MBR10L60CT, MBRF10L60CT

SWITCHMODE™ Power Rectifier 60 V, 10 A

Features and Benefits

- Low Forward Voltage
- Low Power Loss/High Efficiency
- High Surge Capability
- 10 A Total (5 A Per Diode Leg)
- Guard−Ring for Stress Protection
- These are Pb−Free Devices

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

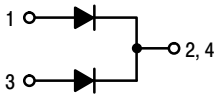
MAXIMUM RATINGS

Please See the Table on the Following Page

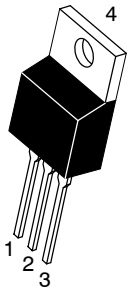
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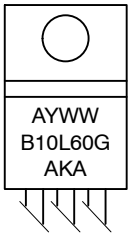
SCHOTTKY BARRIER RECTIFIER 10 AMPERES, 60 VOLTS

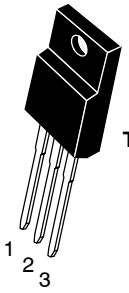


MARKING DIAGRAMS

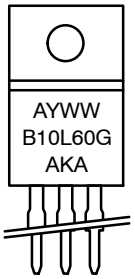


TO−220AB CASE 221A PLASTIC





TO−220 FULLPAK™ CASE 221D STYLE 3



A	= Assembly Location
Y	= Year
WW	= Work Week
B10L60	= Device Code
G	= Pb−Free Device
AKA	= Polarity Designator

ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 2 of this data sheet.

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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	60	V
Average Rectified Forward Current (Rated V_R) T_C = 140°C	(Per Leg) (Per Device)	$I_{F(AV)}$	5 10	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	−55 to +150	°C
Storage Temperature		T_{stg}	−65 to +175	°C
ESD Ratings:	Machine Model = C Human Body Model = 3B		> 400 > 8000	V

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

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

Rating		Symbol	Value	Unit
Maximum Thermal Resistance				°C/W
MBR10L60CT	Junction−to−Case	$R_{\theta JC}$	2.8	
	Junction−to−Ambient	$R_{\theta JA}$	70	
MBRF10L60CT	Junction−to−Case	$R_{\theta JC}$	5.7	
	Junction−to−Ambient	$R_{\theta JA}$	75	

ELECTRICAL CHARACTERISTICS (Per Diode Leg)

Rating	Symbol	Typ	Max	Unit
Maximum Instantaneous Forward Voltage (Note 2)	v_F			V
(I_F = 5 A, T_C = 25°C)		0.49	0.57	
(I_F = 5 A, T_C = 125°C)		0.43	0.49	
(I_F = 10 A, T_C = 25°C)		0.60	0.66	
(I_F = 10 A, T_C = 125°C)		0.53	0.61	
Maximum Instantaneous Reverse Current (Note 2)	i_R			
(Rated DC Voltage, T_C = 25°C)		77	220	μA
(Rated DC Voltage, T_C = 125°C)		33	60	mA

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

DEVICE ORDERING INFORMATION

Device Order Number	Package Type	Shipping
MBR10L60CTG	TO−220AB (Pb−Free)	50 Units / Rail
MBRF10L60CTG	TO−220FP (Pb−Free)	50 Units / Rail

