

SODJ*****(C)**A-SH

SURFACE MOUNT TRANSIENT VOLTAGE SUPPRESSOR

200 Watt Peak Pulse Power

Features

- * For surface mounted applications in order to optimize board space
- * Low profile package
- * Excellent clamping capability
- * IEC61000-4-2 ESD 15kV Air,8kV contact compliance
- * Protects one I/O line
- * Lead-free parts meet RoHS requirements
- * Suffix "-SH" indicates Halogen-free part, ex.SODJ5.0A-SH.

Applications

- * Personal digital assistants (PDA)
- * Cellular handsets & Accessories
- * Portable devices
- * Portable instrumentation
- * Handhelds and notebooks
- * Digital cameras

Mechanical data

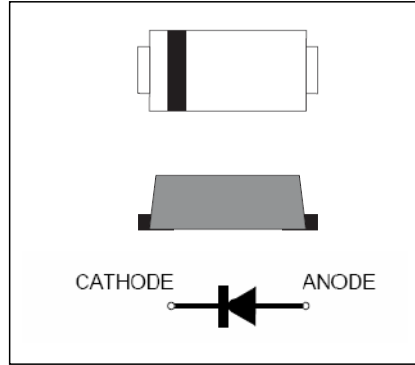
- * **Epoxy** : UL94-V0 rated flame retardant
- * **Case** : Molded plastic, SOD123-FL/MINI SMA
- * **Terminals** :Plated terminals, solderable per MIL-STD-750,Method 2026
- * **Polarity** : Indicated by cathode band; Bidirectional without color band.
- * **Mounting Position** : Any
- * **Weight** : Approximated 0.0155 gram

1.Maximum ratings and Electrical Characteristics(AT T =25 AoC unless otherwise noted)

| PARAMETER | SYMBOL | VALUE | UNITS |
|---|-------------|-------------|--------------------|
| Peak Power Dissipation at $T_A=25^{\circ}\text{C}$, $T_P=1\text{ms}$ (Note 1) | P_{PPM} | Minimum 200 | Watts |
| Steady State Power Dissipation at $T_C=75^{\circ}\text{C}$ (Note 2) | $P_{M(AV)}$ | 0.5 | Watts |
| Peak Forward Surge Current, 8.3ms Single Half Sine-Wave Superimposed on Rated Load(JECED Method) (Note 3) | I_{FSM} | 20 | Amps |
| Operating Temperature Range | T_J , | -55 to +150 | $^{\circ}\text{C}$ |
| Storage Temperature Range | T_{STG} | -55 to +175 | $^{\circ}\text{C}$ |

NOTES:

1. Non-repetitive current pulse, per Fig. 3 and derated above $T_A=25^{\circ}\text{C}$ per Fig. 2.
2. 8.0mm² (.013mm thick) land areas
3. 8.3ms single half sine-wave, duty cycle= 4 pulses per minutes maximum.



