

MUR1610CT, MUR1615CT, MUR1620CT, MUR1640CT, MUR1660CT

SWITCHMODE™ Power Rectifiers

... designed for use in switching power supplies, inverters and as free wheeling diodes, these state-of-the-art devices have the following features:

- Ultrafast 35 and 60 Nanosecond Recovery Times
- 175°C Operating Junction Temperature
- Popular TO-220 Package
- Epoxy Meets UL94, V_O @ 1/8"
- High Temperature Glass Passivated Junction
- High Voltage Capability to 600 Volts
- Low Leakage Specified @ 150°C Case Temperature
- Current Derating @ Both Case and Ambient Temperatures

Mechanical Characteristics:

- Case: Epoxy, Molded
- Weight: 1.9 grams (approximately)
- 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
- Marking: U1610, U1615, U1620, U1640, U1660

MAXIMUM RATINGS

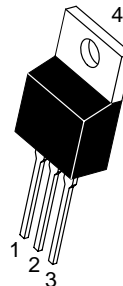
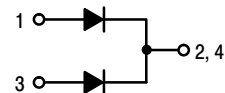
Please See the Table on the Following Page



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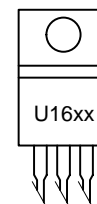
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**ULTRAFAST
RECTIFIERS
8.0 AMPERES
100-600 VOLTS**



TO-220AB
CASE 221A
PLASTIC

MARKING DIAGRAM



U16xx = Device Code
xx = 10, 15, 20, 40 or 60

ORDERING INFORMATION

| Device | Package | Shipping |
|-----------|---------|---------------|
| MUR1610CT | TO-220 | 50 Units/Rail |
| MUR1615CT | TO-220 | 50 Units/Rail |
| MUR1620CT | TO-220 | 50 Units/Rail |
| MUR1640CT | TO-220 | 50 Units/Rail |
| MUR1660CT | TO-220 | 50 Units/Rail |

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MAXIMUM RATINGS

| Rating | Symbol | MUR16 | | | | | Unit |
|--|--|--------------|------|------|------|------|------------------|
| | | 10CT | 15CT | 20CT | 40CT | 60CT | |
| Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage | V_{RRM} V_{RWM} V_R | 100 | 150 | 200 | 400 | 600 | Volts |
| Average Rectified Forward Current Total Device, (Rated V_R), $T_C = 150^\circ\text{C}$ | Per Leg Total Device $I_{F(AV)}$ | 8.0 16 | | | | | Amps |
| Peak Rectified Forward Current (Rated V_R , Square Wave, 20 kHz), $T_C = 150^\circ\text{C}$ | Per Diode Leg I_{FM} | 16 | | | | | Amps |
| Nonrepetitive Peak Surge Current (Surge applied at rated load conditions halfwave, single phase, 60 Hz) | I_{FSM} | 100 | | | | | Amps |
| Operating Junction Temperature and Storage Temperature | T_J, T_{stg} | - 65 to +175 | | | | | $^\circ\text{C}$ |

THERMAL CHARACTERISTICS (Per Diode Leg)

| | | | | |
|--|-----------------|-----|-----|--------------------|
| Maximum Thermal Resistance, Junction to Case | $R_{\theta JC}$ | 3.0 | 2.0 | $^\circ\text{C/W}$ |
|--|-----------------|-----|-----|--------------------|

ELECTRICAL CHARACTERISTICS (Per Diode Leg)

| | | | | | |
|--|----------|----------------|--------------|--------------|---------------|
| Maximum Instantaneous Forward Voltage (Note 1.) ($i_F = 8.0$ Amps, $T_C = 150^\circ\text{C}$) ($i_F = 8.0$ Amps, $T_C = 25^\circ\text{C}$) | V_F | 0.895 0.975 | 1.00 1.30 | 1.20 1.50 | Volts |
| Maximum Instantaneous Reverse Current (Note 1.) (Rated dc Voltage, $T_C = 150^\circ\text{C}$) (Rated dc Voltage, $T_C = 25^\circ\text{C}$) | i_R | 250 5.0 | 500 10 | | μA |
| Maximum Reverse Recovery Time ($I_F = 1.0$ Amp, $di/dt = 50$ Amps/ μs) ($I_F = 0.5$ Amp, $I_R = 1.0$ Amp, $I_{REC} = 0.25$ Amp) | t_{rr} | 35 25 | 60 50 | | ns |

