Switch-mode Power Rectifier

60 V, 40 A

MBR40L60CTG

Features and Benefits

- Low Forward Voltage
- Low Power Loss/High Efficiency
- High Surge Capability
- 40 A Total (20 A Per Diode Leg)
- Guard−Ring for Stress Protection
- This Device is Pb−Free and is RoHS Compliant

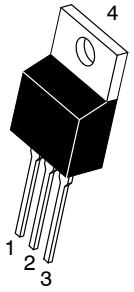
Applications

- Power Supply − Output Rectification
- Power Management
- Instrumentation

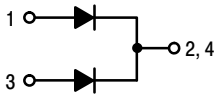
Mechanical Characteristics:

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

SCHOTTKY BARRIER RECTIFIER 40 AMPERES, 60 VOLTS



TO−220
CASE 221A
STYLE 6



MARKING DIAGRAM

A	= Assembly Location
Y	= Year
WW	= Work Week
B40L60	= Device Code
G	= Pb−Free Device
AKA	= Polarity Designator

ORDERING INFORMATION

See detailed ordering and shipping information on page 5 of this data sheet.

MAXIMUM RATINGS (Per Diode Leg)

Symbol	Rating	Value	Unit
V_{RRM} V_{RWM} V_R	Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	60	V
$I_{F(AV)}$	Average Rectified Forward Current (Per Leg) (Rated V_R) T_C = 130°C (Per Device)	20 40	A
I_{FSM}	Nonrepetitive Peak Surge Current (Surge applied at rated load conditions halfwave, single phase, 60 Hz)	240	A
T_J	Operating Junction Temperature (Note 1)	−55 to +150	°C
T_{stg}	Storage Temperature	−65 to +175	°C
	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

Symbol	Characteristic	Value	Unit
	Maximum Thermal Resistance		°C/W
$R_{\theta JC}$	Junction−to−Case	1.8	
$R_{\theta JA}$	Junction−to−Ambient	70	

ELECTRICAL CHARACTERISTICS (Per Diode Leg)

Symbol	Characteristic	Typ	Max	Unit
v_F	Maximum Instantaneous Forward Voltage (Note 2)			V
	(I_F = 20 A, T_C = 25°C)	0.56	0.61	
	(I_F = 20 A, T_C = 125°C)	0.53	0.58	
	(I_F = 40 A, T_C = 25°C)	0.75	0.81	
	(I_F = 40 A, T_C = 125°C)	0.69	0.74	
i_R	Maximum Instantaneous Reverse Current (Note 2)			
	(Rated DC Voltage, T_C = 25°C)	210	550	μA
	(Rated DC Voltage, T_C = 125°C)	95	175	mA

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%.

