

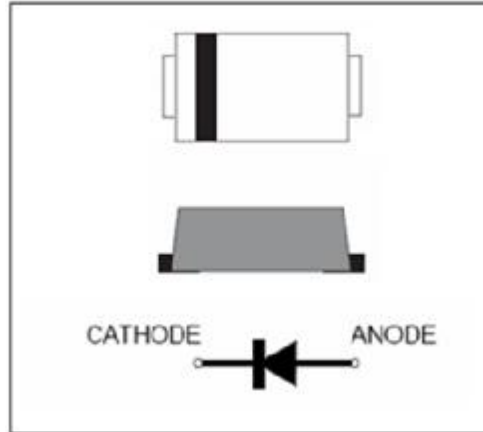
# LMBR120ET1G thru LMBR1200ET1G

## Schottky Barrier Rectifiers

Reverse Voltage 20 to 200V Forward Current 1.0A

### 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



### Mechanical Data

**Case:** SOD-323HE

molded plastic over sky die

**Terminals:** Tin Plated, solderable per

MIL-STD-750, Method 2026

**Polarity:** Color band denotes cathode end

**Mounting Position:** Any

**Weight:** 0.011 g

**Handling precaution:** None

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

### 1. Electrical Characteristic

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

Parameter Symbol	symbol	LMBR 120ET1G	LMBR 130ET1G	LMBR 140ET1G	LMBR 150ET1G	LMBR 160ET1G	LMBR 180ET1G	LMBR 1100ET1G	LMBR 1150ET1G	LMBR 1200ET1G	Unit
device marking code		12	13	14	15	16	18	110	115	120	
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 TC = 75°C	$I_{F(AV)}$	1.0									A
Peak forward surge current 8.3ms single half sine-wave superimposed on rated load (JEDEC Method)	$I_{FSM}$	22									A
Typical thermal resistance (Note 1)	$R_{\theta JA}$ $R_{\theta JL}$	220 50									°C/W
Operating junction temperature range	$T_J$	-55 to +150									°C
storage temperature range	$T_{STG}$	-65 to +150									°C

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

Parameter Symbol	symbol	LMBR 120ET1G	LMBR 130ET1G	LMBR 140ET1G	LMBR 150ET1G	LMBR 160ET1G	LMBR 180ET1G	LMBR 1100ET1G	LMBR 1150ET1G	LMBR 1200ET1G	Unit
Maximum instantaneous forward voltage at ( $I_F = 0.7$ A, $T_J = 25^\circ\text{C}$ ) ( $I_F = 1.0$ A, $T_J = 25^\circ\text{C}$ )	$V_F$	0.48 0.55			0.7		0.85		0.9	0.92	V
Maximum DC reverse current at rated DC blocking voltage $T_A = 25^\circ\text{C}$ $T_J = 125^\circ\text{C}$	$I_R$	0.02 10									mA
Typical junction capacitance at 4.0V, 1MHz	$C_J$	160									PF

NOTES:

