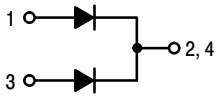
MBR60L45CTG, MBR60L45WTG

Switch-mode Power Rectifier 45 V, 60 A

ON Semiconductor®

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SCHOTTKY BARRIER RECTIFIERS 60 AMPERES, 45 VOLTS



Features and Benefits

- Low Forward Voltage
- Low Power Loss/High Efficiency
- High Surge Capacity
- 175°C Operating Junction Temperature
- 60 A Total (30 A Per Diode Leg)
- Guard−Ring for Stress Protection
- These Devices are Pb−Free, Halogen Free/BFR Free and are RoHS Compliant

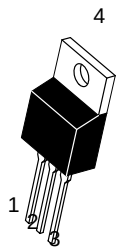
Applications

- Power Supply − Output Rectification
- Power Management
- Instrumentation

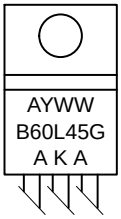
Mechanical Characteristics:

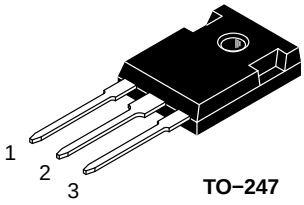
- Case: Epoxy, Molded
- Epoxy Meets UL 94 V−0 @ 0.125 in
- Weight (Approximately): 1.9 Grams (TO−220)
  4.3 Grams (TO−247)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead Temperature for Soldering Purposes: 260°C Max. for 10 Seconds
- Shipped 50 Units Per Plastic Tube for TO−220 and 30 Units Per Plastic Tube for TO−247

MARKING DIAGRAMS



TO−220
CASE 221A
STYLE 6





TO−247
CASE 340AL



B60L45	= Device Code
A	= Assembly Location
Y	= Year
WW	= Work Week
AKA	= Polarity Designator
G	= Pb−Free Device

ORDERING INFORMATION

Device	Package	Shipping
MBR60L45CTG	TO−220 (Pb−Free)	50 Units/Rail
MBR60L45WTG	TO−247 (Pb−Free)	30 Units/Rail

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MAXIMUM RATINGS (Per Diode Leg)

Rating	Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V_{RRM} V_{RWM} V_R	45	V
Average Rectified Forward Current (Rated V_R) T_C = 145°C for MBR60L45CTG (Rated V_R) T_C = 165°C for MBR60L45WTG	$I_{F(AV)}$	30	A
Peak Repetitive Forward Current (Rated V_R, Square Wave, 20 kHz)	I_{FRM}	60	A
Nonrepetitive Peak Surge Current (Surge applied at rated load conditions halfwave, single phase, 60 Hz)	I_{FSM}	200	A
Operating Junction Temperature (Note 1)	T_J	−65 to +175	°C
Storage Temperature	T_{stg}	−65 to +175	°C
Voltage Rate of Change (Rated V_R)	dv/dt	10,000	V/μs
ESD Ratings: Machine Model = C Human Body Model = 3B		> 400 > 8000	V

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

1. The heat generated must be less than the thermal conductivity from Junction−to−Ambient: $dP_D/dT_J < 1/R_{\theta JA}$.

THERMAL CHARACTERISTICS

Characteristic	Symbol	Value	Unit
Maximum Thermal Resistance			°C/W
(MBR60L45CTG) − Junction−to−Case	$R_{\theta JC}$	1.9	
(MBR60L45WTG) − Junction−to−Case	$R_{\theta JC}$	0.59	

ELECTRICAL CHARACTERISTICS (Per Diode Leg)

Characteristic	Symbol	Value	Unit
Maximum Instantaneous Forward Voltage (Note 2)	v_F		V
(I_F = 30 A, T_C = 25°C)		0.55	
(I_F = 30 A, T_C = 125°C)		0.53	
(I_F = 60 A, T_C = 25°C)		0.73	
(I_F = 60 A, T_C = 125°C)		0.76	
Maximum Instantaneous Reverse Current (Note 2)	i_R		mA
(Rated DC Voltage, T_C = 25°C)		1.2	
(Rated DC Voltage, T_C = 125°C)		275	

