NextGen Components,Inc.

PART CODE: SMBES3D000S320

SPECIFICATION SHEET

SPECIFICATION SHEET NO.	P0319-SMBES3D000S320
DATE	March 19, 2022
REVISION	A0
DESCRIPITION	SMD Super Fast Recovery Rectifier, SMB series, ES3DB Type, 2 Pads Reverse Voltage 200V Max. Forward Current 3.0A Max. Operating Temp. Range -55°C ~+150°C Package in Tape/Reel, 3000pcs/13" Reel RoHS/RoHS III compliant
CUSTOMER	
CUSTOMER PART NUMBER	
CROSS REF. PART NUMBER	
ORIGINAL PART NUMBER	MDD ES3DB
PART CODE	SMBES3D000S320

VENDOR APPROVE
Issued/Checked/Approved   
DATE: March 19, 2022

CUSTOMER APPROVE
DATE:

NextGen Components,Inc.

PART CODE: **SMBES3D000S320**

SMD SUPER FAST RECOVERY RECTIFER SMB SERIES

MAIN FEATURE

- The plastic package carries Underwriters Laboratory Flammability Classification 94V-0
- Low reverse leakage
- Built-in strain relief
- High forward surge current capability
- High temperature soldering guaranteed: 250℃/ 10 seconds at terminals
- Glass passivated chip junction

APPLICATION

- For SMD application

RFQ
Request For Quotation

PART CODE GUIDE

SMB	ES3D000	S	320
1	2	3	4

1) **SMB**: SMD Super Fast Recovery Rectifier, SMB/DO-214AA series code

2) **ES3D000**: Type code for ES3DB

3) **S**: Package code, Tape/reel, 3000pcs/13” reel.

4) **320:** Specification code for Forward Current 3.0A Max. Reverse Voltage 200V Max.

SMD SUPER FAST RECOVERY RECTIFER SMB SERIES

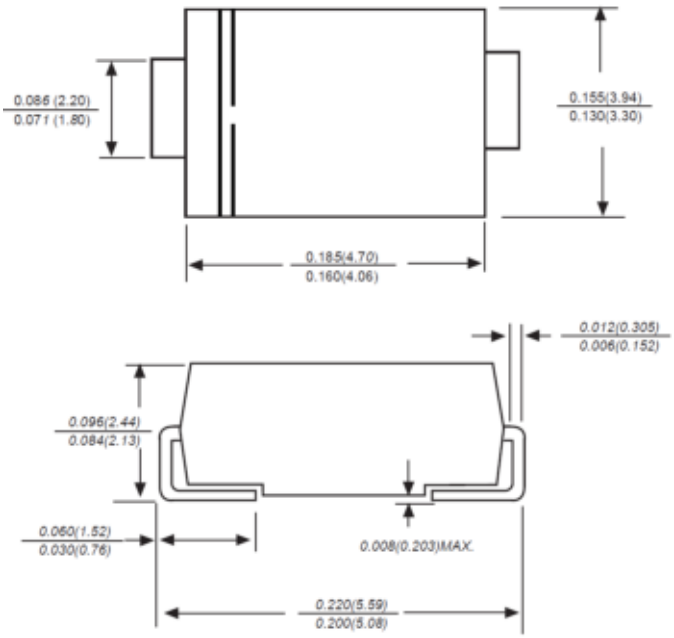
DIMENSION (Unit: Inch/mm)

Image for reference

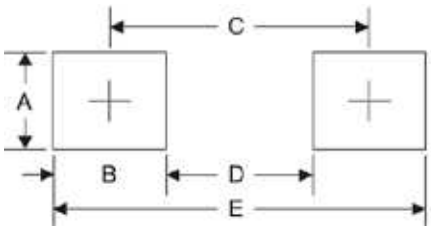


Marking: ES3DB

SMB/DO-214AA



Recommend Pad Layout



Symbol	Unit (inch)	Unit (mm)
A	0.110	2.80
B	0.094	2.40
C	0.181	4.60
D	0.086	2.20
E	0.276	7.00

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PART CODE: **SMBES3D000S320**

SMD SUPER FAST RECOVERY RECTIFER SMB SERIES

MECHANICAL DATA

Case	Terminals	Polarity	Mounting Position	Weight per piece
JEDEC SMB/DO-214AA molded plastic body	Solder plated, Solderable per MIL-STD-750, Method 2026	Polarity symbol marking on case	Any	0.0030 Ounce, 0.100 grams

