

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:

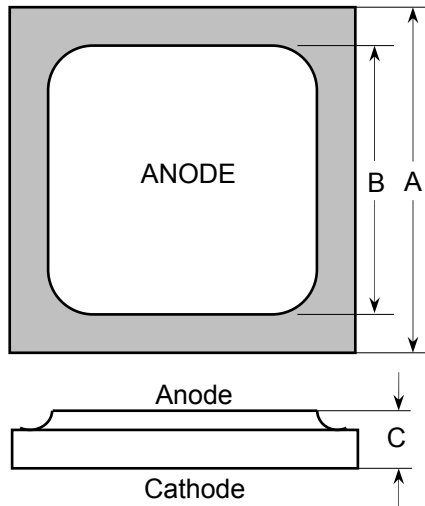
| Characteristics | Symbol | MURC 805 | MURC 810 | MURC 815 | MURC 820 | MURC 840 | MURC 860 | Unit |
|---|----------------|-------------|----------|----------|----------|----------|----------|------------------|
| Peak Inverse Voltage | V_{RWM} | 50 | 100 | 150 | 200 | 400 | 600 | V |
| Average Rectified Forward Current Total Device,(Rated V_R), $T_C = 150^\circ\text{C}$ | $I_{F(AV)}$ | 8.0 | | | | | | A |
| Peak Repetitive Forward Current (Rated V_R , Squire Wave,20KHZ), $T_C = 150^\circ\text{C}$ | 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 | | | | | | $^\circ\text{C}$ |

Electrical Characteristics:

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

1. Pulse Test: Pulse Width = 300 μs , Duty Cycle $\leq 2\%$

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)

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MURC805, MURC810, MURC815, MURC820

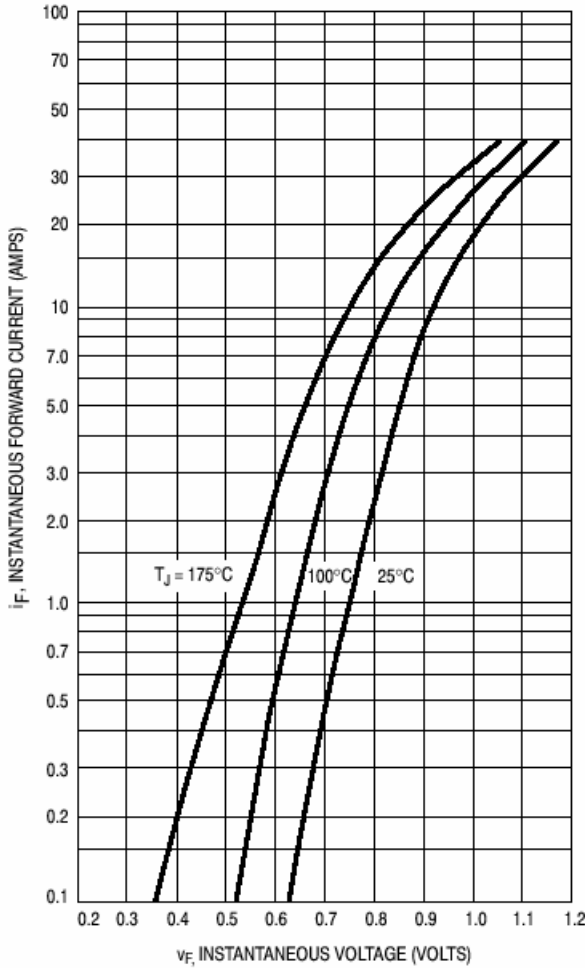


Figure 1. Typical Forward Voltage

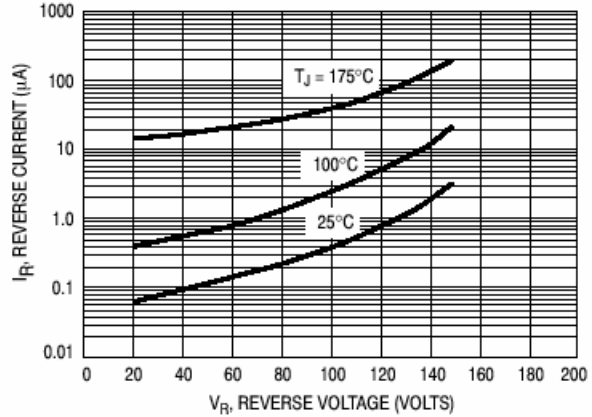


Figure 2. Typical Reverse Current*

* 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 .