1. 8.0mm<sup>2</sup> (.013mm thick) land areas

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

Fig. 1 - Forward Current Derating Curve

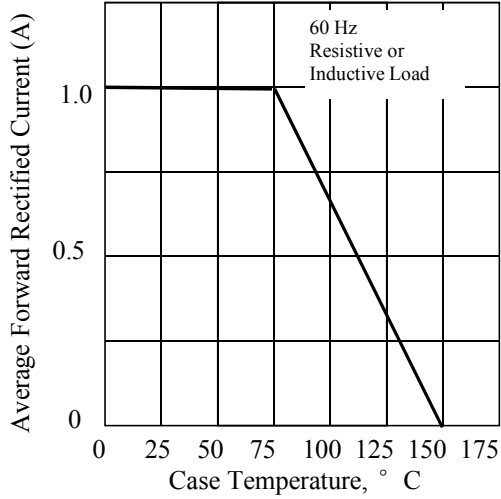


Fig. 2 - Maximum Non-repetitive Peak Forward Surge Current

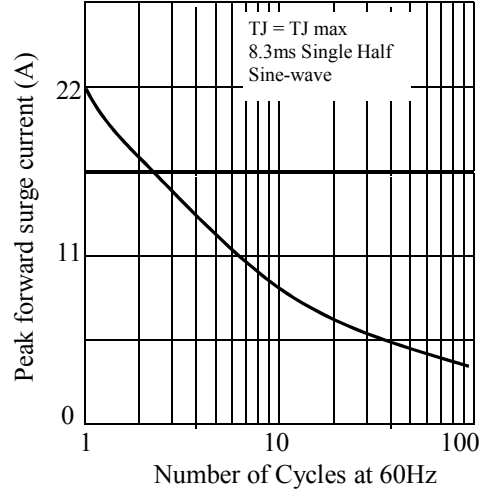


Fig 3. - Typical Instantaneous Forward Characteristics

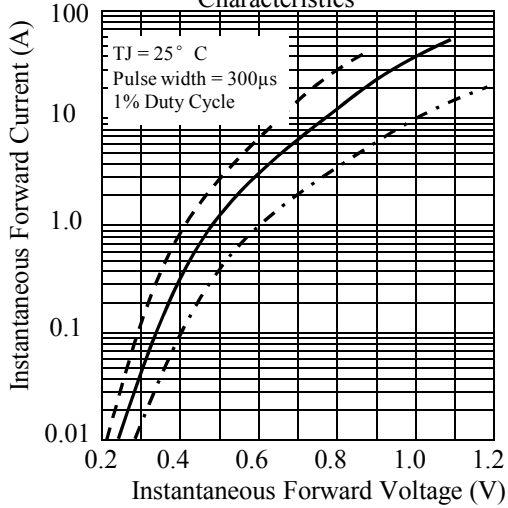


Fig 4. - Typical Reverse Characteristics

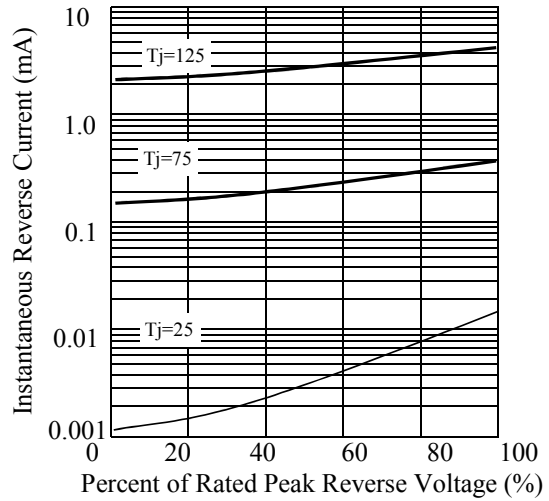


Fig 5. - typical transient thermal impedance

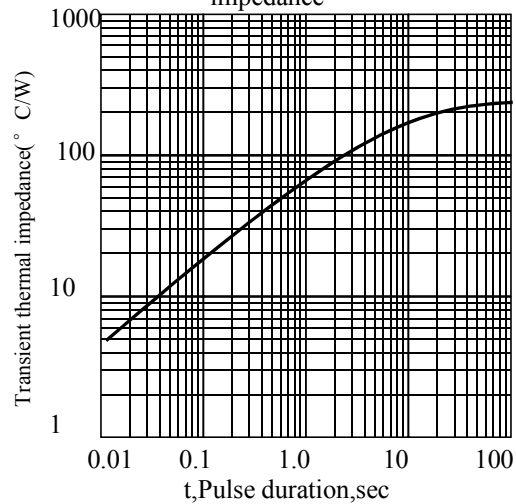
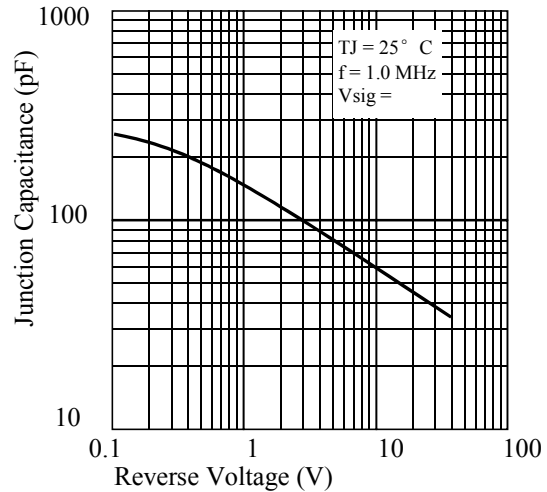


