

Technical Data  
Data Sheet 4855, Rev.-

**MURC405-MURC460**  
**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 405	MURC 410	MURC 415	MURC 420	MURC 440	MURC 460	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	$V_{RRM}$ $V_{RWM}$ $V_R$	50	100	150	200	400	600	V
Average Rectified Forward Current(Square Wave)	$I_{F(AV)}$	4.0 @ $T_A = 80^\circ\text{C}$				4.0 @ $T_A = 40^\circ\text{C}$		A
Non-Repetitive Peak Surge Current (Surge applied at rated load conditions, half wave, single phase, 60Hz)	$I_{FSM}$	125				110		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)	$C_T$	100				40		pF
Operating Junction Temperature and Storage Temperature	$T_J, T_{stg}$	-65 to +175						$^\circ\text{C}$

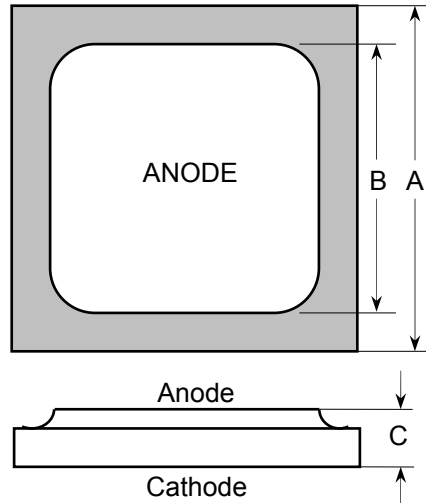
**Electrical Characteristics:**

Characteristics	Symbol	MURC 405	MURC 410	MURC 415	MURC 420	MURC 440	MURC 460	Unit
Max. Instantaneous Forward Voltage (Note1) ( $I_F = 3.0\text{ Amp}$ , $T_J = 150^\circ\text{C}$ ) ( $I_F = 3.0\text{ Amp}$ , $T_J = 25^\circ\text{C}$ ) ( $I_F = 4.0\text{ Amp}$ , $T_J = 25^\circ\text{C}$ )	$V_F$	0.71 0.88 0.89				1.05 1.25 1.28		V
Max. Instantaneous Reverse Current (Note1) (Rated DC Voltage, $T_J = 150^\circ\text{C}$ ) (Rated DC Voltage, $T_J = 25^\circ\text{C}$ )	$I_R$	150 5				250 10		$\mu\text{A}$
Max. Reverse Recovery Time ( $I_F = 1.0\text{ Amp}$ , $di/dt = 50\text{ A}/\mu\text{s}$ ) ( $I_F = 0.5\text{ Amp}$ , $I_R = 1.0\text{ A}$ , $I_{REC}=0.25\text{A}$ )	$t_{rr}$	35 25				75 50		nS
Max. Forward Recovery Time ( $I_F = 1.0\text{ Amp}$ , $di/dt = 100\text{ A}/\mu\text{s}$ , Recover to 1.0 V)	$T_{fr}$	25				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	65 x 65	0.065 (1.651)	0.049 (1.254)	0.009 (0.229)

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

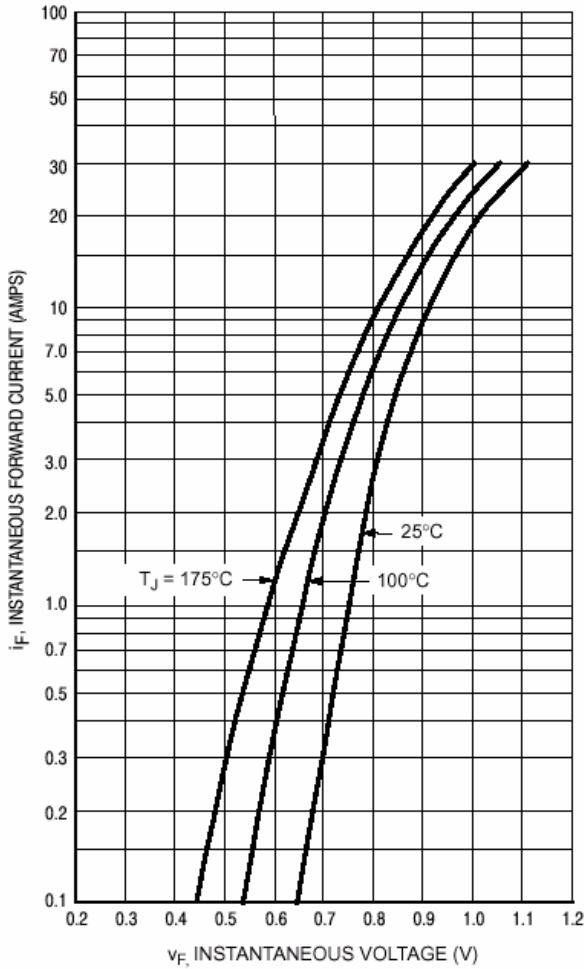
<sup>(2)</sup> Tolerance is ± 0.001" (0.025 mm)

