**Data Sheet 4858, Rev.-**
**Technical Data**

# MURC805-MURC860
# Ultrafast Silicon Die

## Applications:

- **Switching Power Supply** • **General Purpose** • **Free-Wheeling Diodes** • **Polarity Protection Diode**

## Features:

- **Glass-Passivated**
- **Epitaxial Construction.**
- **Low Reverse Leakage Current**
- **High Surge Current Capability**
- **Low Forward Voltage Drop**
- **Fast Reverse-Recovery Behavior**

**Maximum Ratings:**

| Characteristics | Symbol | MURC 805 | MURC 810 | MURC 815 | MURC 820 | MURC 840 | MURC 860 | Unit |
|---|---|---|---|---|---|---|---|---|
| Peak Inverse Voltage | $V_{RWM}$ | 50 | 100 | 150 | 200 | 400 | 600 | V |
| Average Rectified Forward Current Total Device,(Rated $V_R$), $T_C$ = 150°C | $I_{F(AV)}$ | 8.0 | | | | | | A |
| Peak Repetitive Forward Current (Rated $V_R$, Squre Wave,20KHz), $T_C$ = 150°C | $I_{FM}$ | 16 | | | | | | A |
| Max. Peak One Cycle Non-Repetitive Surge Current 8.3 ms, half Sine pulse | $I_{FSM}$ | 100 | | | | | | A |
| Operating JunctionTemperature and Storage Temperature | $T_J$, $T_{stg}$ | -65 to +175 | | | | | | °C |

## Electrical Characteristics:

| Characteristics | Symbol | MURC 805 | MURC 810 | MURC 815 | MURC 820 | MURC 840 | MURC 860 | Unit |
|---|---|---|---|---|---|---|---|---|
| Max. Forward Voltage Drop(Note1)<br>($I_F$ = 8.0 Amp, $T_J$ = 150 °C)<br>($I_F$ = 8.0 Amp, $T_J$ = 25 °C) | $V_F$ | 0.895<br>0.975 | | | | 1.00<br>1.30 | 1.20<br>1.50 | V |
| Max. Reverse Current (Note1)<br>(Rated DC Voltage, $T_J$ = 150 °C)<br>(Rated DC Voltage, $T_J$ = 25 °C) | $I_R$ | 250<br>5.0 | | | | 500<br>10 | | µA |
| Max. Junction Capacitance<br>@$V_R$ = 5V, $T_C$ = 25 °C<br>$f_{SIG}$ = 1MHz, $V_{SIG}$ = 50mV (p-p) | $C_T$ | 240 | | | | | | pF |
| Max Reverse Recovery Time<br>($I_F$ = 1.0 Amp, di/dt = 50 A/µs)<br>($I_F$ = 0.5 Amp, $I_R$ = 1.0 A,<br>$I_{REC}$=0.25A) | $t_{rr}$ | 35<br>25 | | | | 60<br>50 | | nS |

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

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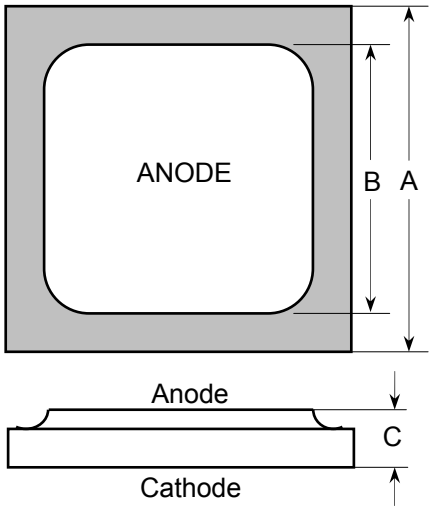
## Dimensions in inches (mm)




Top side metalization:
Al - 25 kÅ minimum or
Ti/Ni/Ag - 30 kÅ minimum

Bottom side metalization:
Ti/Ni/Ag - 30 kÅ minimum.
Bottom side is cathode, top side is anode.

