

Technical Data  
Data Sheet 4861, Rev.-

**MURC1510-MURC1560**  
**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 1510	MURC 1515	MURC 1520	MURC 1540	MURC 1560	Unit
Peak Inverse Voltage	$V_{RWM}$	100	150	200	400	600	V
Average Rectified Forward Current (Rated $V_R$ )	$I_{F(AV)}$	15 @ $T_C = 150^\circ\text{C}$				15 @ $T_C = 145^\circ\text{C}$	A
Peak Rectified Forward Current (Rated $V_R$ , Square Wave, 20 kHz)	$I_{FRM}$	30 @ $T_C = 150^\circ\text{C}$				30 @ $T_C = 145^\circ\text{C}$	A
Max. Peak One Cycle Non-Repetitive Surge Current 8.3 ms, half Sine pulse	$I_{FSM}$	200			150		A
Operating Junction Temperature and Storage Temperature	$T_J, T_{stg}$	-65 to +175					$^\circ\text{C}$

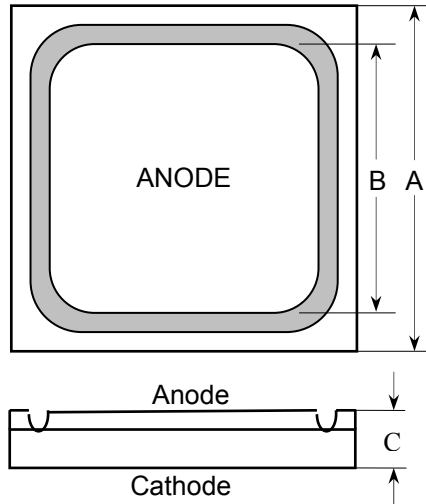
**Electrical Characteristics:**

Characteristics	Symbol	MURC 1510	MURC 1515	MURC 1520	MURC 1540	MURC 1560	Unit
Max. Instantaneous Forward Voltage (Note1) ( $I_F = 15$ Amp, $T_J = 150^\circ\text{C}$ ) ( $I_F = 15$ Amp, $T_J = 25^\circ\text{C}$ )	$V_F$	0.85 1.05			1.12 1.25	1.20 1.50	V
Max. Instantaneous Reverse Current (Note1) (Rated DC Voltage, $T_C = 150^\circ\text{C}$ ) (Rated DC Voltage, $T_C = 25^\circ\text{C}$ )	$I_R$	500 10			500 10	1000 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  $\leq 2\%$

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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 <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	120 x 120	0.120 (3.048)	0.094 (2.388)	0.010 (0.254)

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

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

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**MURC1510, MURC1515, MURC1520**

