

MBR30L60CTG, MBRF30L60CTG

Switch-mode Power Rectifier 60 V, 30 A

Features and Benefits

- Low Forward Voltage
- Low Power Loss/High Efficiency
- High Surge Capability
- 30 A Total (15 A Per Diode Leg)
- Guard-Ring for Stress Protection
- These Devices are Pb-Free and are RoHS Compliant

Applications

- Power Supply – Output Rectification
- Power Management
- Instrumentation

Mechanical Characteristics:

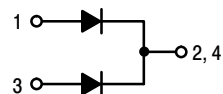
- Case: Epoxy, Molded
- Epoxy Meets UL 94 V-0 @ 0.125 in
- Weight (Approximately): 1.9 Grams (TO-220 & TO-220FP)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead Temperature for Soldering Purposes:
260°C Max. for 10 Seconds



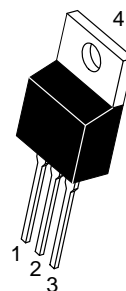
ON Semiconductor®

www.onsemi.com

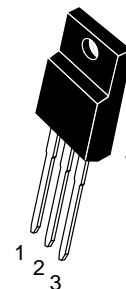
SCHOTTKY BARRIER RECTIFIER 30 AMPERES, 60 VOLTS



MARKING DIAGRAMS



TO-220
CASE 221A
STYLE 6



TO-220 FULLPAK™
CASE 221AH



A = Assembly Location
Y = Year
WW = Work Week
B30L60 = Device Code
G = Pb-Free Device
AKA = Polarity Designator

ORDERING INFORMATION

See detailed ordering and shipping information on page 2 of this data sheet.

MBR30L60CTG, MBRF30L60CTG

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	60	V
Average Rectified Forward Current (Per Leg) MBR30L60CTG (Rated V_R) $T_C = 133^\circ\text{C}$ (Per Device) MBRF30L60CTG (Rated V_R) $T_C = 108^\circ\text{C}$ (Per Device)	$I_{F(AV)}$	15 30	A
Nonrepetitive Peak Surge Current (Surge applied at rated load conditions halfwave, single phase, 60 Hz)	I_{FSM}	240	A
Operating Junction Temperature (Note 1)	T_J	-55 to +150	$^\circ\text{C}$
Storage Temperature	T_{stg}	-65 to +175	$^\circ\text{C}$
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

Characteristic	Symbol	Value	Unit
Maximum Thermal Resistance MBR30L60CTG Junction-to-Case Junction-to-Ambient	$R_{\theta JC}$ $R_{\theta JA}$	2.1 70	$^\circ\text{C}/\text{W}$
MBRF30L60CTG Junction-to-Case Junction-to-Ambient	$R_{\theta JC}$ $R_{\theta JA}$	5.0 75	

ELECTRICAL CHARACTERISTICS (Per Diode Leg)

Characteristic	Symbol	Typ	Max	Unit
Maximum Instantaneous Forward Voltage (Note 2) ($I_F = 15\text{ A}$, $T_C = 25^\circ\text{C}$) ($I_F = 15\text{ A}$, $T_C = 125^\circ\text{C}$) ($I_F = 30\text{ A}$, $T_C = 25^\circ\text{C}$) ($I_F = 30\text{ A}$, $T_C = 125^\circ\text{C}$)	V_F	0.57 0.53 0.75 0.70	0.62 0.57 0.81 0.73	V
Maximum Instantaneous Reverse Current (Note 2) (Rated DC Voltage, $T_C = 25^\circ\text{C}$) (Rated DC Voltage, $T_C = 125^\circ\text{C}$)	i_R	137 62	350 110	μA 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 $\leq 2.0\%$.

