

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:**

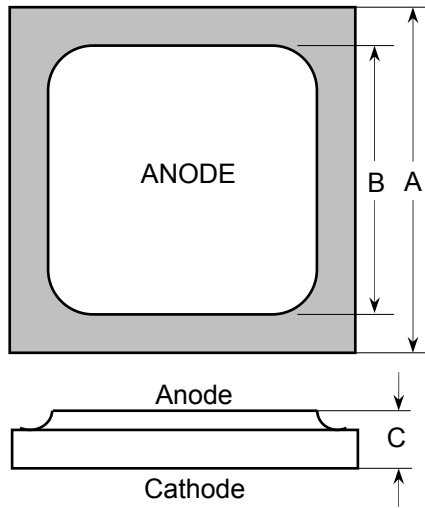
Characteristics	Symbol	MURC 805	MURC 810	MURC 815	MURC 820	MURC 840	MURC 860	Unit
Peak Inverse Voltage	$V_{RWM}$	50	100	150	200	400	600	V
Average Rectified Forward Current Total Device,(Rated $V_R$ ), $T_C = 150^\circ\text{C}$	$I_{F(AV)}$	8.0						A
Peak Repetitive Forward Current (Rated $V_R$ , Squire 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		$\mu\text{A}$
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/ $\mu\text{s}$ ) ( $I_F = 0.5$ 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 $\mu\text{s}$ , 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 <sup>2</sup> )	Dimension A <sup>(1)</sup> Inch (millimeter)	Dimension B <sup>(1)</sup> Inch (millimeter)	Dimension C <sup>(2)</sup> Inch (millimeter)
Si p-n die	85 x 85	0.085 (2.159)	0.069 (1.753)	0.009 (0.229)

<sup>(1)</sup> Tolerance is ± 0.003" (0.076 mm)

<sup>(2)</sup> Tolerance is ± 0.001" (0.025 mm)

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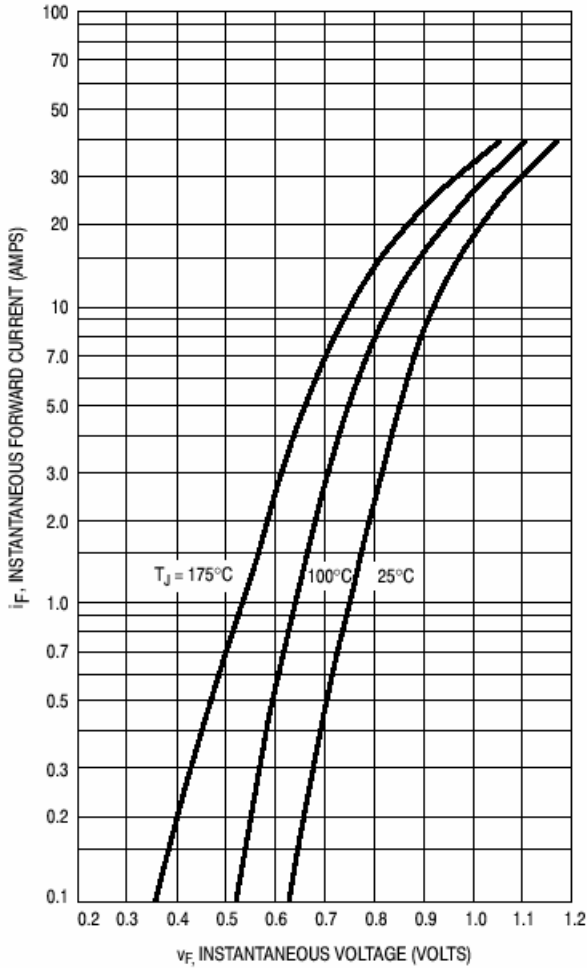
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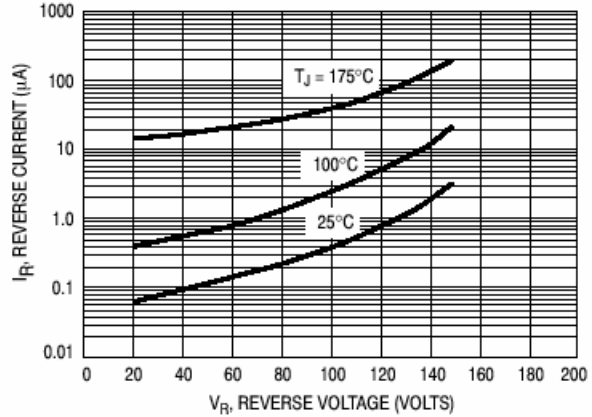
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**MURC805, MURC810, MURC815, MURC820**

