MBR1045DCT,MBR1045DFCT

LOW VF SCHOTTKY RECTIFIERS

VOLTAGE: 45 Volts **CURRENT:** 10.0 Amperes

FEATURES

- Low forward voltage drop for high efficiency
- Low power loss for high reliability
- High forward surge capability for high reliability
- High frequency operation
- Solder bath temperature 260℃ maximum,10s,per JESD22-B106
- Component in accordance to RoHS 2011/65/EU

MECHANICAL DATA

- **Terminals:** Plated Leads Solderable per MIL-STD-202, Method 208
- **Mounting Position:** Any
- **Lead Free:** Lead Free Finish, RoHS Compliant
- **Polarity:** As marked

TYPICAL APPLICATIONS

- For use in high frequency inverters ,
  AC/DC converters,LED driver etc. applications

Marking and Polarity

TO-220AB

MBR1045DCT

TO-220F

MBR1045DFCT

Remark:

①. NH=niuhang trademark;

②. FF=Product line code,According to actual changes
YWW=Data code,According to actual changes
EDDQK=Inernal code,According to actual changes

③. MBR1045DCT/FCT=Modle.

Maximum Ratings (Ratings at 25℃ ambient temperature unless otherwise specified)

Parameter	Symbol	MBR1045DCT,MBR1045DFCT	Unit
Maximum repetitive peak reverse voltage	V_{RRM}	45	V
Maximum average forward rectified current(see fig.1)	$I_{F(AV)}$	10	A
Peak forward surge current 8.3ms single half sine-wave superimposed on rated load (JEDEC method at rated TL)	I_{FSM}	120	A
Peak repetitive reverse current per diode at tp=2μs 1KHz	I_{RRM}	10	uA

Electrical Characteristcs (Ratings at 25℃ ambient temperature unless otherwise specified)

Parameter	Test Conditions	Symbol	MBR1045DCT,MBR1045DFCT			Unit
			Min.	Typ.	Max.	
Instaneous forward voltage per diode (note1)	T_A=25℃ IF= 5.0 A	V_F	--	0.54	0.62	V
	T_A=125℃		--	0.49	0.55	
Reverse current per diode (note1)	T_A=25℃ VR= V_{RRM}	I_R	--	1	10	uA
	T_A=125℃ VR= 80%*V_{RRM}		--	0.5	2	mA
Typical junction capacitance	1V,10KHz	C_J	--	360	--	pF

Thermal Characteristcs (Ratings at 25℃ ambient temperature unless otherwise specified)

Parameter	Symbol	MBR1045DCT,MBR1045DFCT		Unit
Operating junction	T_J	-55 to 150		℃
Storage temperature range	T_{STD}	-55 to 150		
Typical thermal resistance (note3)	$R_{\theta JC}$	TO-220AB	TO-220F	℃/W
		2.5	4.5	

Notes:

1. Pulse test: 300 μs pulse width,1% duty cycle
2. Device mounted on Device mounted on 75mm x 45mm x 2.5mm Aluminum Plate Heatsink.

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RATINGANDCHARACTERISTICCURVES