MAX. RATING & CHARACTERISTICS

Parameter		SYMBOLS	VALUE			UNITS
			Min.	Typical	Max.	
Repetitive peak reverse voltage		V_{RRM}			200	Volts
RMS voltage		V_{RMS}			140	Volts
DC blocking voltage		V_{DC}			200	Volts
Average forward output rectified current at TL= 125°C		I_{AV}			3.0	A
Peak forward surge current 8.3ms single half sine-wave superimposed on rated load (JEDEC Method)		I_{FSM}		90		A
Instantaneous forward voltage at 3.0A		V_F			1.25	Volts
DC reverse current at rated DC blocking voltage	**TA=25℃**	I_R			5.0	μA
	TA=125℃				100	μA
Reverse recovery Time (Note 2)		trr			35	ns
Junction capacitance (NOTE 3)		C_J		45		pF
Thermal resistance (Note 4)		$R_{\theta JA}$ $R_{\theta JC}$		50 16		°C/W
Operating junction temperature range		T_J	-55		+150	°C
Storage temperature range		T_{STG}	-55		+150	°C

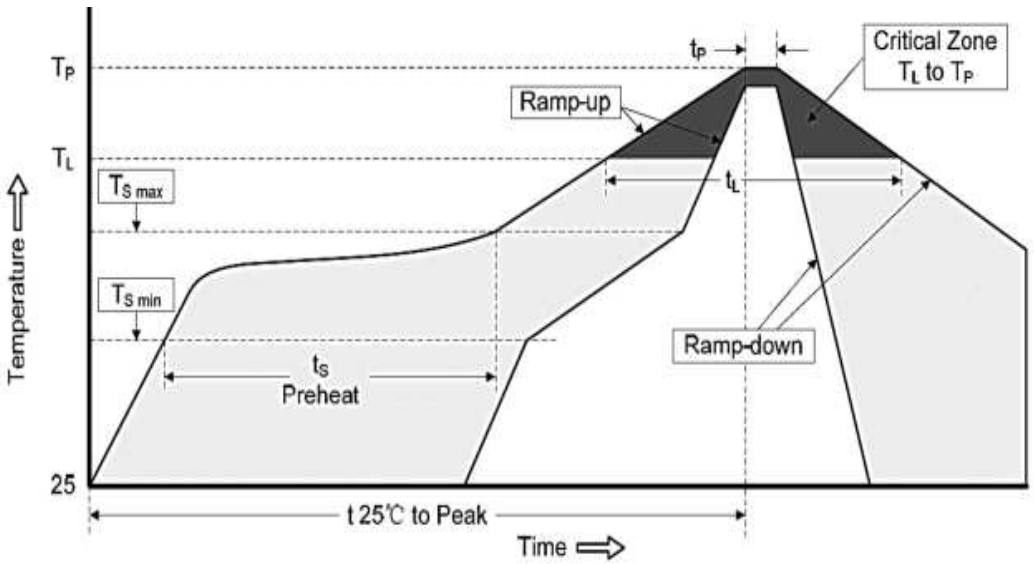
Note

1. Ratings at 25 C ambient temperature unless otherwise specified. Single phase half-wave 60Hz, resistive or inductive load, for capacitive load current derate by 20%.
2. Reverse recovery condition IF=0.5A,IR=1.0A,Irr=0.25A
3. Measured at 1.0MHz and applied reverse voltage of 4.0Voltage
4. P.C.B. mounted with 0.2x0.2”(5.0x5.0mm) copper pad areas.

