

MBR4040DCT THRU MBR40200DCT

Schottky Barrier Rectifiers



Voltage: 40~200 Volts

Current: 40 Amperes

Package: TO-220AB

Features

- NH'S Plane Schottky Barrier Chip Technology
- Low Forward Voltage Drop For High Efficiency
- Low Power Loss For High Reliability
- High Frequency Switching Speed

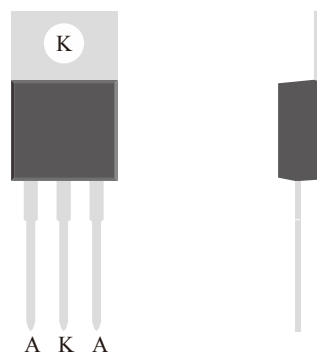
Mechanical Data

- **Case:** Molded With UL-94 Class V-0 Recognized, RoHS-Compliant
- **Polarity:** Look At The Diagram And Polarity On The Right
- **Terminals:** Tin Plated Leads, Solderable Per J-STD-002 And JESD22-B102

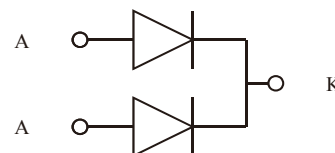
Typical Applications

- Switch Mode Power Supplies (SMPS)
- Fast Chargers
- LED Driver And Monitor Lighting
- Automotive Electronics And Charging Posts

Diagram:



Polarity:



Single Phase, Half Wave, 60Hz, Resistive Or Inductive Load. For Capacitive Load, Derate Current By 20%

Maximum Ratings (Ta=25°C Unless Otherwise Specified)

Parameter	Test Conditions	Symbol	MBR40 40DCT	MBR40 45DCT	MBR40 60DCT	MBR40 80DCT	MBR40 100DCT	MBR40 150DCT	MBR40 200DCT	Unit
Maximum Repetitive Peak Reverse Voltage		V_{RRM}	40	45	60	80	100	150	200	V
Maximum RMS Voltage		V_{RMS}	28	32	42	56	70	105	140	V
Maximum DC Blocking Voltage		V_{DC}	40	45	60	80	100	150	200	V
Maximum Average Forward Rectified Current	Per Diode Total device	$I_{F(AV)}$	20 40							A
Peak Forward Surge Current Per Diode	8.3ms Single Half Sine-wave Superimposed On Rate Load	I_{FSM}	250							A
Current Squared Time Per Diode	$t < 8.3ms$	I^2t	259.4							A ² sec
Maximum Mounting Torque	M3 screw	T_{MM}	1.1							N.m

Electrical Characteristics (Ta=25°C Unless Otherwise Specified)

Parameter	Test Conditions	Symbol	MBR40 40DCT	MBR40 45DCT	MBR40 60DCT	MBR40 80DCT	MBR40 100DCT	MBR40 150DCT	MBR40 200DCT	Unit
Instantaneous Forward Voltage Per Diode	$I_F = 20.0 A$	V_F	0.55	0.70	0.85	0.90				V
Maximum DC Reverse Current at Rated DC Blocking Voltage	Ta=25°C, $V_R = V_{RRM}$ Ta=110°C, $V_R = V_{RRM} * 80\%$	I_{RRM}	100 10	80 8	50 5	10 3				uA mA
Typical Junction Capacitance Per Diode	4 V, 1MHz	C_J	1000	810	760	300				pF

Thermal Characteristics (Ta=25°C Unless Otherwise Specified)

Parameter	Test Conditions	Symbol	MBR40 40DCT	MBR40 45DCT	MBR40 60DCT	MBR40 80DCT	MBR40 100DCT	MBR40 150DCT	MBR40 200DCT	Unit
Operating Junction Temperature Range		T _J	-55~125			-55~150		-55~175		℃
Storage Temperature Range		T _{STD}	-55~125			-55~150		-55~175		
Thermal Resistance Junction To Ambient With Steady-State	Still Air Environment With Ta=25℃	R _{θJA}	50.0							℃/W
Thermal Resistance Junction-Case With Steady-State	Device Mounted On 75mm x 45mm x 2.5mm Alu. Heat.	R _{θJC}	1.8							