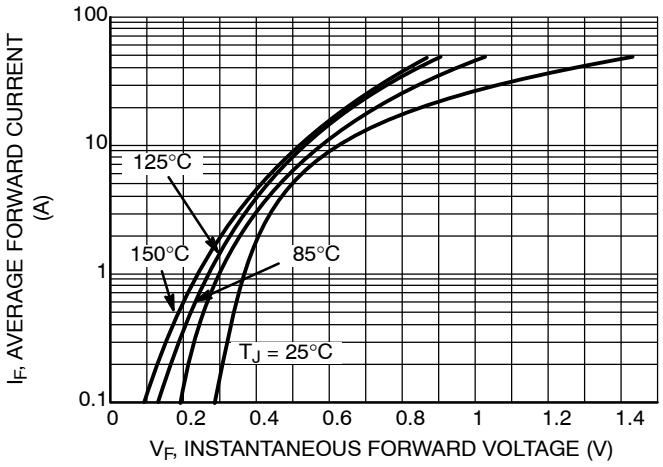


Figure 1. Typical Forward Voltage

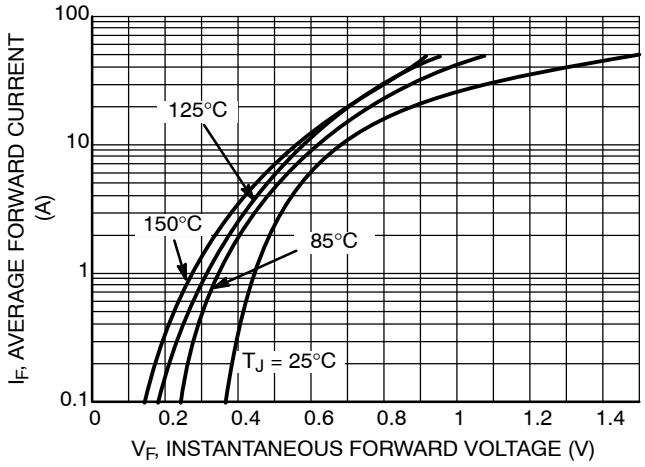


Figure 2. Maximum Forward Voltage

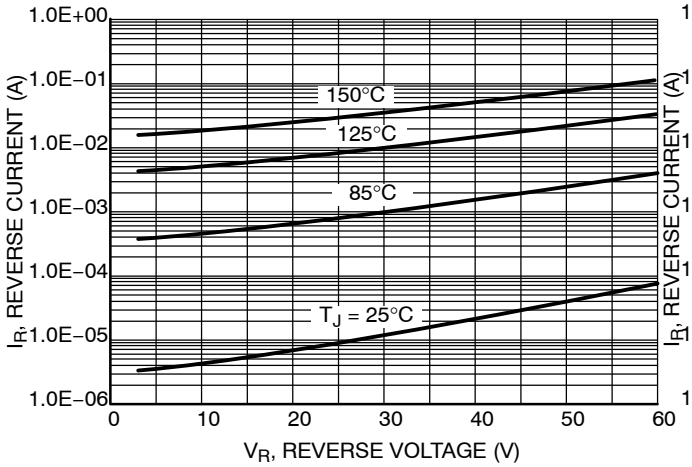


Figure 3. Typical Reverse Current

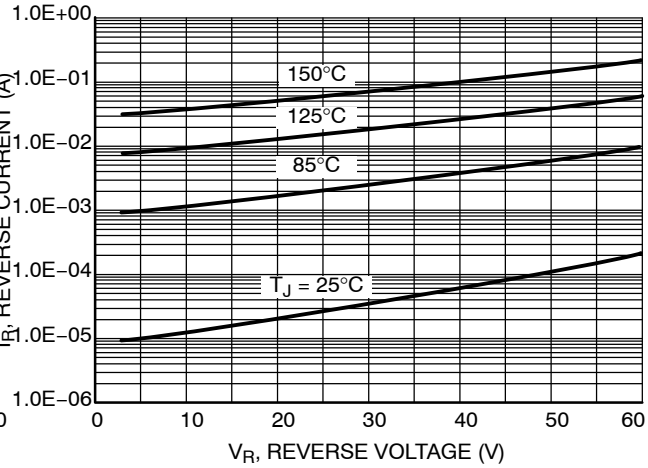


Figure 4. Maximum Reverse Current

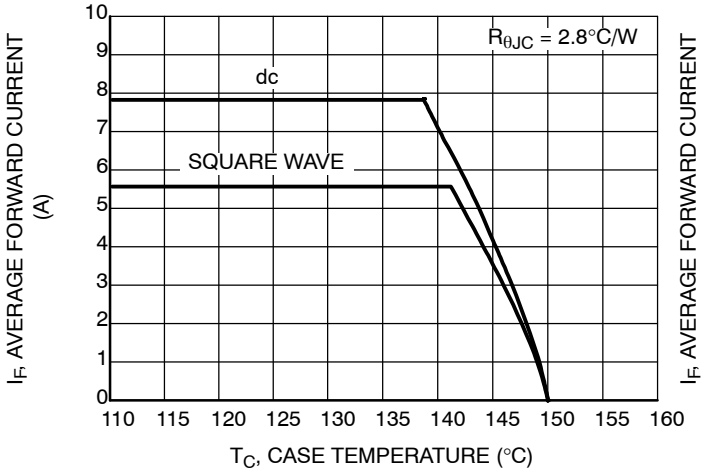


Figure 5. Current Derating, Case per Leg
MBR10L60CT