RELIABILITY

Number	Experiment Items	Experiment Method And Conditions	Reference Documents
1	Solder Resistance Test	Test 260°C± 5°C for 10 ± 2 sec. Immerse body into solder 1/16" ± 1/32"	MIL-STD-750D METHOD-2031.2
2	Solderability Test	230°C ±5°C for 5 sec.	MIL-STD-750D METHOD-2026.1 0
3	Pull Test	1 kg in axial lead direction for 10 sec.	MIL-STD-750D METHOD-2036.4
4	Bend Test	0.5Kg Weight Applied To Each Lead, Bending Arcs 90 °C ± 5 °C For 3 Times	MIL-STD-750D METHOD-2036.4
5	High Temperature Reverse Bias Test	T_A=100°C for 1000 Hours at V_R=80% Rated V_R	MIL-STD-750D METHOD-1038.4
6	Forward Operation Life Test	TA=25°C Rated Average Rectified Current	MIL-STD-750D METHOD-1027.3
7	Intermittent Operation Life Test	On state: 5 min with rated IRMS Power Off state: 5 min with Cool Forced Air. On and off for 1000 cycles.	MIL-STD-750D METHOD-1036.3
8	Pressure Cooker Test	15 PSIG, T_A=121°C, 4 hours	MIL-S-19500 APPENOIXC
9	Temperature Cycling Test	-55°C~+125°C; 30 Minutes For Dwelled Time 5 minutes for transferred time. Total: 10 cycles.	MIL-STD-750D METHOD-1051.7
10	Thermal Shock Test	0°C for 5 minutes., 100°C for 5minutes, Total: 10 cycles	MIL-STD-750D METHOD-1056.7
11	Forward Surge Test	8.3ms Single Sale Sine-wave One Surge.	MIL-STD-750D METHOD-4066.4
12	Humidity Test	T_A=65°C, RH=98% for 1000 hours.	MIL-STD-750D METHOD-1021.3
13	High Temperature Storage life Test	150°C for 1000 Hours	MIL-STD-750D METHOD-1031.5

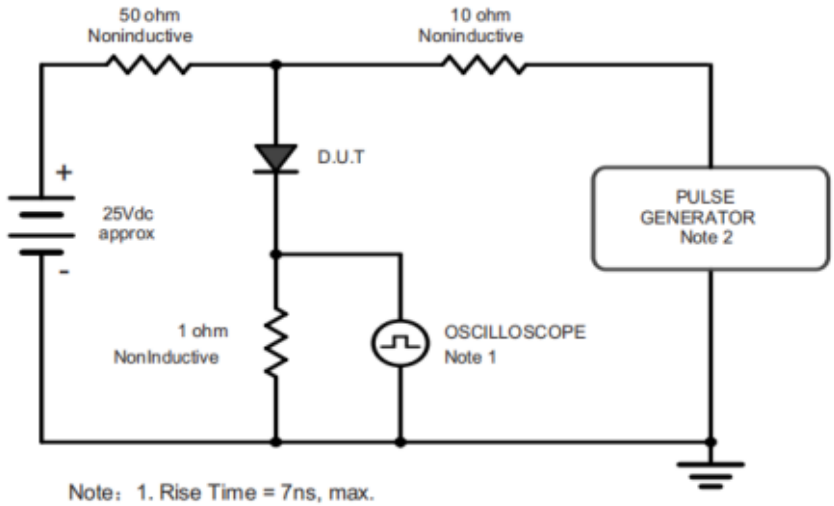
SUGGESTED REFLOW PROFILE (For Reference Only)



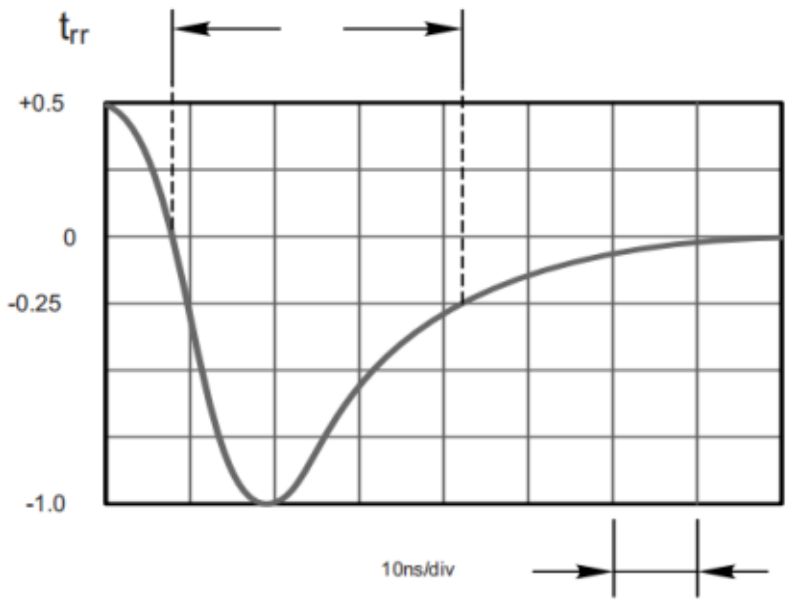
Profile Feature		Pb-Free Assembly
Average Ramp-up Rate (Ts Max to Tp)		3℃/second Max
Preheat	**Temperature Min (Ts Min.)**	150℃
	Temperature Max (Ts Max.)	200℃
	Time (ts Min. to ts Max.)	60 ~ 180 seconds
Time maintained above	**Temperature (TL)**	217℃
	Time (tL)	60 ~ 150 seconds
Peak/Classification Temperature (Tp)		250 ℃
Time within 5℃ of actual Peak Temperature (tp)		3 ~ 10 seconds
Ramp-down rate		6 ℃ /Second Max.
Time 25 ℃ to Peak Temperature		8 minutes Max.
Suggest reflow times		3 Times Max.