DEVICE ORDERING INFORMATION

Device Order Number	Package Type	Shipping
MBR30L60CTG	TO-220 (Pb-Free)	50 Units / Rail
MBRF30L60CTG	TO-220FP (Pb-Free)	50 Units / Rail

MBR30L60CTG, MBRF30L60CTG

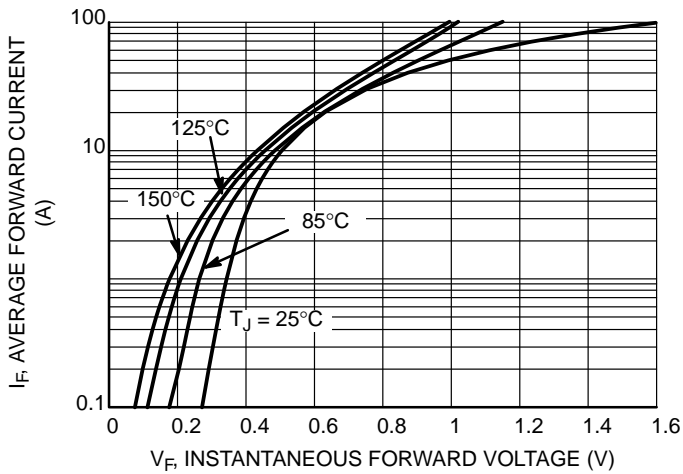


Figure 1. Typical Forward Voltage

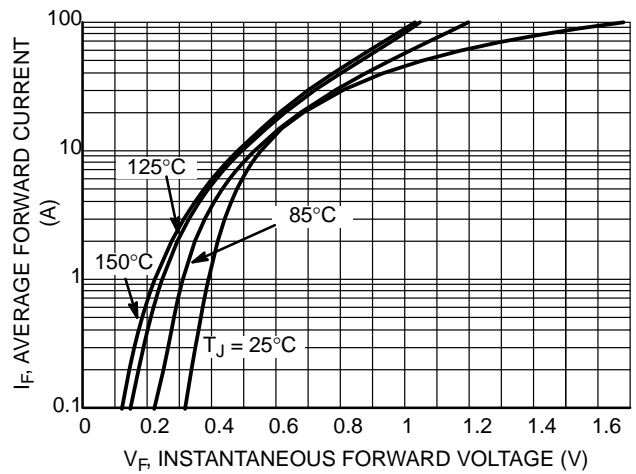


Figure 2. Maximum Forward Voltage