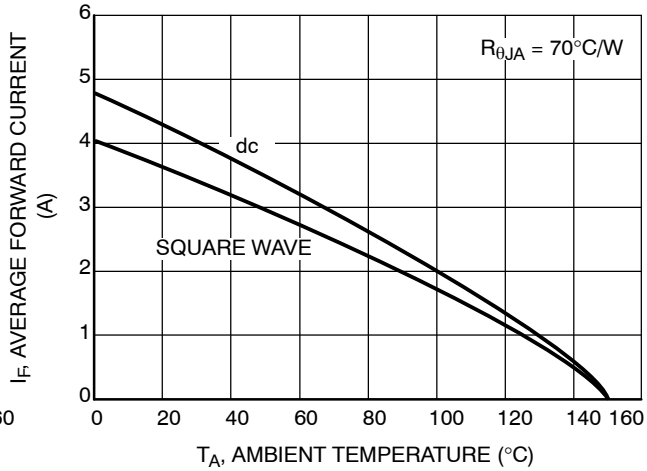


Figure 6. Current Derating, Ambient per Leg
MBR10L60CT

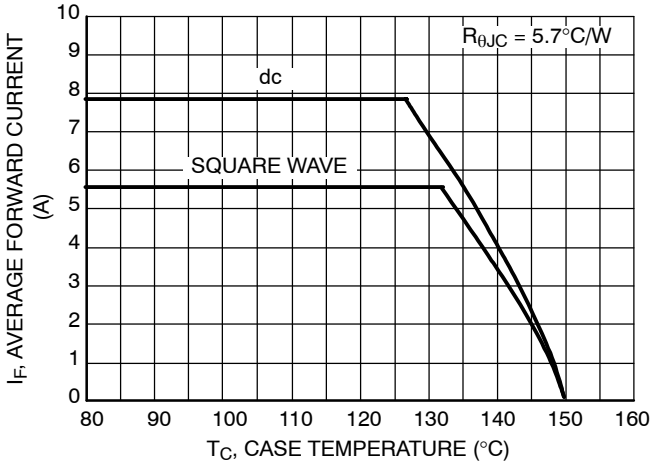


Figure 7. Current Derating, Case per Leg MBRF10L60CT

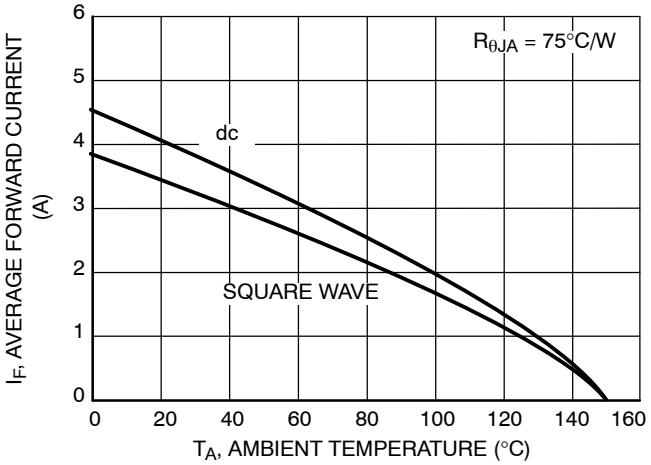


Figure 8. Current Derating, Ambient per Leg MBRF10L60CT

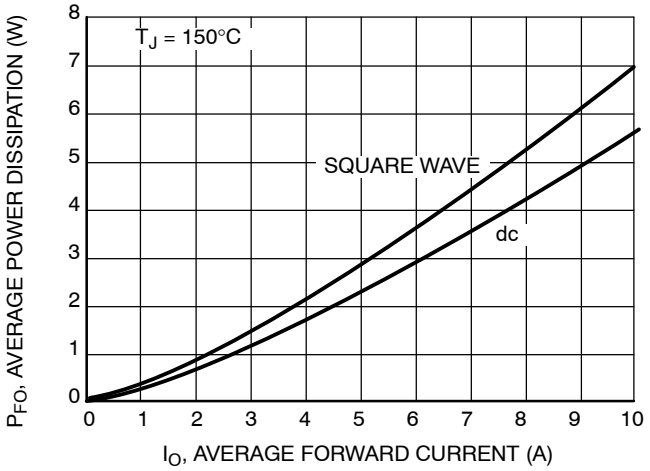


Figure 9. Forward Power Dissipation

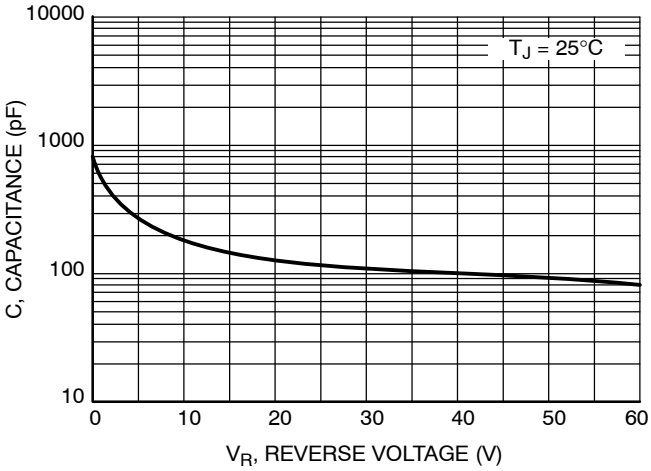