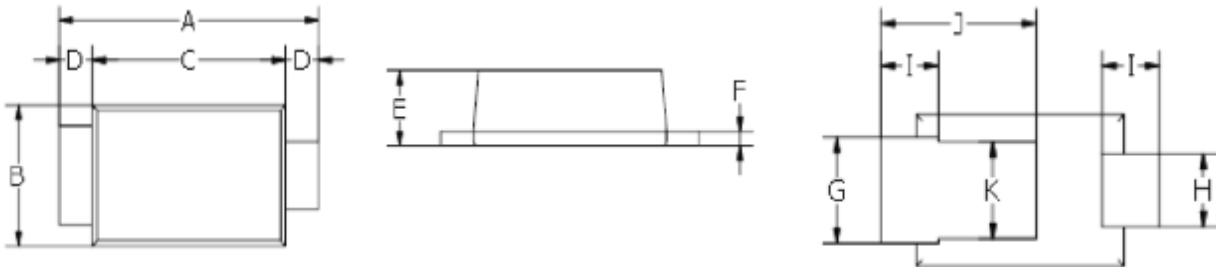
Fig 6. - Typical Junction Capacitance



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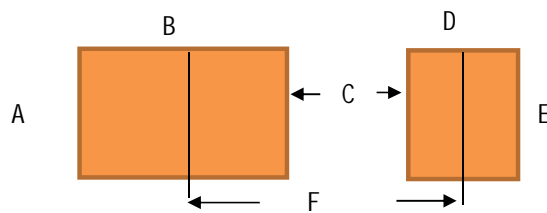
### 3. dimension:

SOD-323HE



DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	2.30	2.70	0.091	0.106
B	1.20	1.40	0.047	0.055
C	1.75	1.95	0.069	0.077
D	0.30Typ		0.012Typ	
E	0.55	0.75	0.030	0.022
F	0.10	0.20	0.004	0.008
G	0.65	0.95	0.026	0.037
H	0.50	0.70	0.020	0.028
I	0.40	0.80	0.016	0.031
J	1.15	1.55	0.045	0.061
K	0.8Typ		0.032Typ	

Suggested solder pad layout



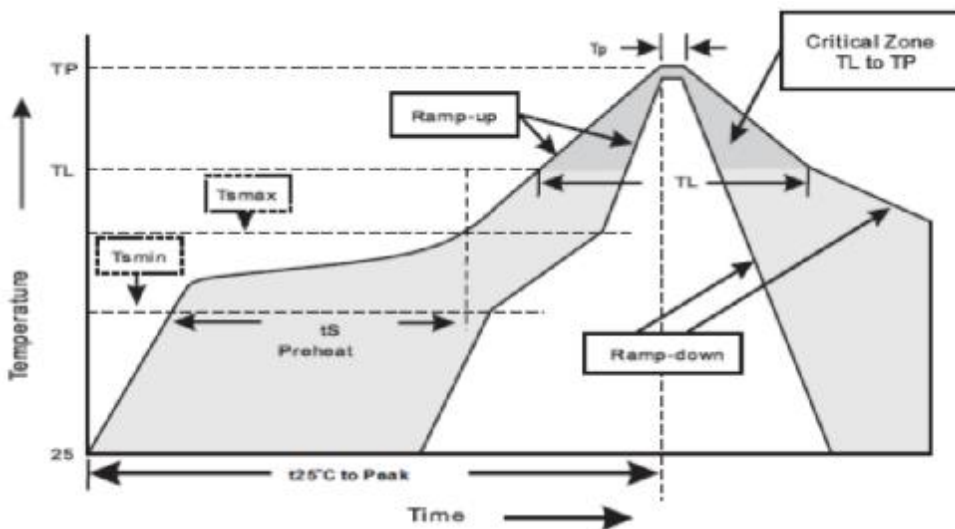
Dimensions in inches and (millimeters)