Notes: 1. Pulse Test: 300 Us Pulse Width, 1% Duty Cycle

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Typical Characteristics Curves

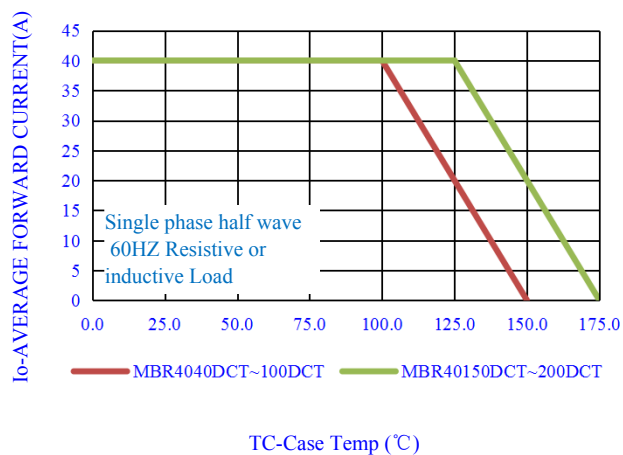


Fig.1-FORWARD CURRENT DERATING CURVE

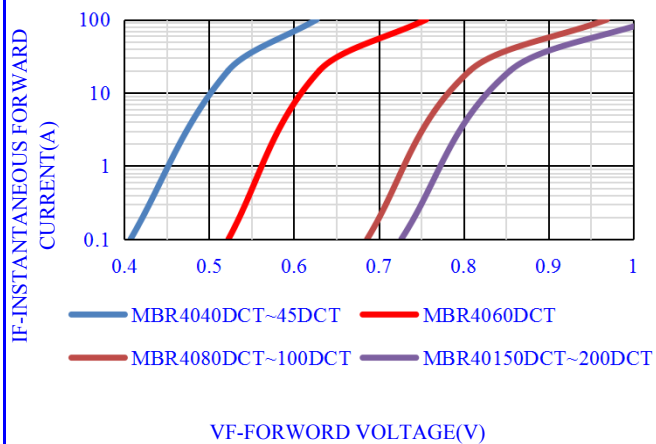


Fig.2- TYPICAL INSTANTANEOUS FORWARD

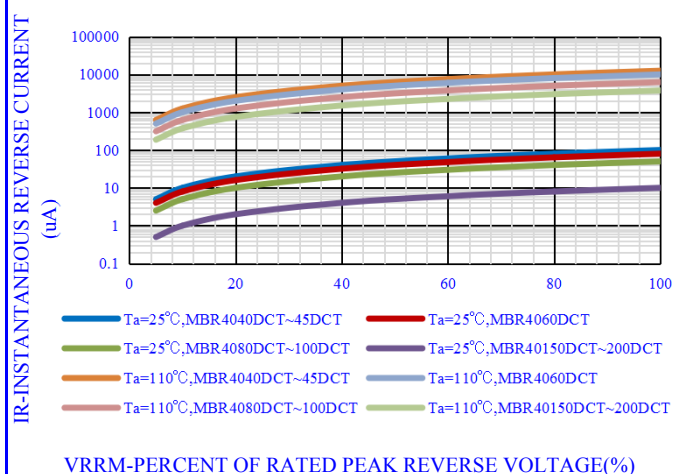


Fig.3- TYPICAL REVERSE CHARACTERISTICS

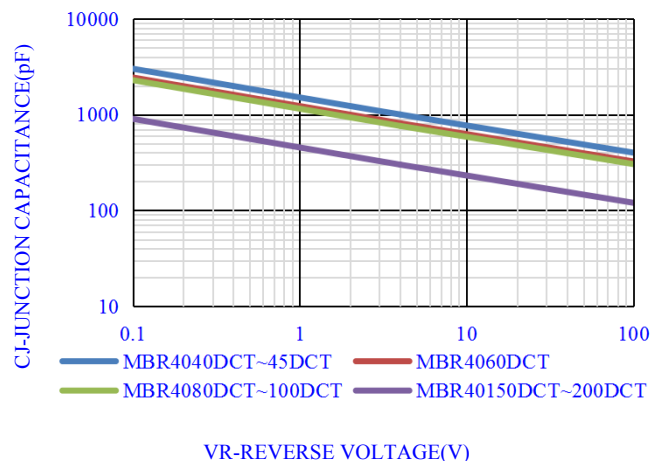


Fig.4- TYPICAL JUNCTION CAPACITANCE

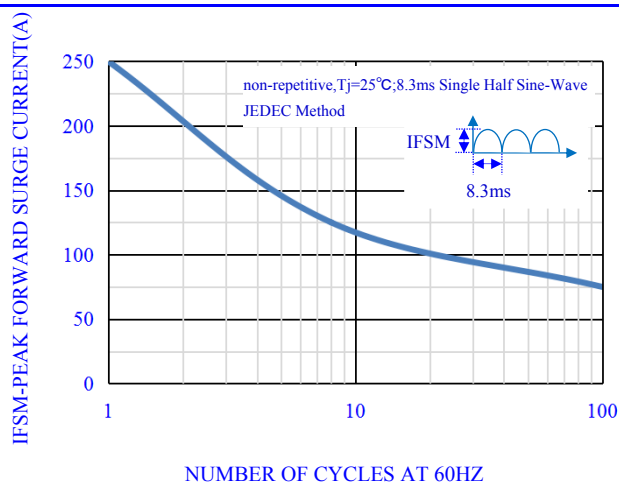


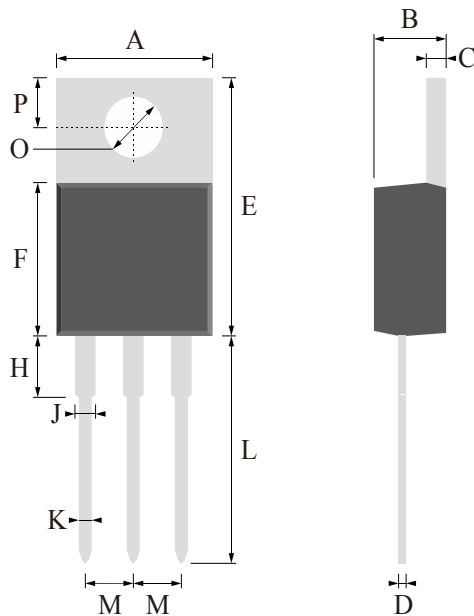
Fig.5-MAX. NON-REPETITIVE SURGE CURRENT