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

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| UNI-DIRECTIONAL PART NUMBER | Bidirectional-DIRECTIONAL PART NUMBER | REVERSE STAND-OFF VOLTAGE VRWM (V) | BREAKDOWN VOLTAGE VBR (V) MIN. @IT | BREAKDOWN VOLTAGE VBR (V) MAX. @IT | TEST CURRENT IT (mA) | MAXIMUM CLAMPING VOLTAGE @IPP VC (V) | REVERSE LEAKAGE @VRWM IR (uA) | Marking Code | |
|-----------------------------|---------------------------------------|------------------------------------|------------------------------------|------------------------------------|----------------------|--------------------------------------|-------------------------------|--------------|----|
| | | | | | | | | Uni | Bi |
| SODJ5.0A-SH | SODJ5.0CA-SH | 5 | 6.4 | 7 | 10 | 9.2 | 400 | KE | AE |
| SODJ6.0A-SH | SODJ6.0CA-SH | 6 | 6.67 | 7.37 | 10 | 10.3 | 400 | KG | AG |
| SODJ6.5A-SH | SODJ6.5CA-SH | 6.5 | 7.22 | 7.98 | 10 | 11.2 | 250 | KK | AK |
| SODJ7.0A-SH | SODJ7.0CA-SH | 7 | 7.78 | 8.6 | 10 | 12 | 100 | KM | AM |
| SODJ7.5A-SH | SODJ7.5CA-SH | 7.5 | 8.33 | 9.21 | 1 | 12.9 | 50 | KP | AP |
| SODJ8.0A-SH | SODJ8.0CA-SH | 8 | 8.89 | 9.83 | 1 | 13.6 | 25 | KR | AR |
| SODJ8.5A-SH | SODJ8.5CA-SH | 8.5 | 9.44 | 10.4 | 1 | 14.4 | 10 | KT | AT |
| SODJ9.0A-SH | SODJ9.0CA-SH | 9 | 10 | 11.1 | 1 | 15.4 | 5 | KV | AV |
| SODJ10A-SH | SODJ10CA-SH | 10 | 11.1 | 12.3 | 1 | 17 | 2.5 | KX | AX |
| SODJ11A-SH | SODJ11CA-SH | 11 | 12.2 | 13.5 | 1 | 18.2 | 2.5 | KZ | AZ |
| SODJ12A-SH | SODJ12CA-SH | 12 | 13.3 | 14.7 | 1 | 19.9 | 2.5 | LE | BE |
| SODJ13A-SH | SODJ13CA-SH | 13 | 14.4 | 15.9 | 1 | 21.5 | 1 | LG | BG |
| SODJ14A-SH | SODJ14CA-SH | 14 | 15.6 | 17.2 | 1 | 23.2 | 1 | LK | BK |
| SODJ15A-SH | SODJ15CA-SH | 15 | 16.7 | 18.5 | 1 | 24.4 | 1 | LM | BM |
| SODJ16A-SH | SODJ16CA-SH | 16 | 17.8 | 19.7 | 1 | 26 | 1 | LP | BP |
| SODJ17A-SH | SODJ17CA-SH | 17 | 18.9 | 20.9 | 1 | 27.6 | 1 | LR | BR |
| SODJ18A-SH | SODJ18CA-SH | 18 | 20 | 22.1 | 1 | 29.2 | 1 | LT | BT |
| SODJ20A-SH | SODJ20CA-SH | 20 | 22.2 | 24.5 | 1 | 32.4 | 1 | LV | BV |
