

Technical Data
Data Sheet 4853, Rev. B

MURC105-MURC160
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 105	MURC 110	MURC 115	MURC 120	MURC 130	MURC 140	MURC 150	MURC 160	Unit
Peak Inverse Voltage	V_{RWM}	50	100	150	200	300	400	500	600	V
Average Rectified Forward Current(Square Wave Mounting Method #3 Per Note1)	$I_{F(AV)}$	1.0 @ $T_A = 130^\circ\text{C}$				1.0 @ $T_A = 120^\circ\text{C}$				A
Max. Peak One Cycle Non-Repetitive Surge Current 8.3 ms, half Sine pulse	I_{FSM}	35								A
Operating Junction Temperature and Storage Temperature	T_J, T_{stg}	-65 to +175								$^\circ\text{C}$

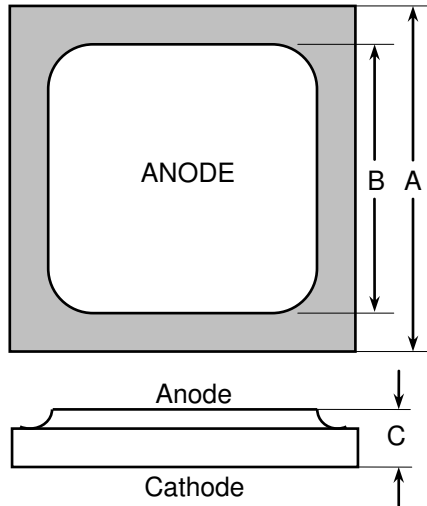
Electrical Characteristics:

Characteristics	Symbol	MURC 105	MURC 110	MURC 115	MURC 120	MURC 130	MURC 140	MURC 150	MURC 160	Unit
Max. Forward Voltage Drop (Note1) ($I_F = 1.0$ Amp, $T_J = 150^\circ\text{C}$) ($I_F = 1.0$ Amp, $T_J = 25^\circ\text{C}$)	V_F	0.710 0.875				1.05 1.25				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	50 2.0				150 5.0				μA
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				75 50				nS
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	30				10				pF
Max Forward Recovery Time ($I_F = 1.0$ Amp, $di/dt = 50$ A/ μs , I_{REC} to 1.0V)	T_{fr}	25				50				nS

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

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Dimensions in inches (mm)



Top side metalization - Aluminum - 25 kÅ

Bottom side metalization - Titanium 1.2 kÅ,
Nickel 1.8 kÅ, Silver - 30 kÅ minimum

Bottom side is cathode, top side is anode.

See part ordering information for different options

Die type	Area (mil ²)	Dimension A ⁽¹⁾ Inch (millimeter)	Dimension B ⁽¹⁾ Inch (millimeter)	Dimension C ⁽²⁾ Inch (millimeter)
(1) Si p-n die	34 x 34	0.034 (0.864)	0.020 (0.508)	0.009 (0.229)

Tolerance is ± 0.003" (0.076 mm)

⁽²⁾ Tolerance is ± 0.001" (0.025 mm)