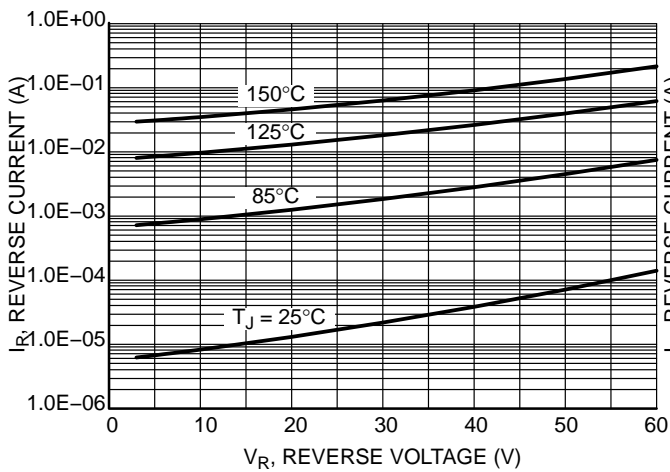


Figure 3. Typical Reverse Current

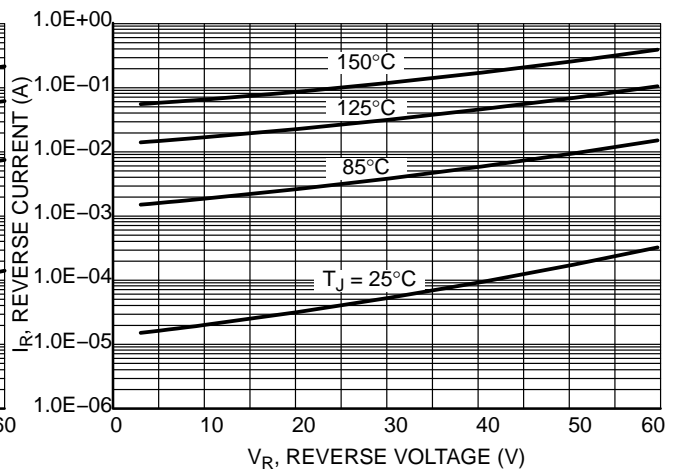


Figure 4. Maximum Reverse Current

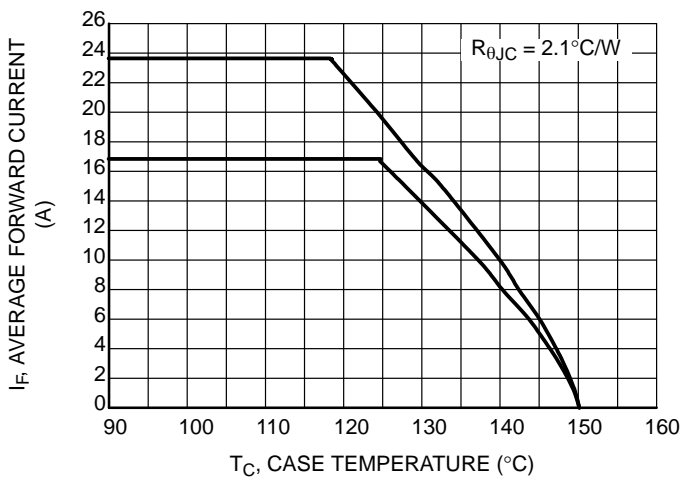


Figure 5. Current Derating, Case per Leg
MBR30L60CT

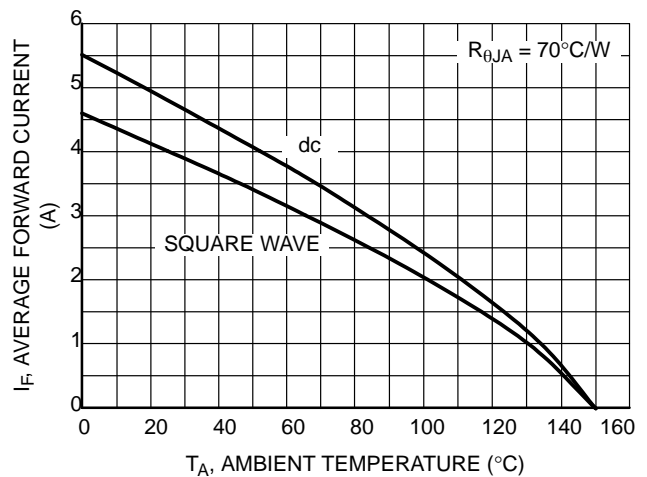


Figure 6. Current Derating, Ambient per Leg