RATINGS AND CHARACTERISTIC CURVES (For Reference Only)

Fig.1 Reverse Recovery Time Characteristic And Test Circuit Diagram



Note: 1. Rise Time = 7ns, max.
Input Impedance = 1megohm,22pF.
2. Ries Time =10ns, max.
Source Impedance = 50 ohms.



Set time Base for 10ns/div

RATINGS AND CHARACTERISTIC CURVES (For Reference Only)

Fig.2 Maximum Average Forward Current Rating

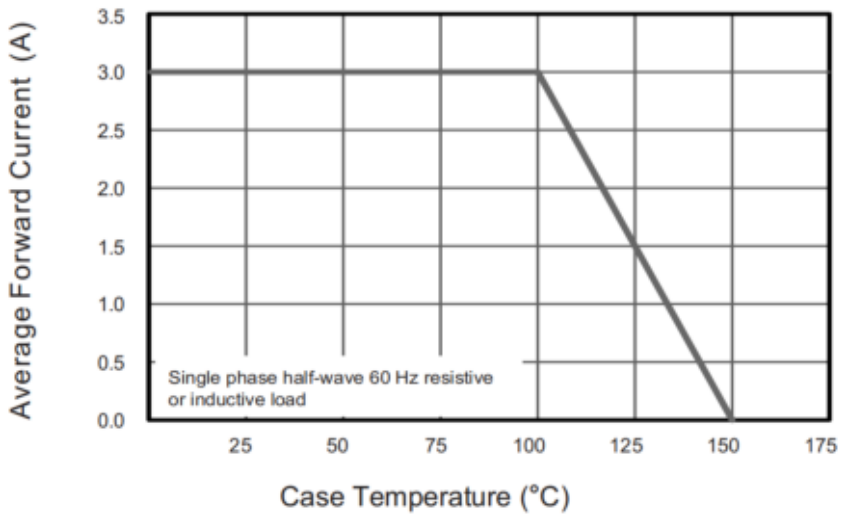
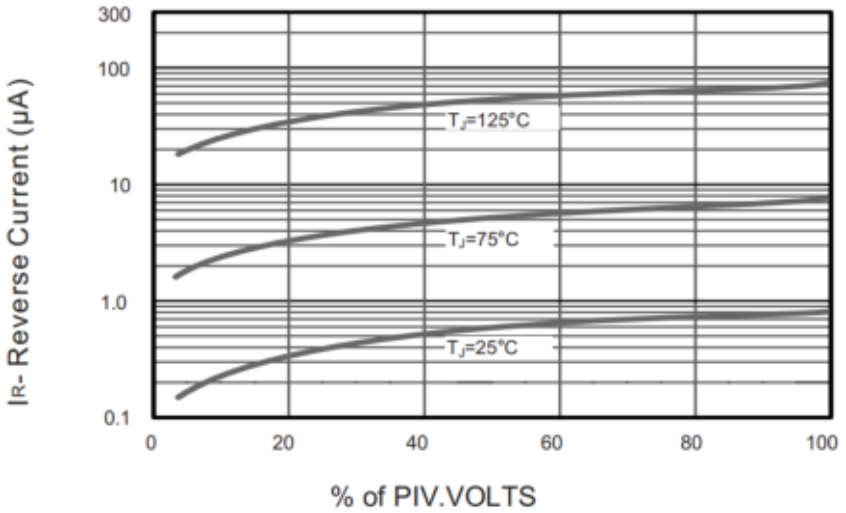