1. Pulse Test: Pulse Width = 300 μs , Duty Cycle $\leq 2.0\%$

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MUR1610CT, MUR1615CT, MUR1620CT

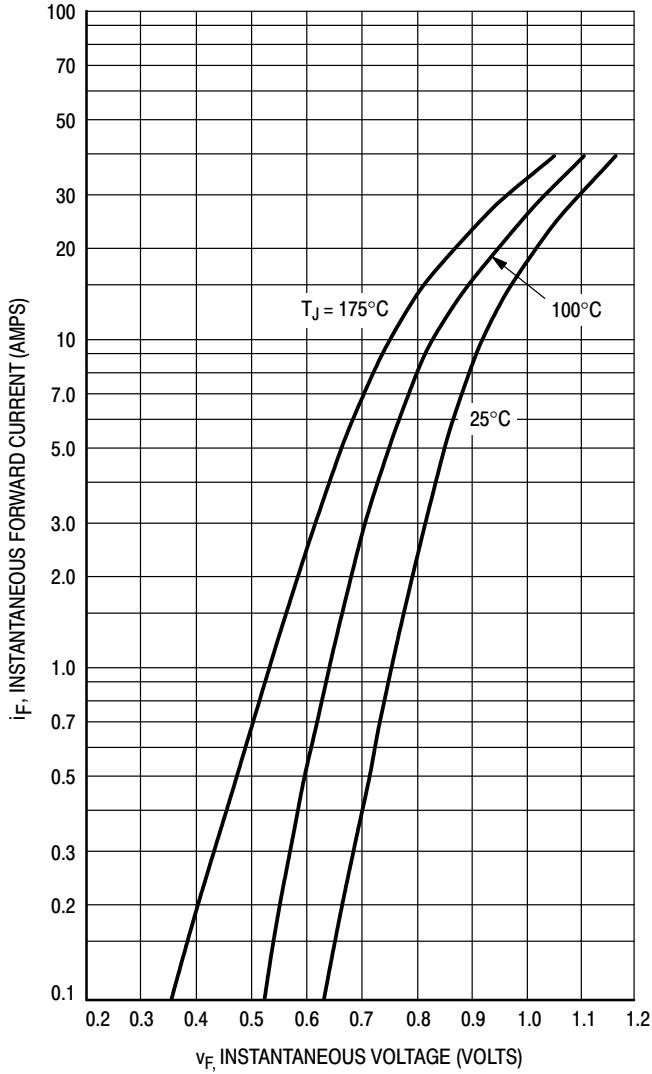


Figure 1. Typical Forward Voltage, Per Leg

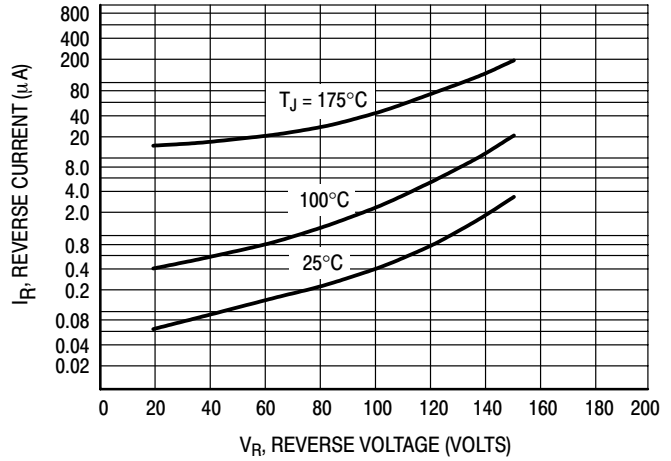


Figure 2. Typical Reverse Current, Per Leg*

* The curves shown are typical for the highest voltage device in the voltage grouping. Typical reverse current for lower voltage selections can be estimated from these same curves if V_R is sufficiently below rated V_R .