PACKAGE	A	B	C	D	E	F
SOD123-FL	0.044(1.10)	0.079(2.00)	0.019(0.5)	0.032(0.8)	0.04(1.00)	0.075(1.90)

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## 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 <sub>L</sub> to T <sub>P</sub> )	<3°C/sec
Preheat - Temperature Min(T <sub>smin</sub> ) - Temperature Max(T <sub>smax</sub> ) - Time(min to max)(t <sub>s</sub> )	150°C 200°C 60-120sec
T <sub>smax</sub> to T <sub>L</sub> - Ramp-up Rate	<3sec
Time maintained above: - Temperature (T <sub>L</sub> ) - Time(t <sub>u</sub> )	217°C 60-260sec
Peak Temperature(T <sub>P</sub> )	255 -0/+5°C
Time within 5°C of actual Peak Temperature(T <sub>P</sub> )	10-30sec
Ramp-down Rate	<6°C/sec
Time 25°C to Peak Temperature	<6minutes

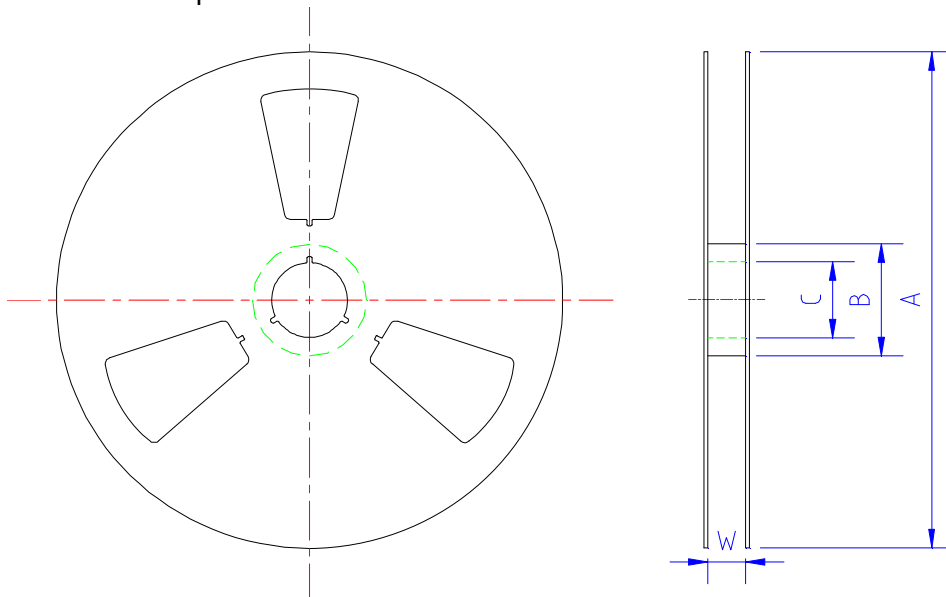
## LMBR120ET1G thru LMBR1200ET1G

### 6.High reliability test capabilities

Item Test	Condition	Reference
Solder Resistance	at 260±5°C for 10±2sec immerse	MIL-STD-750D METHOD-2031
Solderability	at 245±5°C for 5 sec	MIL-STD-202F METHOD-208