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

2. Pulse Test: Pulse Width = 300 μs, Duty Cycle ≤ 2.0%.

TYPICAL CHARACTERISTICS

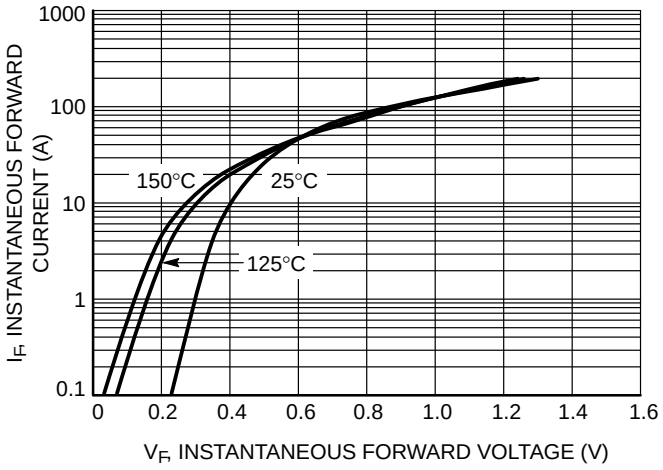


Figure 1. Typical Forward Voltage

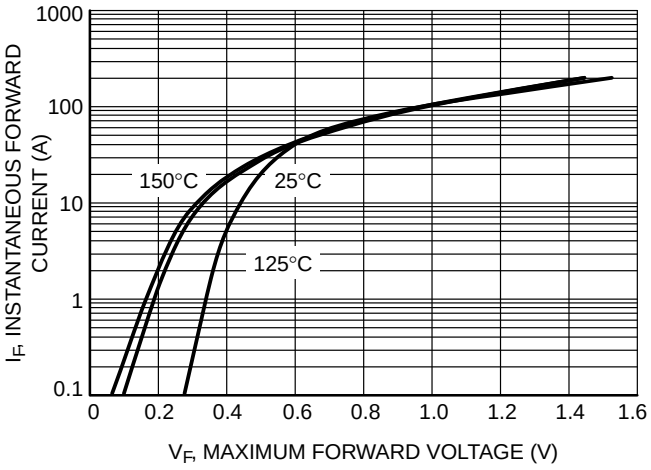


Figure 2. Maximum Forward Voltage

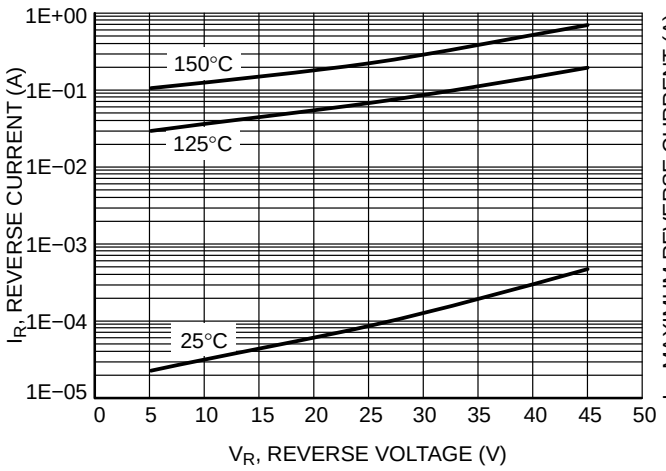