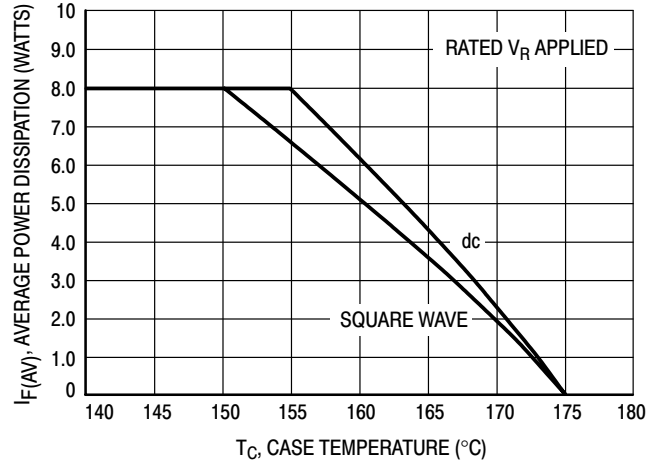


Figure 3. Current Derating, Case, Per Leg

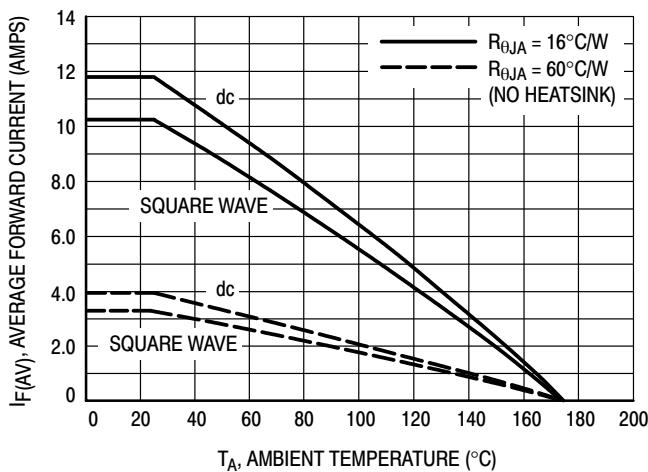


Figure 4. Current Derating, Ambient, Per Leg

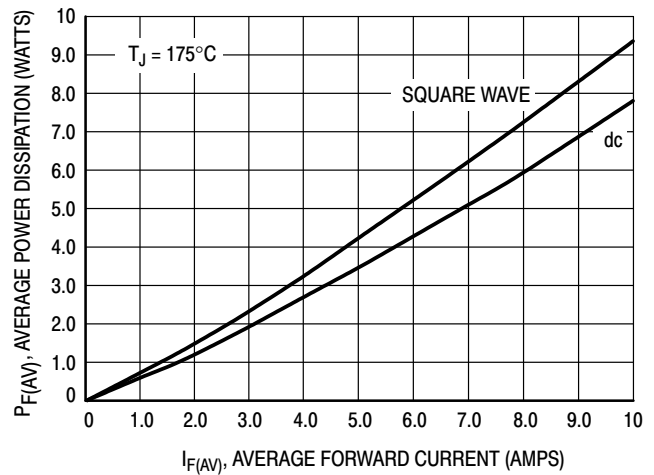


Figure 5. Power Dissipation, Per Leg

MUR1640CT

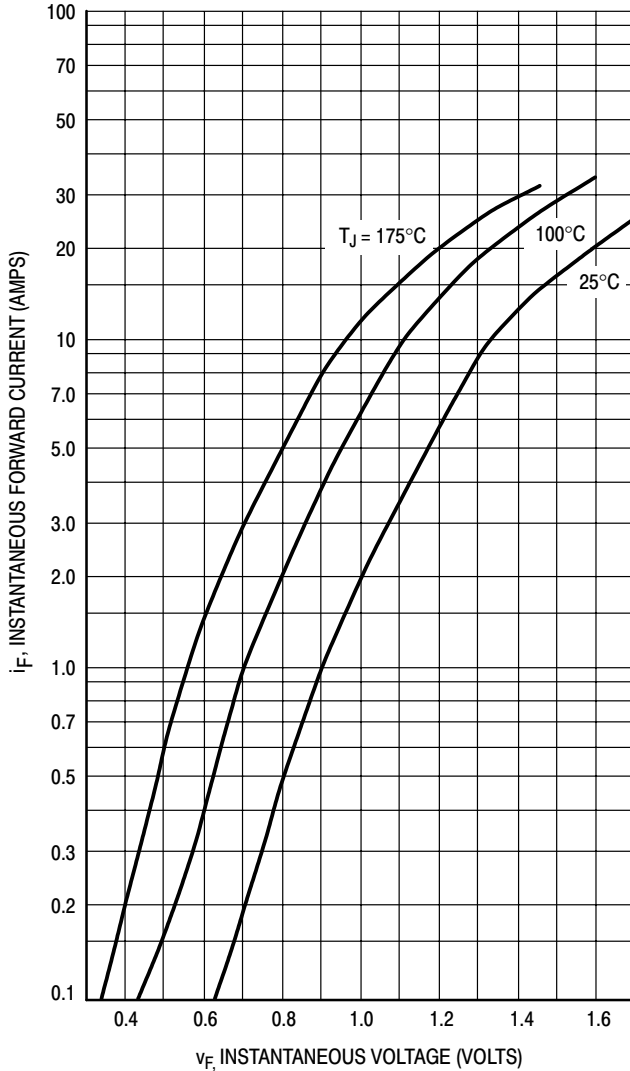


Figure 6. Typical Forward Voltage, Per Leg

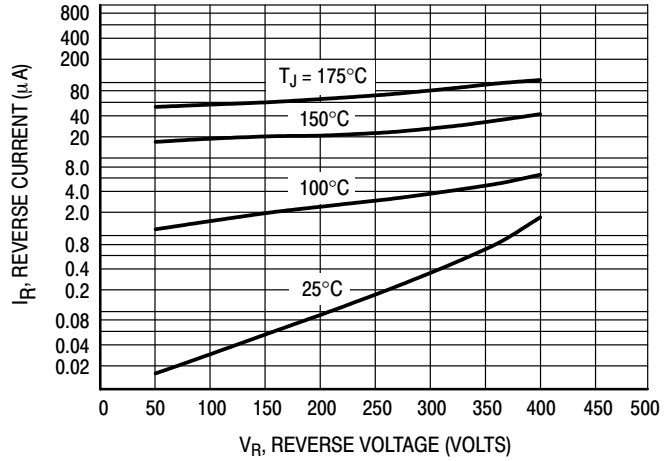


Figure 7. Typical Reverse Current, Per Leg*

* The curves shown are typical for the highest voltage device in the voltage grouping. Typical reverse current for lower voltage selections can be estimated from these curves if V_R is sufficiently below rated V_R .

