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

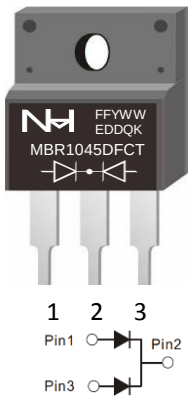
Marking and Polarity

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

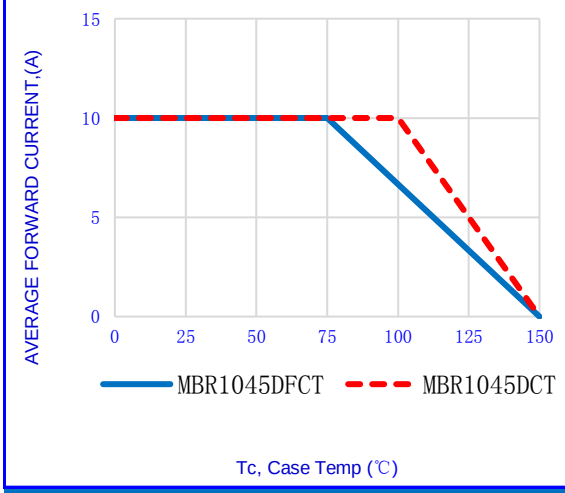

Fig.1-FORWARD CURRENT DERATING CURVE

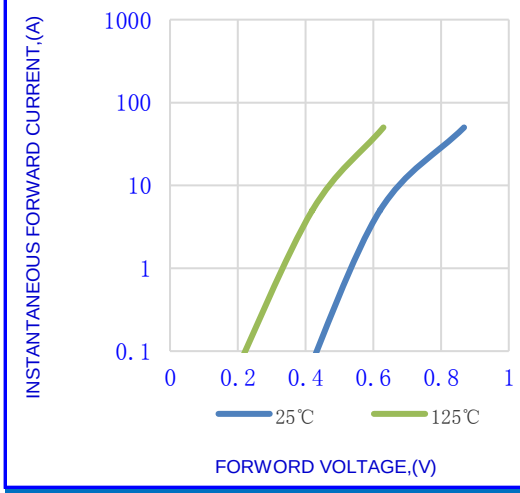

Fig.2- TYPICAL INSTANTANEOUS FORWARD

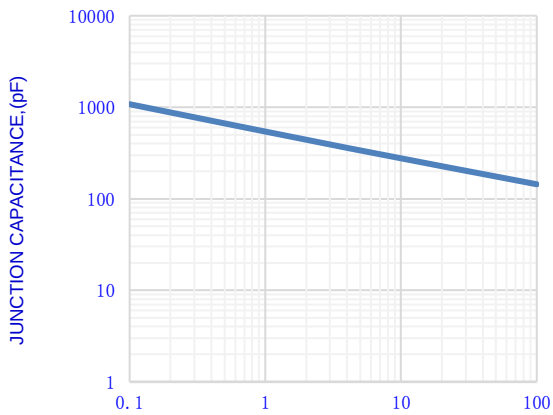

Fig.3- TYPICAL JUNCTION CAPACITANCE

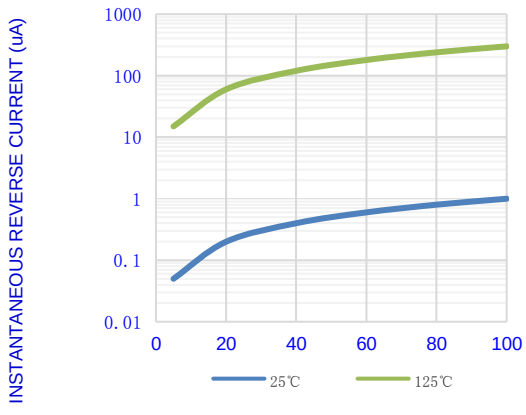

Fig.4- TYPICAL REVERSE CHARACTERISTICS

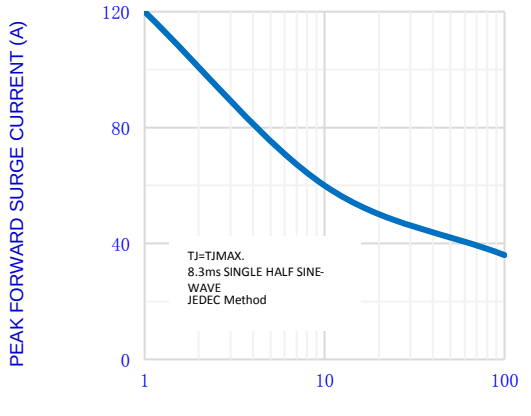

Fig.5-MAX. NON-REPETITIVE SURGE CURRENT

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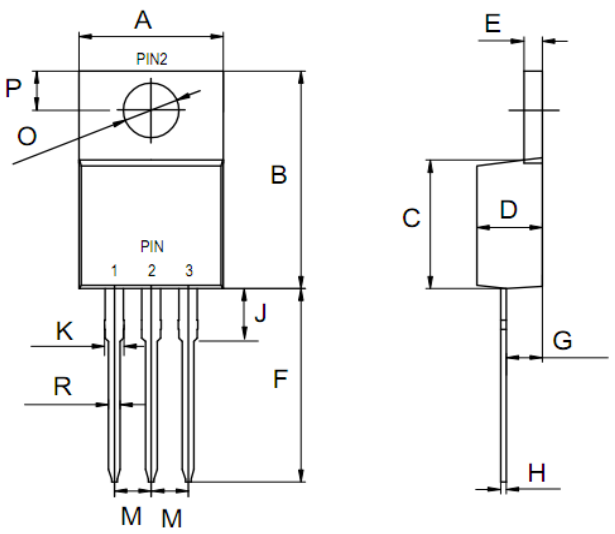
OUTLINE DRAWINGS