| Die type | Area ($mil^2$) | Dimension A [(1)] Inch (millimeter) | Dimension B [(1)] Inch (millimeter) | Dimension C [(2)] Inch (millimeter) |
|---|---|---|---|---|
| Si p-n die | 85 x 85 | 0.085 (2.159) | 0.069 (1.753) | 0.009 (0.229) |

(1) Tolerance is ± 0.003" (0.076 mm)
(2) Tolerance is ± 0.001" (0.025 mm)

**MURC805, MURC810, MURC815, MURC820**

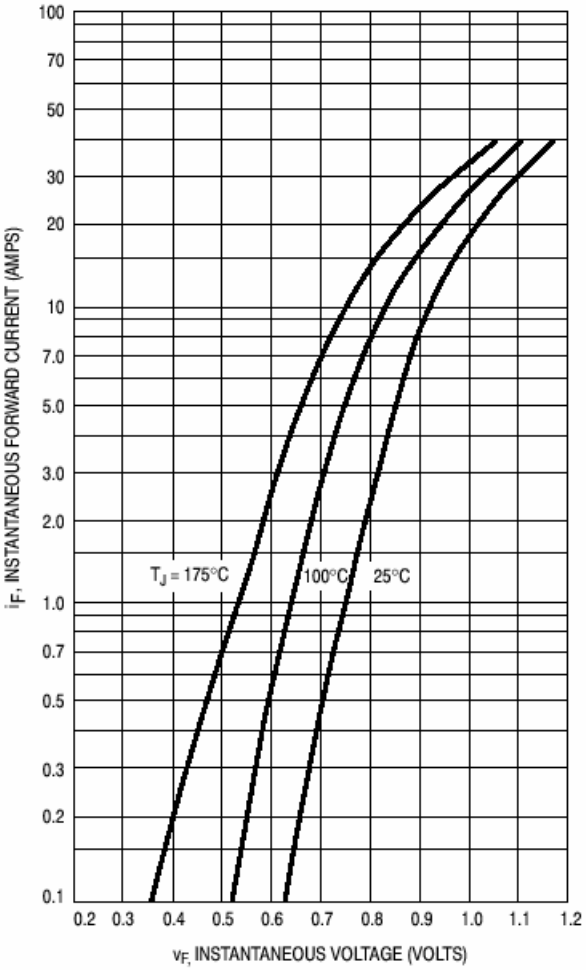



