MBR2045CT - MBR2060CT / MBRF2045CT - MBRF2060CT

20A SCHOTTKY BARRIER RECTIFIER

Product Summary

MBR2045CT / MBRF2045CT (Per Leg)

V_{RRM} (V)	I_O (A)	$V_{F\ (MAX)}$ (V) @ +25°C	$I_{R\ (MAX)}$ (mA) @ +25°C
45	10	0.64	0.1

MBR2060CT / MBRF2060CT (Per Leg)

V_{RRM} (V)	I_O (A)	$V_{F\ (MAX)}$ (V) @ +25°C	$I_{R\ (MAX)}$ (mA) @ +25°C
60	10	0.81	0.1

Features and Benefits

- Guard Ring Die Construction for Transient Protection.
- High Surge Current Capability.
- Low Forward Voltage Drop.
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

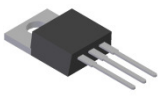
Description and Applications

This Schottky Barrier Rectifier is designed to meet the general requirements of commercial applications. It is ideally suited for use as:

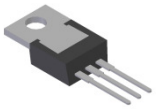
- Polarity Protection Diode
- Re-Circulating Diode
- Switching Diode

Mechanical Data

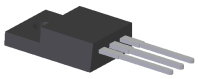
- Case: TO-220AB, ITO-220AB
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Matte Tin Annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208 e3
- Polarity: See Below
- Weight: TO-220AB – 1.95 grams (Approximate)
  ITO-220AB – 1.69 grams (Approximate)



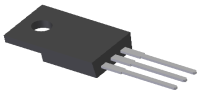
TO-220AB
Top View



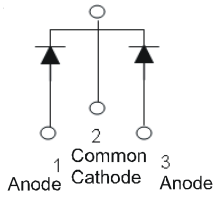
TO-220AB
Bottom View



ITO-220AB
Top View



ITO-220AB
Bottom View



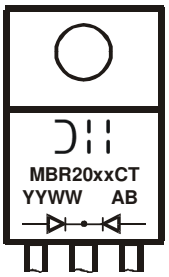
Package Pin Out
Configuration

Ordering Information (Note 4)

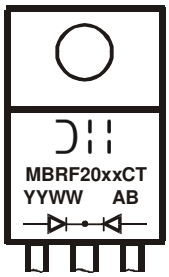
Part Number	Case	Packaging
MBR2045CT-LJ	TO-220AB (Type C)	50 pieces/tube
MBRF2045CT-LJ	ITO-220AB (TO220F-3)	50 pieces/tube
MBR2060CT-LJ	TO-220AB (Type C)	50 pieces/tube
MBRF2060CT-LJ	ITO-220AB (TO220F-3)	50 pieces/tube

Notes:
1. EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant. All applicable RoHS exemptions applied.
2. See http://www.diodes.com/quality/lead_free.html for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
4. For packaging details, go to our website at http://www.diodes.com/products/packages.html.

Marking Information



MBR20xxCT = Product Type Marking Code
AB = Foundry and Assembly Code
YYWW = Date Code Marking
YY = Last two Digits of Year (ex: 13 = 2013)
WW = Week (01 - 53)



MBRF20xxCT = Product Type Marking Code
AB = Foundry and Assembly Code
YYWW = Date Code Marking
YY = Last two Digits of Year (ex: 13 = 2013)
WW = Week (01 - 53)

Maximum Ratings (Per Leg) (@T_A = +25°C, unless otherwise specified.)

Single phase, half wave, 60Hz, resistive or inductive load.
For capacitance load, derate current by 20%.

Characteristic	Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage MBR2045CT / MBRF2045CT MBR2060CT / MBRF2060CT	V_{RRM} V_{RWM} V_{RM}	 45 60	V
Average Rectified Output Current (Per Leg) (Total)	I_O	10 20	A
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load	I_{FSM}	180	A

Thermal Characteristics (Per Leg)

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance, Junction to Case (Note 5) Package = TO-220AB Package = ITO-220AB	$R_{\theta JC}$	 2 4	°C/W
Typical Thermal Resistance, Junction to Ambient (Note 5) Package = TO-220AB Package = ITO-220AB	$R_{\theta JA}$	 15 25	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