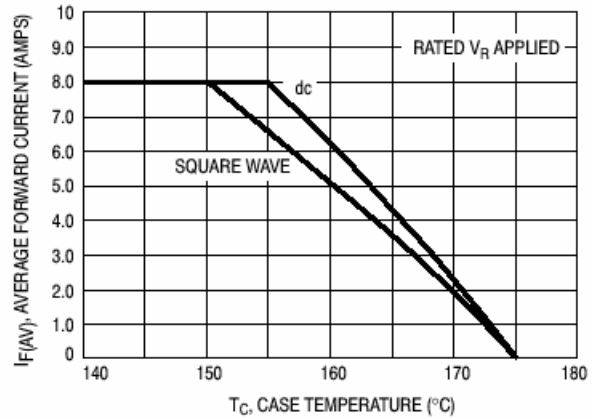


Figure 3. Current Derating, Case

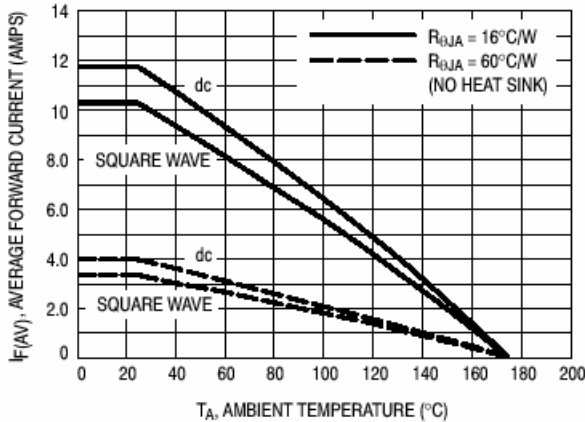


Figure 4. Current Derating, Ambient

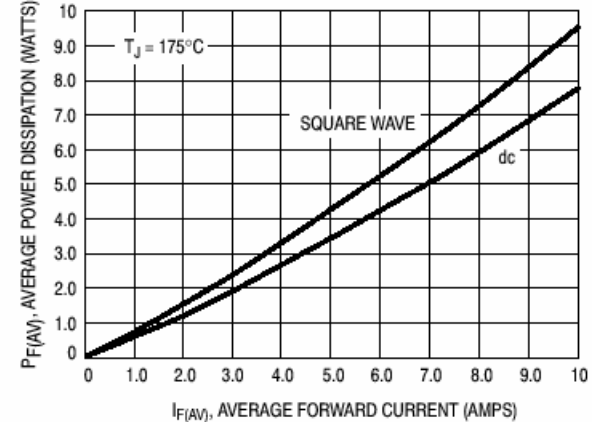


Figure 5. Power Dissipation

MURC840

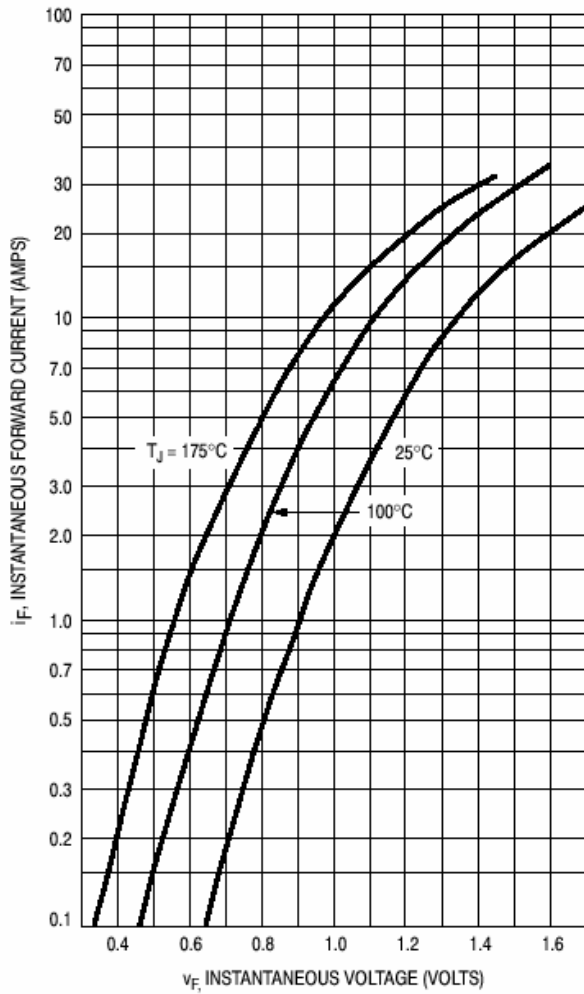


Figure 6. Typical Forward Voltage

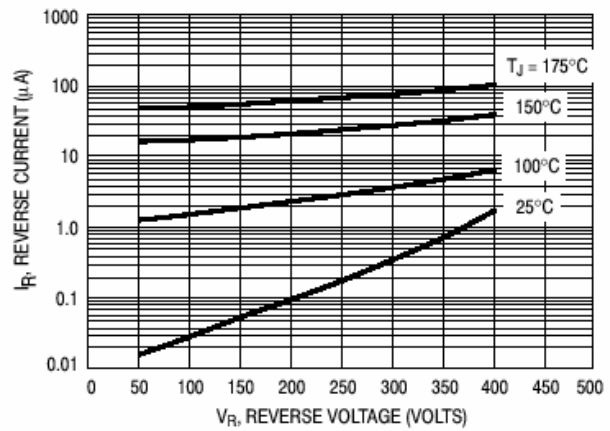


Figure 7. Typical Reverse Current*

* 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 .