**Figure 1. Typical Forward Voltage**

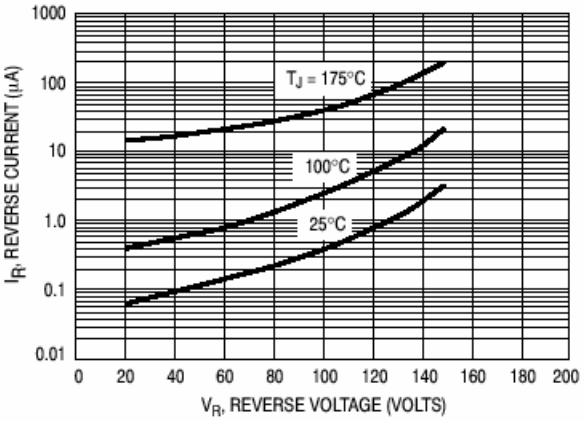



**Figure 2. Typical Reverse Current***

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

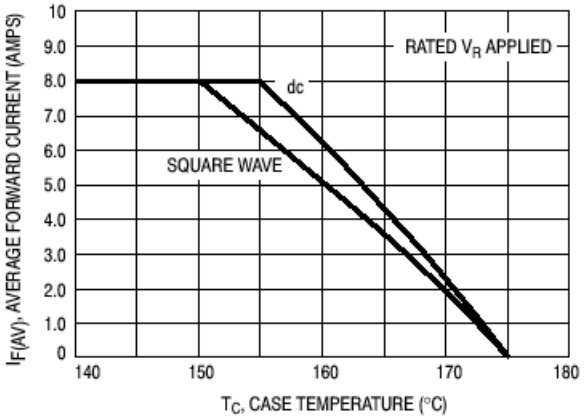



**Figure 3. Current Derating, Case**

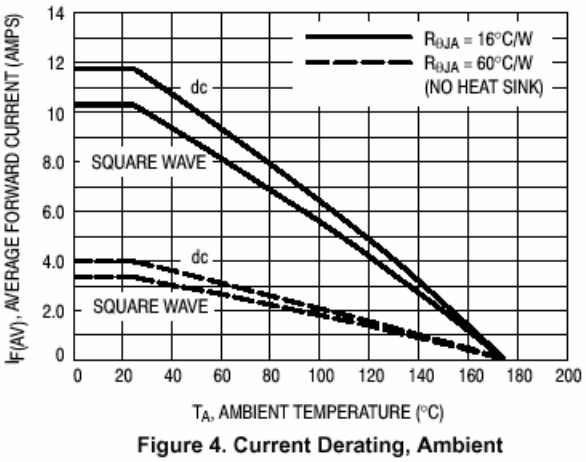



**Figure 4. Current Derating, Ambient**

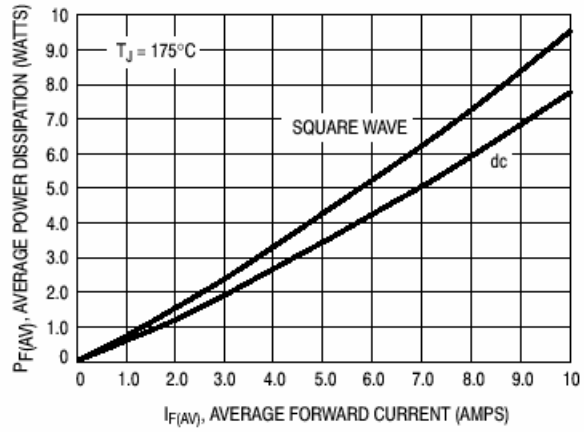



