

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:

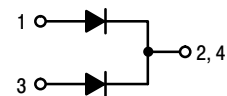
- Case: Epoxy, Molded
- Epoxy Meets UL 94 V-0 @ 0.125 in
- Weight (Approximately): 1.9 Grams (TO-220 & TO-220FP)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead Temperature for Soldering Purposes:
260°C Max. for 10 Seconds



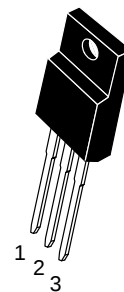
ON Semiconductor®

www.onsemi.com

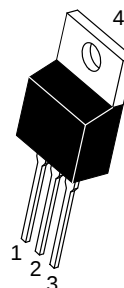
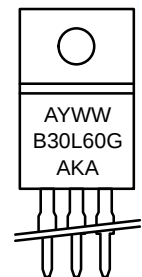
SCHOTTKY BARRIER RECTIFIER 30 AMPERES, 60 VOLTS



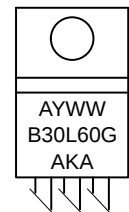
MARKING DIAGRAMS



TO-220 FULLPAK™
CASE 221D
STYLE 3



TO-220
CASE 221A
STYLE 6



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) MBR30L60CT (Rated V_R) $T_C = 133^\circ\text{C}$ (Per Device) MBRF30L60CT (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 MBR30L60CT Junction-to-Case Junction-to-Ambient MBRF30L60CT Junction-to-Case Junction-to-Ambient	$R_{\theta JC}$ $R_{\theta JA}$ $R_{\theta JC}$ $R_{\theta JA}$	2.1 70 5.0 75	$^\circ\text{C/W}$

