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

Description and Applications

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

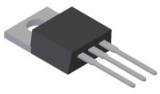
- Polarity Protection Diode
- Re-Circulating Diode
- Switching Diode

Features and Benefits

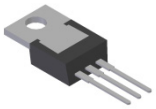
- Guard Ring Die Construction for Transient Protection.
- High Surge Current Capability.
- Low Forward Voltage Drop.
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

Mechanical Data

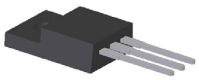
- Case: TO-220AB, ITO-220AB
- Case Material: Molded Plastic, "Green" Molding compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Matte Tin annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208 e3
- Polarity: See Below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



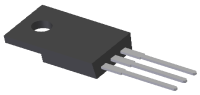
TO-220AB
Top View



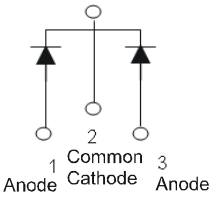
TO-220AB
Bottom View



ITO-220AB
Top View



ITO-220AB
Bottom View



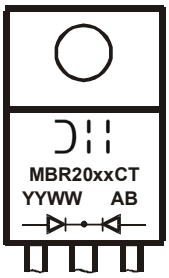
Package Pin Out
Configuration

Ordering Information (Note 4)

Part Number	Case	Packaging
MBR20xxCT (Note 5)	TO-220AB	50 pieces/tube
MBRF20xxCT (Note 5)	ITO-220AB	50 pieces/tube
MBRF20xxCT-JT (Note 5)	ITO-220AB (Alternate)	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.
5. xx = Device type, e.g. 45 = MBR2045CT

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	I_O	10	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 6) Package = TO-220AB Package = ITO-220AB	$R_{\theta JC}$	 2 4	°C/W
Typical Thermal Resistance, Junction to Ambient (Note 6) 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 7) 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: 6. Device mounted on Device with FR4 add heat sink (45mm x 20mm x12mm), with minimum recommended pad layout per http://www.diodes.com
7. Short duration pulse test used to minimize self-heating effect