**Figure 5. Power Dissipation**

**MURC840**

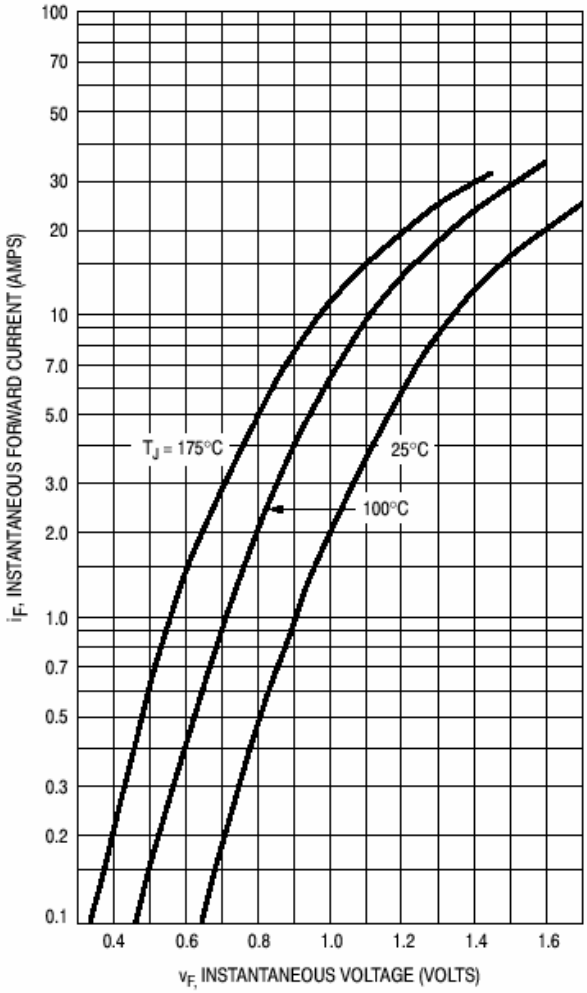



**Figure 6. Typical Forward Voltage**

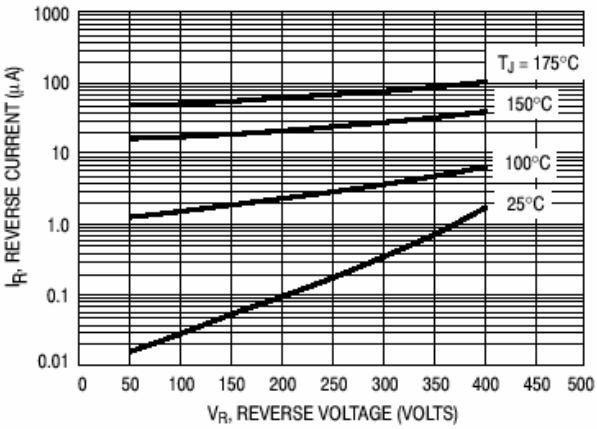



**Figure 7. Typical Reverse Current***

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

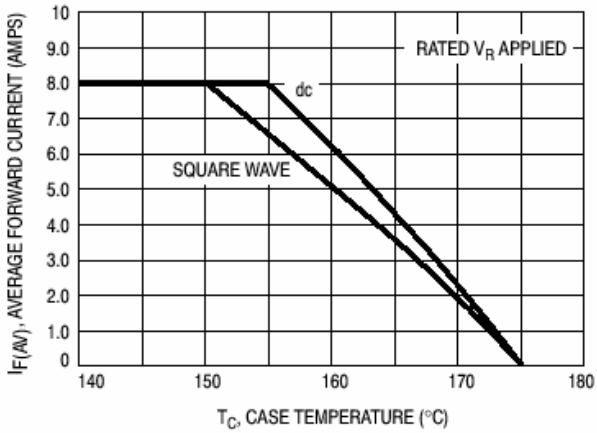



**Figure 8. Current Derating, Case**

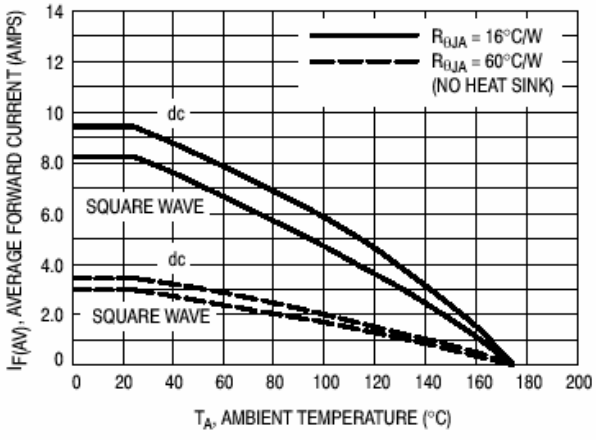