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

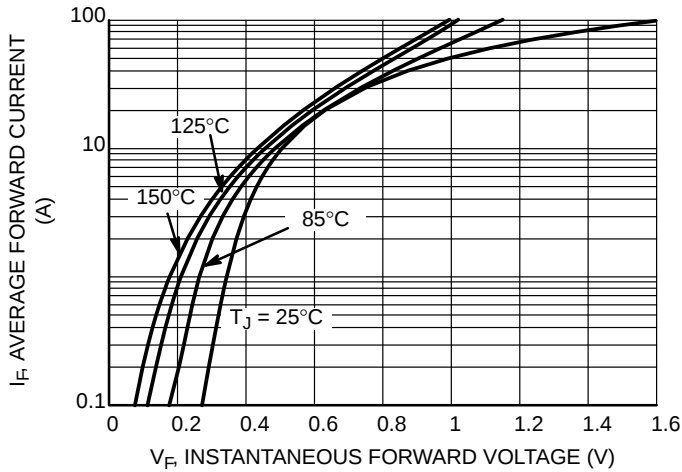


Figure 1. Typical Forward Voltage

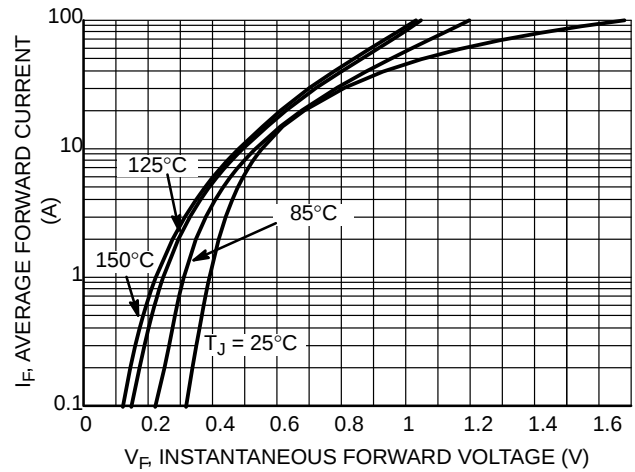


Figure 2. Maximum Forward Voltage

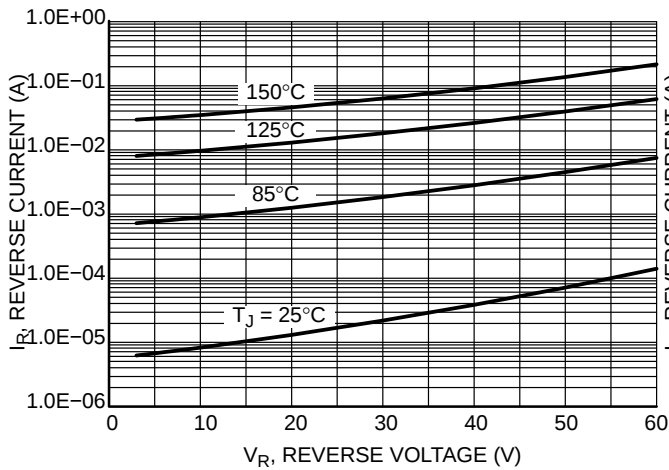


Figure 3. Typical Reverse Current