Fig.3 Typical Reverse Characteristics



RATINGS AND CHARACTERISTIC CURVES (For Reference Only)

Fig.4 Typical Forward Characteristics

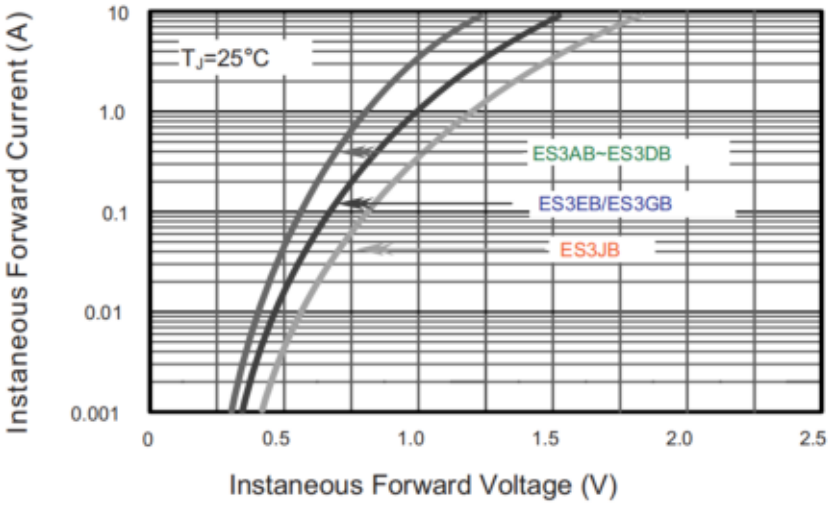
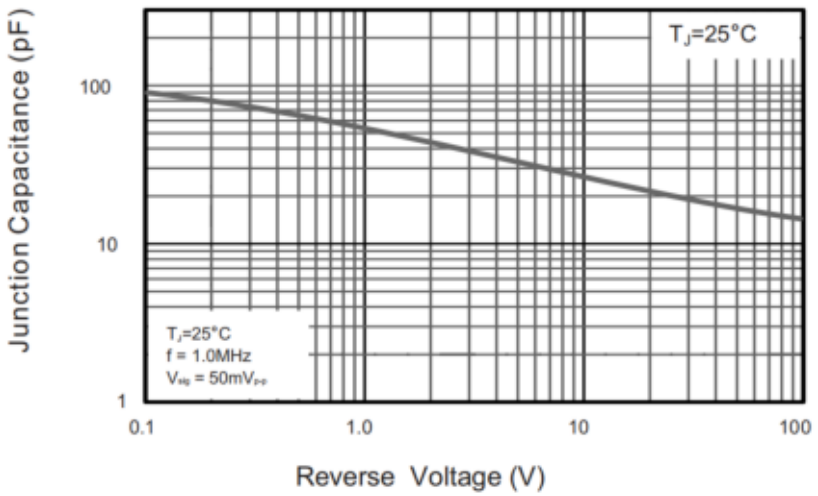
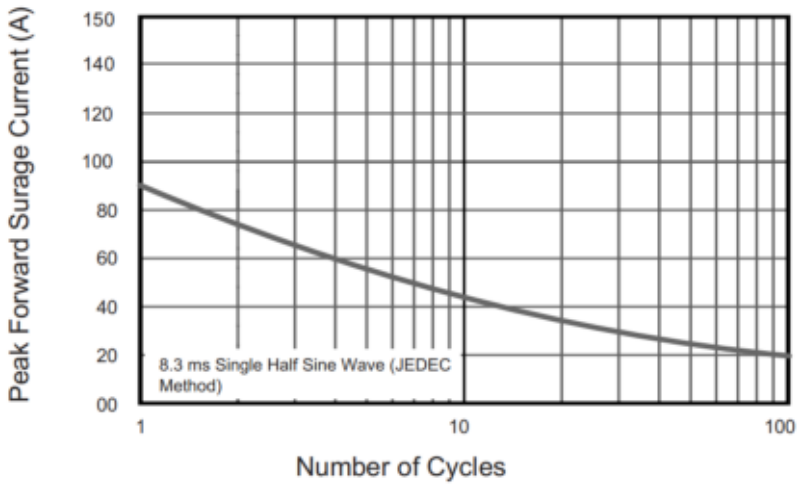