| SODJ22A-SH | SODJ22CA-SH | 22 | 24.4 | 26.9 | 1 | 35.5 | 1 | LX | BZ |
| SODJ24A-SH | SODJ24CA-SH | 24 | 26.7 | 29.5 | 1 | 38.9 | 1 | LZ | BZ |
| SODJ26A-SH | SODJ26CA-SH | 26 | 28.9 | 31.9 | 1 | 42.1 | 1 | ME | CE |
| SODJ28A-SH | SODJ28CA-SH | 28 | 31.1 | 34.4 | 1 | 45.4 | 1 | MG | CG |
| SODJ30A-SH | SODJ30CA-SH | 30 | 33.3 | 36.8 | 1 | 48.4 | 1 | MK | CK |
| SODJ33A-SH | SODJ33CA-SH | 33 | 36.7 | 40.6 | 1 | 53.3 | 1 | MM | CM |
| SODJ36A-SH | SODJ36CA-SH | 36 | 40 | 44.2 | 1 | 58.1 | 1 | MP | CP |
| SODJ40A-SH | SODJ40CA-SH | 40 | 44.4 | 49.1 | 1 | 64.5 | 1 | MR | CR |
| SODJ43A-SH | SODJ43CA-SH | 43 | 47.8 | 52.8 | 1 | 69.4 | 1 | MT | CT |
| SODJ45A-SH | SODJ45CA-SH | 45 | 50 | 55.3 | 1 | 72.7 | 1 | MV | CV |
| SODJ48A-SH | SODJ48CA-SH | 48 | 53.3 | 58.9 | 1 | 77.4 | 1 | MX | CX |
| SODJ51A-SH | SODJ51CA-SH | 51 | 56.7 | 62.7 | 1 | 82.4 | 1 | MZ | CZ |
| SODJ54A-SH | SODJ54CA-SH | 54 | 60 | 66.3 | 1 | 87.1 | 1 | NE | DE |
| SODJ58A-SH | SODJ58CA-SH | 58 | 64.4 | 71.2 | 1 | 93.6 | 1 | NG | DG |
| SODJ60A-SH | SODJ60CA-SH | 60 | 66.7 | 73.7 | 1 | 96.8 | 1 | NK | DK |
| SODJ64A-SH | SODJ64CA-SH | 64 | 71.1 | 78.6 | 1 | 103 | 1 | NM | DM |
| SODJ70A-SH | SODJ70CA-SH | 70 | 77.8 | 86 | 1 | 113 | 1 | NP | DP |
| SODJ75A-SH | SODJ75CA-SH | 75 | 83.3 | 92.1 | 1 | 121 | 1 | NR | DR |
| SODJ78A-SH | SODJ78CA-SH | 78 | 86.7 | 95.8 | 1 | 126 | 1 | NT | DT |
| SODJ85A-SH | SODJ85CA-SH | 85 | 94.4 | 104 | 1 | 137 | 1 | NV | DV |
| SODJ90A-SH | SODJ90CA-SH | 90 | 100 | 111 | 1 | 146 | 1 | NX | DX |
| SODJ100A-SH | SODJ100CA-SH | 100 | 111 | 123 | 1 | 162 | 1 | NZ | DZ |
| SODJ110A-SH | SODJ110CA-SH | 110 | 122 | 135 | 1 | 177 | 1 | PE | EE |
| SODJ120A-SH | SODJ120CA-SH | 120 | 133 | 147 | 1 | 193 | 1 | PG | EG |
| SODJ130A-SH | SODJ130CA-SH | 130 | 144 | 159 | 1 | 209 | 1 | PK | EK |
| SODJ150A-SH | SODJ150CA-SH | 150 | 167 | 185 | 1 | 243 | 1 | PM | EM |
| SODJ160A-SH | SODJ160CA-SH | 160 | 178 | 197 | 1 | 259 | 1 | PP | EP |
| SODJ170A-SH | SODJ170CA-SH | 170 | 189 | 209 | 1 | 275 | 1 | PR | ER |