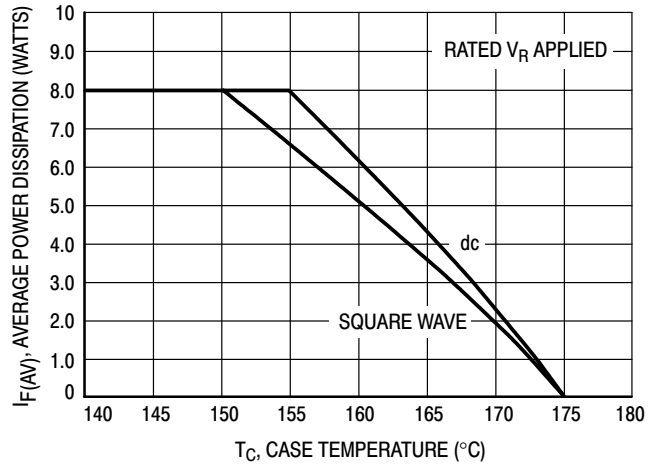


Figure 8. Current Derating, Case, Per Leg

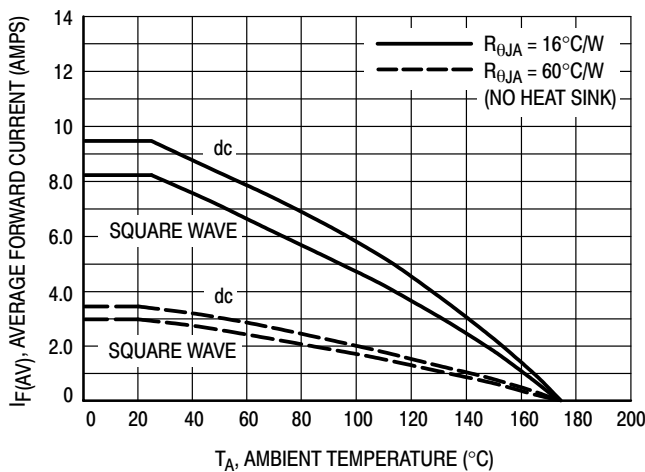


Figure 9. Current Derating, Ambient, Per Leg

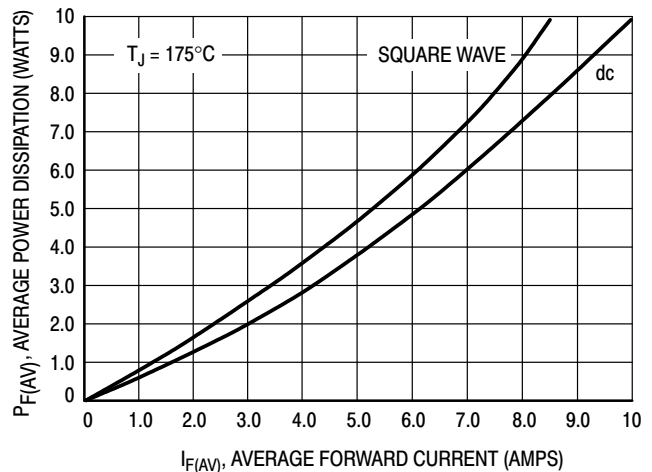


Figure 10. Power Dissipation, Per Leg

MUR1660CT

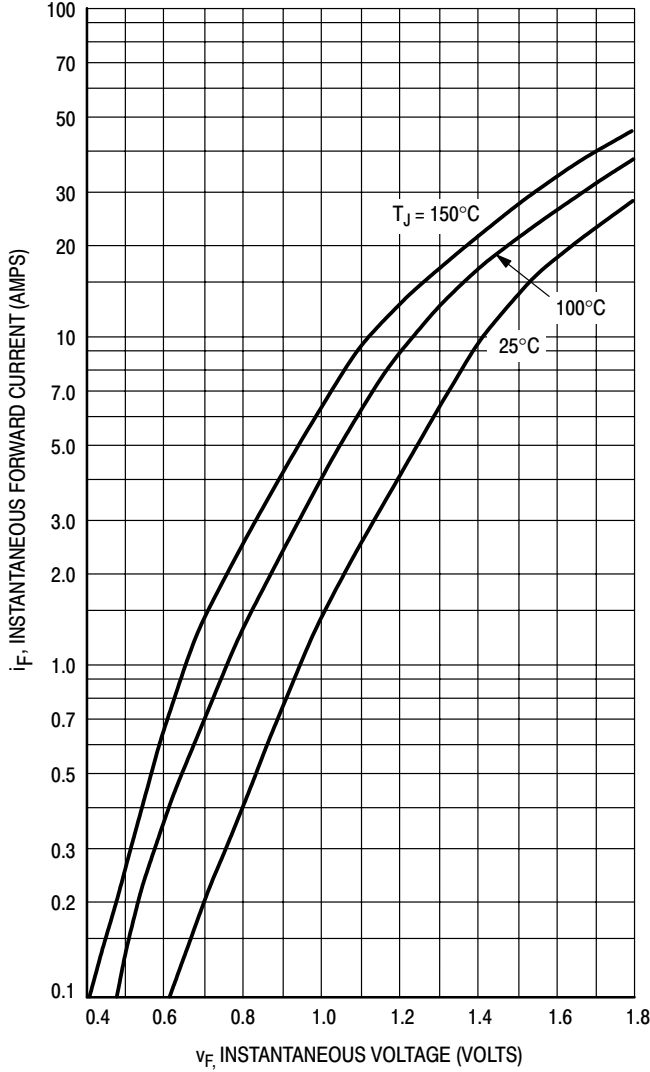