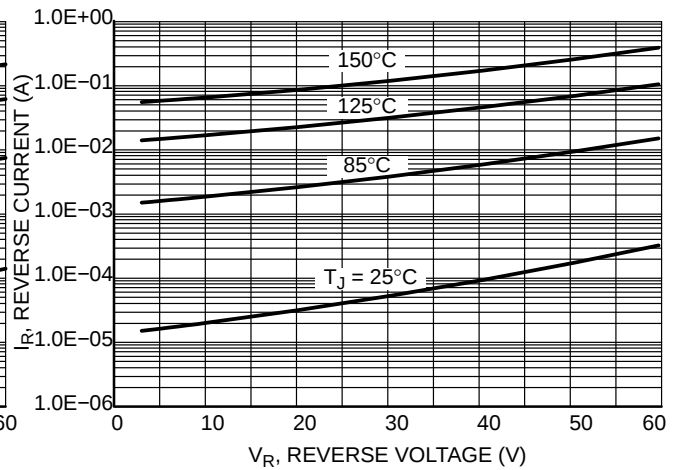


Figure 4. Maximum Reverse Current

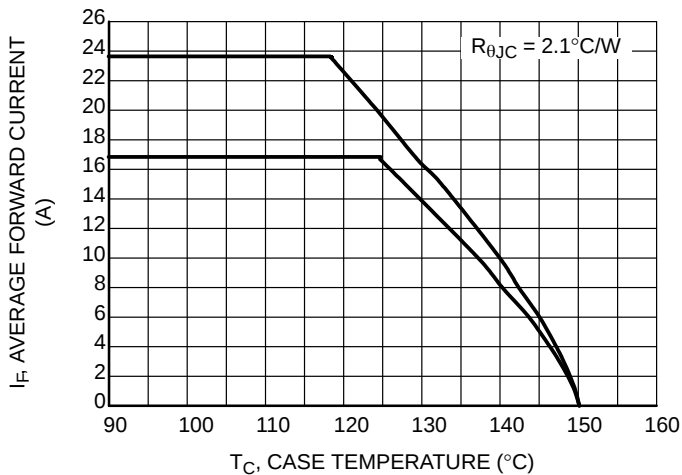


Figure 5. Current Derating, Case per Leg
MBR30L60CT

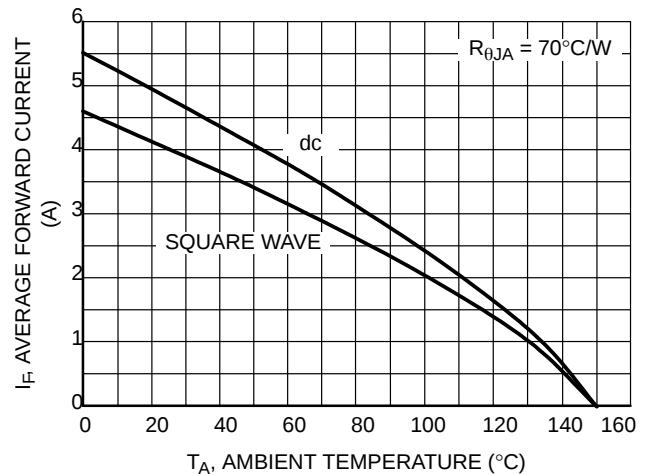
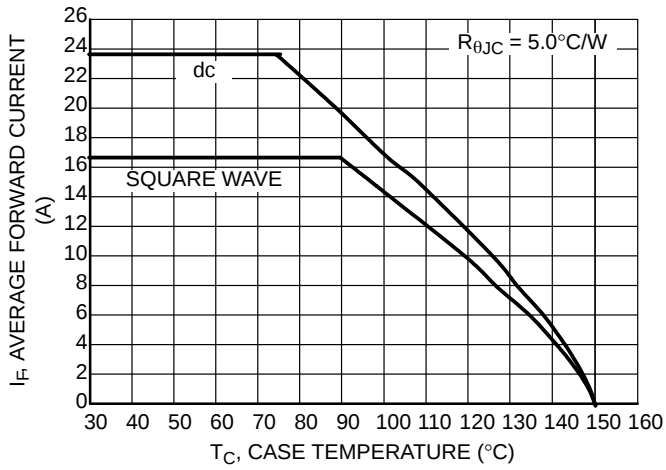
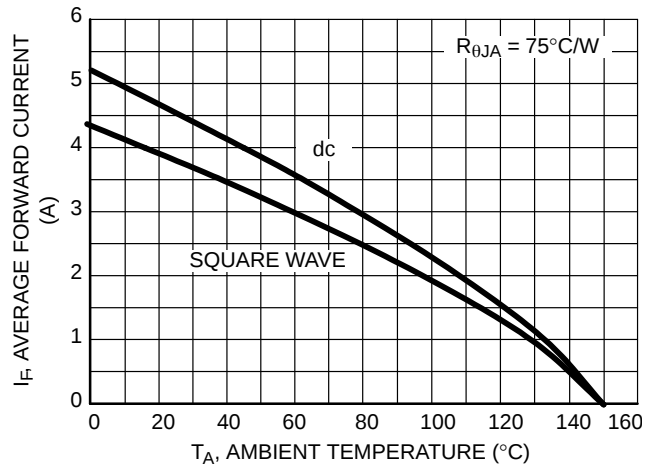