Fig.5 Typical Junction Capacitance



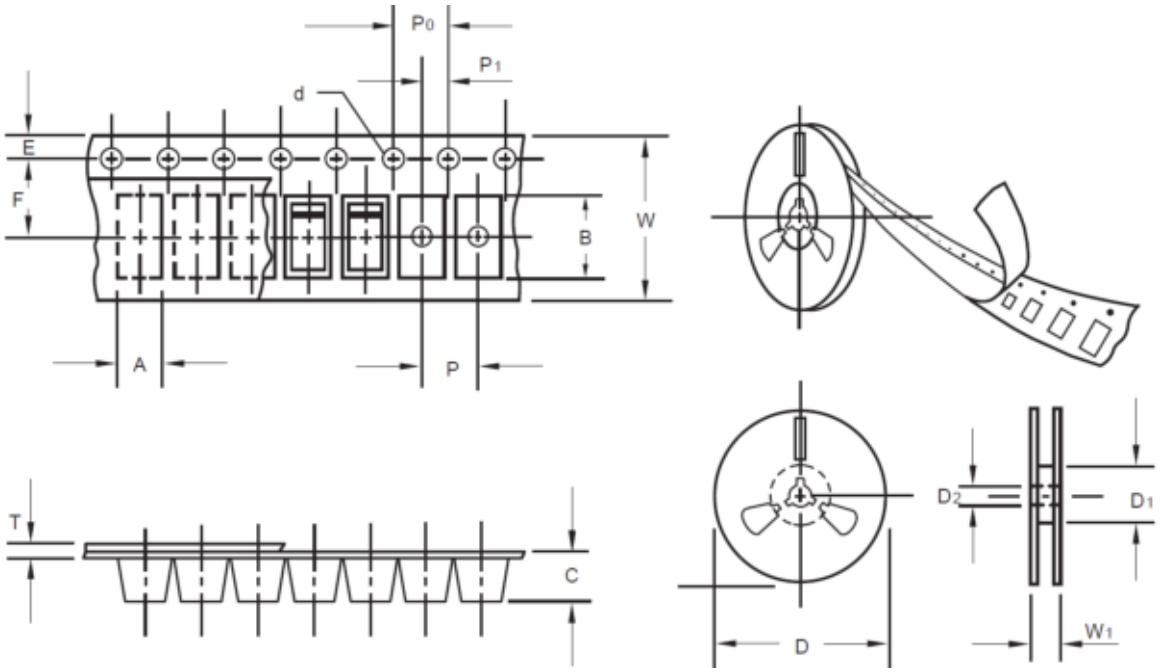
RATINGS AND CHARACTERISTIC CURVES (For Reference Only)

Fig.6 Maximum Non-Repetitive Peak Forward Surage Current



TAPE/REEL (Unit: mm)

All Devices are packed in accordance with EIA standard RS-481-A and specifications.



Item	Symbol	Tolerance	SMB/DO-214AA
Carrier width	A	0.1	3.81
Carrier Length	B	0.1	5.41
Carrier Depth	C	0.1	2.42
Sprocket hole	d	0.05	1.50
13”Reel outside diameter	D	2.0	330.00
13”Reel inner diameter	D1	Min.	50.00
7”Reel outside diameter	-	-	-
7”Reel inner diameter	-	-	-
Feed hole diameter	D2	0.5	13.00
Sprocket hole position	E	0.1	1.75
Punch hole position	F	0.1	5.55
Punch hole pitch	P	0.1	8.00
Sprocket hole pitch	P0	0.1	4.00
Embossment center	P1	0.1	2.00
Overall tape thickness	T	0.1	0.30
Tape width	W	0.3	12.00
Reel width	W1	1.0	12.30

SPQ PACKAGE for Reference

Item	Unit	Value
Case Code		SMB/DO-214AA
Reel Size	Inch	13
Reel Size	mm	330
Tape Space	mm	/
SPQ /Reel	pcs	3000
Weigh /SPQ	LBs	4.63
Weigh /SPQ	KGs	2.10
Qty. Per Box	pcs	6,000
Inner Box	Inch	L13.2*W13.2*H1.95

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