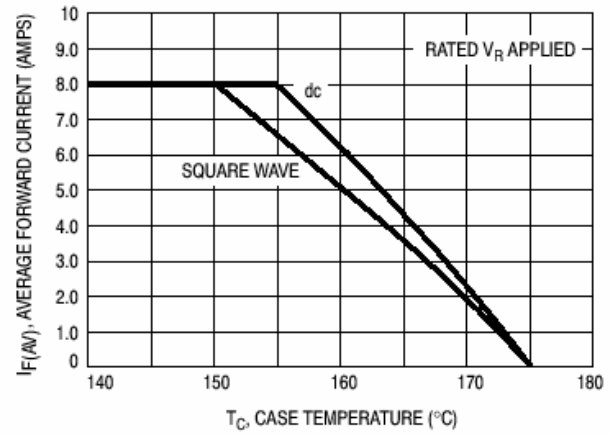


Figure 8. Current Derating, Case

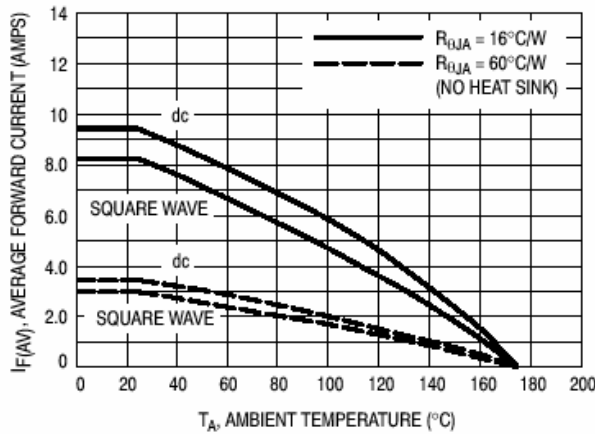


Figure 9. Current Derating, Ambient

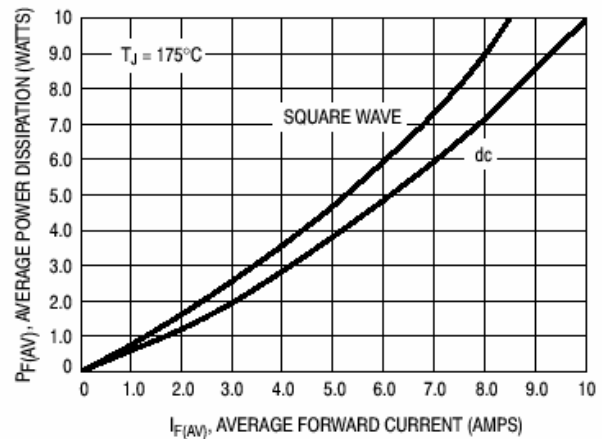


Figure 10. Power Dissipation

MURC860

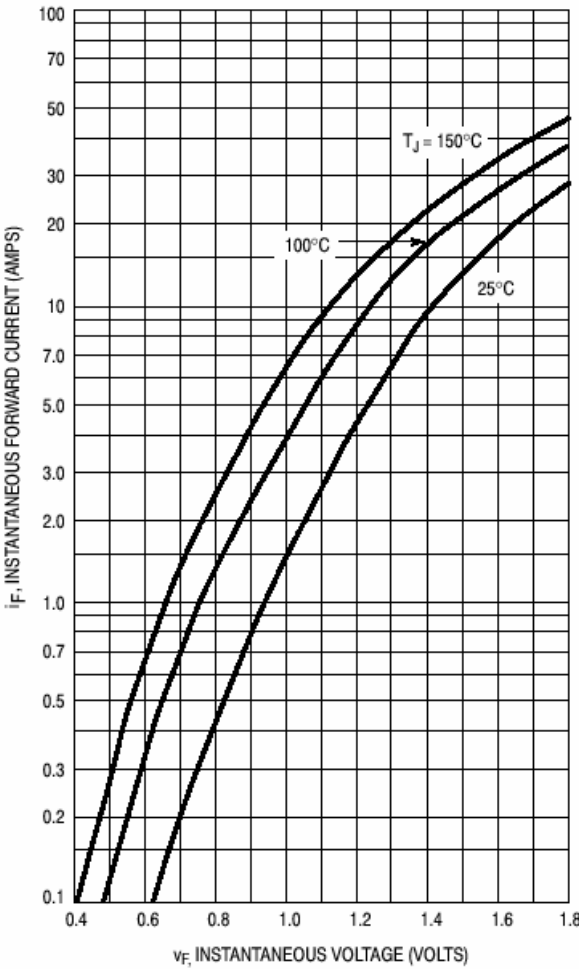


Figure 11. Typical Forward Voltage

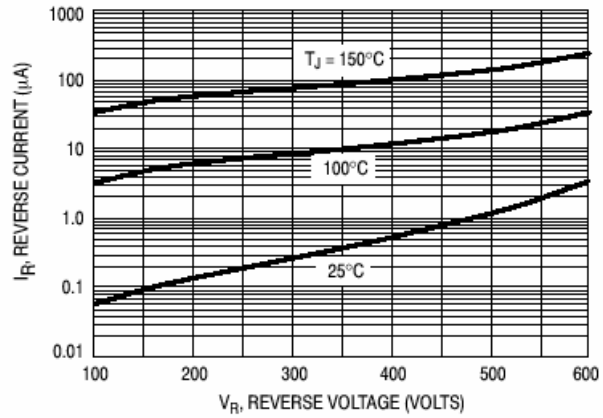


Figure 12. Typical Reverse Current*

* 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 .