MURC105, MURC110, MURC115, MURC120

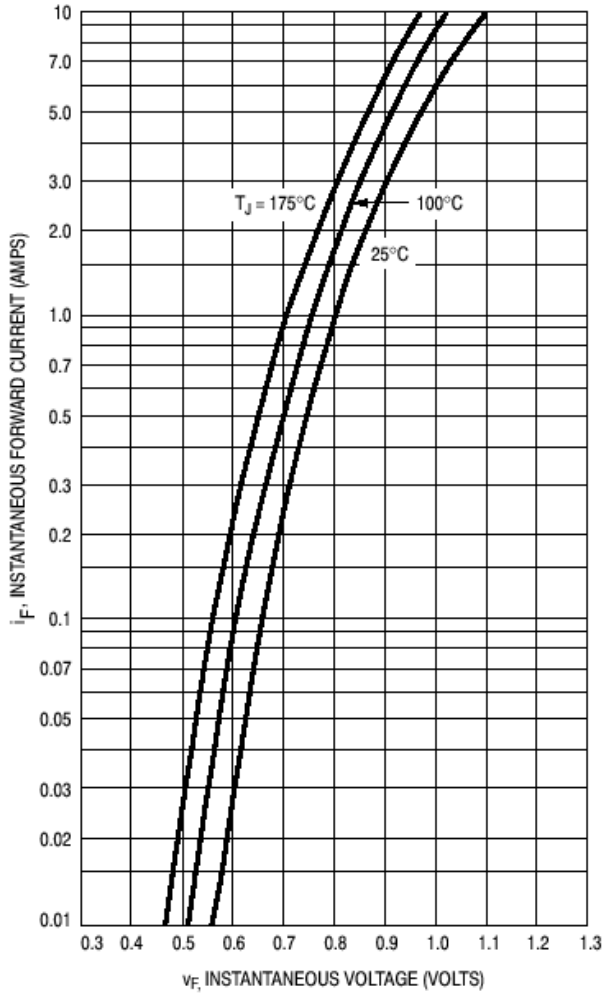


Figure 1. Typical Forward Voltage

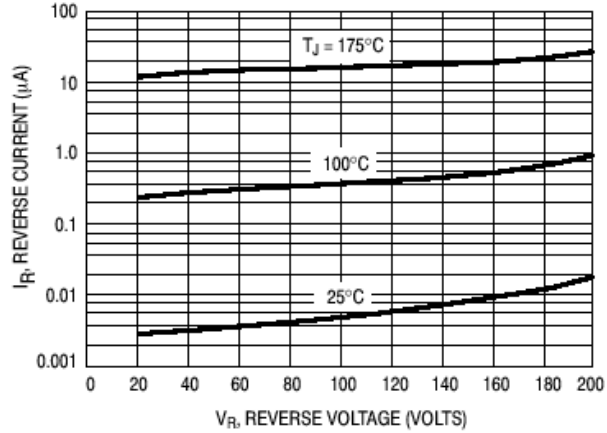
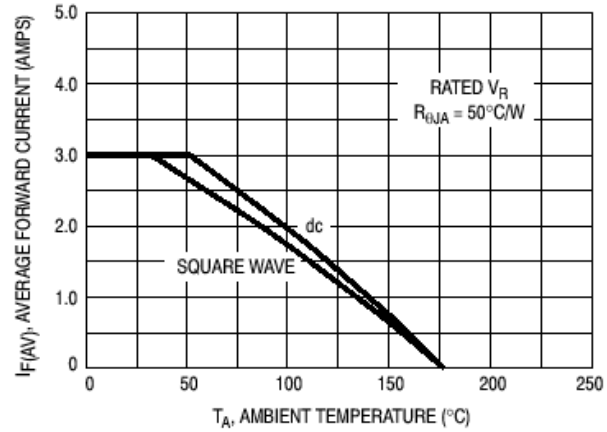


Figure 2. Typical Reverse Current*

* The curves shown are typical for the highest voltage device in the voltage 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
(Mounting Method #3 Per Note 1)**