MBR2045CT / MBRF2045CT

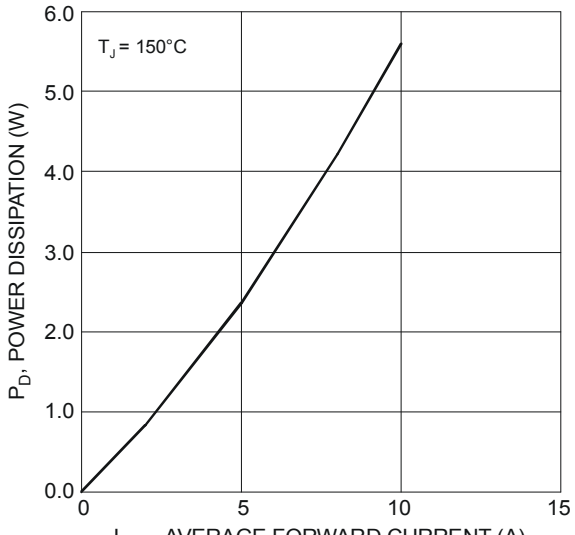


Figure 1 Forward Power Dissipation

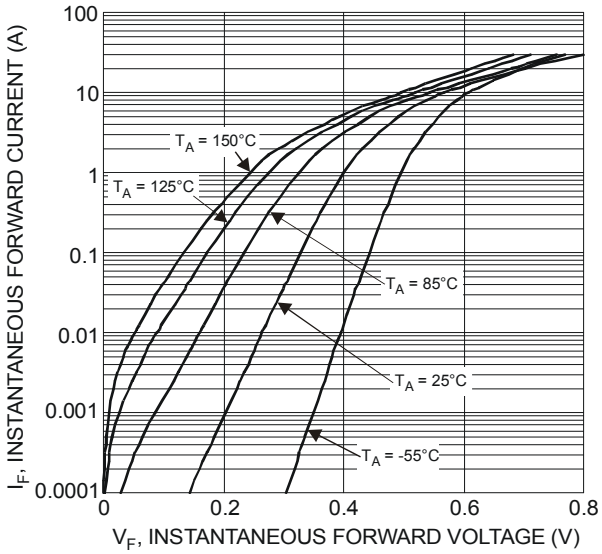


Figure 2 Typical Forward Characteristics

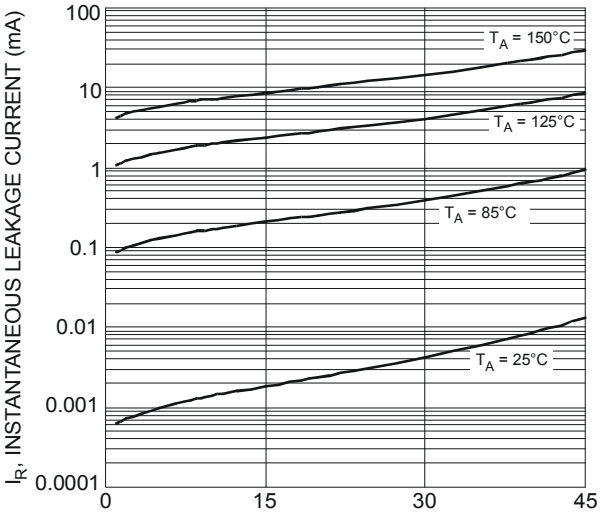


Figure 3 Typical Reverse Characteristics

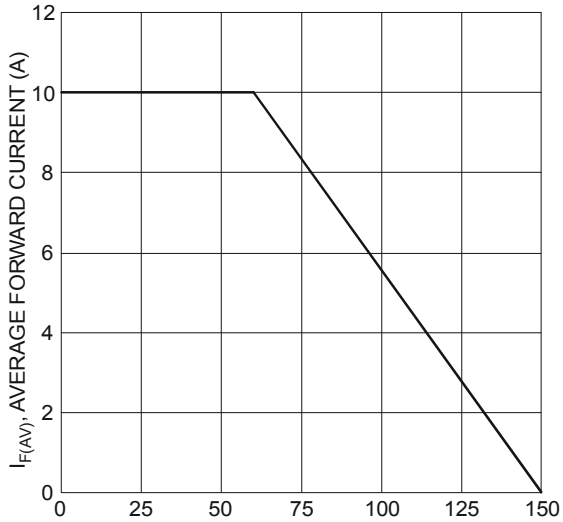
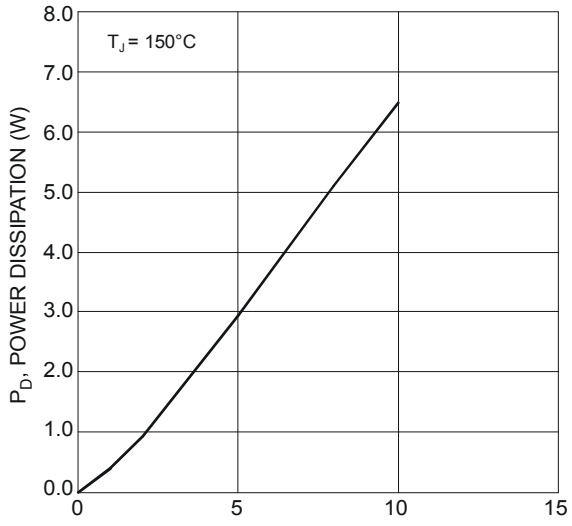


Figure 4 Forward Current Derating Curve

MBR2060CT / MBRF2060CT



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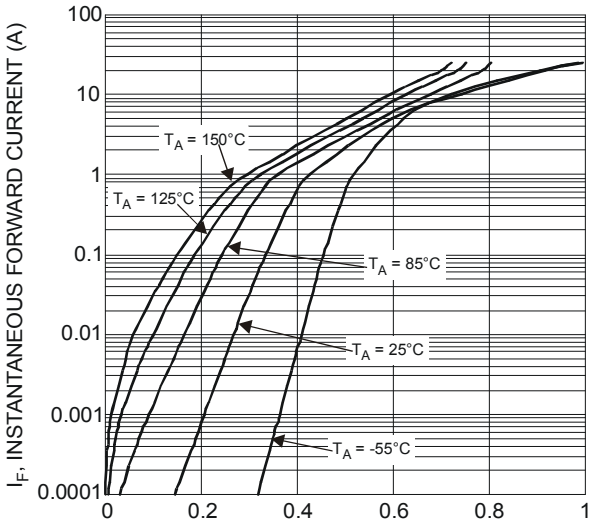