Figure 11. Typical Forward Voltage, Per Leg

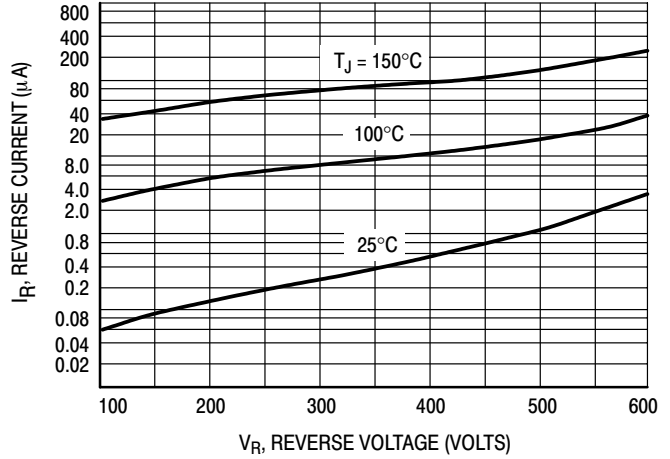


Figure 12. Typical Reverse Current, Per Leg*

* The curves shown are typical for the highest voltage device in the voltage grouping. Typical reverse current for lower voltage selections can be estimated from these same curves if V_R is sufficiently below rated V_R .

