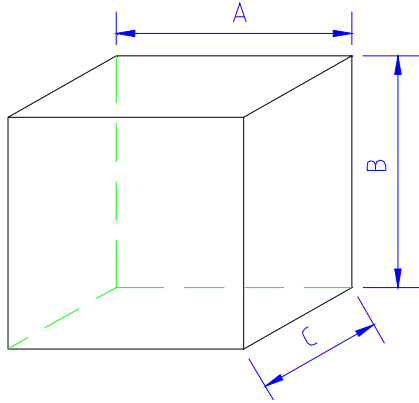
Title:
Power Diode SMD Package Packing Spec

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C. 7" reel packing box



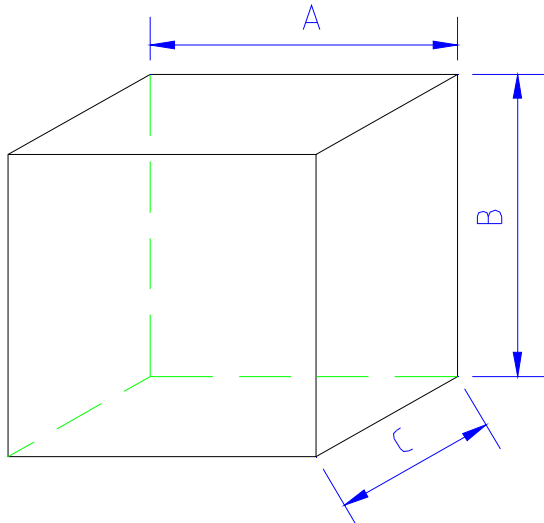
unit: mm

| | A | B | C |
|----------------------|---------|---------|---------|
| SMA/SMA-FL | 188±2.0 | 188±2.0 | 138±2.0 |
| SOD123FL SOD323HE | 186±2.0 | 139±2.0 | 185±2.0 |

as per above packing

| | Q' ty/Box |
|------------|-----------|
| SMA/SMA-FL | 16K |
| SOD123FL | 30K |
| SOD323HE | 30K |

D. reel packing carton



unit: mm

| | A | B | C |
|------|---------|---------|---------|
| size | 350±2.0 | 340±2.0 | 350±2.0 |

as per above packing

| Spec | Q' ty/Carton |
|--------------------|--------------|
| SMA/SMA-FL 7" reel | 80K |
| SMA13"reel | 80K |
| SMB13"reel | 48K |
| SMC13"reel | 36K |
| SMA-FL13"reel | 80K |
| TO277 13" reel | 80K |
| SMB-FL 13" reel | 80K |

unit: mm

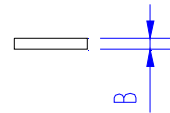
| | A | B | C |
|----------------------|---------|---------|---------|
| SOD123FL SOD323HE | 455±2.0 | 400±2.0 | 410±2.0 |

as per above packing

| Spec | Q' ty/Carton |
|-------------------|--------------|
| SOD123-FL 7" reel | 360K |
| SOD323HE 7" reel | 360K |

5.1.2 Tape Spec

A. Cover Tape

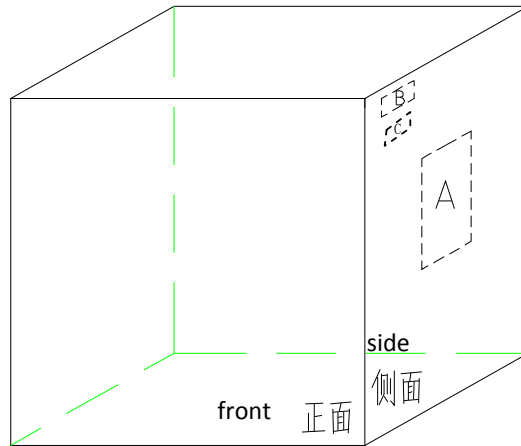
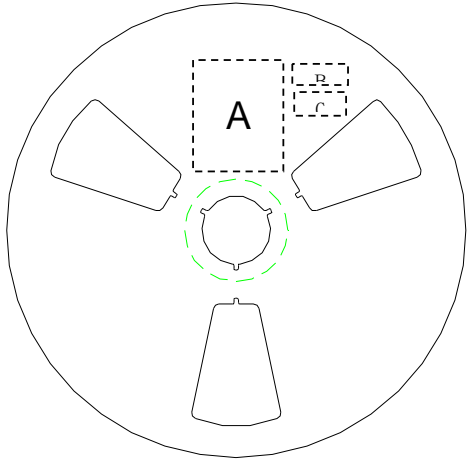