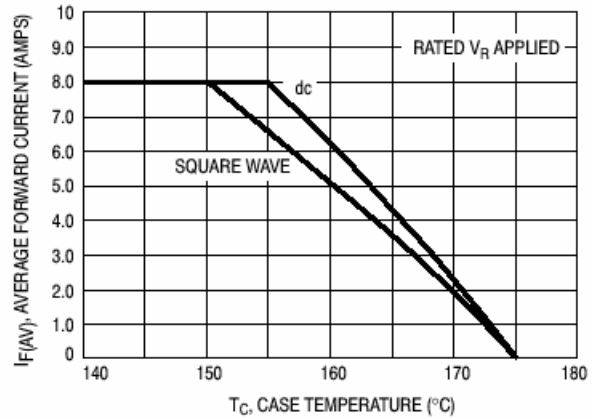


**Figure 1. Typical Forward Voltage**

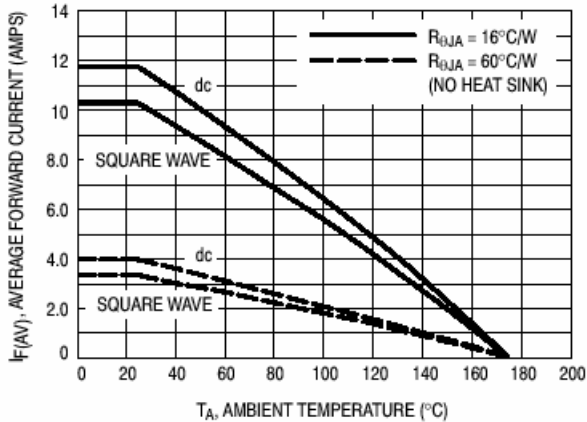


**Figure 2. Typical Reverse Current\***

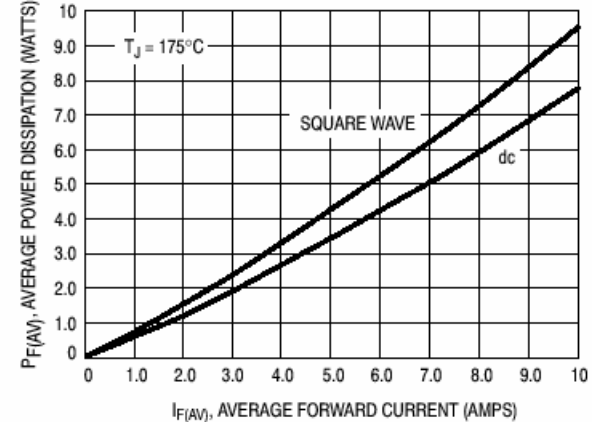
\* The curves shown are typical for the highest voltage device in the grouping. Typical reverse current for lower voltage selections can be estimated from these same curves if  $V_R$  is sufficiently below rated  $V_R$ .