**DISCLAIMER:**

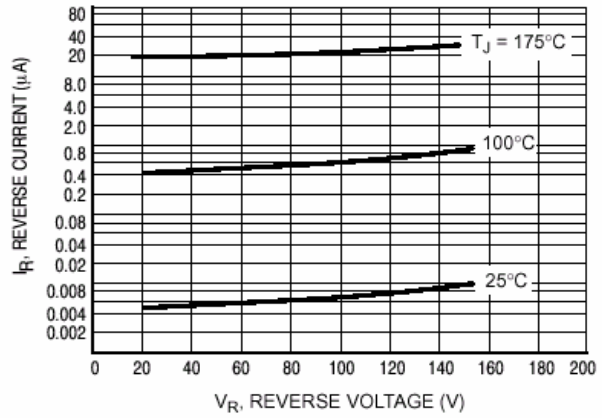
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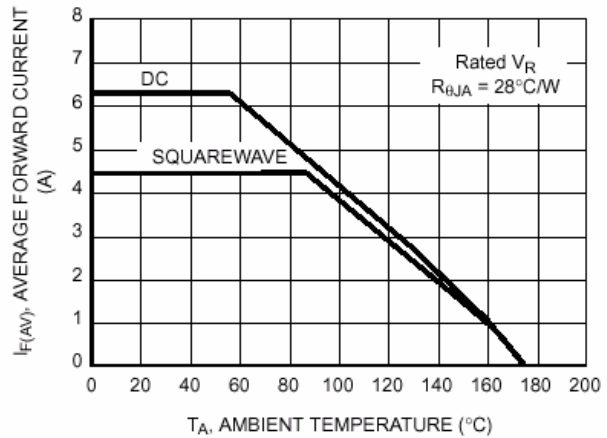
**MURC405, MURC410, MURC415, MURC420**