Figure 6. Current Derating, Ambient per Leg
MBR30L60CT

MBR30L60CTG, MBRF30L60CTG



**Figure 7. Current Derating, Case per Leg
MBRF30L60CT**



**Figure 8. Current Derating, Ambient per Leg
MBRF30L60CT**

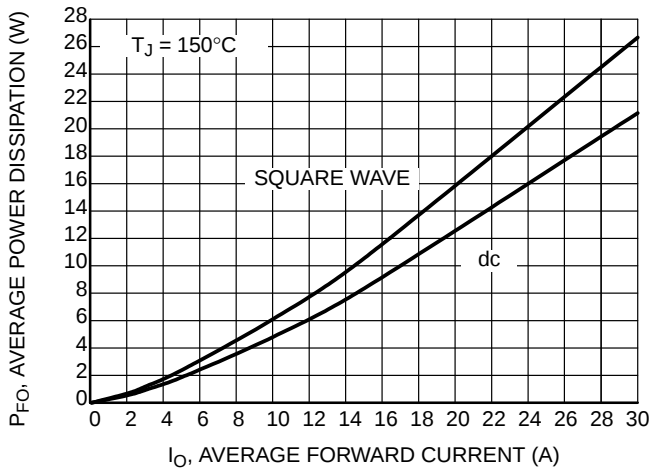


Figure 9. Forward Power Dissipation

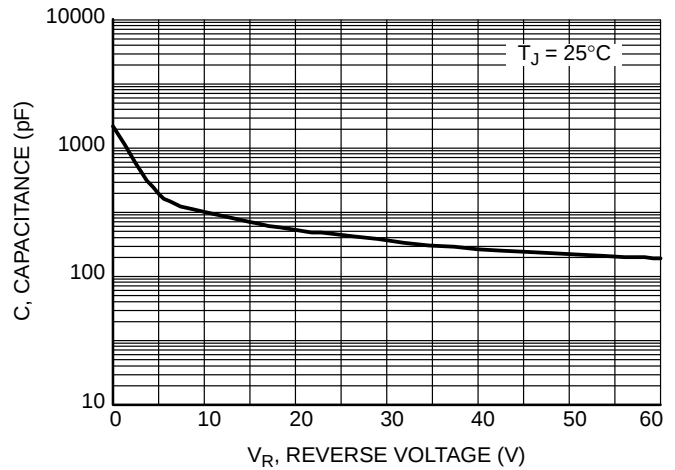


Figure 10. Capacitance

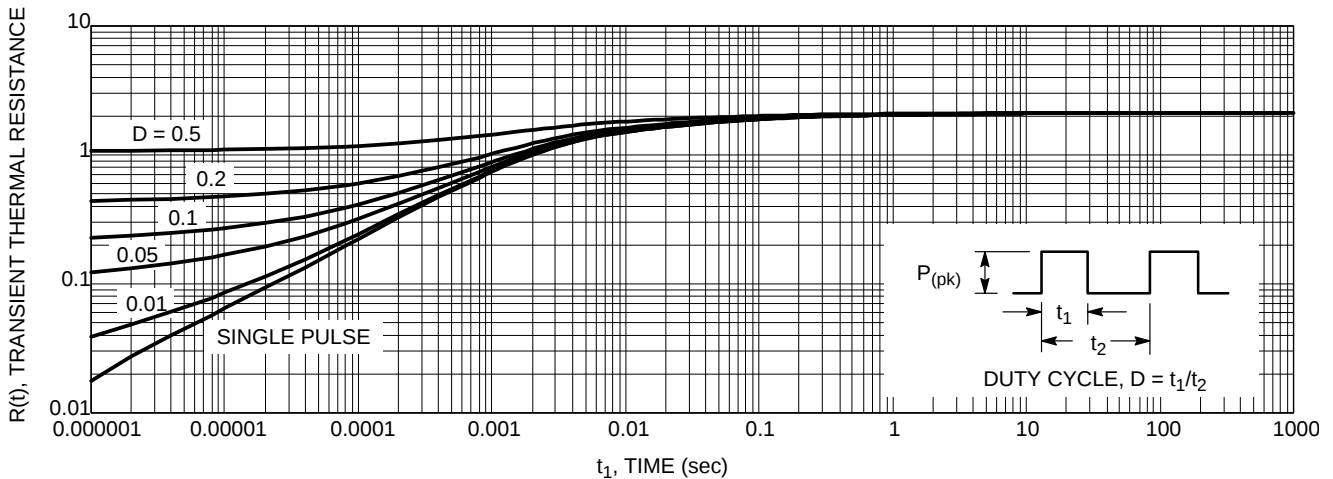