Electrical Characteristics (Per Leg) (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
MBR2045CT / MBRF2045CT Forward Voltage Drop	V_F	— —	0.58 —	0.64 0.57	V	I_F = 10A, T_J = +25°C I_F = 10A, T_J = +125°C
MBR2060CT / MBRF2060CT Forward Voltage Drop	V_F	— —	0.75 —	0.81 0.69	V	I_F = 10A, T_J = +25°C I_F = 10A, T_J = +125°C
Leakage Current (Note 6) at Rated DC Blocking Voltage	I_R	— —	— —	0.1 15	mA	V_R = Rated V, T_J = +25°C V_R = Rated V, T_J = +125°C

Notes: 5. Device mounted on heat sink (45mm x 20mm x12mm), with minimum recommended pad layout per http://www.diodes.com.
6. Short duration pulse test used to minimize self-heating effect.

MBR2045CT / MBRF2045CT

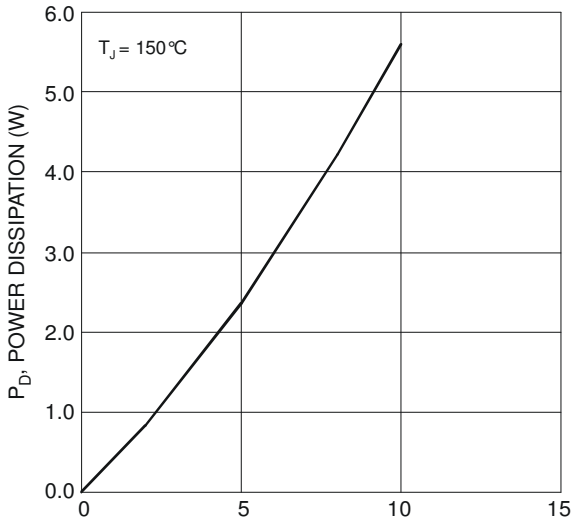


Figure 1 Forward Power Dissipation