High Temperature Reverse Bias	V <sub>R</sub> =80% rate at T <sub>j</sub> =150°C for 168hrs	MIL-STD-750D METHOD-1038
Forward Operation Life	Rated average rectifier current	MIL-STD-750D METHOD-1027
Intermittent Operation Life	T <sub>A</sub> =25°C , I <sub>F</sub> =I <sub>o</sub>	MIL-STD-750D METHOD-1036
Pressure Cooker	15P <sub>SIG</sub> at T <sub>A</sub> =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 <sub>A</sub> =85°C , R <sub>H</sub> =85% for 1000hrs	MIL-STD-750D METHOD-1021
High Temperature Storage Life	at 175°C for 1000hrs	MIL-STD-750D METHOD-1031

5.1 、 SMD Packing Reel Spec & Packing Quantity

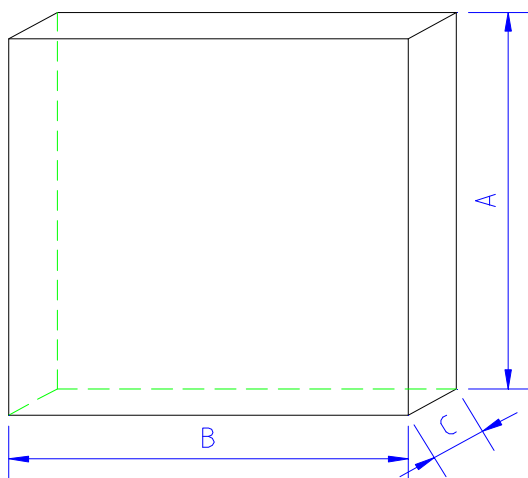
5.1.1 Reel Packing  
A. Reel Spec



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

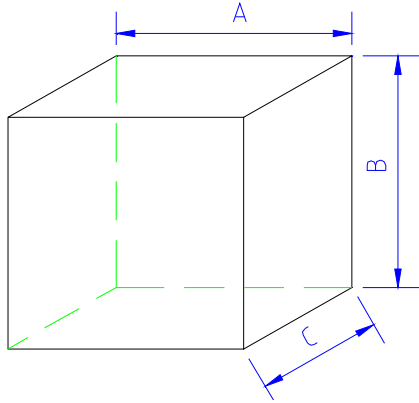
Title:  
Power Diode SMD Package Packing Spec

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C. 7" reel packing box



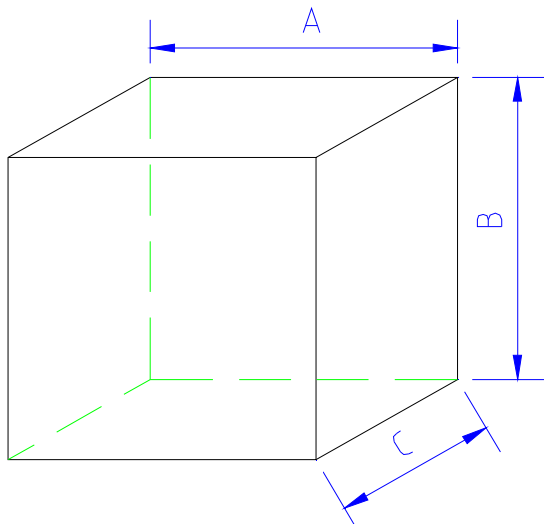
unit: mm

	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

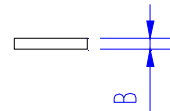
	A	B	C
SOD123FL SOD323HE	455±2.0	400±2.0	410±2.0