Figure 3. Typical Reverse Current

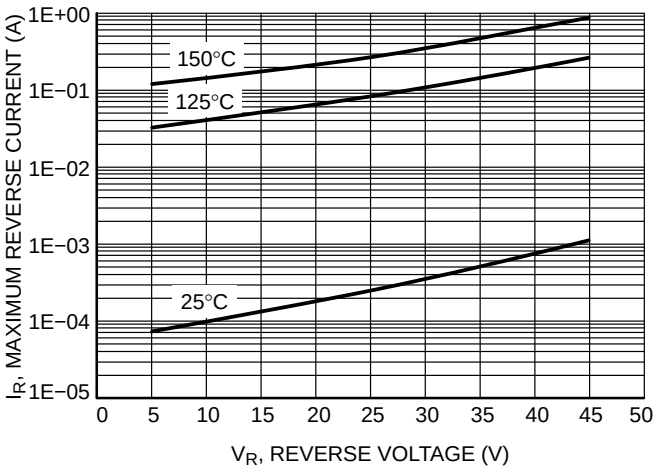


Figure 4. Maximum Reverse Current

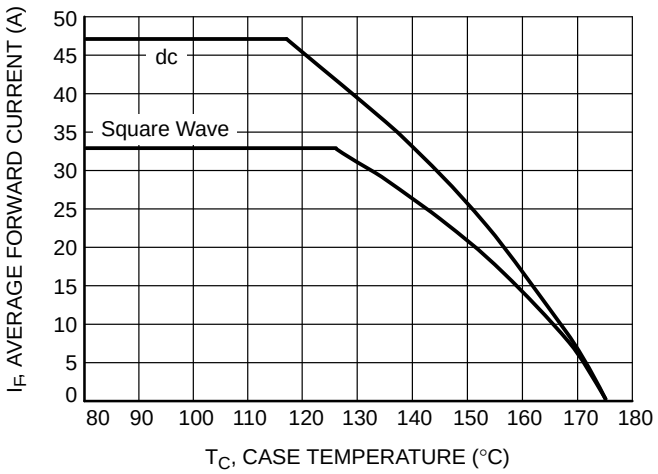


Figure 5. Current Derating for MBR60L45CTG

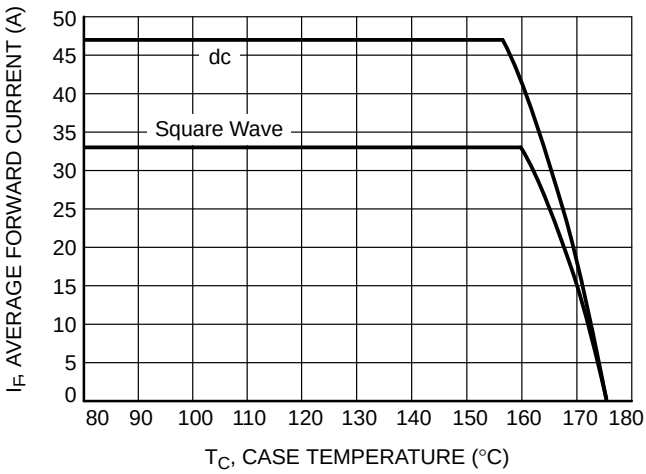


Figure 6. Current Derating for MBR60L45WTG

TYPICAL CHARACTERISTICS