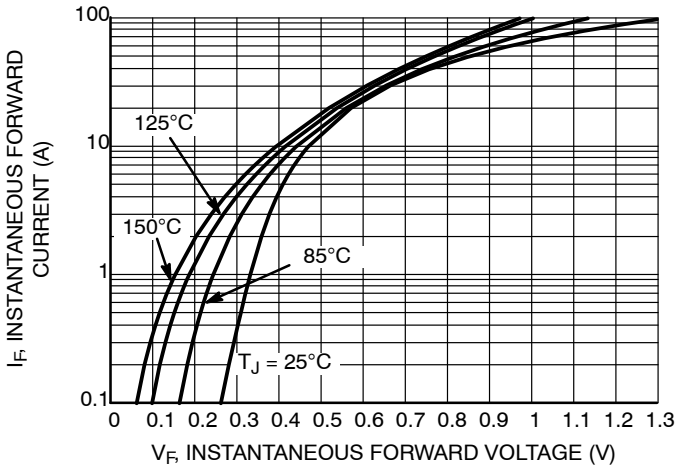


Figure 1. Typical Forward Voltage

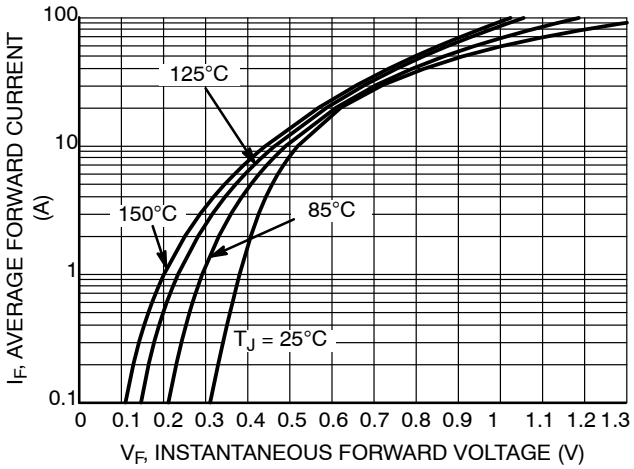


Figure 2. Maximum Forward Voltage

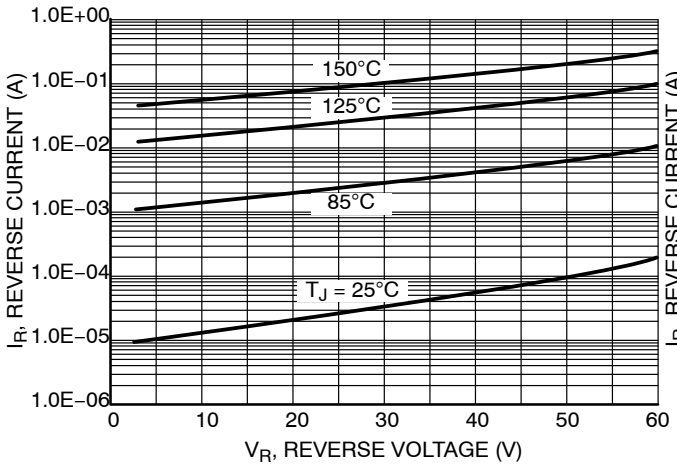


Figure 3. Typical Reverse Current

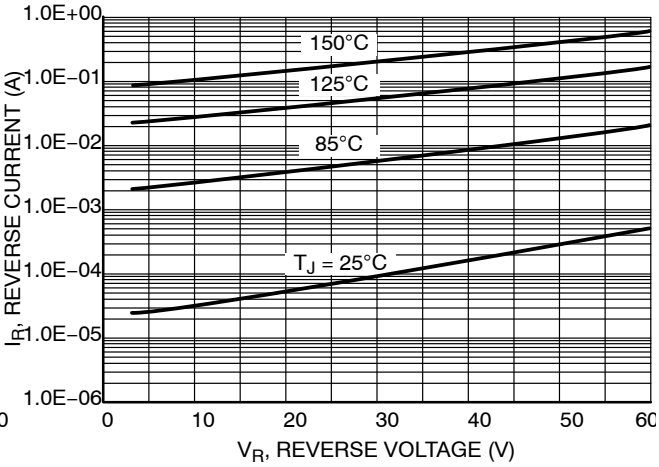