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

Fig. 1-Peak Pulse Power Rating Curve

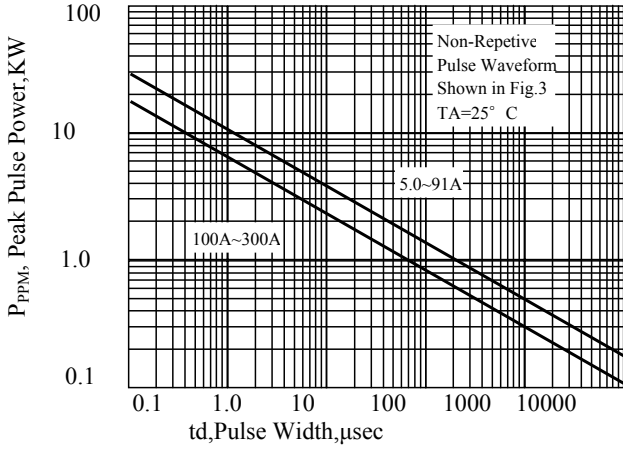


Fig. 2-Power Derating Curve

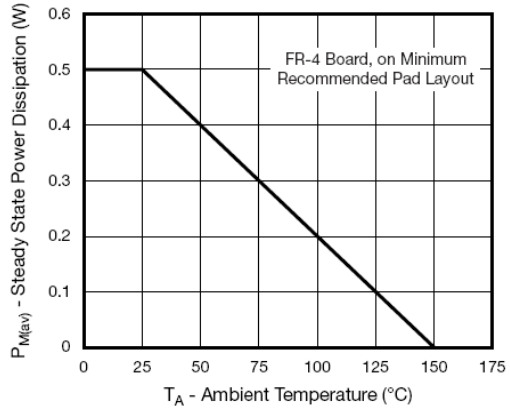


Fig. 3-Pulse Waveform

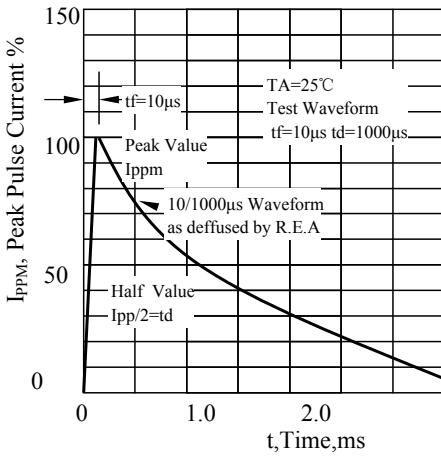


Fig. 4-Typical Junction Capacitance Unidirectional

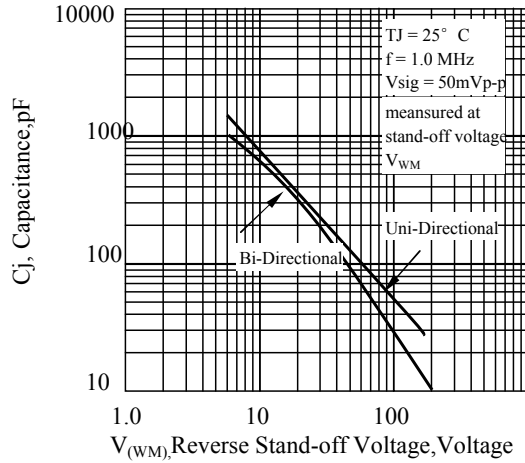


Fig 5. - typical transient thermal impedance

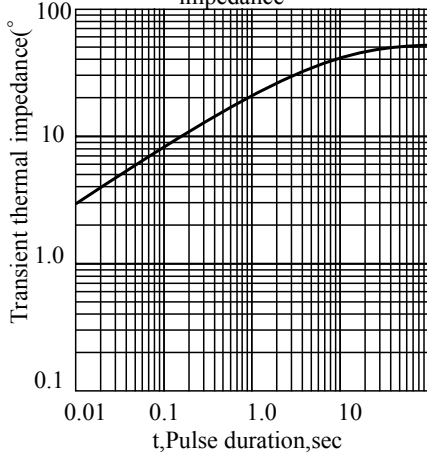
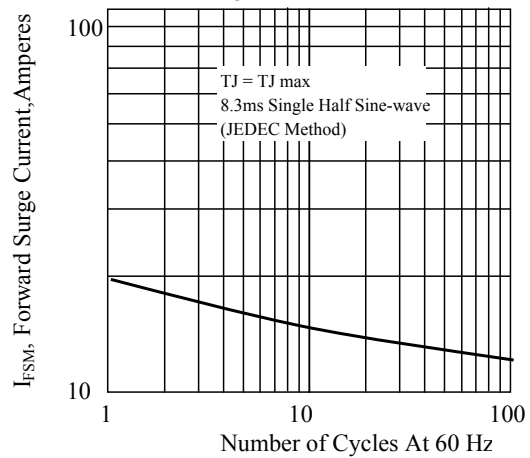


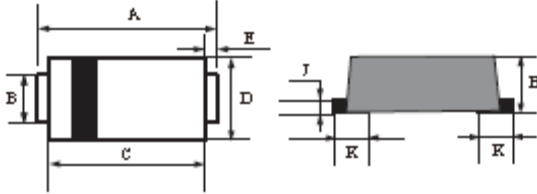
Fig. 6-Maximum Non-Repetitive Peak Forward Surge Current Unidirectional



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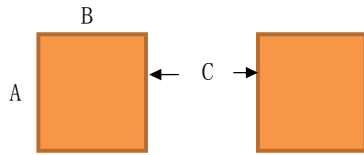
3. dimension:

SOD123-FL



| DIM | MILLIMETERS | | INCHES | |
|-----|-------------|------|----------|-------|
| | MIN | MAX | MIN | MAX |
| A | 3.5 | 3.9 | 0.138 | 0.159 |
| B | 0.75 | 0.95 | 0.029 | 0.037 |
| C | 2.6 | 3.0 | 0.103 | 0.119 |
| D | 1.6 | 2.0 | 0.063 | 0.079 |
| E | 0.45Typ | | 0.018Typ | |
| H | 0.9 | 1.2 | 0.036 | 0.047 |
| J | 0.12 | 0.22 | 0.005 | 0.009 |
| K | 0.8Typ | | 0.032Typ | |