**Figure 3. Current Derating, Case**



**Figure 4. Current Derating, Ambient**



**Figure 5. Power Dissipation**

**MURC840**

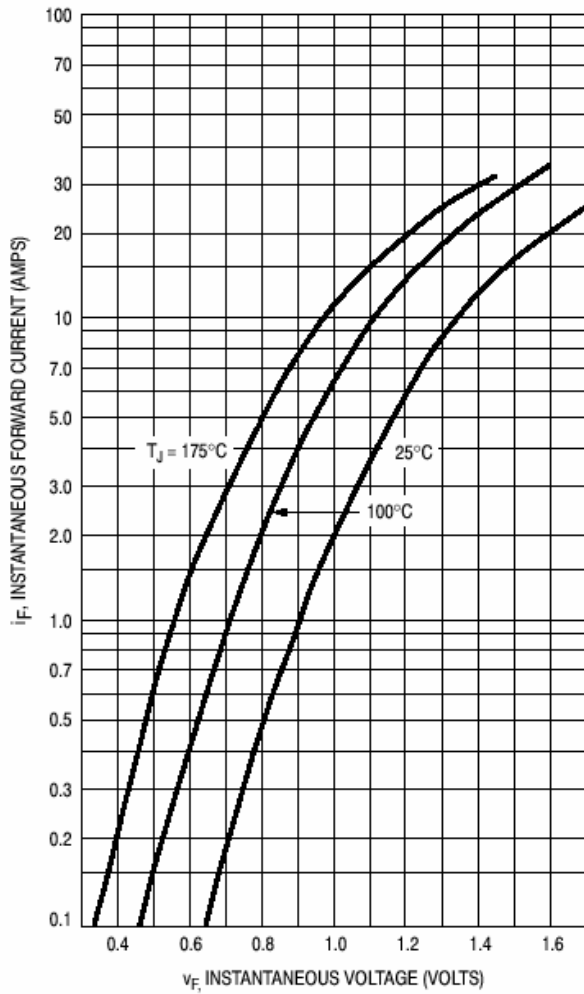


Figure 6. Typical Forward Voltage

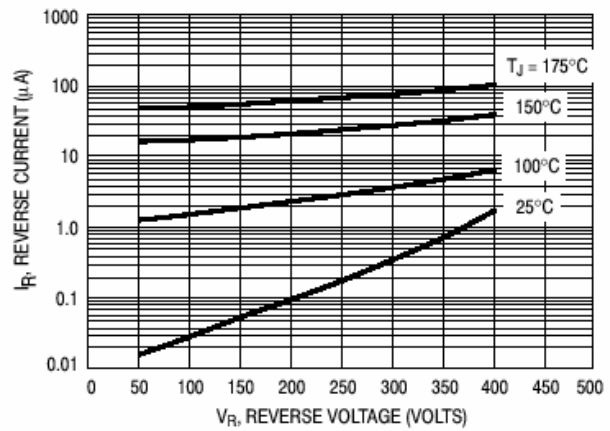


Figure 7. Typical Reverse Current\*

\* 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  $V_R$ .