Figure 10. Capacitance

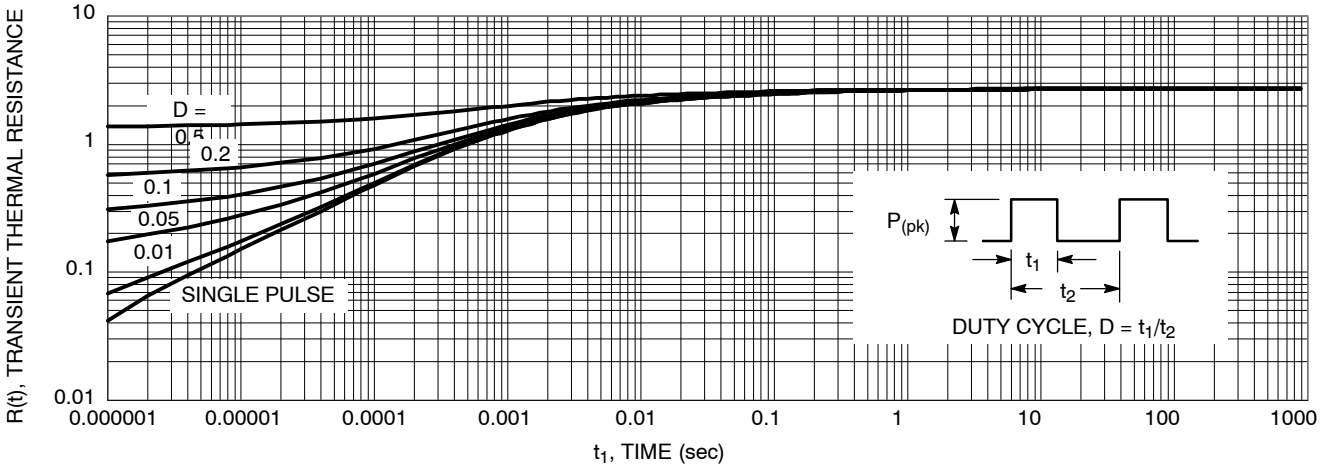


Figure 11. Thermal Response Junction−to−Case for MBR10L60CT

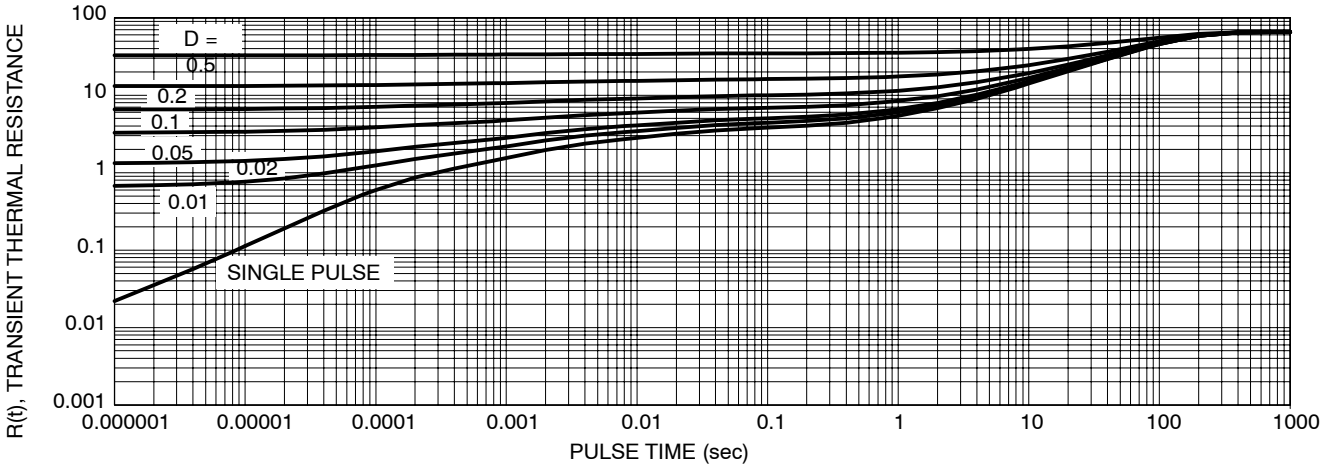


Figure 12. Thermal Response Junction−to−Ambient for MBR10L60CT

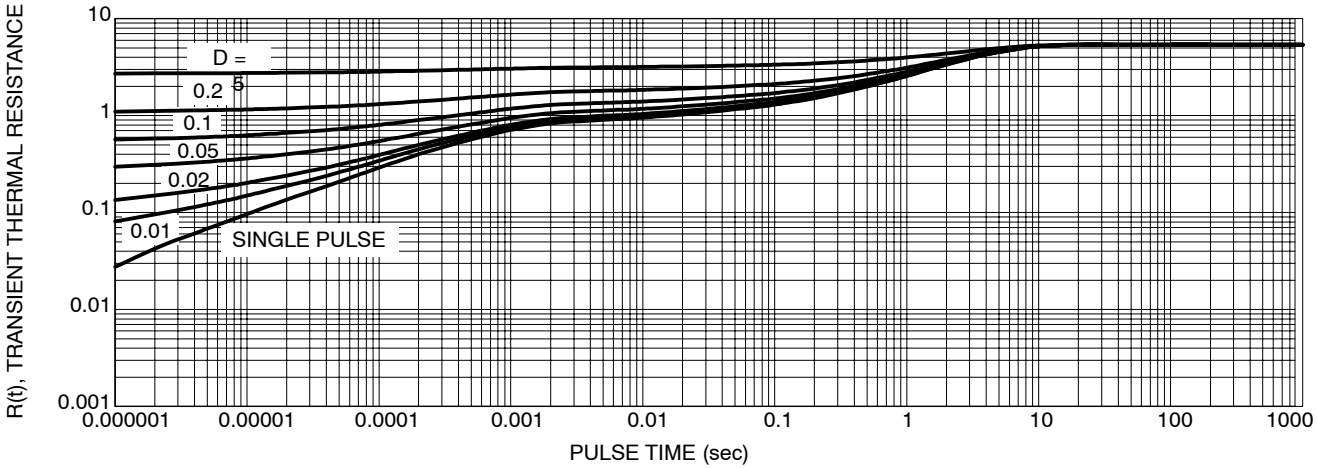


Figure 13. Thermal Response Junction−to−Case for MBRF10L60CT

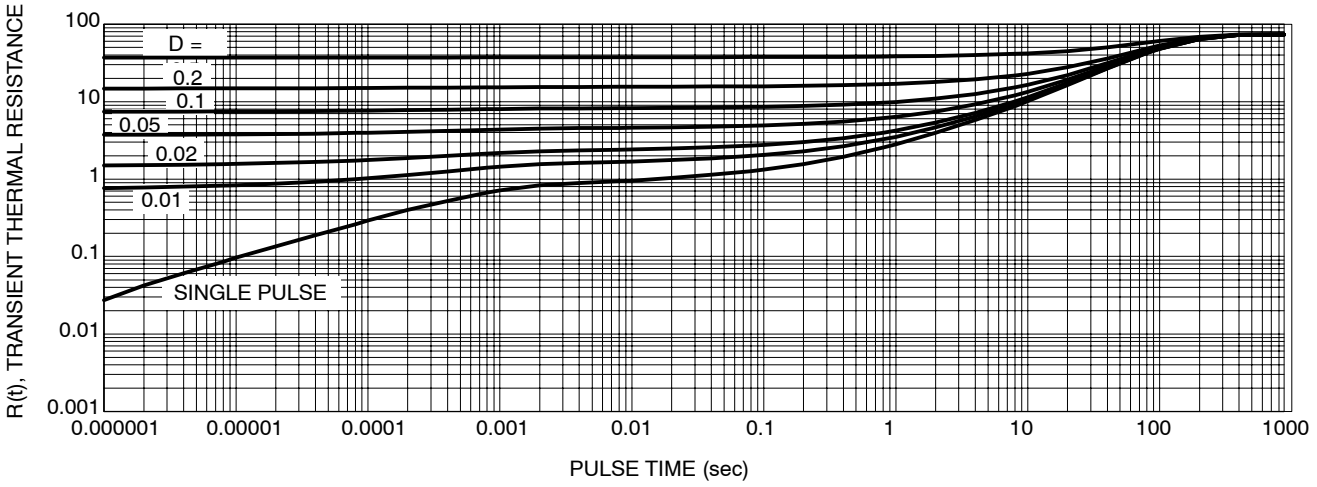
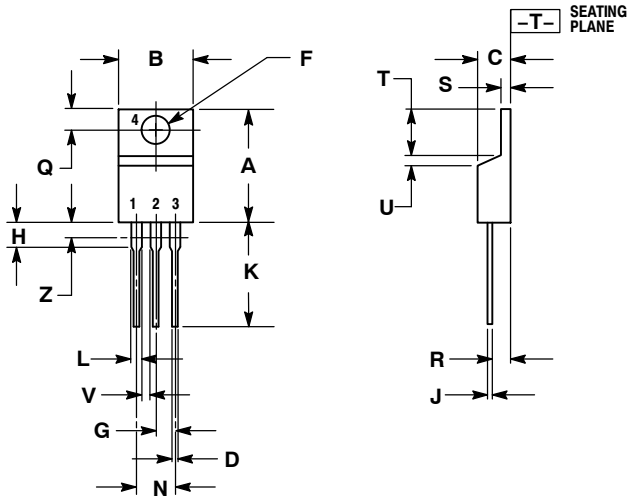