MBR30L60CT

MBR30L60CTG, MBRF30L60CTG

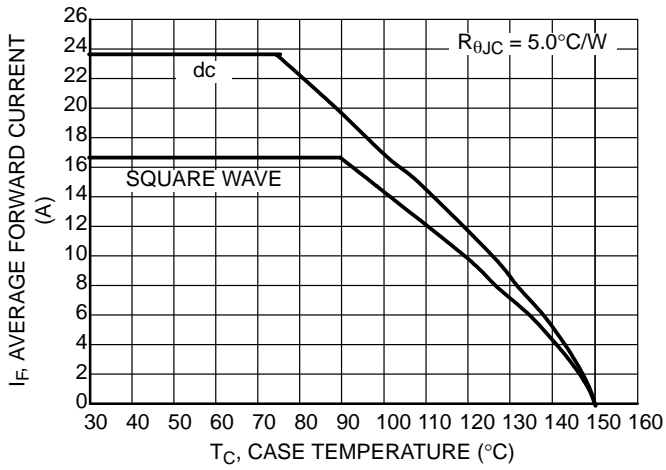


Figure 7. Current Derating, Case per Leg MBRF30L60CT

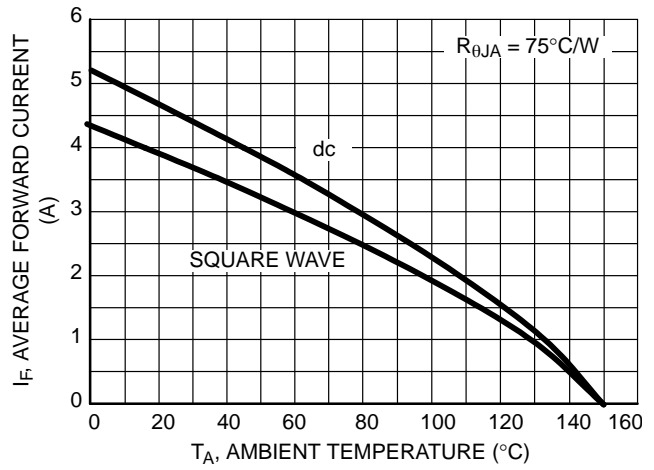


Figure 8. Current Derating, Ambient per Leg MBRF30L60CT

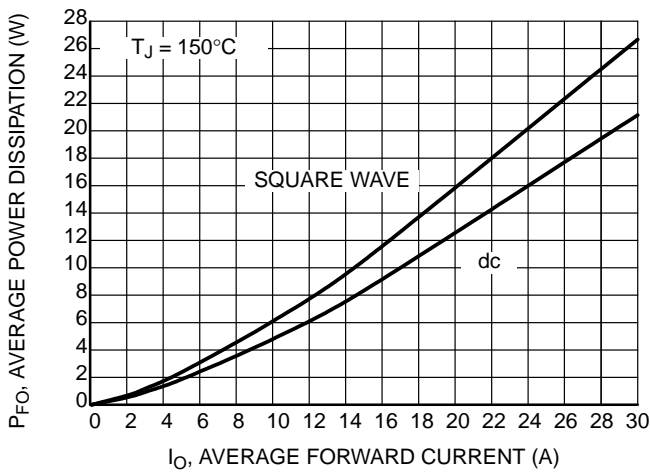


Figure 9. Forward Power Dissipation