TO-220AB

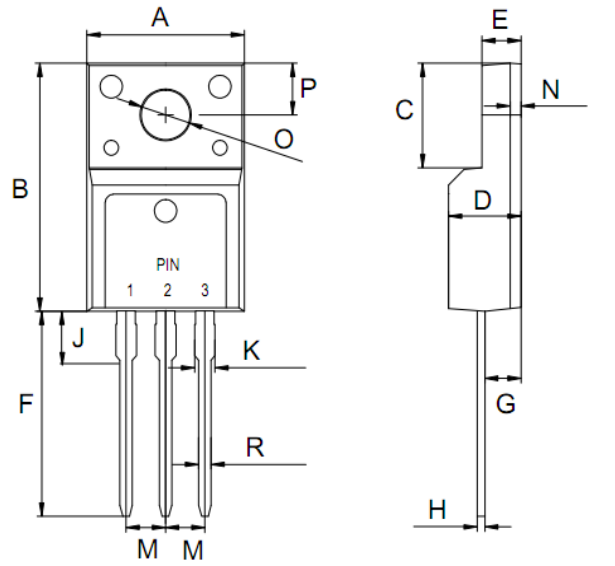


OUTLINE DIMENSIONS

Dim.	Milimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	9.80	-	10.40	0.3858	-	0.4094
B	14.95	-	15.50	0.5886	-	0.6102
C	8.40	-	9.40	0.3307	-	0.3701
D	4.20	-	4.70	0.1654	-	0.1850
E	1.15	-	1.45	0.0453	-	0.0571
F	12.50	-	-	0.4921	-	-
G	2.30	-	2.70	0.0906	-	0.1063
H	0.30	-	0.45	0.0118	-	0.0177
J	3.00	-	4.50	0.1181	-	0.1772
M	2.44	-	2.64	0.0961	-	0.1039
R	0.70	-	1.00	0.0276	-	0.0394
O	3.45	-	3.85	0.1358	-	0.1516
P	2.80	-	3.20	0.1102	-	0.1260

OUTLINE DRAWINGS

TO-220F



OUTLINE DIMENSIONS

Dim.	Milimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	9.91	10.21	10.41	0.3902	0.4020	0.4098
B	15.30	16.00	16.50	0.6024	0.6299	0.6496
C	6.20	6.75	7.20	0.2441	0.2657	0.2835
D	4.44	4.70	4.80	0.1748	0.1850	0.1890
E	2.45	2.57	3.55	0.0965	0.1012	0.1398
F	12.50	13.50	14.50	0.4921	0.5315	0.5709
G	2.25	2.40	2.60	0.0886	0.0945	0.1024
H	0.35	0.50	0.58	0.0138	0.0197	0.0228
J	2.60	2.88	4.00	0.1024	0.1134	0.1575
M	2.41	2.50	2.67	0.0949	0.0984	0.1051
N	4.88	5.00	5.28	0.1921	0.1969	0.2079
R	0.58	0.82	0.94	0.0228	0.0323	0.0370
O	3.25	3.55	3.75	0.1280	0.1398	0.1476
P	2.15	3.30	3.50	0.0846	0.1299	0.1378

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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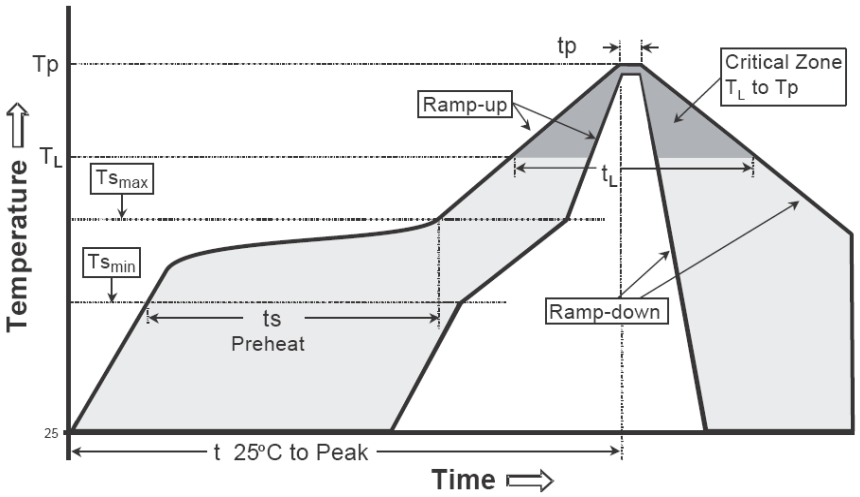
Recommended wave soldering condition

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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