Figure 11. Thermal Response Junction-to-Case, per Leg for MBR30L60CT

MBR30L60CTG, MBRF30L60CTG

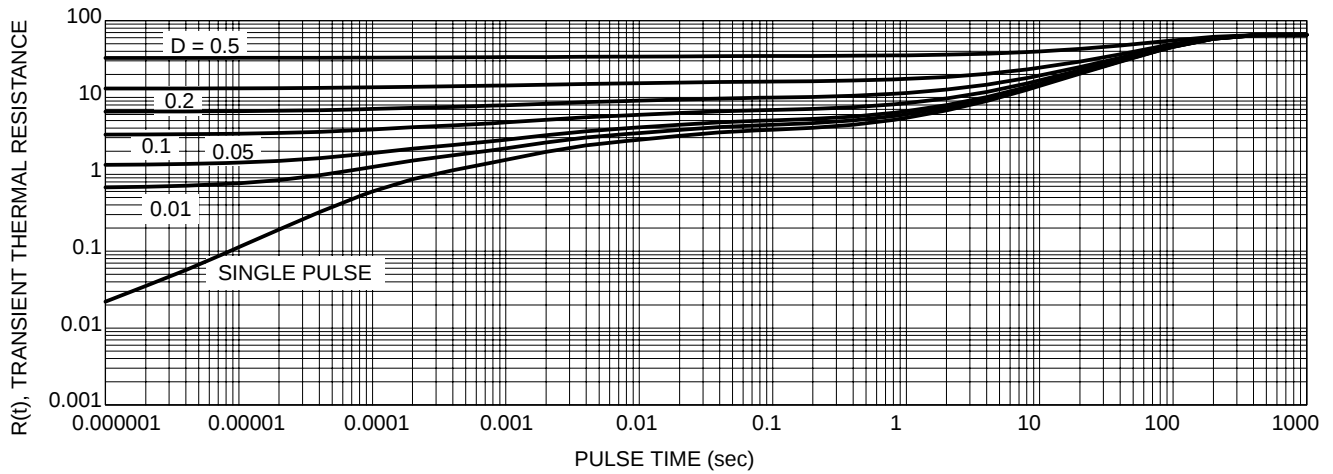


Figure 12. Thermal Response Junction-to-Ambient, per Leg for MBR30L60CT

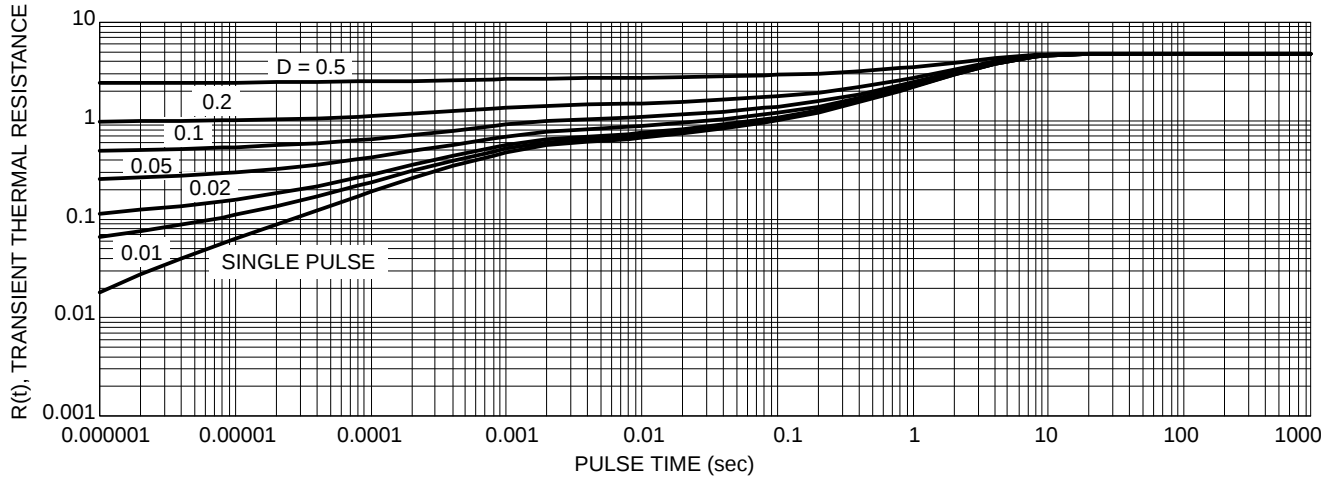


Figure 13. Thermal Response Junction-to-Case, per Leg for MBRF30L60CT

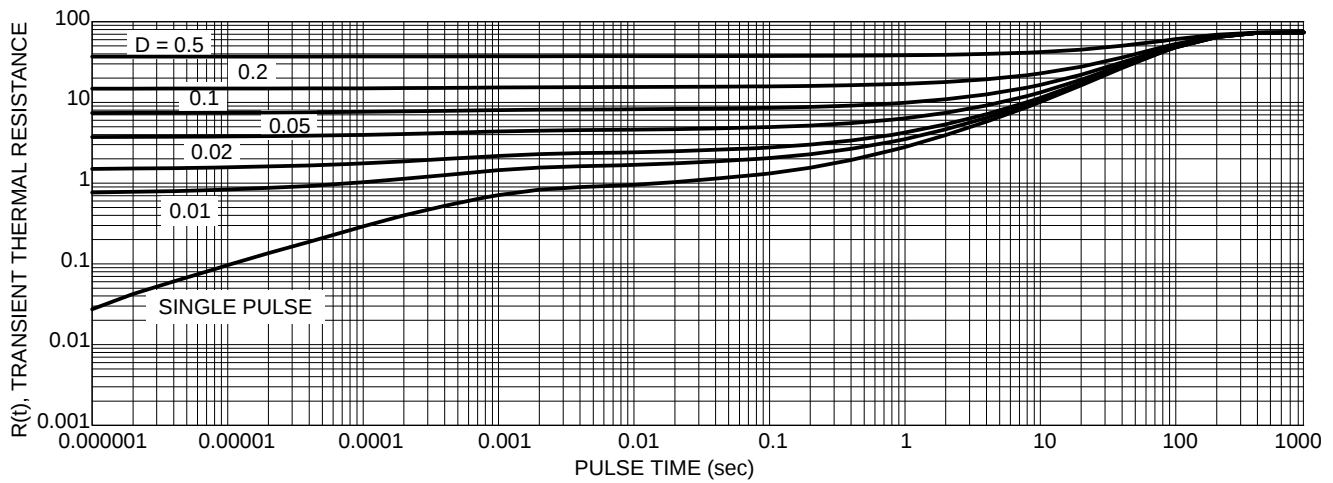
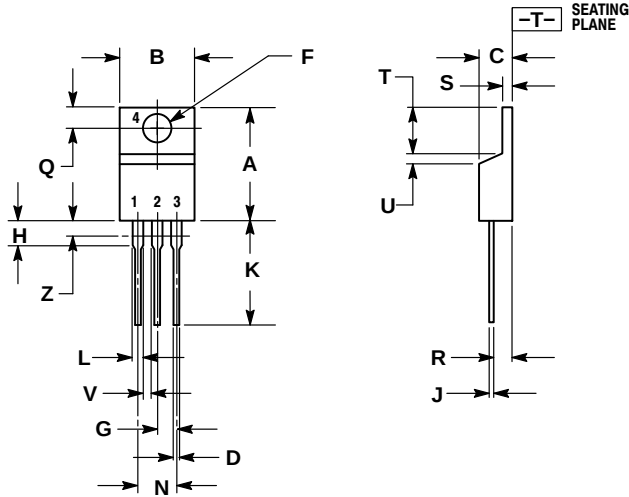