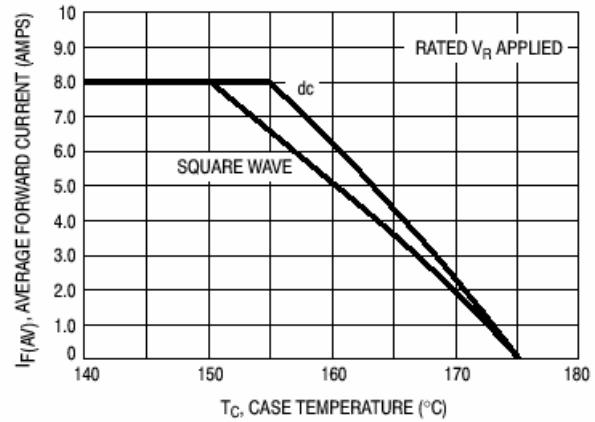


Figure 13. Current Derating, Case

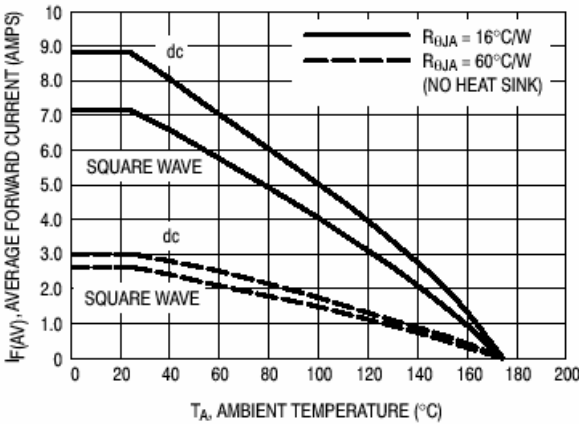


Figure 14. Current Derating, Ambient

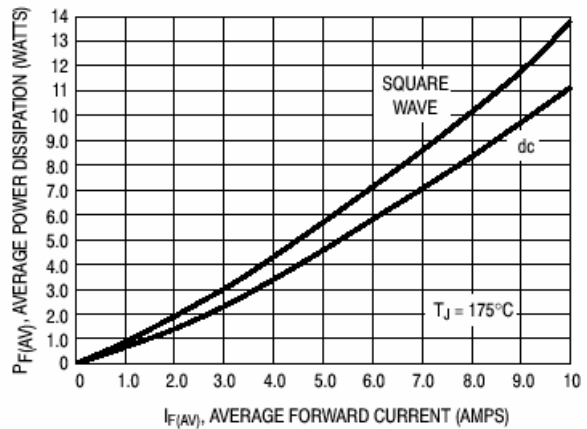