unit: mm

| | A | B |
|--|------------|-------------|
| SMA /SMA-FL SMB-FL /SMB /TO277 | 9.5±0.10 | 0.062±0.007 |
| SMC | 13.30±0.10 | |
| SOD123FL SOD323HE | 5.4±0.10 | |

5.2、SMD Power Diode General Packing Spec

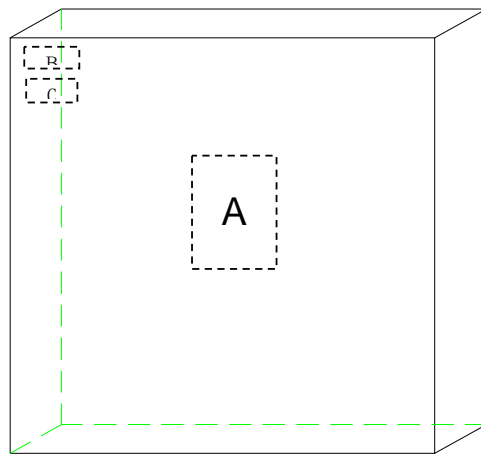
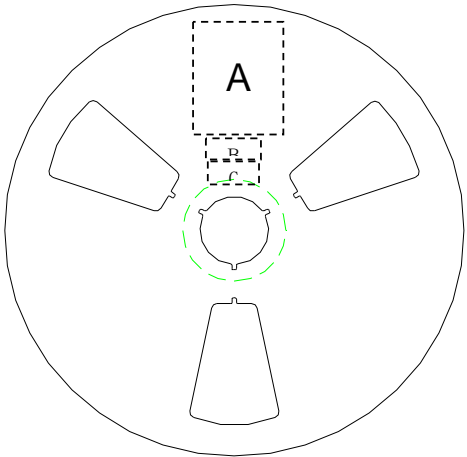
A. 7" reel all labels will be at cathode side of reel ;



A:LRC label;

B:Environment Label C:Halide free label

B. 13" reel



A:LRC label;

B:Environment Labe C:Halide free label

C. Tape lead: face anode side of the reel, upper side is the tape lead position. All labels are at cathode side of the reel.



标题:

Power Diode SMD Package Packing Spec

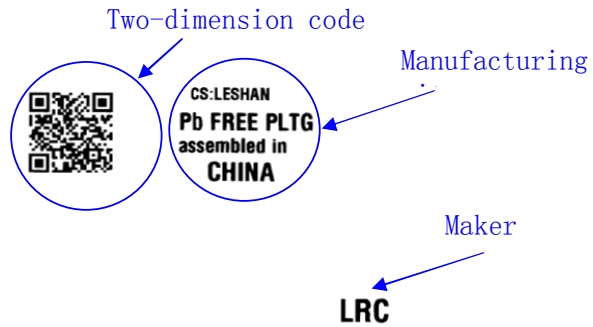
DOC NO.: WI-258

Version: 5 Modification: 0

Page: 6

C. Label Content :
LRC Label

P/N → (1P) LPN: SM140A
Lot No. → (1T) LOT: 140106049X
Date code → (9D) DTE: 1403
Quantity → (Q) QTY: 10000