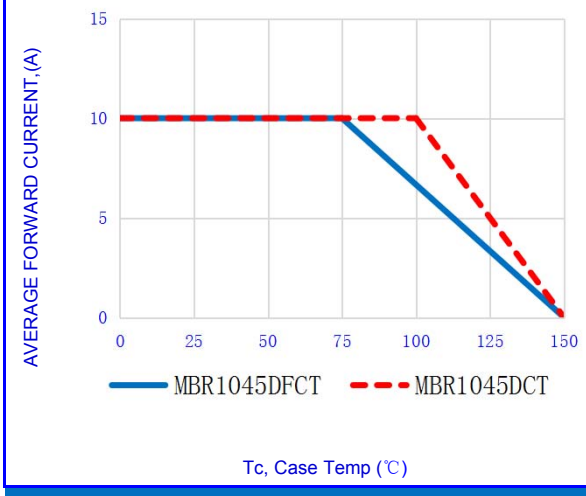

Fig.1-FORWARD CURRENT DERATING CURVE

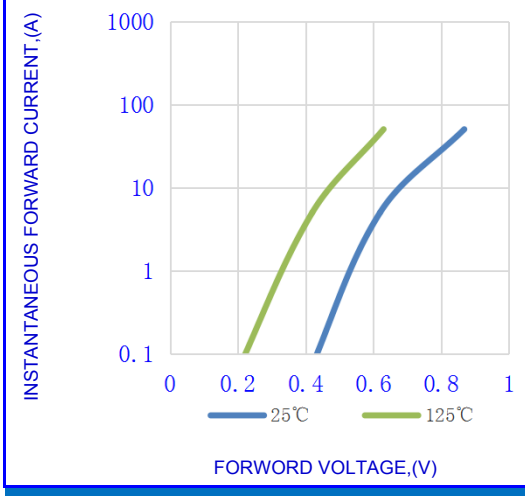

Fig.2- TYPICAL INSTANTANEOUS FORWARD

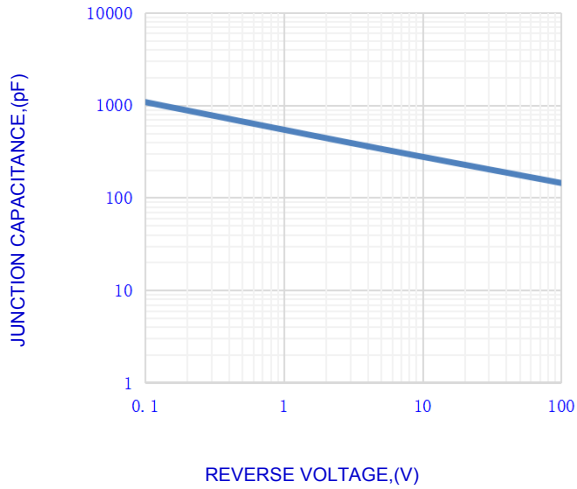

Fig.3- TYPICAL JUNCTION CAPACITANCE

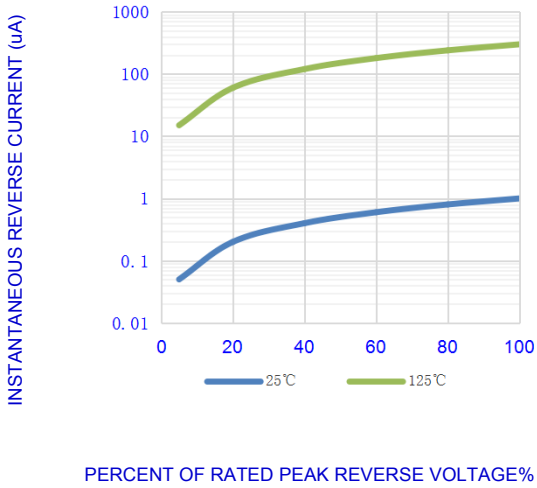

Fig.4- TYPICAL REVERSE CHARACTERISTICS

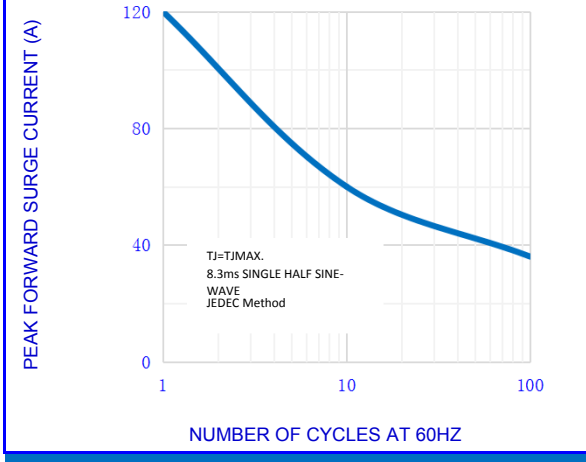

Fig.5-MAX. NON-REPETITIVE SURGE CURRENT

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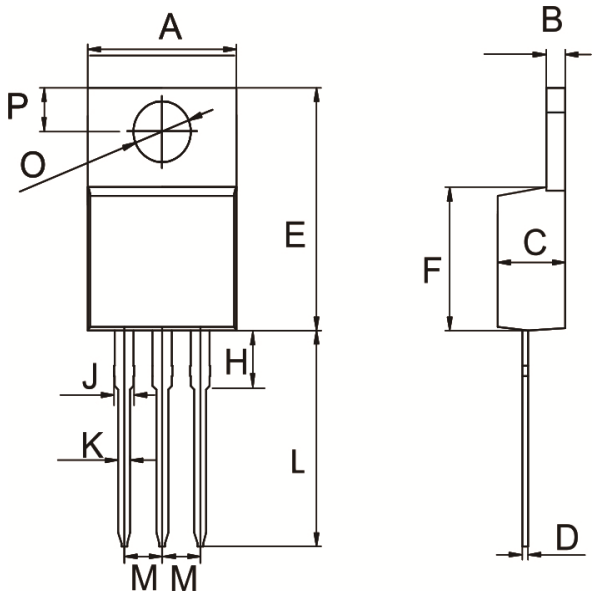
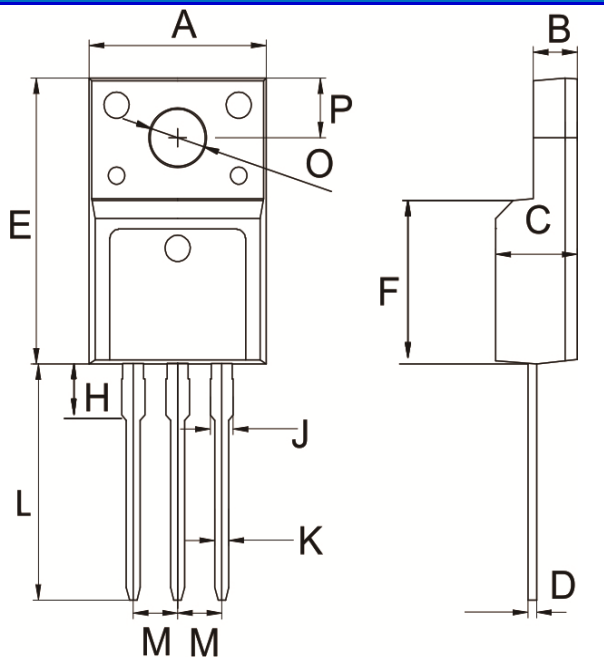
OUTLINE DRAWINGS — TO-220AB