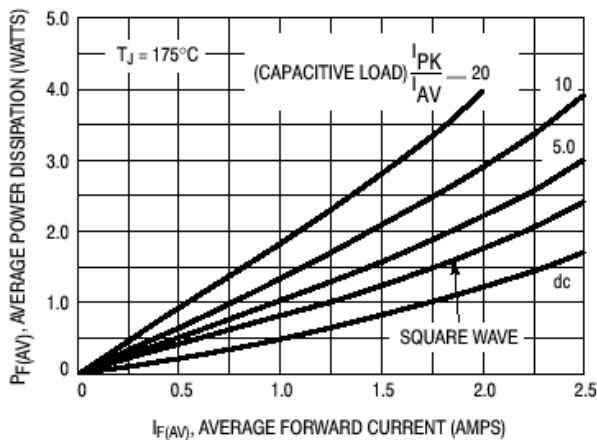


Figure 4. Power Dissipation

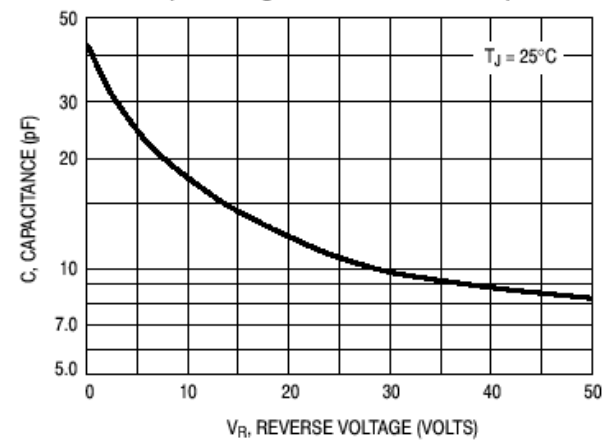


Figure 5. Typical Capacitance

MURC130, MURC140, MURC150, MURC160

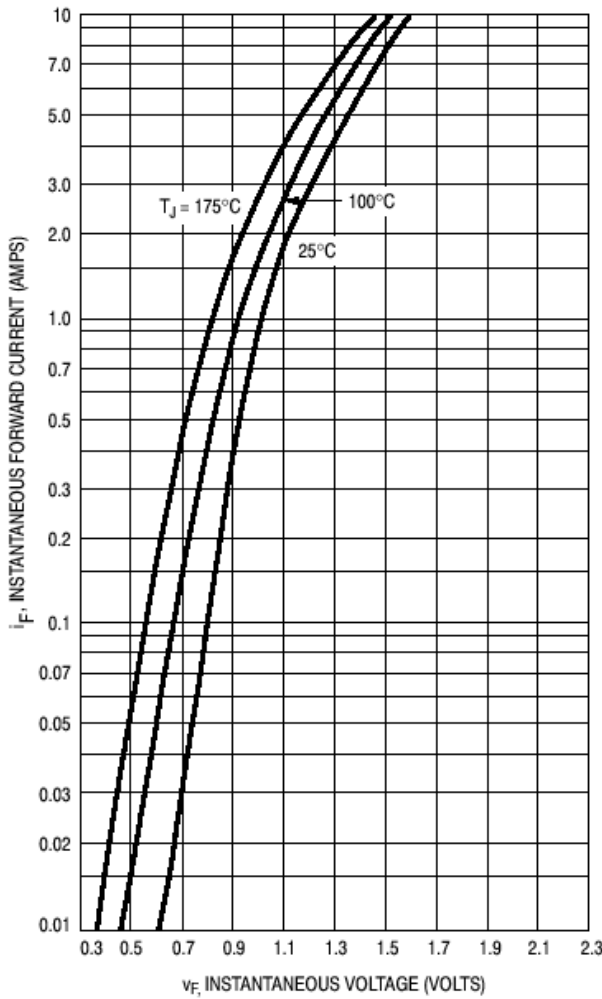


Figure 6. Typical Forward Voltage

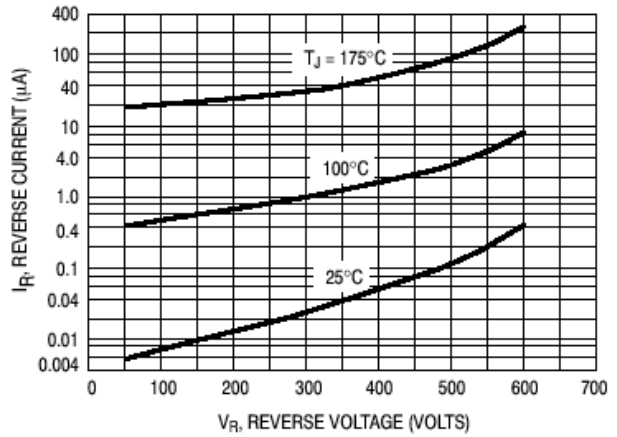
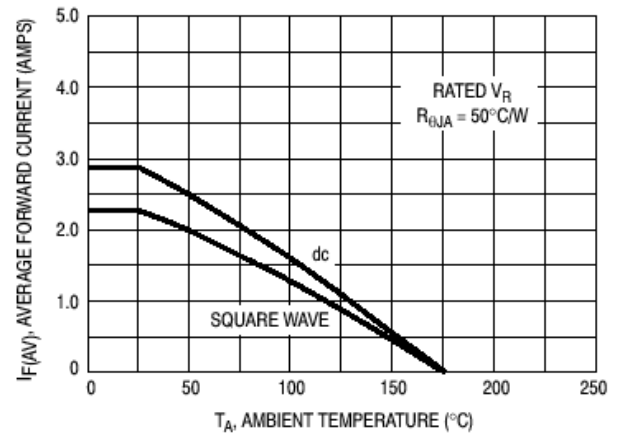


Figure 7. Typical Reverse Current*

* The curves shown are typical for the highest voltage device in the voltage 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
(Mounting Method #3 Per Note 1)**

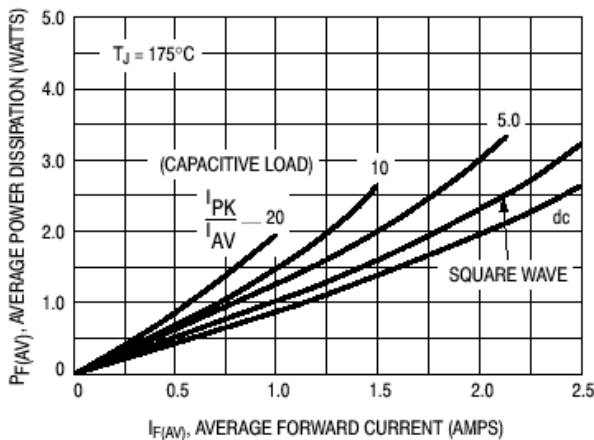


Figure 9. Power Dissipation