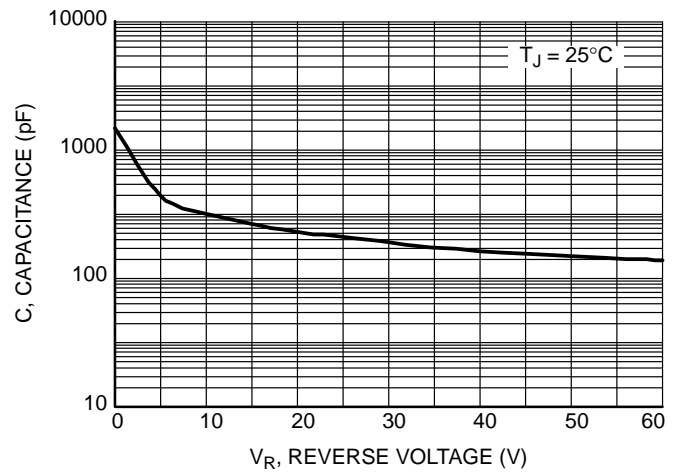


Figure 10. Capacitance

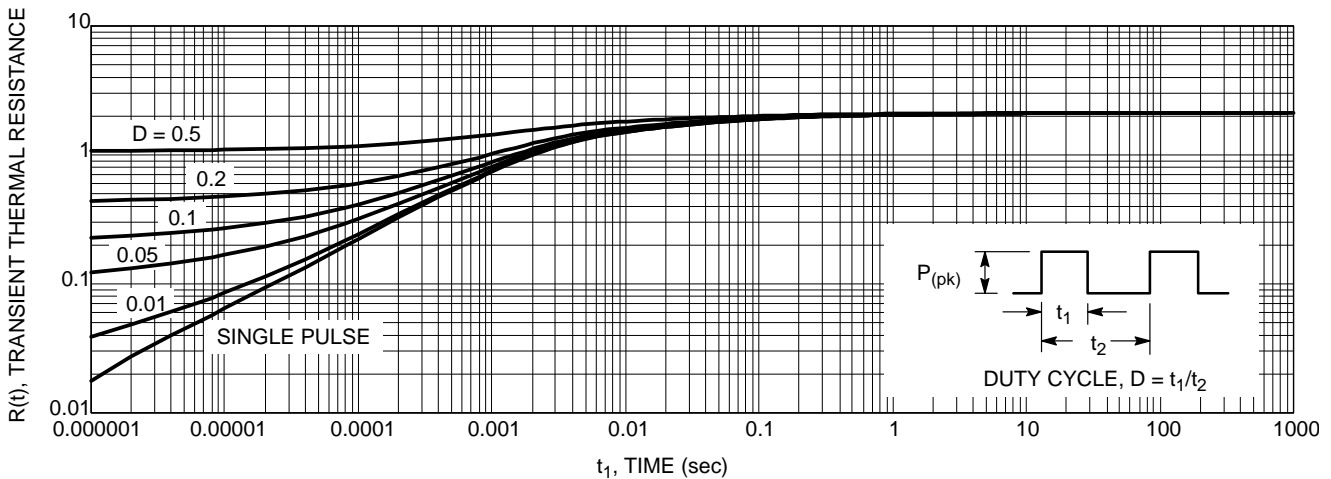


Figure 11. Thermal Response Junction-to-Case, per Leg for MBR30L60CT

MBR30L60CTG, MBRF30L60CTG

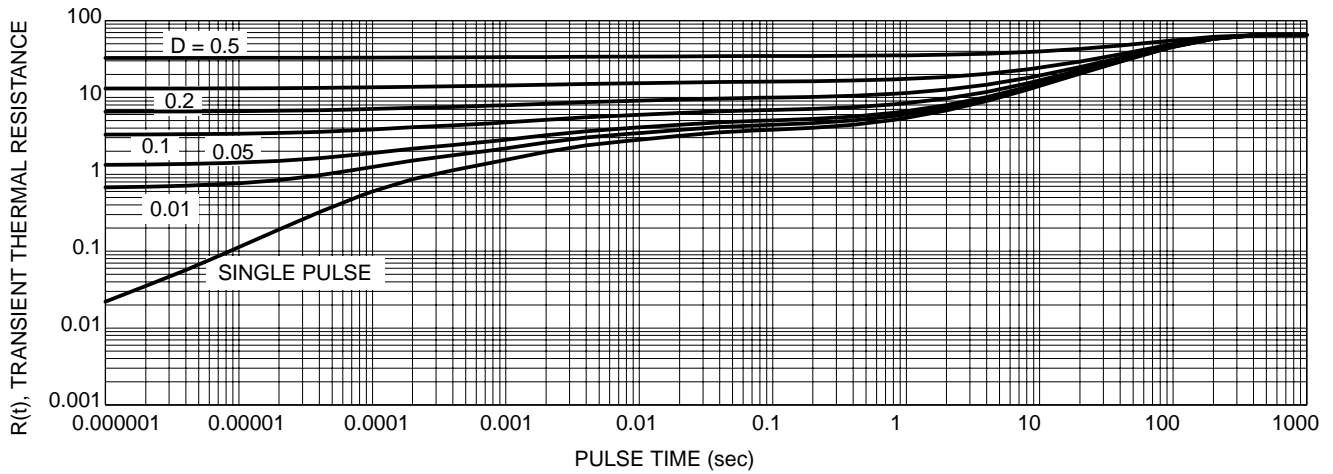


Figure 12. Thermal Response Junction-to-Ambient, per Leg for MBR30L60CT