OUTLINE DIMENSIONS						
Dim.	Milimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	9.25	-	10.75	0.36	-	0.42
B	1.10	-	1.65	0.04	-	0.06
C	4.15	-	4.95	0.16	-	0.19
D	0.25	-	0.65	0.01	-	0.03
E	14.50	-	16.70	0.57	-	0.66
F	8.40	-	9.95	0.33	-	0.39
L	12.15	-	14.30	0.48	-	0.56
H	3.00	-	3.80	0.12	-	0.15
J	1.05	-	1.60	0.04	-	0.06
K	0.65	-	0.95	0.03	-	0.04
M	2.10	-	2.90	0.08	-	0.11
O	3.20	-	4.10	0.13	-	0.16
P	2.45	-	3.10	0.10	-	0.12

OUTLINE DRAWINGS — TO-220F



OUTLINE DIMENSIONS						
Dim.	Milimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	9.25	-	10.75	0.36	-	0.42
B	2.30	-	2.90	0.09	-	0.11
C	4.20	-	5.20	0.17	-	0.20
D	0.35	-	0.75	0.01	-	0.03
E	14.80	-	16.80	0.58	-	0.66
F	8.25	-	9.75	0.32	-	0.38
L	12.15	-	14.15	0.48	-	0.56
H	2.40	-	3.00	0.09	-	0.12
J	1.10	-	1.50	0.04	-	0.06
K	0.60	-	1.00	0.02	-	0.04
M	2.20	-	3.00	0.09	-	0.12
O	2.70	-	3.50	0.11	-	0.14
P	2.25	-	2.85	0.09	-	0.11

PACKING INFORMATION

Package Code	Package Method	Tube Size L×W×H(mm)	Quantity (pcs/Tube)	Inner Box Size L×W×H(mm)	Quantity (pcs/Inner Box)	Outer Carton Size L×W×H(mm)	Quantity (pcs/carton)
TO-220AB	Tube	530x35x8	50	560x155x55	1000	570×284×185	5000
TO-220F	Tube	530x35x8	50	560x155x55	1000	570×284×185	5000

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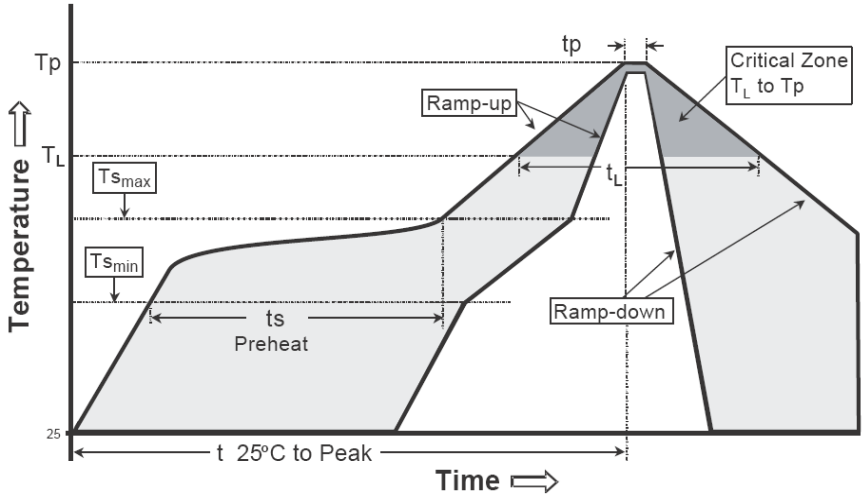
Recommended wave soldering condition

Product	Peak Temperature	Soldering Time
Pb-free devices	260 +0/-5 °C	5 +1/-1 seconds

Recommended temperature profile for IR reflow



Profile feature	Sn-Pb eutectic Assembly	Pb-free Assembly
Average ramp-up rate (Tsmax to Tp)	3°C/second max.	3°C/second max.
Preheat −Temperature Min(TS min) −Temperature Max(TS max) −Time(ts min to ts max)	 100°C 150°C 60-120 seconds	 150°C 200°C 60-180 seconds
Time maintained above: −Temperature (TL) − Time (tL)	 183°C 60-150 seconds	 217°C 60-150 seconds
Peak Temperature(TP)	240 +0/-5 °C	260 +0/-5 °C
Time within 5°C of actual peak temperature(tp)	10-30 seconds	20-40 seconds
Ramp down rate	6°C/second max.	6°C/second max.
Time 25 °C to peak temperature	6 minutes max.	8 minutes max.

Note : All temperatures refer to topside of the package, measured on the package body surface.

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