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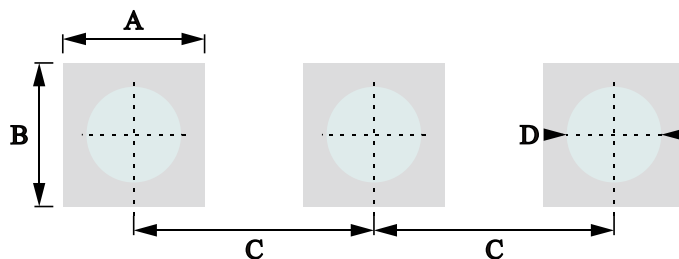
OUTLINE DRAWINGS



TO-220AB

OUTLINE DIMENSIONS						
Dim.	Milimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	9.25	-	10.75	0.3642	-	0.4232
B	4.15	-	4.95	0.1634	-	0.1949
C	1.10	-	1.65	0.0433	-	0.0650
D	0.25	-	0.65	0.0098	-	0.0256
E	14.50	-	16.70	0.5709	-	0.6575
F	8.40	-	9.95	0.3307	-	0.3917
L	12.15	-	14.30	0.4783	-	0.5630
H	3.00	-	3.80	0.1181	-	0.1496
J	1.05	-	1.60	0.0413	-	0.0630
K	0.65	-	0.95	0.0256	-	0.0374
M	2.10	-	2.90	0.0827	-	0.1142
O	3.20	-	4.10	0.1260	-	0.1614
P	2.45	-	3.10	0.0965	-	0.1220