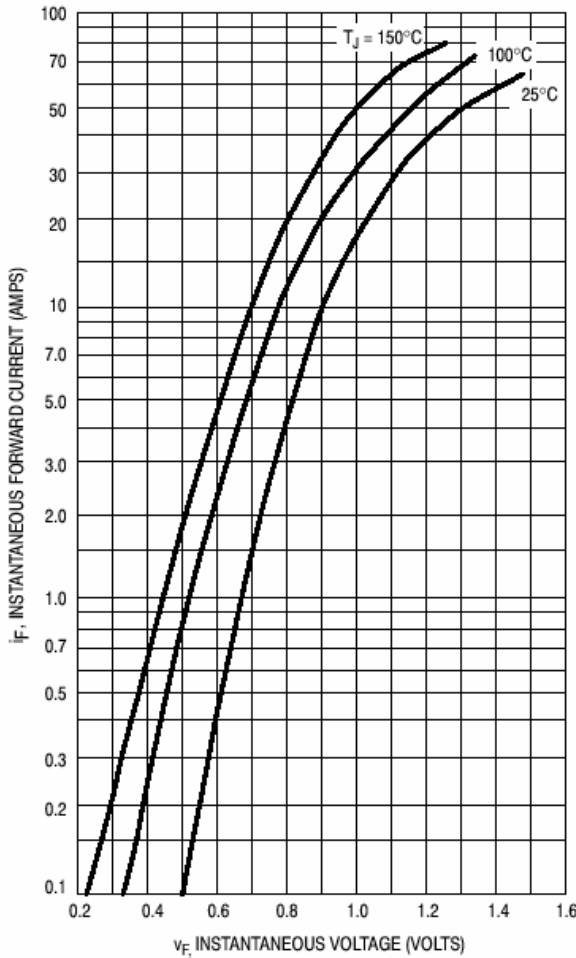


Figure 1. Typical Forward Voltage

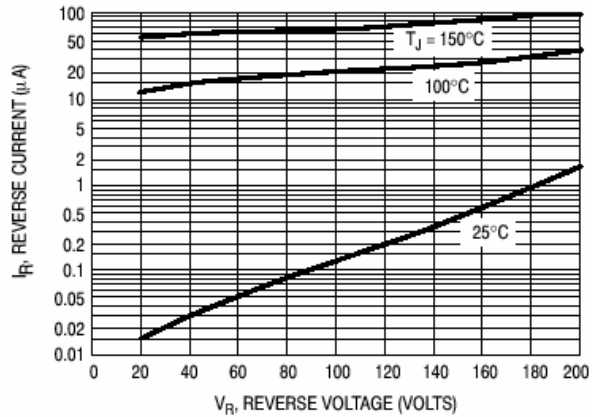


Figure 2. Typical Reverse Current

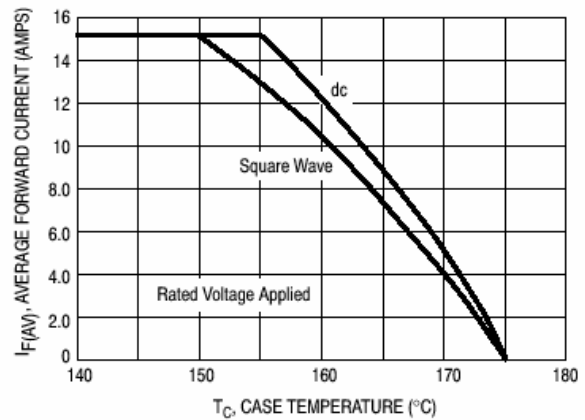


Figure 3. Current Derating, Case

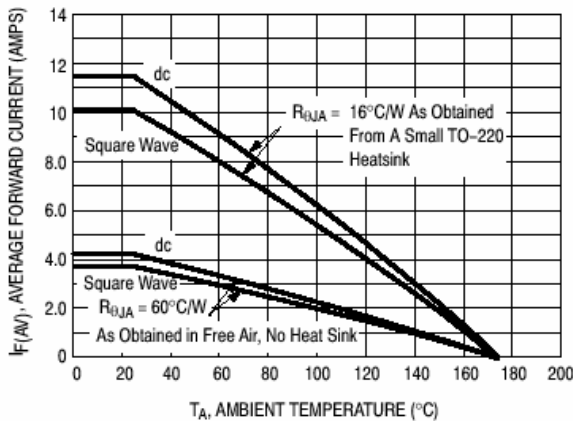


Figure 4. Current Derating, Ambient

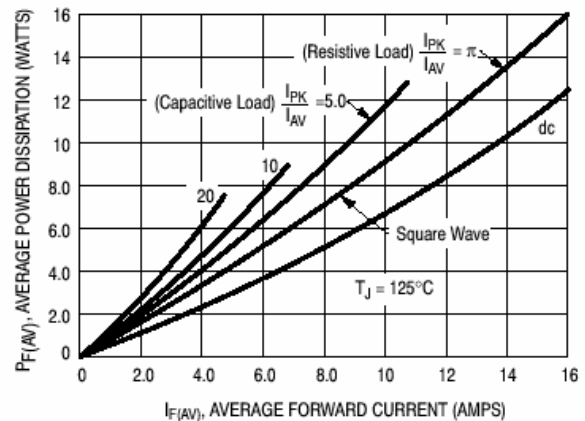
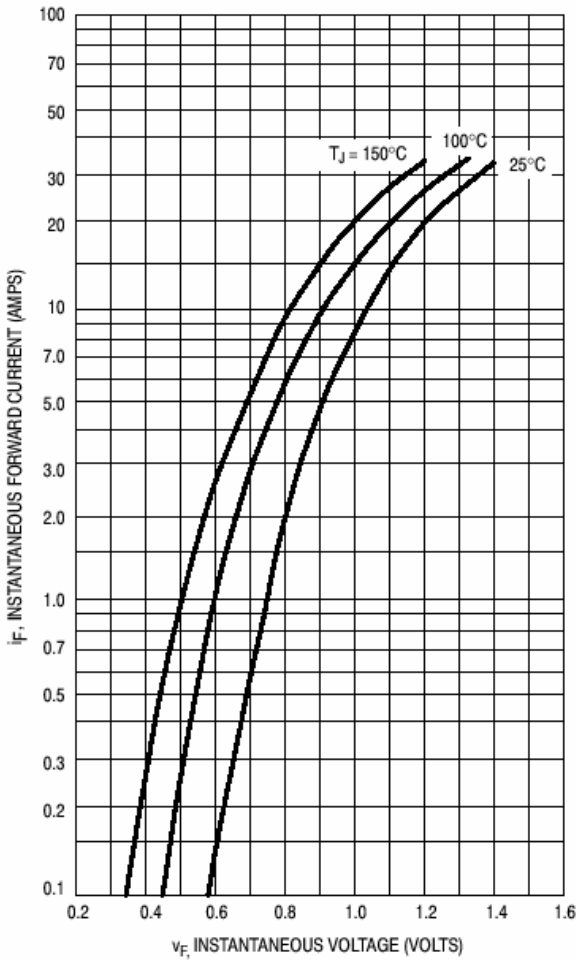