Figure 14. Thermal Response Junction-to-Ambient, per Leg for MBRF30L60CT

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.

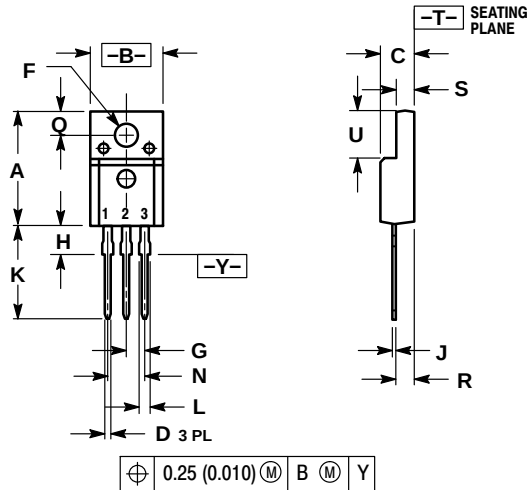
DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.570	0.620	14.48	15.75
B	0.380	0.415	9.66	10.53
C	0.160	0.190	4.07	4.83
D	0.025	0.038	0.64	0.96
F	0.142	0.161	3.61	4.09
G	0.095	0.105	2.42	2.66
H	0.110	0.161	2.80	4.10
J	0.014	0.024	0.36	0.61
K	0.500	0.562	12.70	14.27
L	0.045	0.060	1.15	1.52
N	0.190	0.210	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:
- PIN 1. ANODE
 - CATHODE
 - ANODE
 - CATHODE

MBR30L60CTG, MBRF30L60CTG

PACKAGE DIMENSIONS

TO-220 FULLPAK CASE 221D-03 ISSUE K



NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH
3. 221D-01 THRU 221D-02 OBSOLETE, NEW STANDARD 221D-03.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.617	0.635	15.67	16.12
B	0.392	0.419	9.96	10.63
C	0.177	0.193	4.50	4.90
D	0.024	0.039	0.60	1.00
F	0.116	0.129	2.95	3.28
G	0.100 BSC		2.54 BSC	
H	0.118	0.135	3.00	3.43
J	0.018	0.025	0.45	0.63
K	0.503	0.541	12.78	13.73
L	0.048	0.058	1.23	1.47
N	0.200 BSC		5.08 BSC	
Q	0.122	0.138	3.10	3.50
R	0.099	0.117	2.51	2.96
S	0.092	0.113	2.34	2.87
U	0.239	0.271	6.06	6.88

STYLE 3:

- PIN 1. ANODE
2. CATHODE
3. ANODE

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MBRF30L60CT/D

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