Figure 4. Maximum Reverse Current

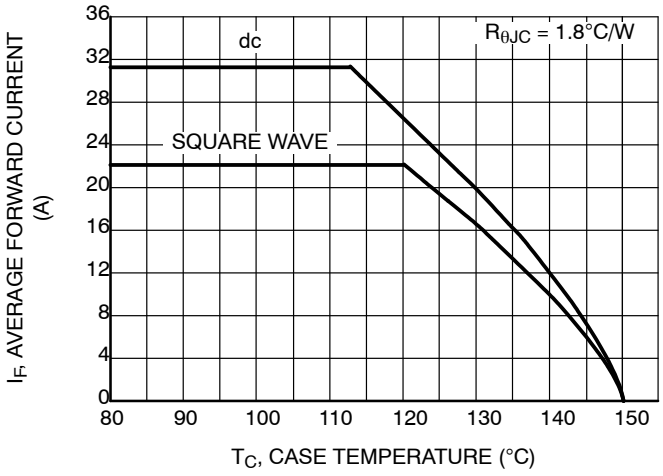


Figure 5. Current Derating, Case per Leg

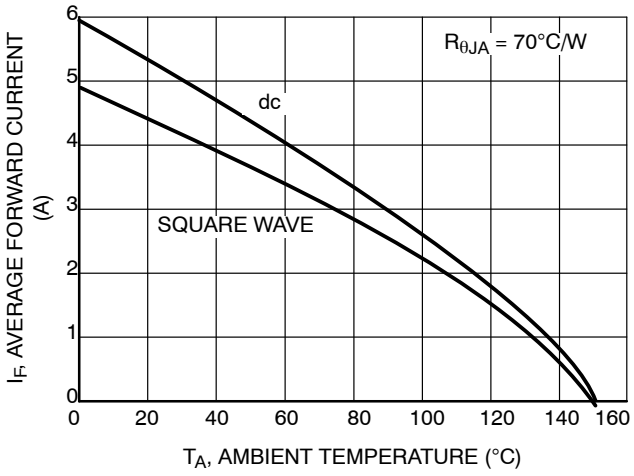


Figure 6. Current Derating, Ambient per Leg

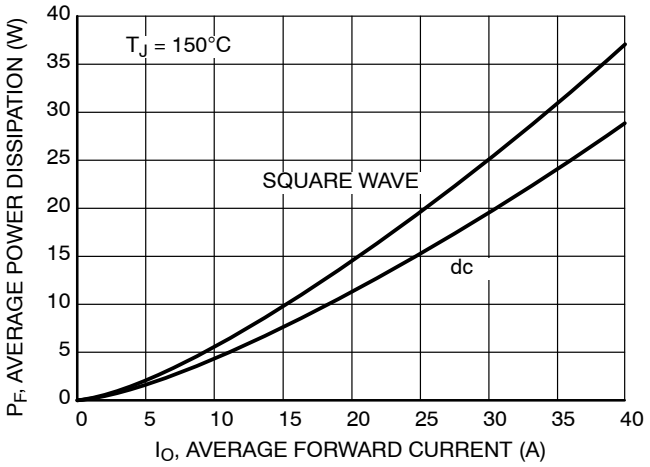