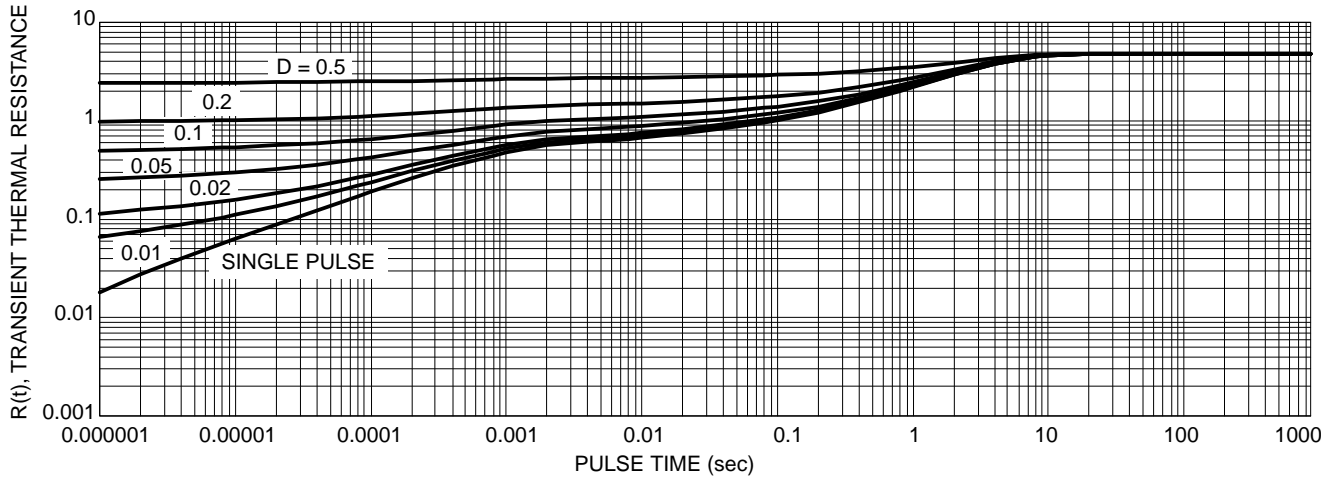


Figure 13. Thermal Response Junction-to-Case, per Leg for MBRF30L60CT

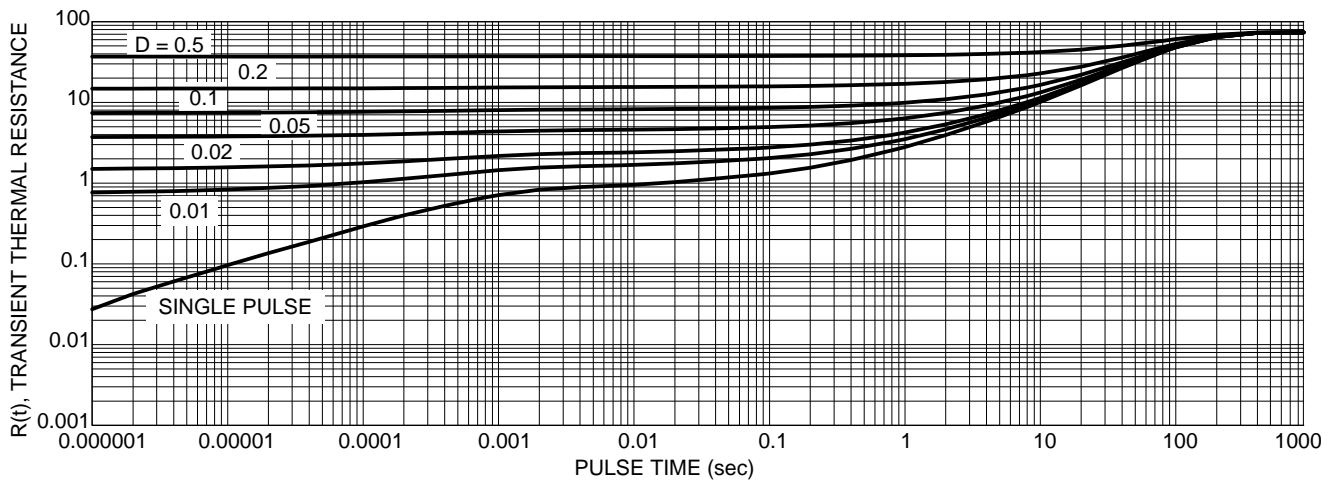
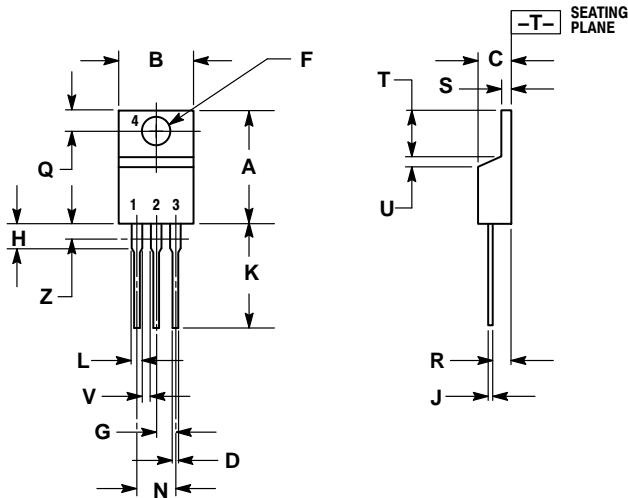


Figure 14. Thermal Response Junction-to-Ambient, per Leg for MBRF30L60CT

MBR30L60CTG, MBRF30L60CTG

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.