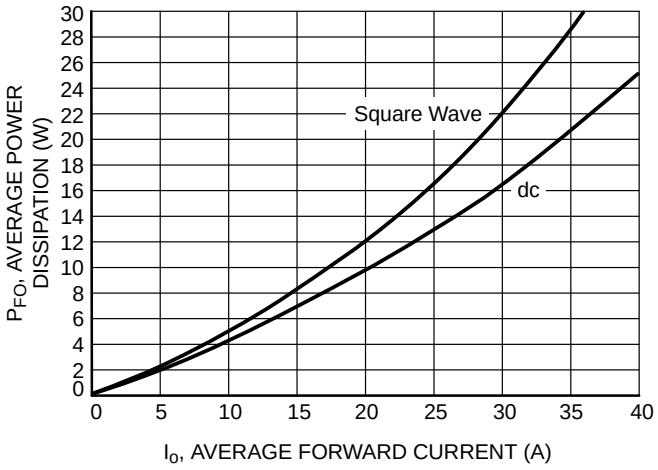


Figure 7. Forward Power Dissipation

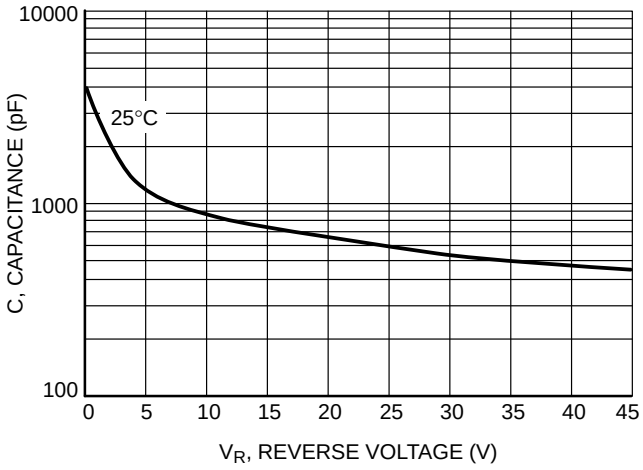


Figure 8. Capacitance

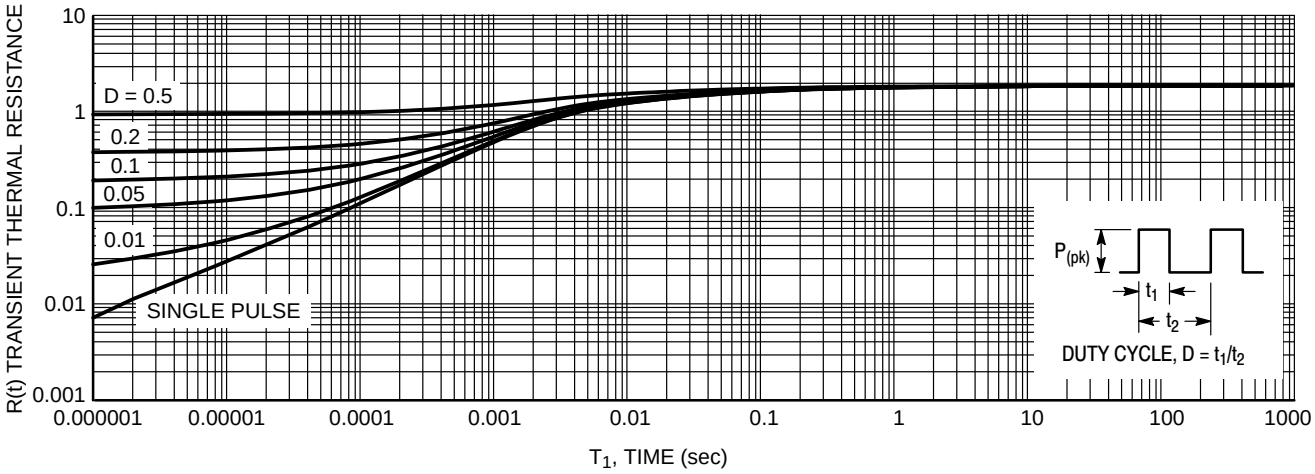


Figure 9. Thermal Response Junction−to−Case for MBR60L45CTG

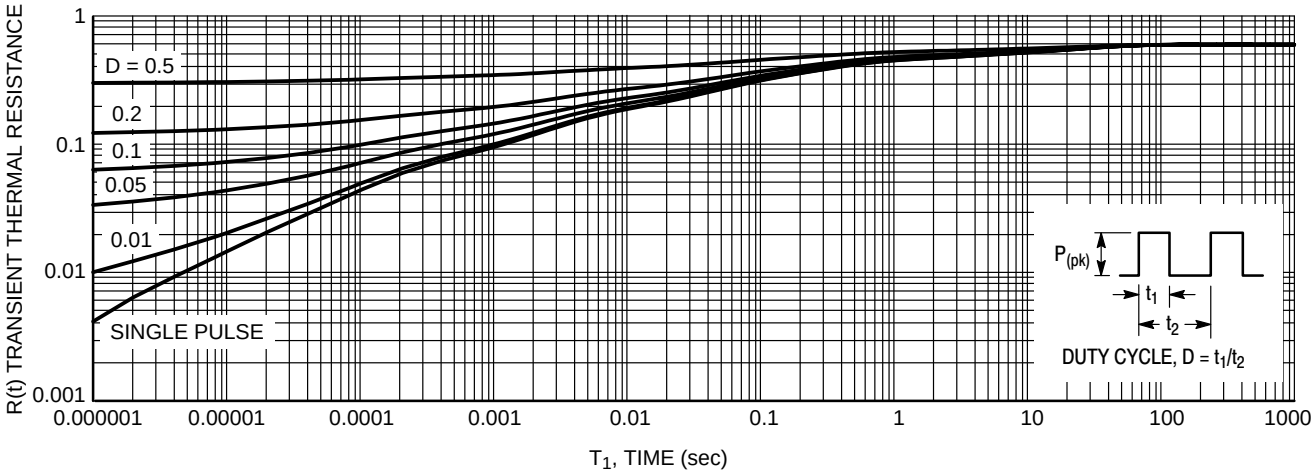
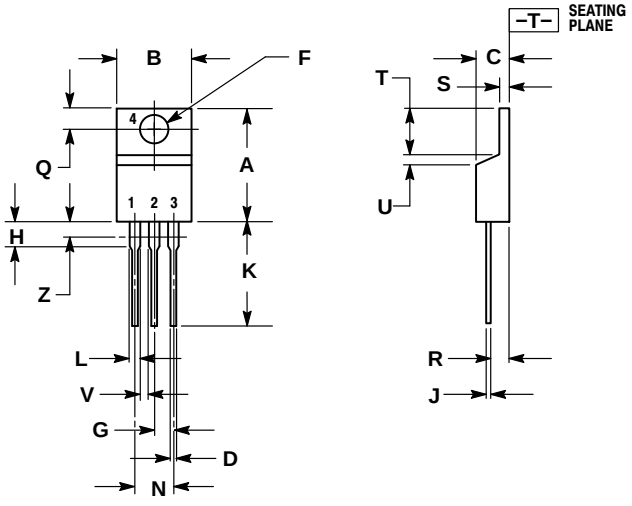