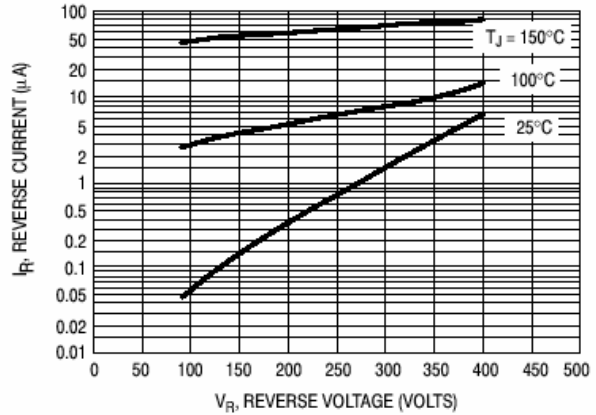
Figure 5. Power Dissipation

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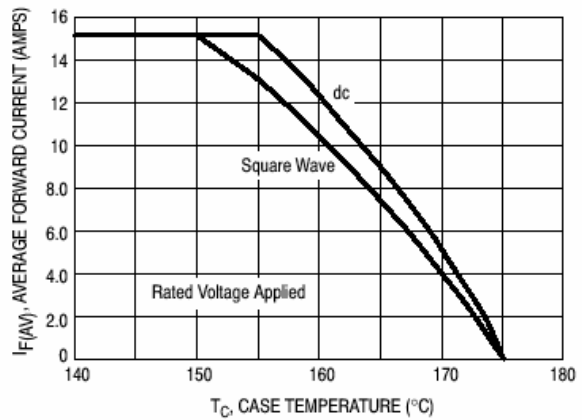
**MURC1540**