Suggested solder pad layout

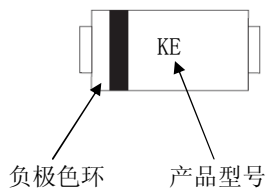


Dimensions in inches and (millimeters)

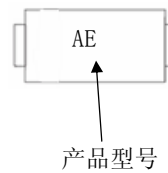
| PACKAGE | A | B | C |
|-----------|-------------|-------------|-------------|
| SOD123-FL | 0.044(1.10) | 0.040(1.00) | 0.079(2.00) |

Marking:

Typical: **SODJ5.0A-SH**



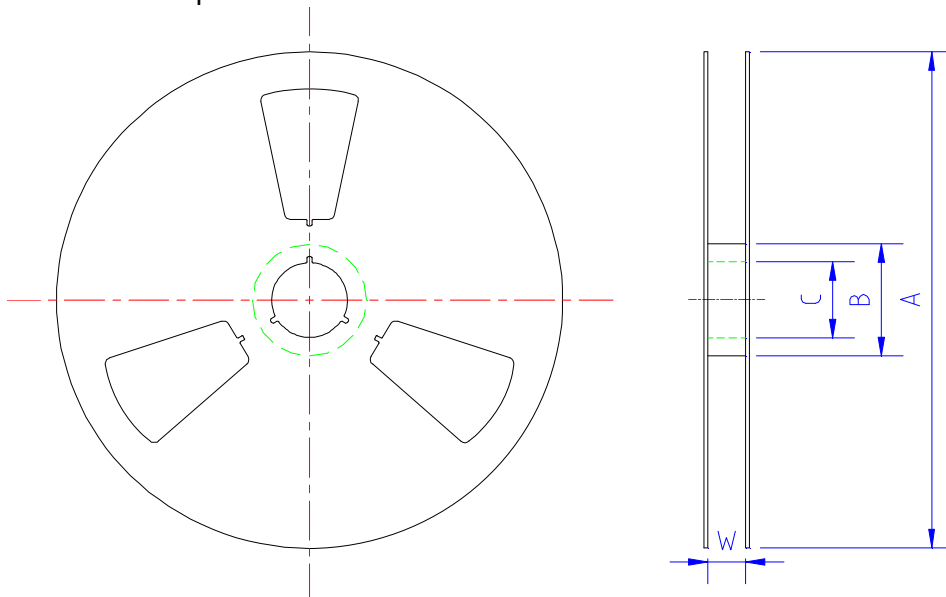
SODJ5.0CA-SH



5.1 、 SMD Packing Reel Spec & Packing Quantity

5.1.1 Reel Packing

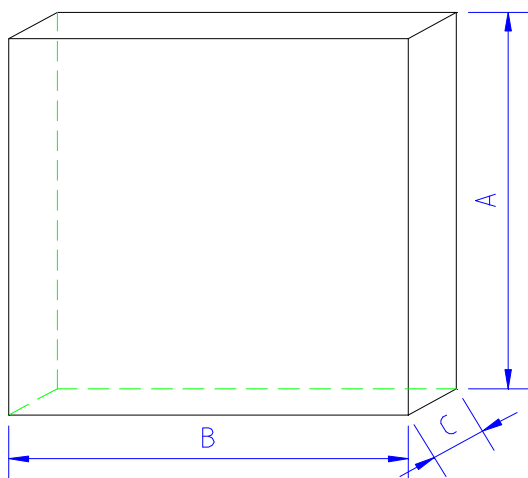
A. Reel Spec



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 |
| 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