Figure 2 Typical Forward Characteristics

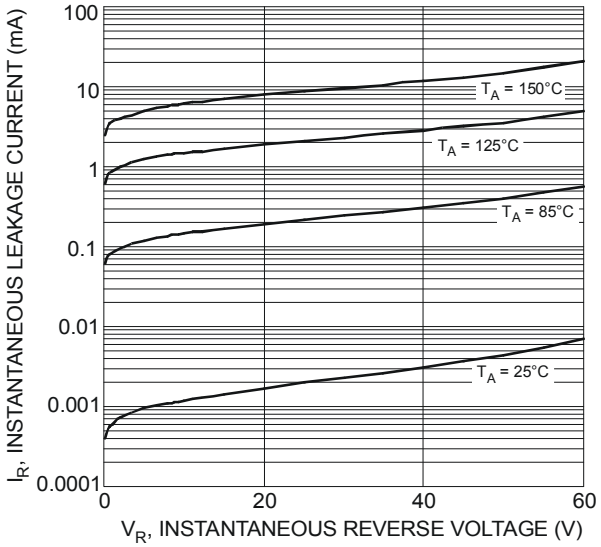


Figure 3 Typical Reverse Characteristics

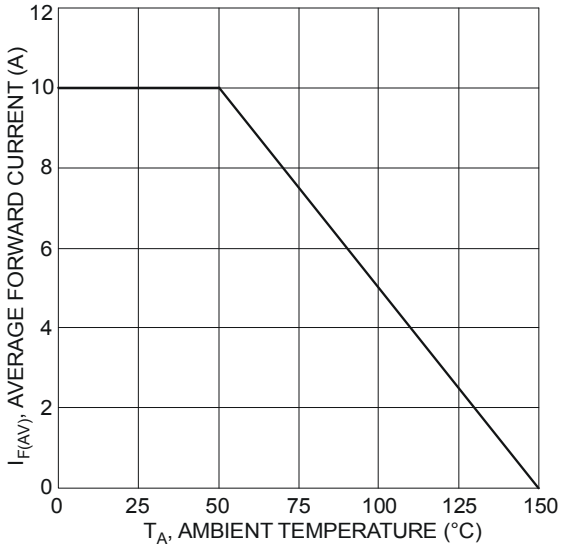
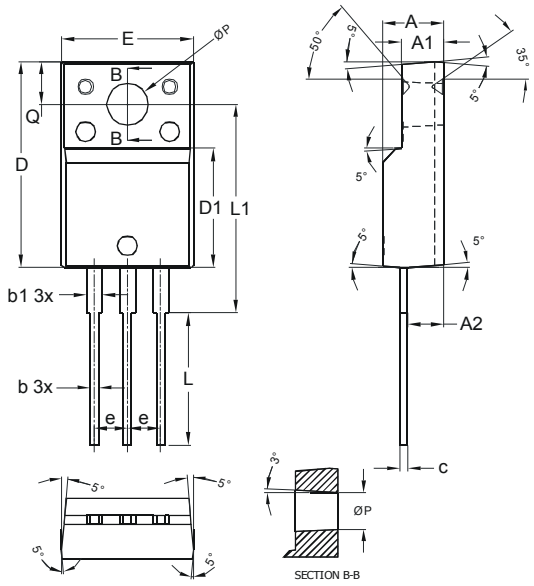


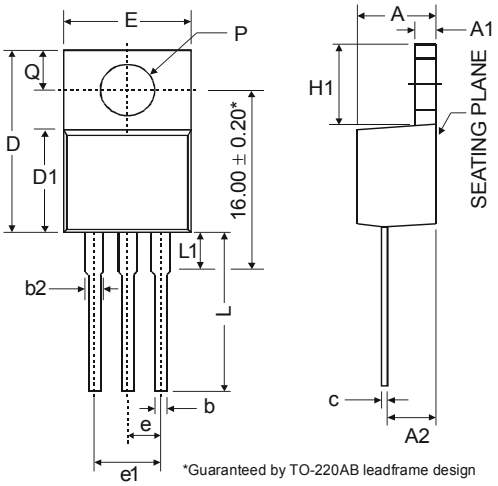
Figure 4 Forward Current Derating Curve

Package Outline Dimensions

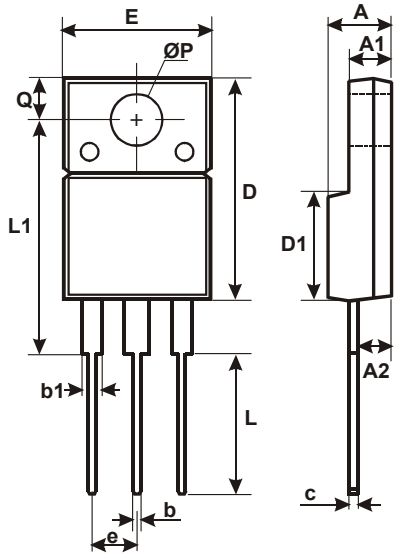
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for latest version.



ITO-220AB			
Dim	**Min**	**Typ**	**Max**
A	4.50	4.70	4.90
A1	3.04	3.24	3.44
A2	2.56	2.76	2.96
b	0.50	0.60	0.75
b1	1.10	1.20	1.35
c	0.50	0.60	0.70
D	15.67	15.87	16.07
D1	8.99	9.19	9.39
e		2.54	
E	9.91	10.11	10.31
L	9.45	9.75	10.05
L1	15.80	16.00	16.20
P	2.98	3.18	3.38
Q	3.10	3.30	3.50
All Dimensions in mm			



TO220AB			
Dim	**Min**	**Typ**	**Max**
A	3.56	-	4.82
A1	0.51	-	1.39
A2	2.04	-	2.92
b	0.39	0.81	1.01
b2	1.15	1.24	1.77
c	0.356	-	0.61
D	14.22	-	16.51
D1	8.39	-	9.01
e		2.54	
e1		5.08	
E	9.66	-	10.66
H1	5.85	-	6.85
L	12.70	-	14.73
L1	-	-	6.35
P	3.54	-	4.08
Q	2.54	-	3.42
All Dimensions in mm			



ITO-220AB Alternate		
Dim	**Min**	**Max**
A	4.36	4.77
A1	2.54	3.1
A2	2.54	2.8
b	0.55	0.75
b1	1.2	1.5
c	0.38	0.68
D	14.5	15.5
D1	8.38	8.89
E	9.72	10.27
e	2.41	2.67
L	9.87	10.67
L1	15.8	17
ØP	3.08	3.39
Q	2.6	3.0
All Dimensions in mm		

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