Figure 15. Power Dissipation

MURC805, MURC810, MURC815, MURC820, MURC840, MURC860

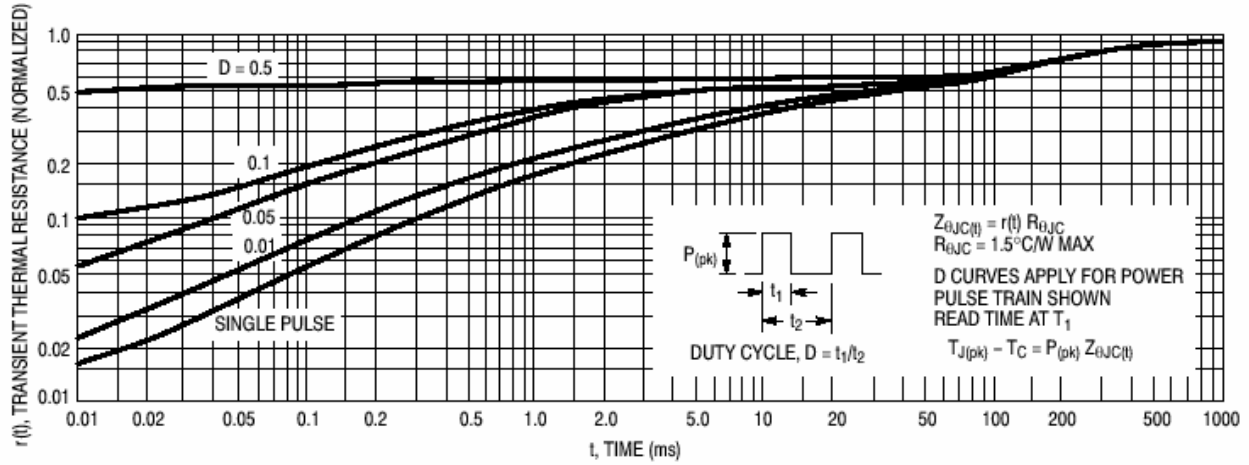


Figure 16. Thermal Response

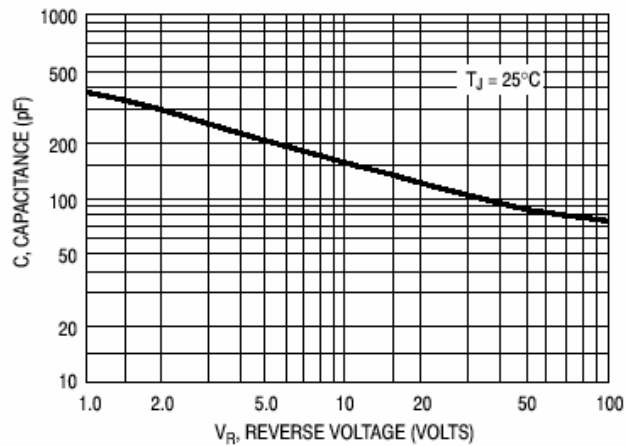


Figure 17. Typical Capacitance