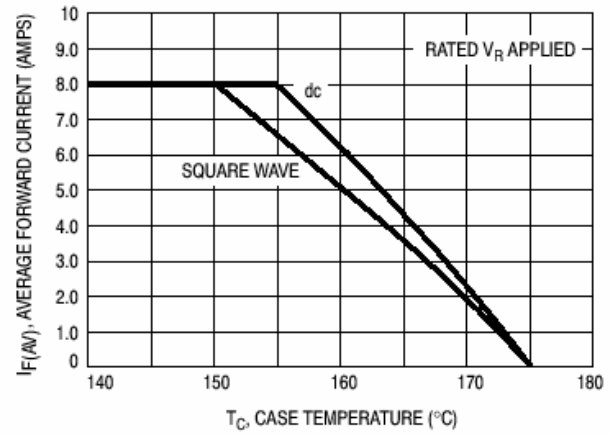


Figure 8. Current Derating, Case

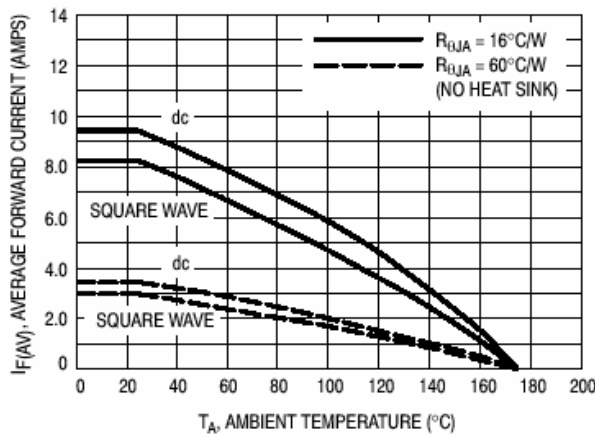


Figure 9. Current Derating, Ambient

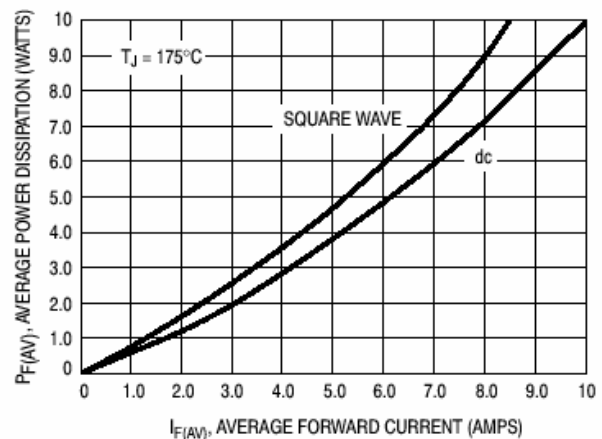
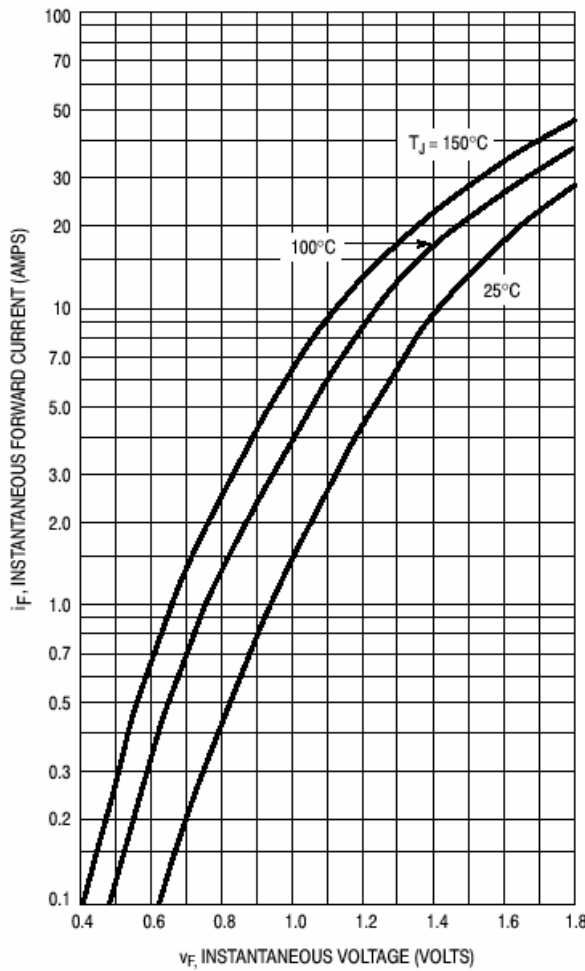
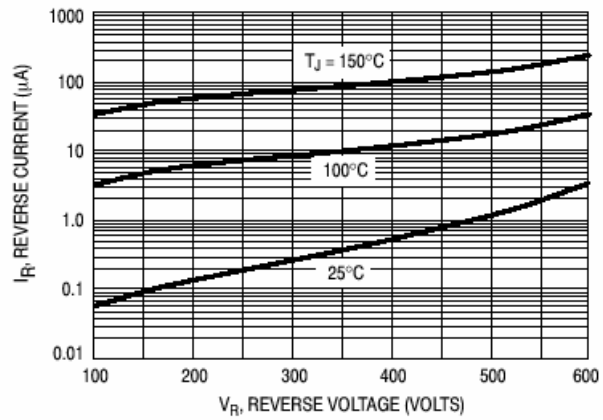