Figure 14. Thermal Response Junction−to−Ambient for MBRF10L60CT

PACKAGE DIMENSIONS

TO−220
CASE 221A−09
ISSUE AF



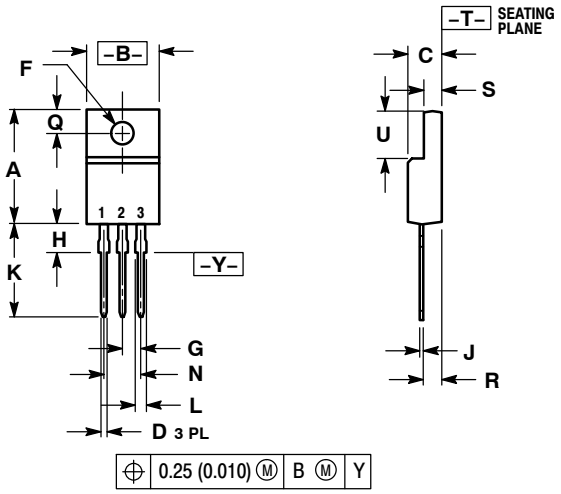
NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. DIMENSION Z DEFINES A ZONE WHERE ALL BODY AND LEAD IRREGULARITIES ARE ALLOWED.

	INCHES		MILLIMETERS	
DIM	MIN	MAX	MIN	MAX
A	0.570	0.620	14.48	15.75
B	0.380	0.405	9.66	10.28
C	0.160	0.190	4.07	4.82
D	0.025	0.035	0.64	0.88
F	0.142	0.161	3.61	4.09
G	0.095	0.105	2.42	2.66
H	0.110	0.155	2.80	3.93
J	0.014	0.025	0.36	0.64
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−220 FULLPAK
CASE 221D−03
ISSUE J



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.

	INCHES		MILLIMETERS	
DIM	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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