Figure 7. Forward Power Dissipation

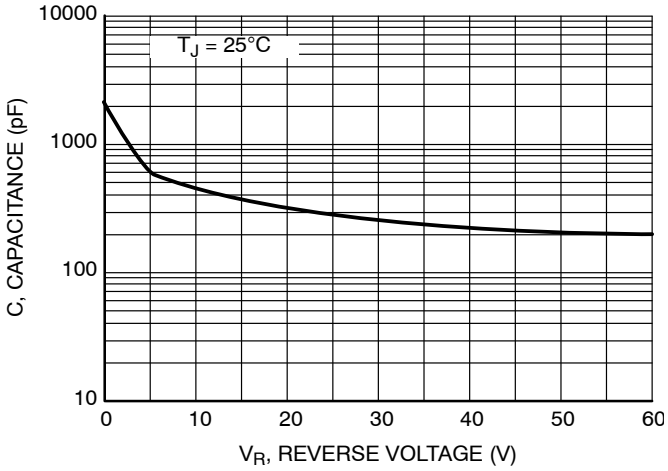


Figure 8. Capacitance

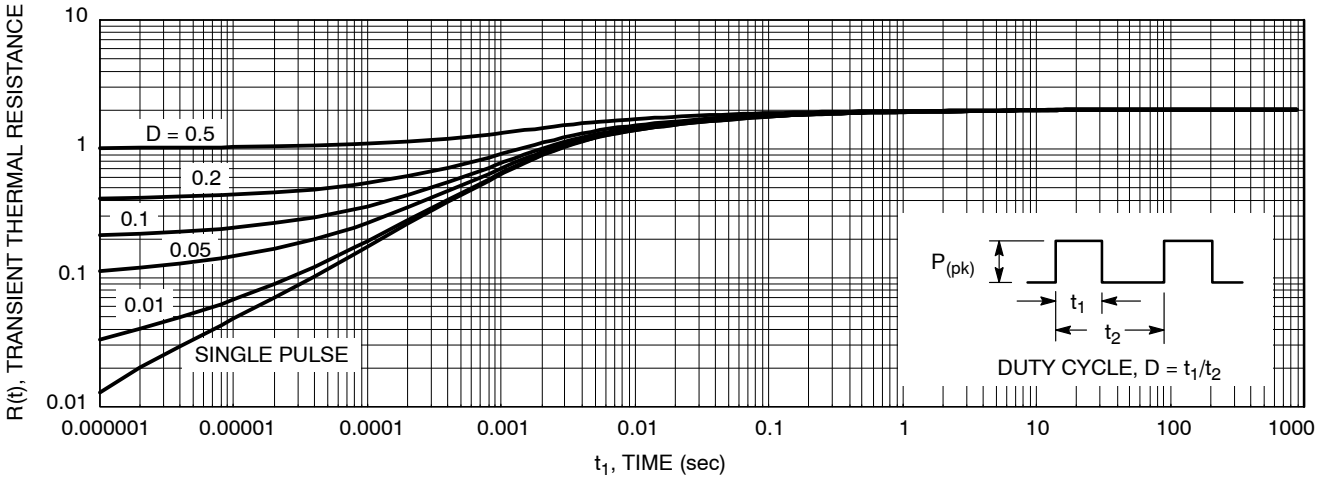


Figure 9. Thermal Response Junction−to−Case for MBR40L60CT

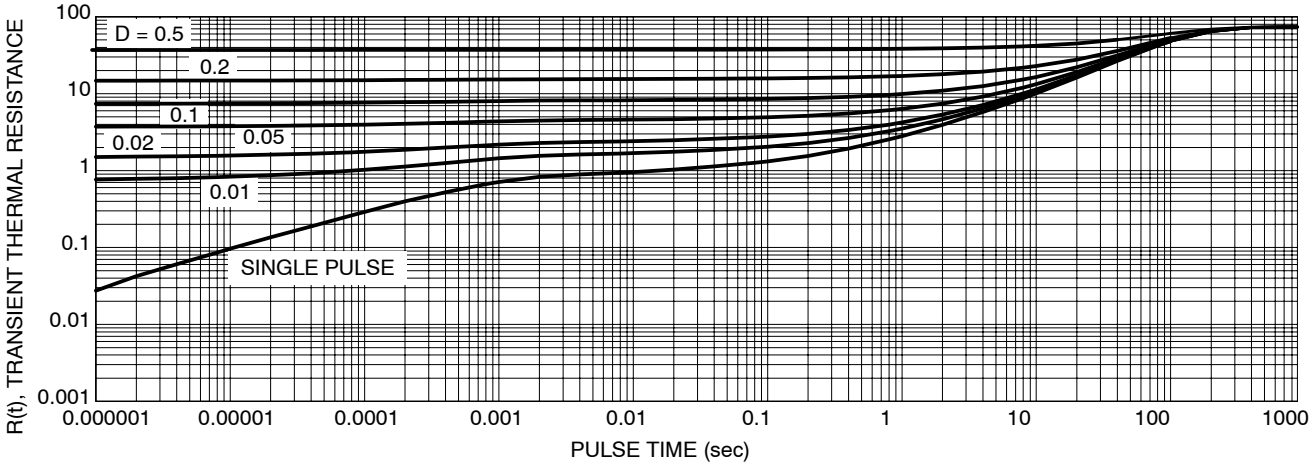
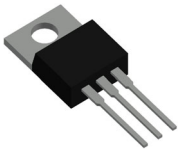