**Figure 9. Current Derating, Ambient**

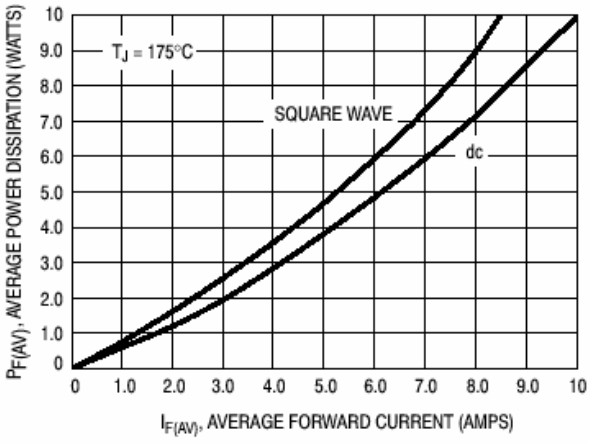



**Figure 10. Power Dissipation**

**MURC860**

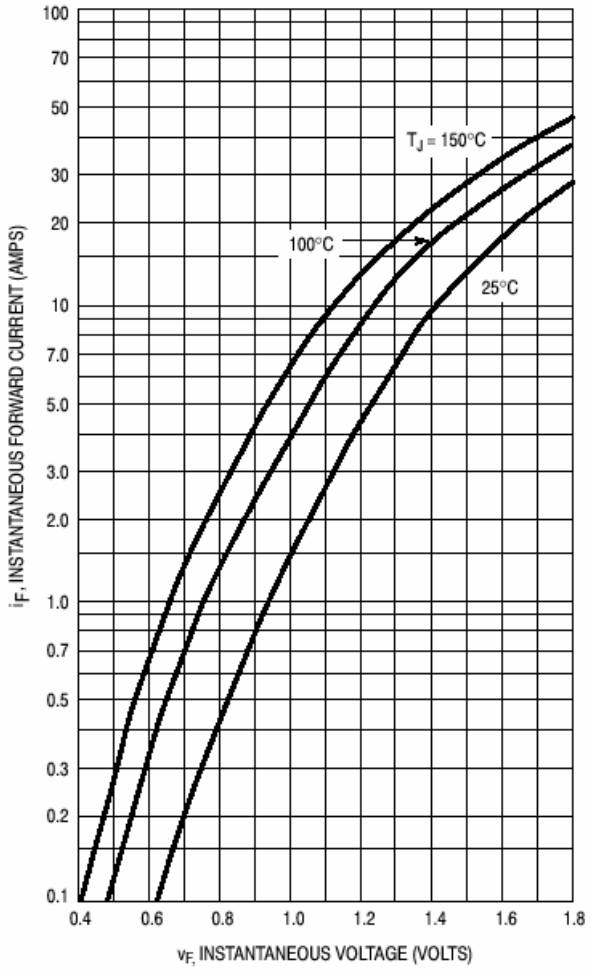



**Figure 11. Typical Forward Voltage**

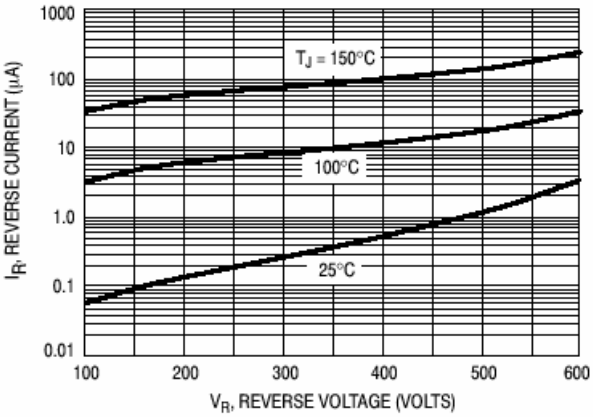



**Figure 12. Typical Reverse Current***

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

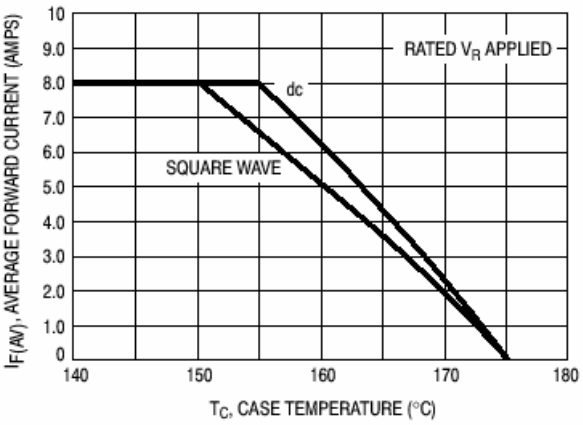