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

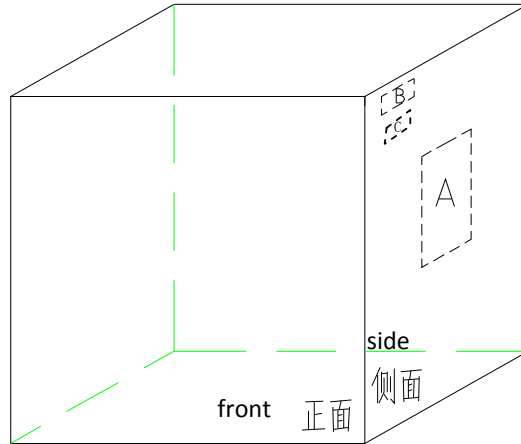
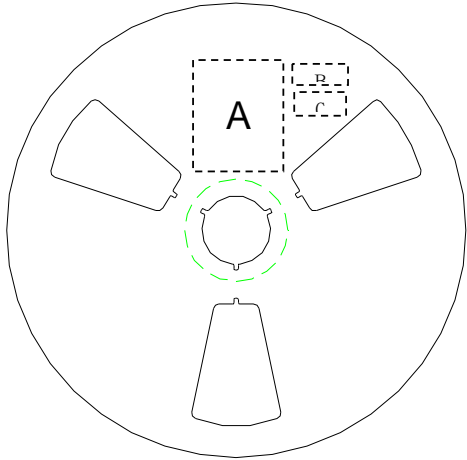
	A	B
SMA /SMA-FL SMB-FL /SMB /TO277	9.5±0.10	0.062±0.007
SMC	13.30±0.10	
SOD123FL SOD323HE	5.4±0.10	





5.2、SMD Power Diode General Packing Spec

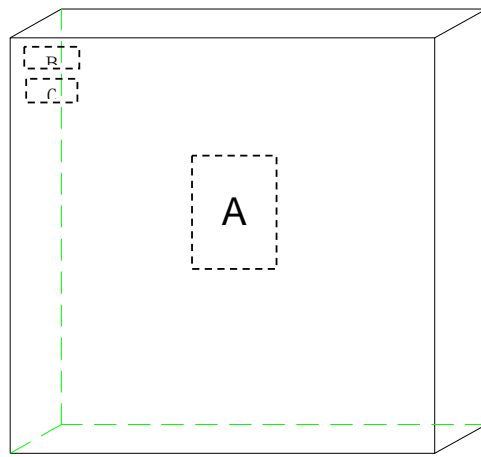
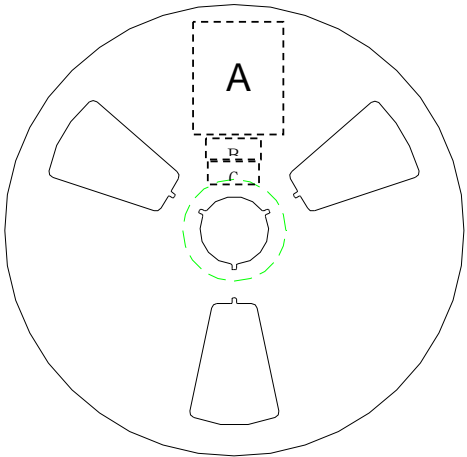
A. 7" reel all labels will be at cathode side of reel ;



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

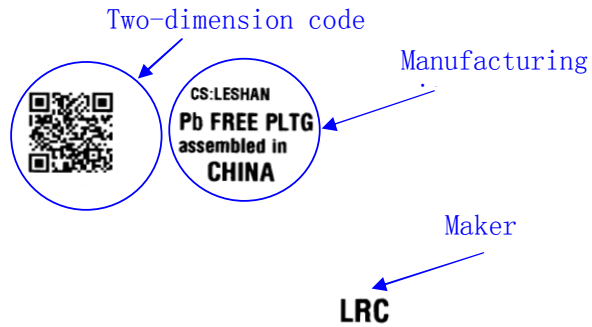
DOC NO.: WI-258

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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



## LMBR120ET1G thru LMBR1200ET1G

### 7. Update Record

版次	更新记录	更新作者	更新日期
1	第一版	周杰	2014.02.26