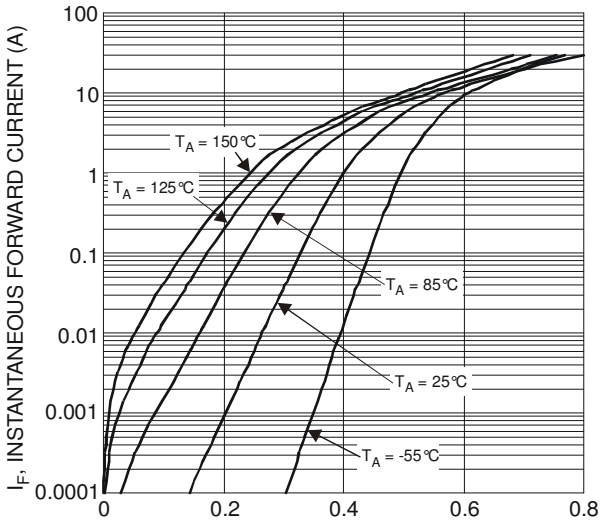


Figure 2 Typical Forward Characteristics

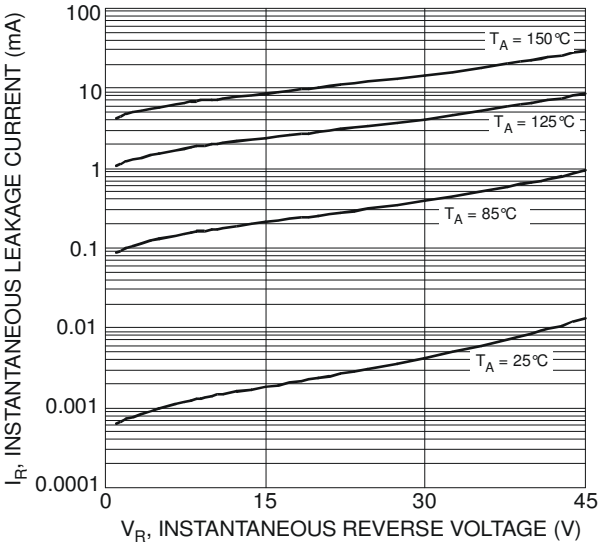


Figure 3 Typical Reverse Characteristics

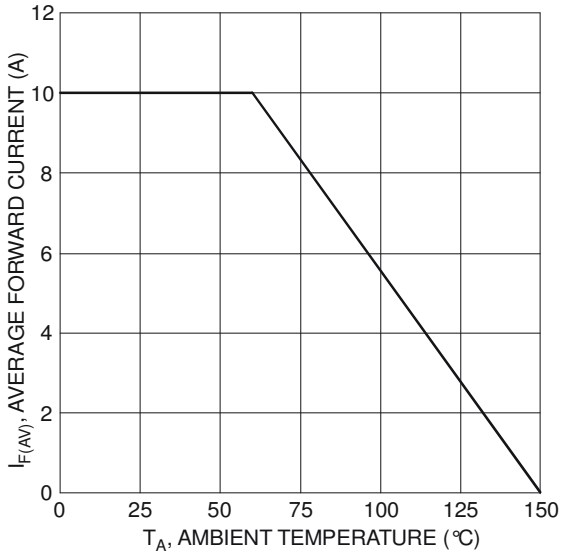


Figure 4 Forward Current Derating Curve

MBR2060CT / MBRF2060CT

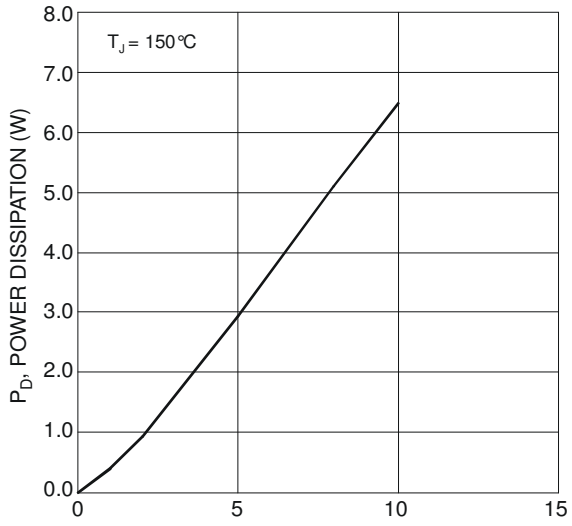


Figure 1 Forward Power Dissipation

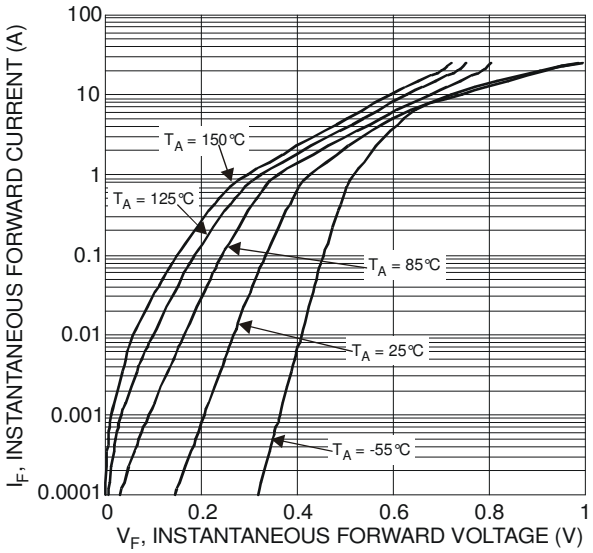


Figure 2 Typical Forward Characteristics

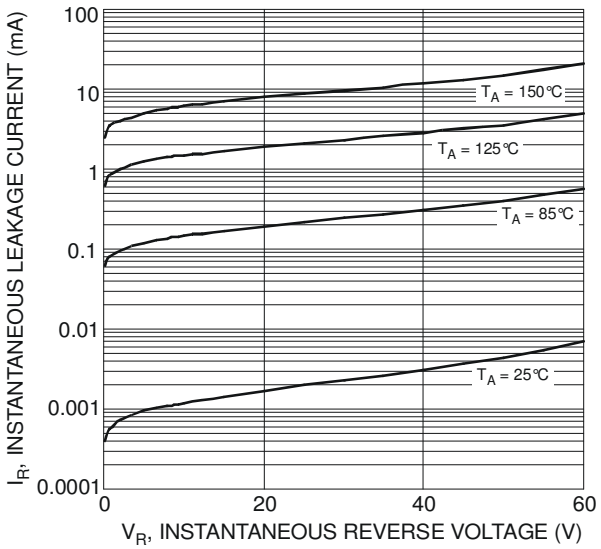


Figure 3 Typical Reverse Characteristics

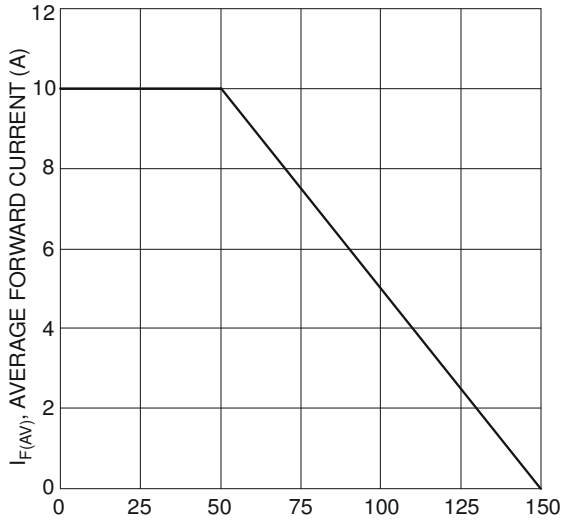
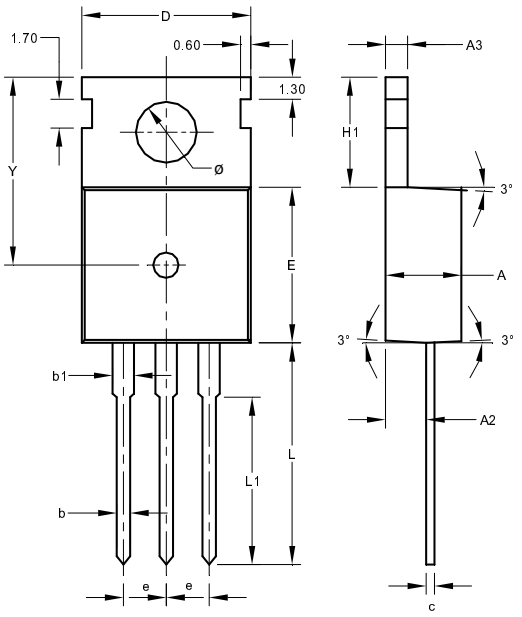


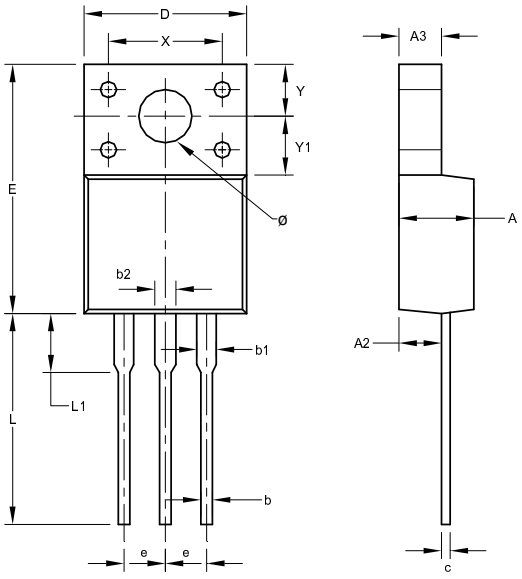
Figure 4 Forward Current Derating Curve

Package Outline Dimensions

Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for the latest version.



TO220AB (Type C)			
Dim	**Min**	**Max**	**Typ**
A	4.40	4.60	4.500
A2	2.20	2.50	2.400
A3	1.20	1.40	1.300
b	0.700	0.900	-
b1	1.170	1.390	1.270
c	0.400	0.600	-
D	9.800	10.200	-
E	9.000	9.400	-
e	-	-	2.54
H1	6.300	6.700	-
L	12.600	13.600	-
L1	9.600	10.600	-
Y	-	-	11.100
Ø	3.560	3.640	-
All Dimensions in mm			



ITO220AB (TO220F-3)			
Dim	**Min**	**Max**	**Typ**
A	4.30	4.90	-
A2	2.52	2.92	-
A3	2.35	2.90	-
b	0.55	0.90	-
b1	1.00	1.40	-
b2	1.10	1.50	-
c	0.45	0.60	-
D	9.70	10.30	-
E	14.70	16.00	-
e	-	-	2.54
L	12.50	13.50	-
L1	2.79	4.50	-
X	6.90	7.10	-
Y	3.00	3.40	-
Y1	3.37	3.90	-
ø	3.00	3.55	-
All Dimensions in mm			

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