Figure 10. Thermal Response Junction−to−Ambient for MBR40L60CT

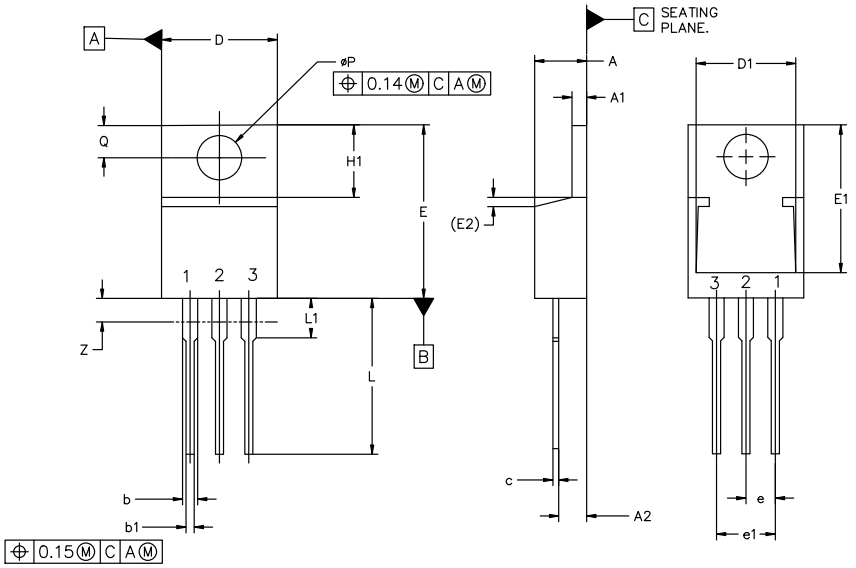
DEVICE ORDERING INFORMATION

Device Order Number	Package Type	Shipping
MBR40L60CTG	TO−220 (Pb−Free)	50 Units / Rail



TO−220−3 10.10x15.12x4.45, 2.54P
CASE 221A
ISSUE AL

DATE 05 FEB 2025



MILLIMETERS			
DIM	MIN	NOM	MAX
A	4.07	4.45	4.83
A1	1.15	1.28	1.41
A2	2.04	2.42	2.79
b	1.15	1.34	1.52
b1	0.64	0.80	0.96
c	0.36	0.49	0.61
D	9.66	10.10	10.53
D1	8.43	8.63	8.83
E	14.48	15.12	15.75
E1	12.58	12.78	12.98
E2	1.27 REF		

MILLIMETERS			
DIM	MIN	NOM	MAX
e	2.42	2.54	2.66
e1	4.83	5.08	5.33
H1	5.97	6.22	6.47
L	12.70	13.49	14.27
L1	2.80	3.45	4.10
Q	2.54	2.79	3.04
øP	3.60	3.85	4.09
Z	−.−−	−.−−	3.48

NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 2018.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. DIMENSION Z DEFINES A ZONE WHERE ALL BODY AND LEAD IRREGULARITIES ARE ALLOWED.

STYLE 1:
PIN 1. BASE
2. COLLECTOR
3. EMITTER
4. COLLECTOR

STYLE 2:
PIN 1. BASE
2. EMITTER
3. COLLECTOR
4. EMITTER

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

STYLE 4:
PIN 1. MAIN TERMINAL 1
2. MAIN TERMINAL 2
3. GATE
4. MAIN TERMINAL 2

STYLE 5:
PIN 1. GATE
2. DRAIN
3. SOURCE
4. DRAIN

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

STYLE 7:
PIN 1. CATHODE
2. ANODE
3. CATHODE
4. ANODE

STYLE 8:
PIN 1. CATHODE
2. ANODE
3. EXTERNAL TRIP/DELAY
4. ANODE

STYLE 9:
PIN 1. GATE
2. COLLECTOR
3. EMITTER
4. COLLECTOR

STYLE 10:
PIN 1. GATE
2. SOURCE
3. DRAIN
4. SOURCE

STYLE 11:
PIN 1. DRAIN
2. SOURCE
3. GATE
4. SOURCE

STYLE 12:
PIN 1. MAIN TERMINAL 1
2. MAIN TERMINAL 2
3. GATE
4. NOT CONNECTED

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ADDITIONAL INFORMATION

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