RECOMMEDND LAYOUT DRAWINGS



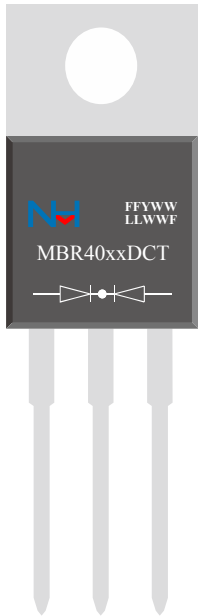
TO-220AB

OUTLINE DIMENSIONS						
Dim.	Milimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	-	1.60	-	-	0.0630	-
B	-	1.60	-	-	0.0630	-
C	-	2.54	-	-	0.1000	-
D	-	1.00	-	-	0.0394	-

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MARKING		MARKING INSTRUCTION																		
		NH=Niuhan Trademark FF=Product Line Code,According To Actual Changes YWW=Date Code,According To Actual Changes LLWWF=Inernal Code,According To Actual Changes MBR40xxDCT=Model,xx=40,45,60,80,100,150,200																		
PACKING INFORMATION <table><tr><th>Package Type</th><th>Package Code</th><th>Product Weight Approx(g/Pcs)</th><th>Package Method</th><th>Quantity (Pcs/Min. Pack.)</th><th>Quantity (Pcs/Inner Box)</th><th>Quantity (Pcs/Carton)</th></tr><tr><td>TO-220AB</td><td>P1</td><td>2.057</td><td>Tube</td><td>50</td><td>1000</td><td>5000</td></tr></table>							Package Type	Package Code	Product Weight Approx(g/Pcs)	Package Method	Quantity (Pcs/Min. Pack.)	Quantity (Pcs/Inner Box)	Quantity (Pcs/Carton)	TO-220AB	P1	2.057	Tube	50	1000	5000
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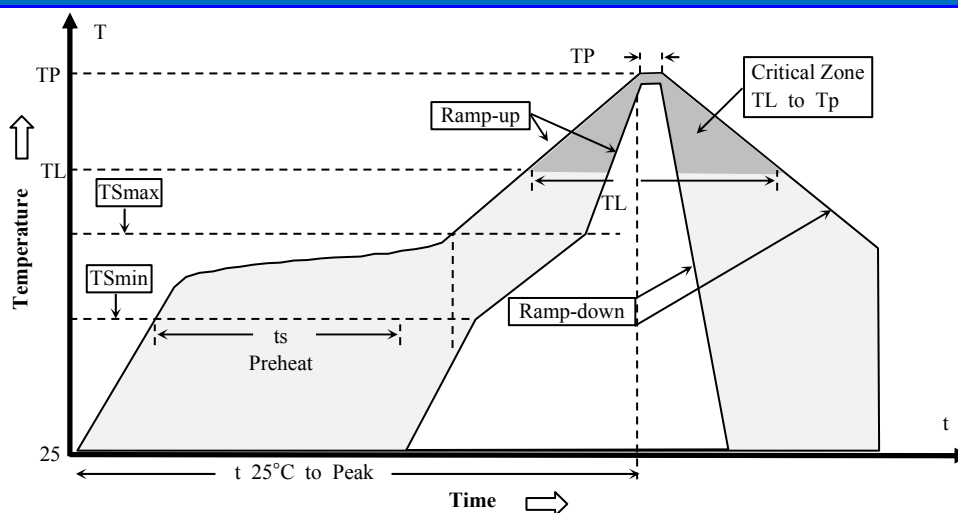
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Recommended wave soldering condition

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 (T _{smax} to T _p)	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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