DIM	INCHES		MILLIMETERS	
	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

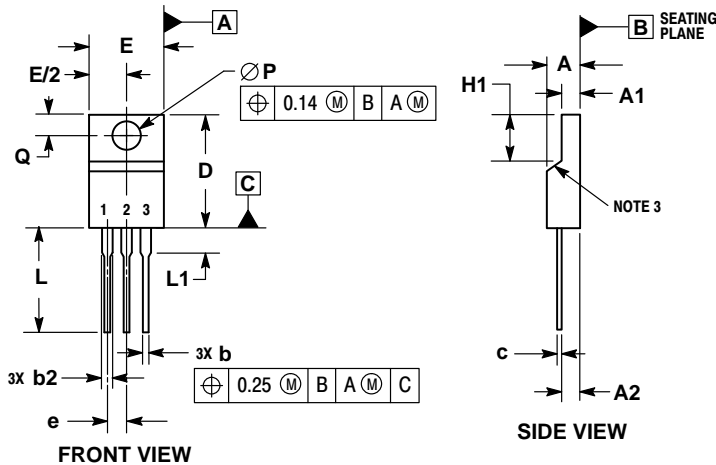
STYLE 6:

1. ANODE
2. CATHODE
3. ANODE
4. CATHODE

MBR30L60CTG, MBRF30L60CTG

PACKAGE DIMENSIONS

TO-220 FULLPACK, 3-LEAD
CASE 221AH
ISSUE F




NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. CONTOUR UNCONTROLLED IN THIS AREA.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH AND GATE PROTRUSIONS. MOLD FLASH AND GATE PROTRUSIONS NOT TO EXCEED 0.13 PER SIDE. THESE DIMENSIONS ARE TO BE MEASURED AT OUTERMOST EXTREME OF THE PLASTIC BODY.
5. DIMENSION b2 DOES NOT INCLUDE DAMBAR PROTRUSION. LEAD WIDTH INCLUDING PROTRUSION SHALL NOT EXCEED 2.00.
6. CONTOURS AND FEATURES OF THE MOLDED PACKAGE BODY MAY VARY WITHIN THE ENVELOP DEFINED BY DIMENSIONS A1 AND H1 FOR MANUFACTURING PURPOSES.

MILLIMETERS		
DIM	MIN	MAX
A	4.30	4.70
A1	2.50	2.90
A2	2.50	2.90
b	0.54	0.84
b2	1.10	1.40
c	0.49	0.79
D	14.70	15.30
E	9.70	10.30
e	2.54 BSC	
H1	6.60	7.10
L	12.50	14.73
L1	---	2.80
P	3.00	3.40
Q	2.80	3.20

FULLPAK is a trademark of Semiconductor Components Industries, LLC.

ON Semiconductor and the  are registered trademarks of Semiconductor Components Industries, LLC (SCILLC) or its subsidiaries in the United States and/or other countries. SCILLC owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of SCILLC's product/patent coverage may be accessed at www.onsemi.com/site/pdf/Patent-Marking.pdf. SCILLC reserves the right to make changes without further notice to any products herein. SCILLC makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does SCILLC assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. "Typical" parameters which may be provided in SCILLC data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. SCILLC does not convey any license under its patent rights nor the rights of others. SCILLC products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the SCILLC product could create a situation where personal injury or death may occur. Should Buyer purchase or use SCILLC products for any such unintended or unauthorized application, Buyer shall indemnify and hold SCILLC and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that SCILLC was negligent regarding the design or manufacture of the part. SCILLC is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:

Literature Distribution Center for ON Semiconductor
P.O. Box 5163, Denver, Colorado 80217 USA
Phone: 303-675-2175 or 800-344-3860 Toll Free USA/Canada
Fax: 303-675-2176 or 800-344-3867 Toll Free USA/Canada
Email: orderlit@onsemi.com

N. American Technical Support: 800-282-9855 Toll Free
USA/Canada
Europe, Middle East and Africa Technical Support:
Phone: 421 33 790 2910
Japan Customer Focus Center
Phone: 81-3-5817-1050

ON Semiconductor Website: www.onsemi.com

Order Literature: <http://www.onsemi.com/orderlit>

For additional information, please contact your local Sales Representative

MBRF30L60CT/D

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

[ON Semiconductor:](#)

[MBR30L60CTG](#) [MBRF30L60CTG](#)