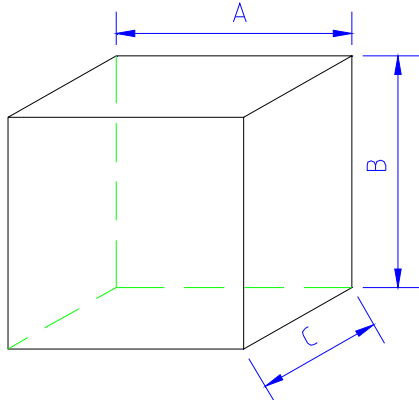
unit: mm

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

as per above packing

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

C. 7" reel packing box



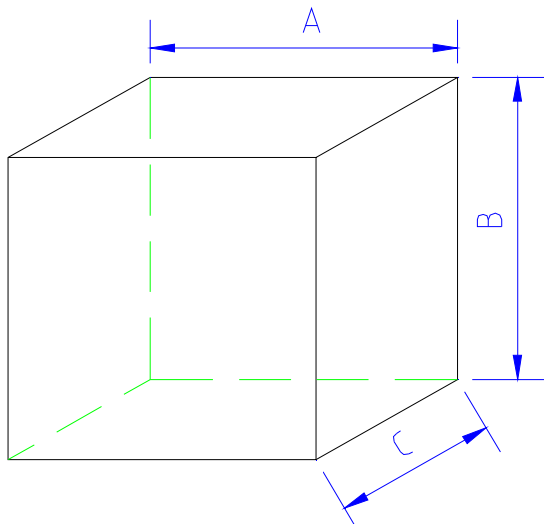
unit: mm

| | 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 |
| 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 |

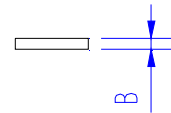
5.1.2 Tape Spec

A. Cover Tape



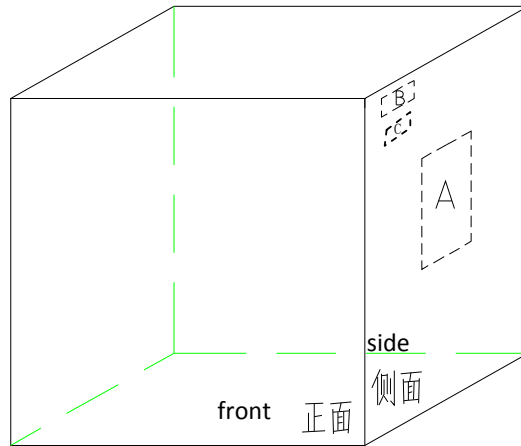
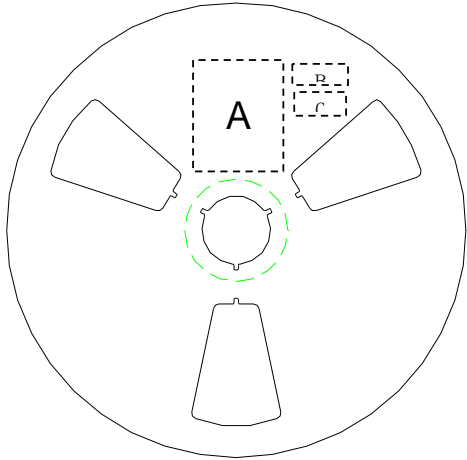
unit: mm

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



5.2、SMD Power Diode General Packing Spec

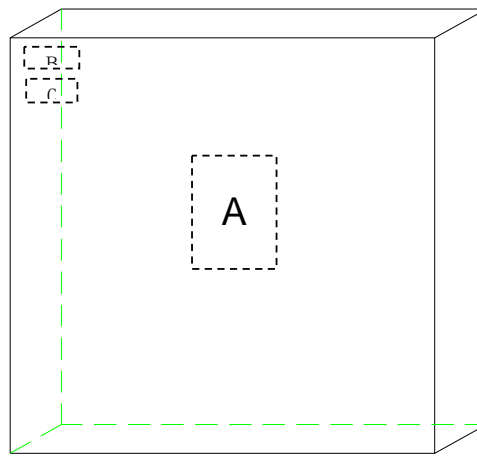
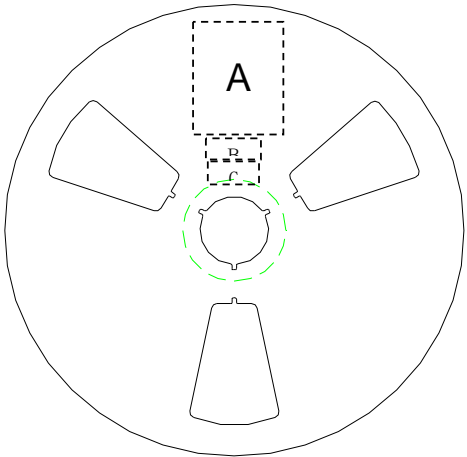
A. 7" reel all labels will be at cathode side of reel ;