lot: 140106049X: 140106---2014/1/6; 049----lot number:49; X: product code

Environment Label



Halide-free Label



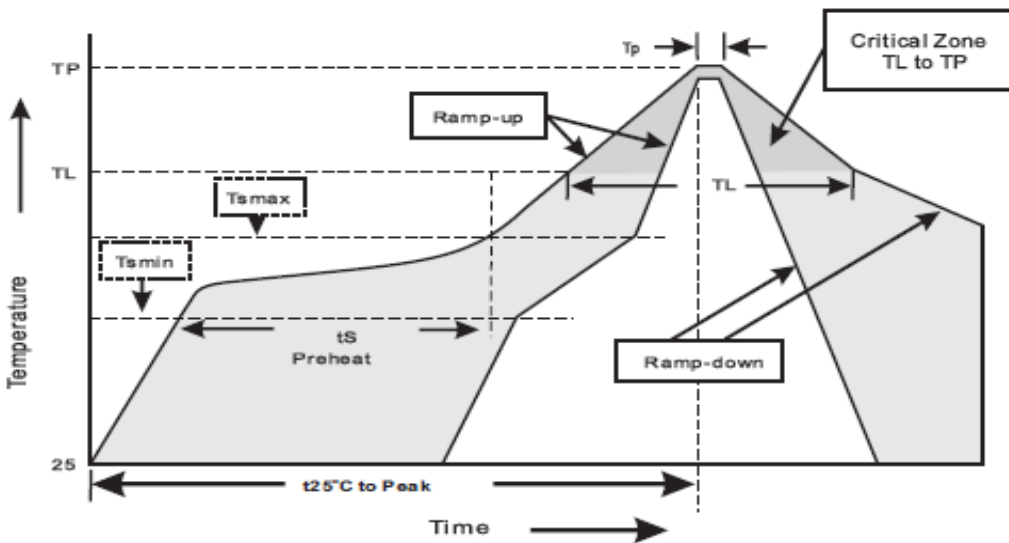
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Reel packing

| PACKAGE | REEL SIZE | REEL (PCS) | COMPONENT SPACING (mm) | BOX (pcs) | INNER BOX (mm) | REEL DIA. (mm) | CARTON SIZE (mm) | CARTON (PCS) | APPOX. GROSS WEIGHT (kg) |
|-----------|-----------|------------|------------------------|-----------|----------------|----------------|------------------|--------------|--------------------------|
| SOD123-FL | 7" | 3,000 | 4.0 | 30,000 | 183*183*123 | 178 | 382*262*387 | 240,000 | 8.7 |

5.Suggested thermal profile for soldering process

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



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-up Rate | <3sec |
| Time maintained above: - Temperature (T _L) - Time(t _L) | 217°C 60-260sec |
| Peak Temperature(T _P) | 255 -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 |

LMBR220FT1G thru LMBR2200FT1G

6.High reliability test capabilities

| Item Test | Condition | Reference |
|-------------------------------|--|----------------------------|
| Solder Resistance | at 260±5°C for 10±2sec immerse body into solder 1/16" ± 1/32" | MIL-STD-750D METHOD-2031 |
| Solderability | at 245±5°C for 5 sec | MIL-STD-202F METHOD-208 |
| High Temperature Reverse Bias | V _R =80% rate at T _j =150°C for 168hrs | MIL-STD-750D METHOD-1038 |
| Forward Operation Life | Rated average rectifier current T _A =25°C for 500hrs | MIL-STD-750D METHOD-1027 |
| Intermittent Operation Life | T _A =25°C , I _F =I _o On state:power on for 5 min. Off state:power off for 5 min. on and off for 500 cycles | MIL-STD-750D METHOD-1036 |
| Pressure Cooker | 15P _{SIG} at T _A =121°C for 4hrs | JESD22-A102 |
| Temperature Cycling | -55°C to +125°C dwelled for 30 min. and transferred for 5min. Total 10 cycles | MIL-STD-750D METHOD-1051 |
| Thermal Shock | 0°C for 5min. Rise to 100°C for 5min. Total 10 cycles | MIL-STD-750D METHOD-1056 |
| Forward Surge | 8.3ms single half sine-wave superimposed on rated load,one surge | MIL-STD-750D METHOD-4066-2 |
| Humidity | at T _A =85°C , RH=85% for 1000hrs | MIL-STD-750D METHOD-1021 |
| High Temperature Storage Life | at 175°C for 1000hrs | MIL-STD-750D METHOD-1031 |

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