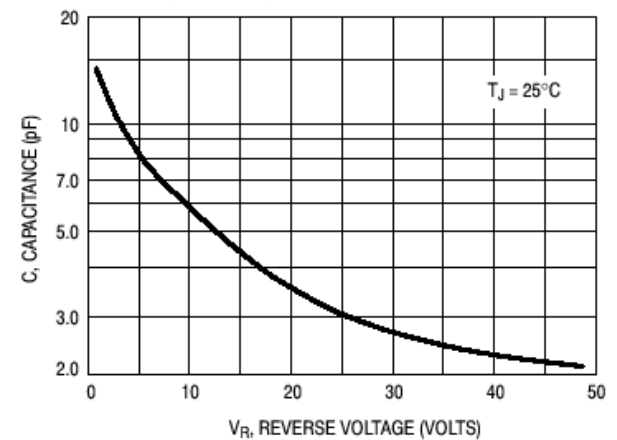


Figure 10. Typical Capacitance

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PART ORDERING INFORMATION

Default part number is Al top, Ag bottom.

Add the following suffix for these metal combinations:

Suffix	Top	Bottom	Part Number
	Al	Ag	MURC105
AG	Al	Au	MURC105AG
BB	Ag	Ag	MURC105BB
BG	Ag	Au	MURC105BG
GG	Au	Au	MURC105GG
GB	Au	Ag	MURC105GB
-R	- Reverse polarity -		MURC105-R

A = Ti (0.3 kA) / Al (25 kA)

B = Ti (1.2 kA) / Ni (1.8 kA) / Ag (30kA)

G = Ti (1.2 kA) / Ni (1.8 kA) / Au (12kA) (**TOP**) / Ti (1.2 kA) / Ni (1.8 kA) / Au (4kA) (**BOTTOM**)

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