Figure 10. Thermal Response Junction−to−Case for MBR60L45WTG

PACKAGE DIMENSIONS

TO−220
CASE 221A−09
ISSUE AH



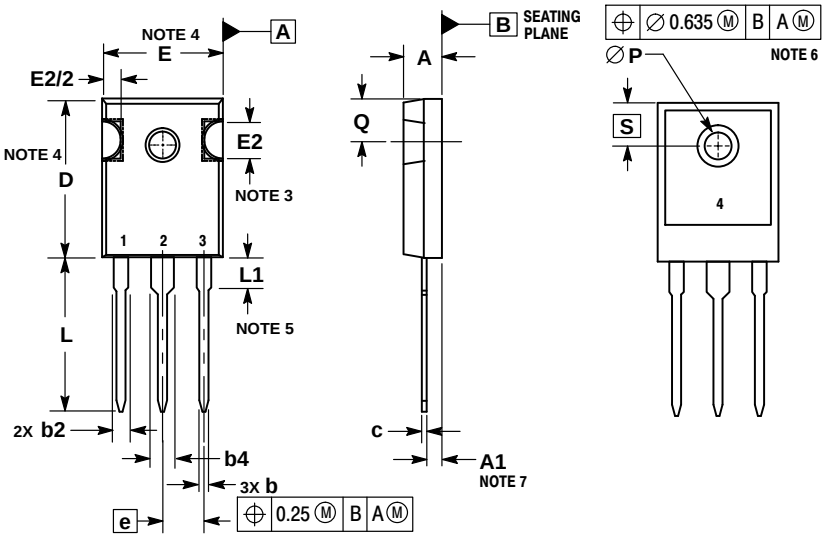
NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. DIMENSION Z DEFINES A ZONE WHERE ALL BODY AND LEAD IRREGULARITIES ARE ALLOWED.

	INCHES		MILLIMETERS	
DIM	MIN	MAX	MIN	MAX
A	0.570	0.620	14.48	15.75
B	0.380	0.415	9.66	10.53
C	0.160	0.190	4.07	4.83
D	0.025	0.038	0.64	0.96
F	0.142	0.161	3.61	4.09
G	0.095	0.105	2.42	2.66
H	0.110	0.161	2.80	4.10
J	0.014	0.024	0.36	0.61
K	0.500	0.562	12.70	14.27
L	0.045	0.060	1.15	1.52
N	0.190	0.210	4.83	5.33
Q	0.100	0.120	2.54	3.04
R	0.080	0.110	2.04	2.79
S	0.045	0.055	1.15	1.39
T	0.235	0.255	5.97	6.47
U	0.000	0.050	0.00	1.27
V	0.045	---	1.15	---
Z	---	0.080	---	2.04

STYLE 6:
PIN 1. ANODE
2. CATHODE
3. ANODE
4. CATHODE

PACKAGE DIMENSIONS

TO−247
CASE 340AL
ISSUE A



NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. SLOT REQUIRED, NOTCH MAY BE ROUNDED.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH. MOLD FLASH SHALL NOT EXCEED 0.13 PER SIDE. THESE DIMENSIONS ARE MEASURED AT THE OUTERMOST EXTREME OF THE PLASTIC BODY.
5. LEAD FINISH IS UNCONTROLLED IN THE REGION DEFINED BY L1.
6. ∅P SHALL HAVE A MAXIMUM DRAFT ANGLE OF 1.5° TO THE TOP OF THE PART WITH A MAXIMUM DIAMETER OF 3.91.
7. DIMENSION A1 TO BE MEASURED IN THE REGION DEFINED BY L1.

	MILLIMETERS	
DIM	MIN	MAX
A	4.70	5.30
A1	2.20	2.60
b	1.00	1.40
b2	1.65	2.35
b4	2.60	3.40
c	0.40	0.80
D	20.30	21.40
E	15.50	16.25
E2	4.32	5.49
e	5.45 BSC	
L	19.80	20.80
L1	3.50	4.50
P	3.55	3.65
Q	5.40	6.20
S	6.15 BSC	

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