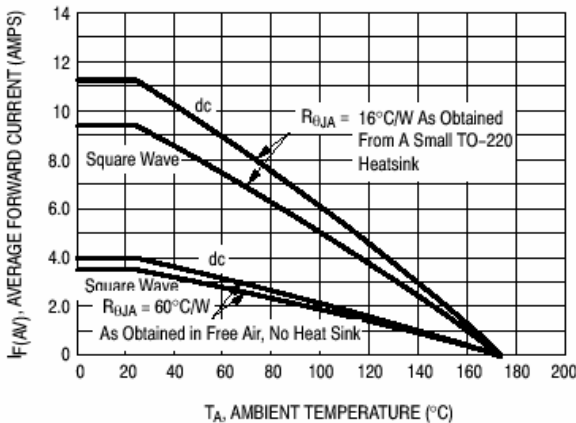
**Figure 6. Typical Forward Voltage**



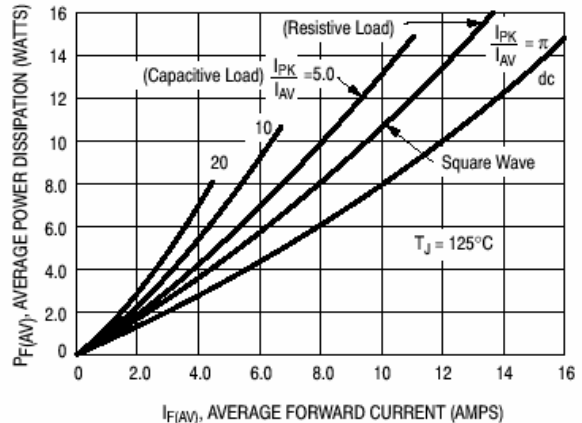
**Figure 7. Typical Reverse Current**



**Figure 8. Current Derating, Case**

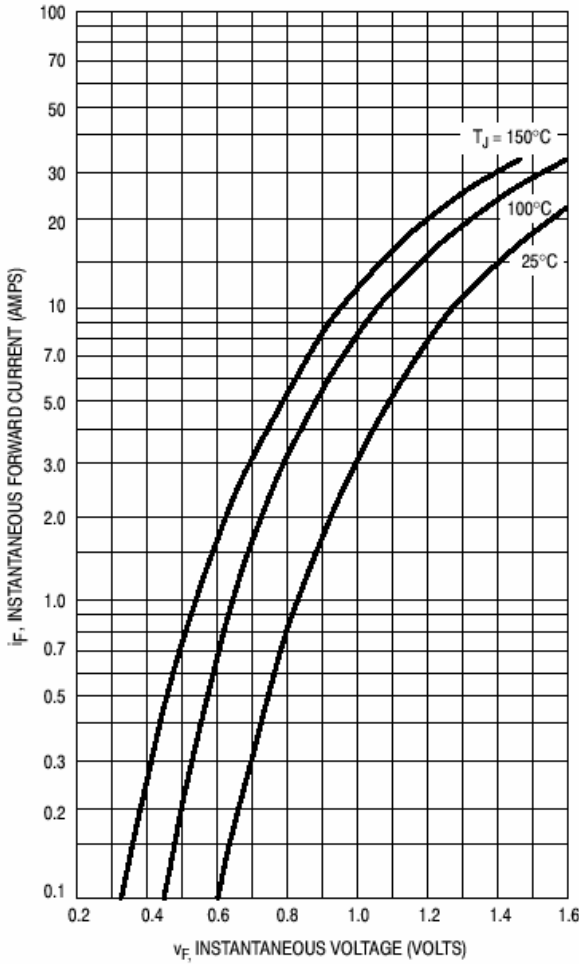


**Figure 9. Current Derating, Ambient**

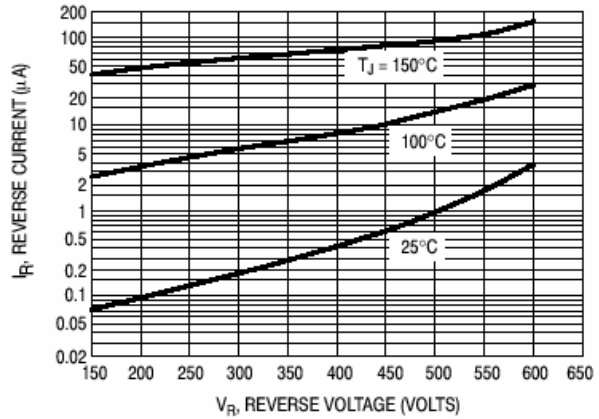


**Figure 10. Power Dissipation**

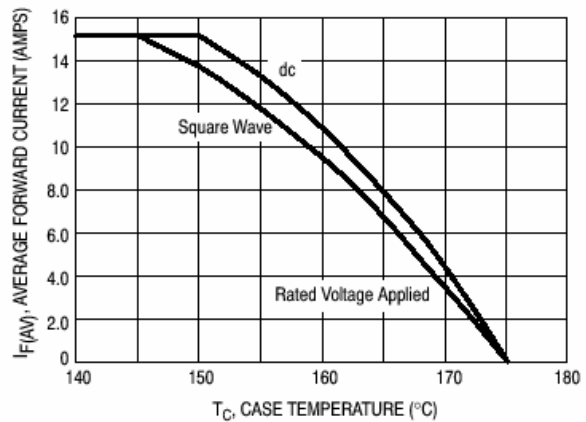
**MURC1560**



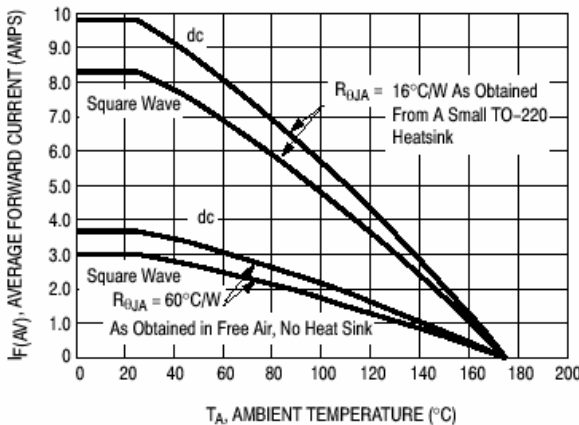