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

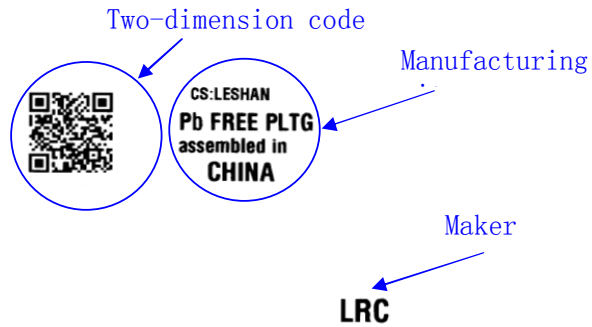
DOC NO.: WI-258

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



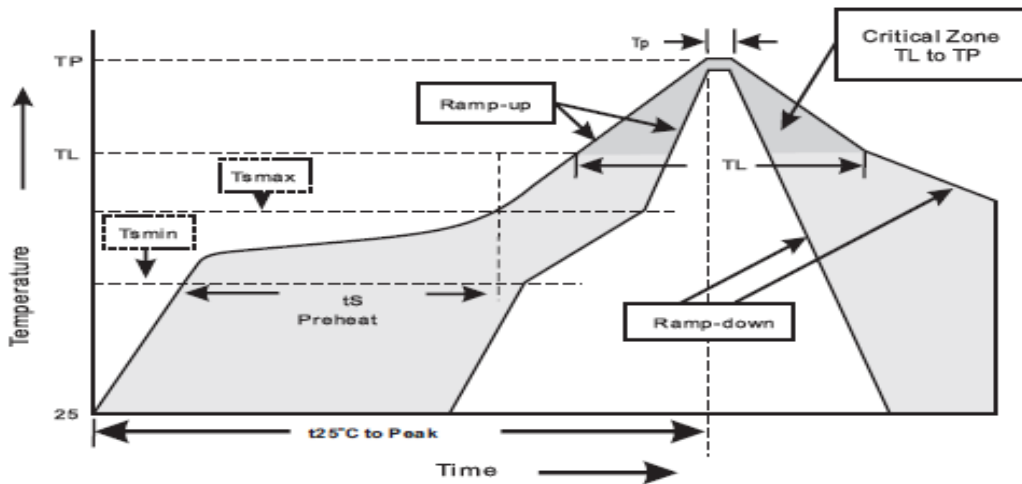
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Reel packing

| PACKAGE | REEL SIZE | REEL (PCS) | COMPONENT SPACING (mm) | BOX (pcs) | INNER BOX (mm) | REEL DIA. (mm) | CARTON SIZE (mm) | CARTON (PCS) | APPROX. 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}) | 150°C |
| - Temperature Max(T _{smax}) | 200°C |
| - Time(min to max)(t _s) | 60~120sec |
| T _{smax} to T _L | |
| - Ramp-up Rate | <3sec |
| Time maintained above: | |
| - Temperature (T _L) | 217°C |
| - Time(t _L) | 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 |

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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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7. Update Record

| 版次 | 更新记录 | 更新作者 | 更新日期 |
|----|------------------------------|------|------------|
| 1 | 第一版 | 周杰 | 2012.12.12 |
| 2 | 因为所有SOD123系列均为无卤塑料，所以取消印字下划线 | 周杰 | 2013.01.04 |
| 3 | 将封装SOD-123S修正为SOD123-FL | 周杰 | 2013.03.20 |
| 4 | 增加双向印字说明。和焊板尺寸标注 | 周杰 | 2013.09.11 |