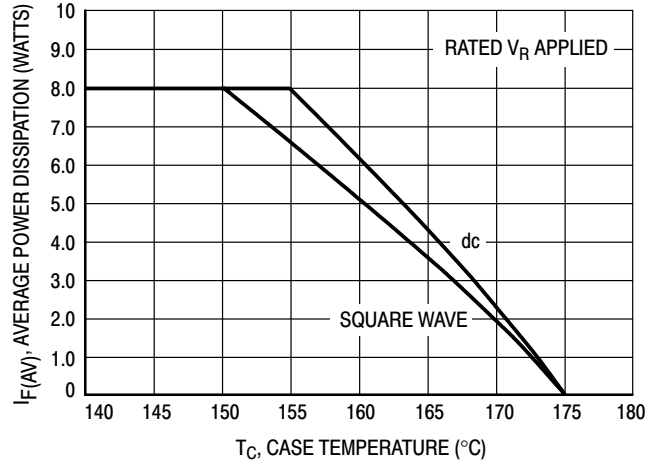


Figure 13. Current Derating, Case, Per Leg

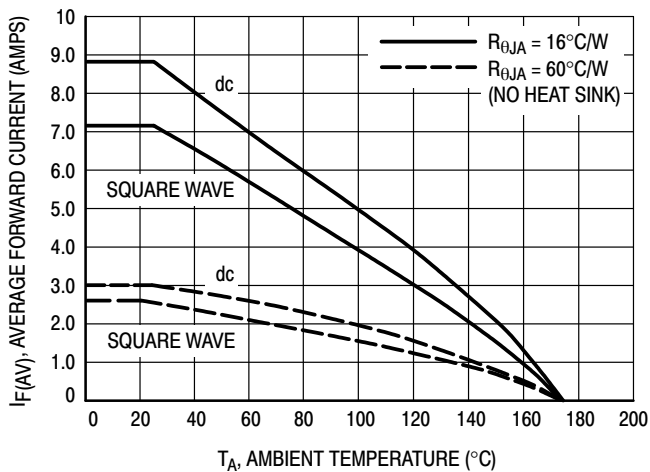


Figure 14. Current Derating, Ambient, Per Leg

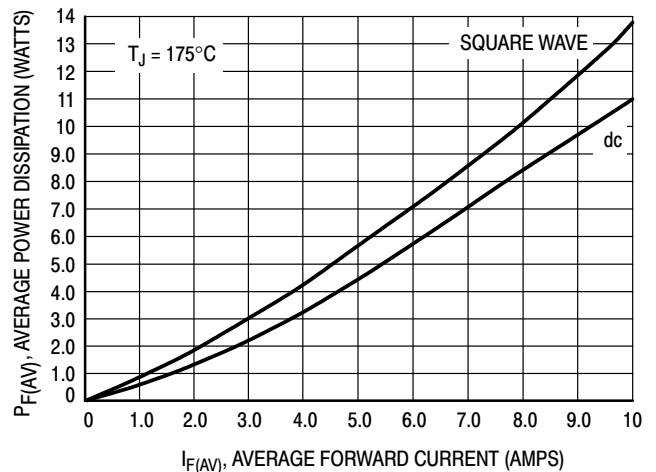


Figure 15. Power Dissipation, Per Leg

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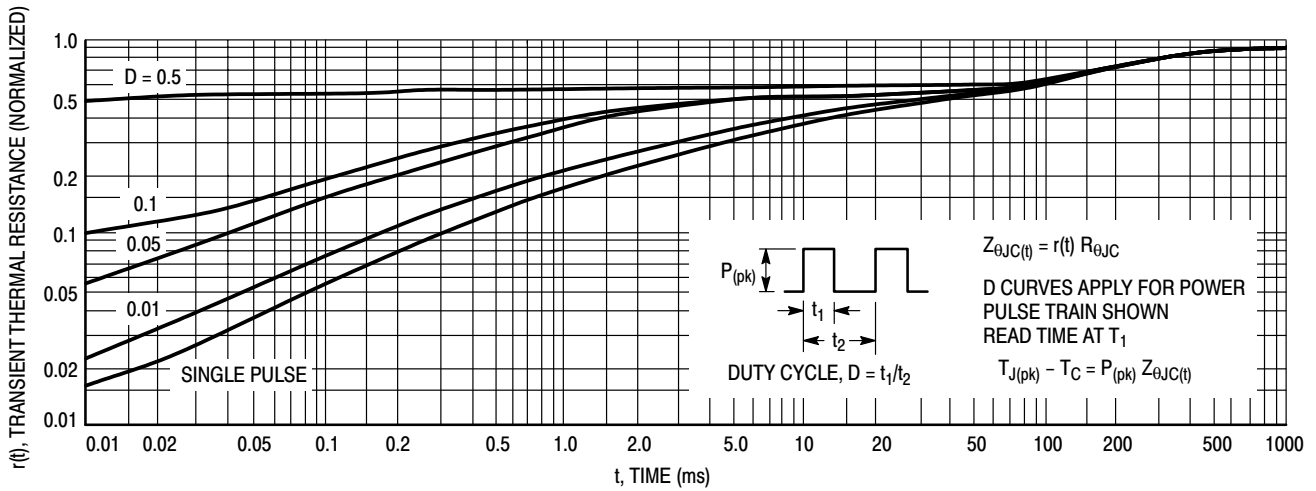


Figure 16. Thermal Response

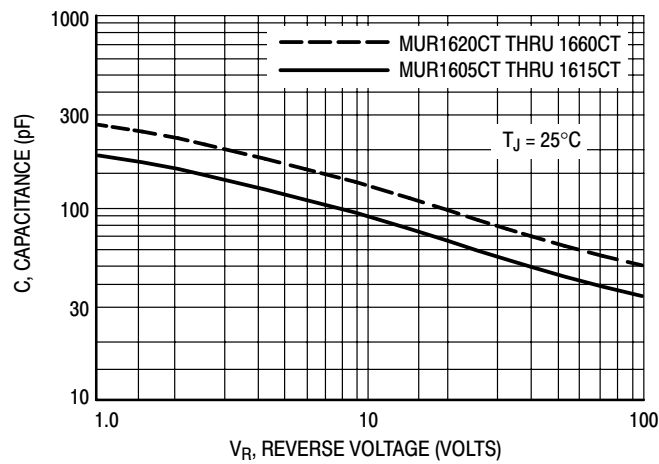
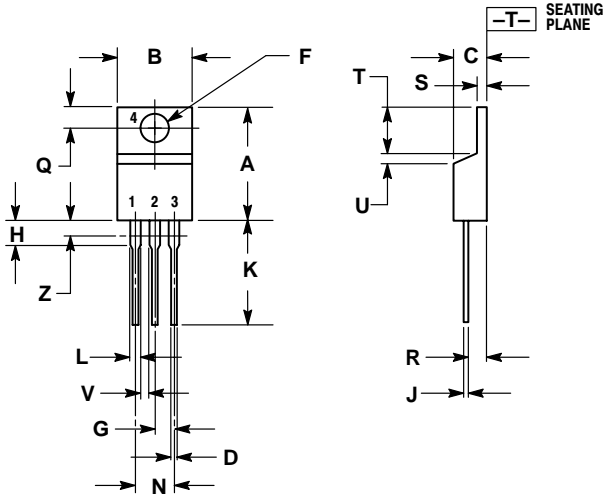


Figure 17. Typical Capacitance, Per Leg

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PACKAGE DIMENSIONS

TO-220 THREE-LEAD
TO-220AB
CASE 221A-09
ISSUE AA



- 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 | 0.405 | 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 | 0.147 | 3.61 | 3.73 |
| G | 0.095 | 0.105 | 2.42 | 2.66 |
| H | 0.110 | 0.155 | 2.80 | 3.93 |
| J | 0.018 | 0.025 | 0.46 | 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 |

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