**Figure 11. Typical Forward Voltage**



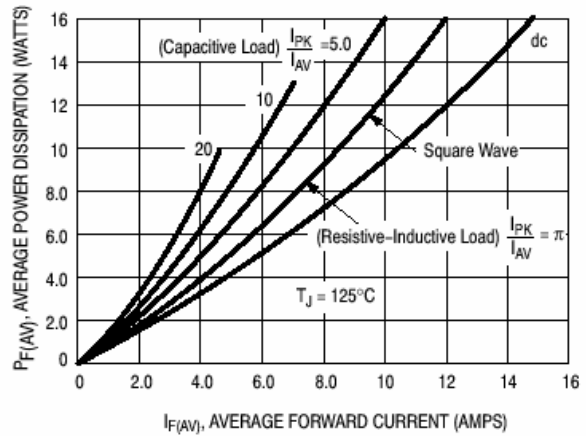
**Figure 12. Typical Reverse Current**



**Figure 13. Current Derating, Case**



**Figure 14. Current Derating, Ambient**



**Figure 15. Power Dissipation**

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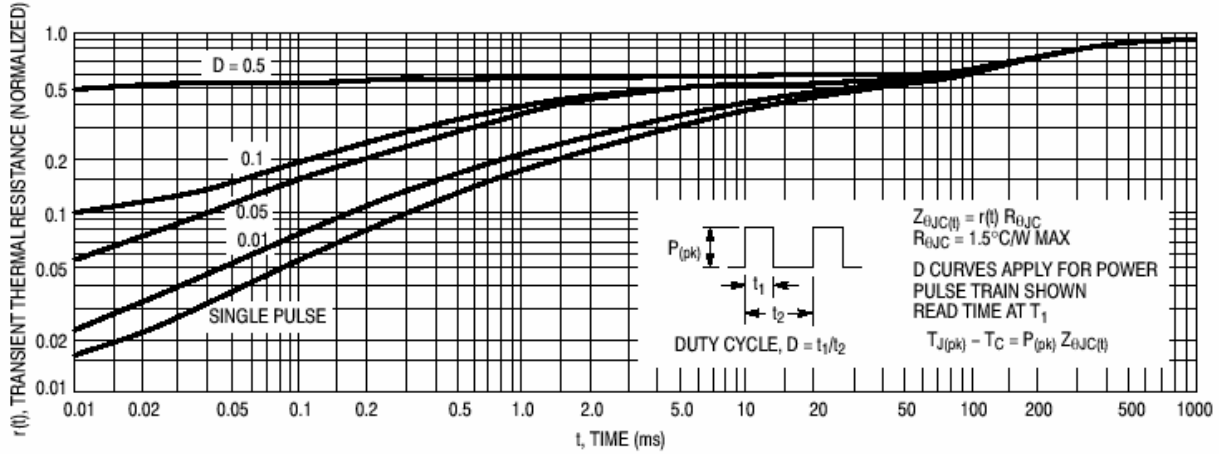


Figure 16. Thermal Response

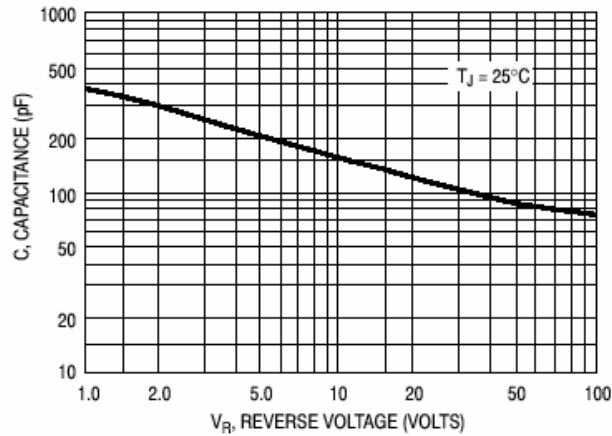


Figure 17. Typical Capacitance