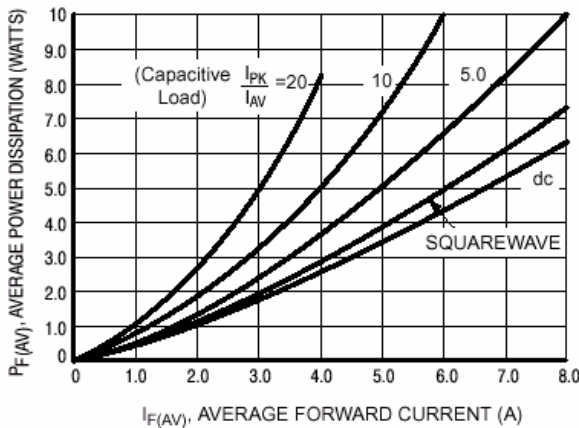
**Figure 1. Typical Forward Voltage**



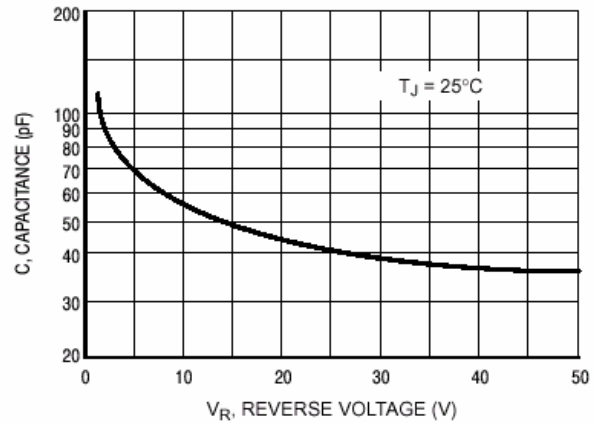
**Figure 2. Typical Reverse Current**



**Figure 3. Current Derating  
(Mounting Method #3 Per Note 2)**



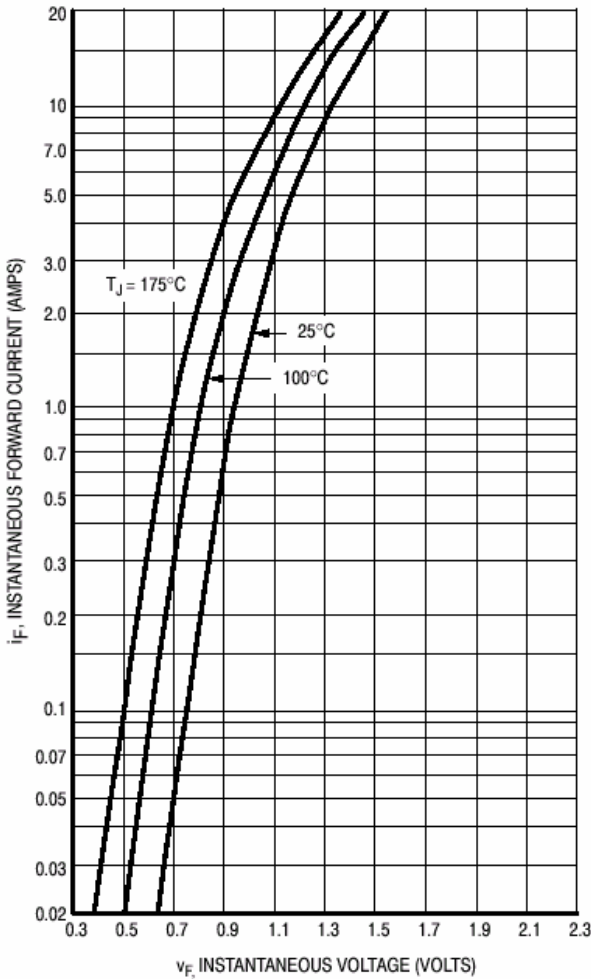
**Figure 4. Power Dissipation**



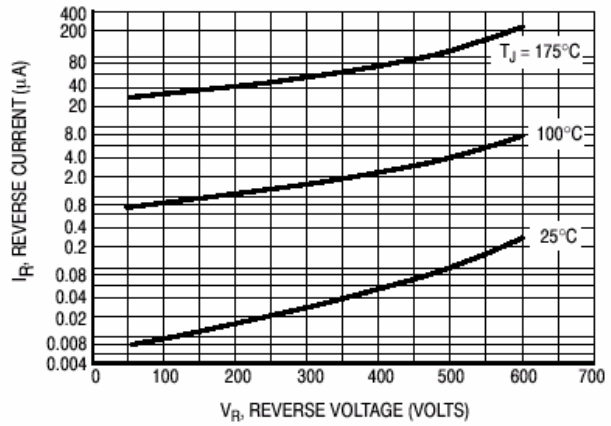
**Figure 5. Typical Capacitance**

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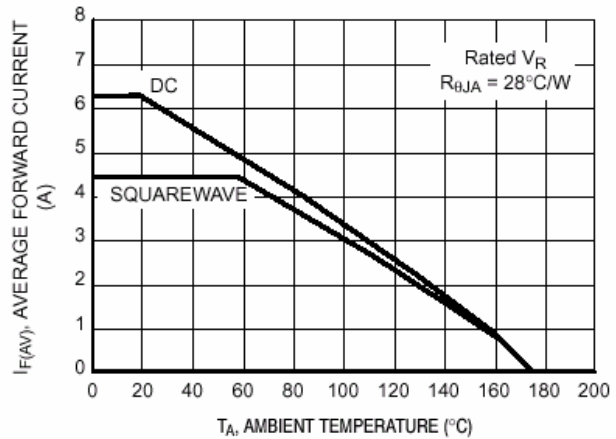
**MURC440, MURC460**



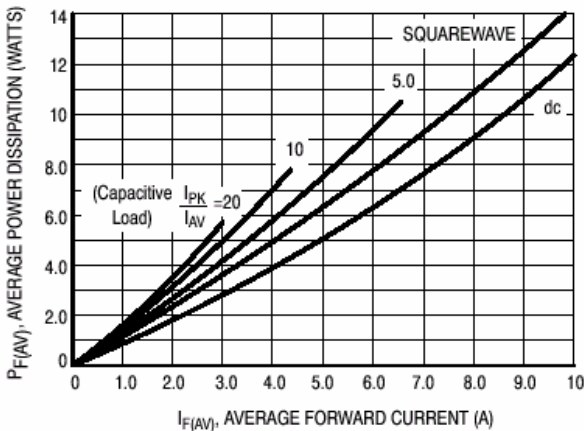
**Figure 6. Typical Forward Voltage**



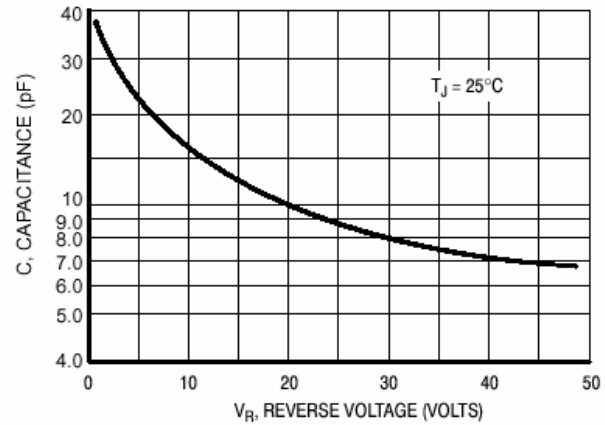
**Figure 7. Typical Reverse Current**



**Figure 8. Current Derating  
(Mounting Method #3 Per Note 2)**



**Figure 9. Power Dissipation**



**Figure 10. Typical Capacitance**