**Figure 13. Current Derating, Case**

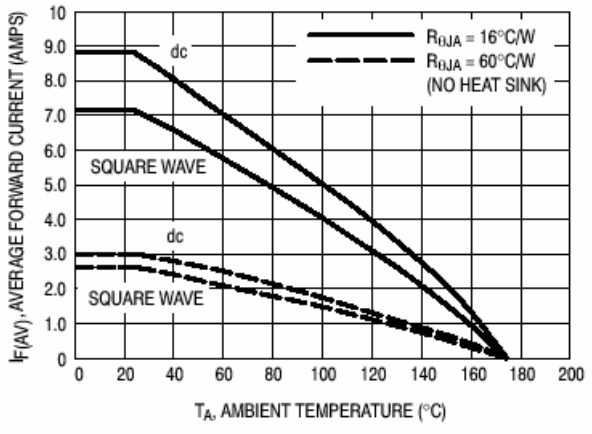



**Figure 14. Current Derating, Ambient**

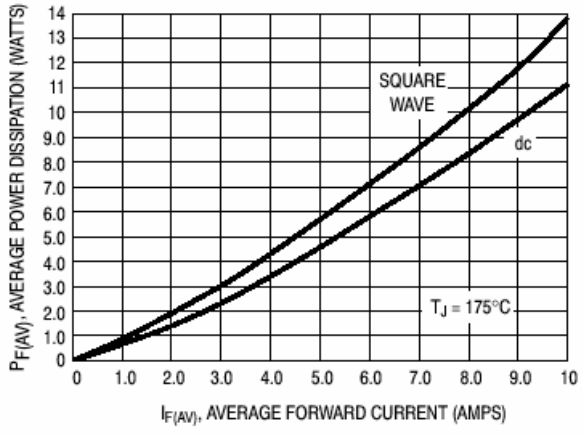



**Figure 15. Power Dissipation**

**MURC805, MURC810, MURC815,MURC820, MURC840, MURC860**

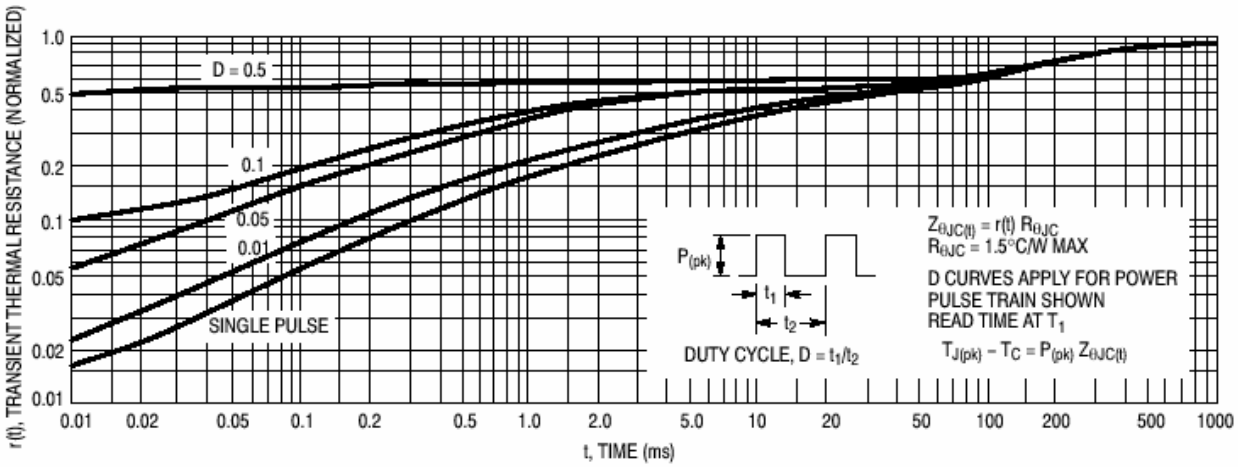



**Figure 16. Thermal Response**

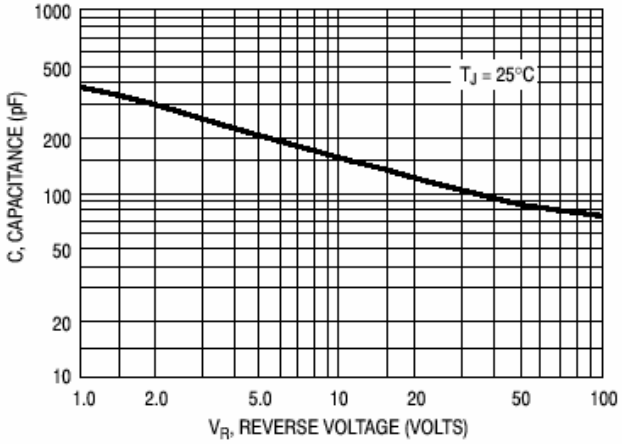



**Figure 17. Typical Capacitance**