Figure 10. Power Dissipation

**MURC860**

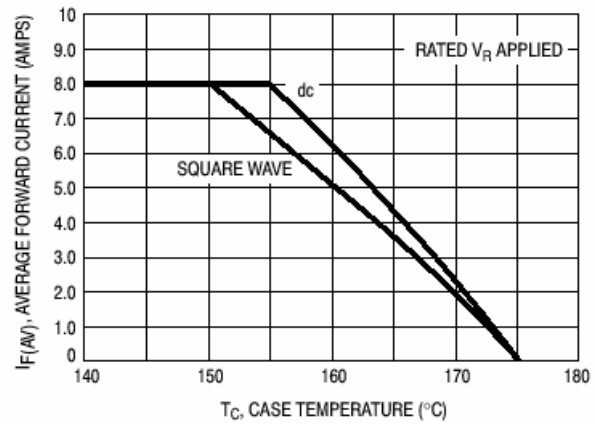


**Figure 11. Typical Forward Voltage**

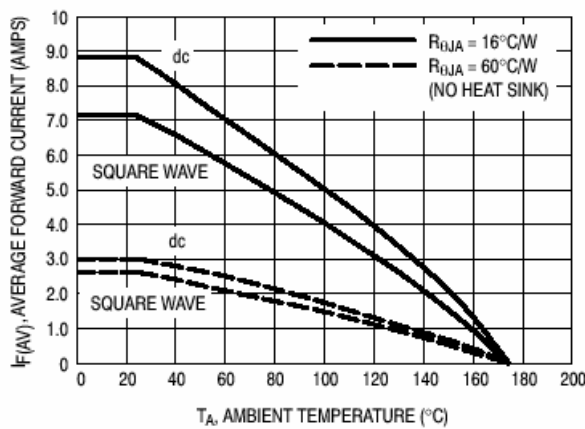


**Figure 12. Typical Reverse Current\***

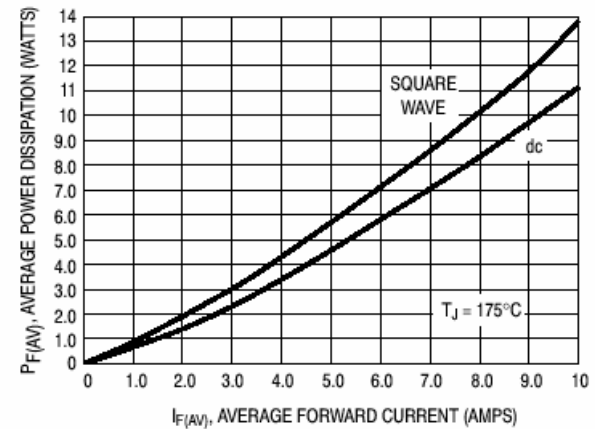
\* The curves shown are typical for the highest voltage device in the grouping. Typical reverse current for lower voltage selections can be estimated from these same curves if  $V_R$  is sufficiently below rated  $V_R$ .



**Figure 13. Current Derating, Case**



**Figure 14. Current Derating, Ambient**



**Figure 15. Power Dissipation**

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

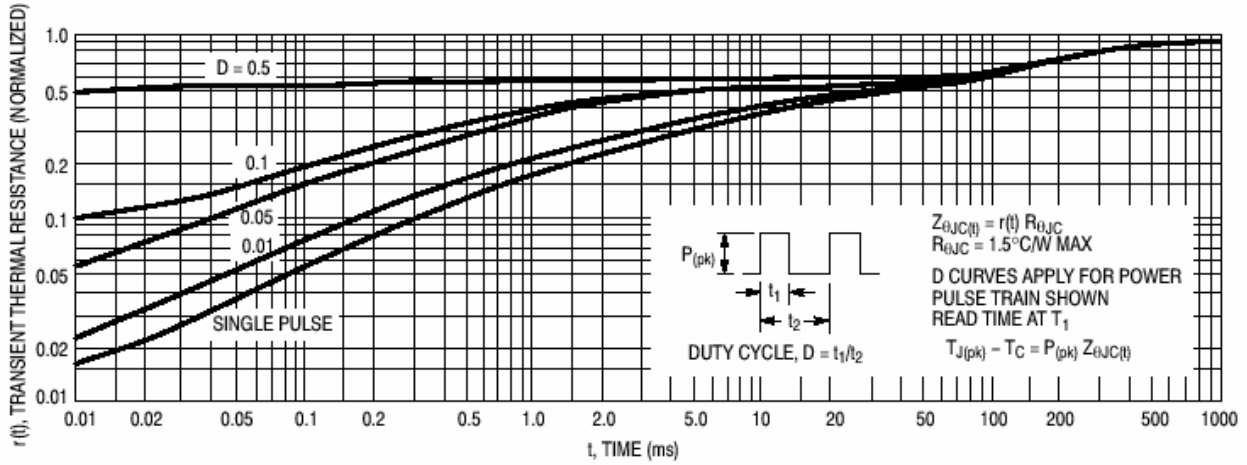


Figure 16. Thermal Response

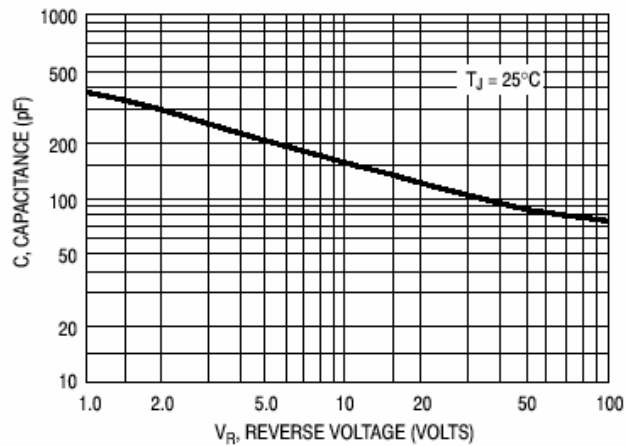


Figure 17. Typical Capacitance