THE DATASHEET OF

MUR410RL

Switch-Mode Power Rectifiers

MUR405, MUR410, MUR415, MUR420, MUR440, MUR460

These state−of−the−art devices are a series designed for use in switching power supplies, inverters and as free wheeling diodes.

Features

- Ultrafast 25 ns, 50 ns and 75 ns Recovery Times
- 175°C Operating Junction Temperature
- Low Forward Voltage
- Low Leakage Current
- High Temperature Glass Passivated Junction
- Reverse Voltage to 600 V
- Shipped in Plastic Bags, 500 per Bag
- Available in Tape and Reel, 1500 per Reel, by Adding a “RLG” Suffix to the Part Number
- MUR460 available in Fan Fold Ammo Pak, 1000 per Box, by adding a “FFG” suffix to the part number
- These are Pb−Free Packages*

Mechanical Characteristics:

- Case: Epoxy, Molded
- Weight: 1.1 Gram (Approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead Temperature for Soldering Purposes: 260°C Max. for 10 Seconds
- Polarity: Cathode indicated by Polarity Band

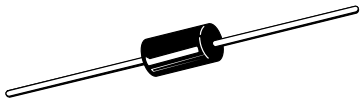
*For additional information on our Pb−Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

ON Semiconductor®

www.onsemi.com

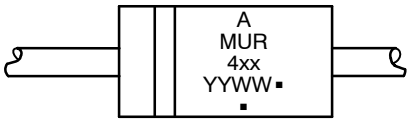
ULTRAFAST RECTIFIERS
4.0 AMPERES, 50−600 VOLTS





AXIAL LEAD
CASE 267
STYLE 1

MARKING DIAGRAM



A = Assembly Location
MUR4xx = Device Number
x = 05, 10, 15, 20, 40, 60
YY = Year
WW = Work Week
▪ = Pb−Free Package
(Note: Microdot may be in either location)

ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 3 of this data sheet.

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MAXIMUM RATINGS

Rating	Symbol	MUR						Unit
		405	410	415	420	440	460	
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) (Mounting Method #3 Per Note 2)	$I_{F(AV)}$	4.0 @ T_A = 80°C				4.0 @ T_A = 40°C		A
Nonrepetitive Peak Surge Current (Surge applied at rated load conditions, half wave, single phase, 60 Hz)	I_{FSM}	125				110		A
Operating Junction Temperature & Storage Temperature	T_J, T_{stg}	−65 to +175						°C

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

THERMAL CHARACTERISTICS

Rating	Symbol	MUR						Unit
		405	410	415	420	440	460	
Maximum Thermal Resistance, Junction−to−Ambient	$R_{\theta JA}$	See Note 2						°C/W
Maximum Thermal Resistance, Junction−to−Case Body	$\Psi_{\theta JC}$	6.6						°C/W

ELECTRICAL CHARACTERISTICS

Rating	Symbol	MUR						Unit
		405	410	415	420	440	460	
Maximum Instantaneous Forward Voltage (Note 1) (i_F = 3.0 A, T_J = 150°C) (i_F = 3.0 A, T_J = 25°C) (i_F = 4.0 A, T_J = 25°C)	v_F	0.71 0.88 0.89				1.05 1.25 1.28		V
Maximum Instantaneous Reverse Current (Note 1) (Rated dc Voltage, T_J = 150°C) (Rated dc Voltage, T_J = 25°C)	i_R	150 5				250 10		μA
Maximum Reverse Recovery Time (I_F = 1.0 A, di/dt = 50 A/μs) (I_F = 0.5 A, i_R = 1.0 A, I_{REC} = 0.25 A)	t_{rr}	35 25				75 50		ns
Maximum Forward Recovery Time (I_F = 1.0 A, di/dt = 100 A/μs, Recovery to 1.0 V)	t_{fr}	25				50		ns
Controlled Avalanche Energy (Maximum)	W_{aval}				5			mJ
Typical Peak Reverse Recovery Current (I_F = 1.0 A, di/dt = 50 A/μs)	I_{RM}	0.8				1.7		A

1. Pulse Test: Pulse Width = 300 μs, Duty Cycle ≤ 2.0%.

ORDERING INFORMATION

Device	Package	Shipping†
MUR405G	Axial Lead*	500 Units / Bag
MUR410G	Axial Lead*	
MUR410RLG	Axial Lead*	1500 / Tape & Reel
MUR415G	Axial Lead*	500 Units / Bag
MUR415RLG	Axial Lead*	1500 / Tape & Reel
MUR420G	Axial Lead*	500 Units / Bag
MUR420RLG	Axial Lead*	1500 / Tape & Reel
MUR440G	Axial Lead*	500 Units / Bag
MUR440RLG	Axial Lead*	1500 / Tape & Reel
MUR460G	Axial Lead*	500 Units / Bag
MUR460FFG	Axial Lead*	1000 Units / Box
MUR460RLG	Axial Lead*	1500 / Tape & Reel

†For information on tape and reel and ammo pak specifications, including part orientation, tape sizes and box dimensions, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

*These packages are inherently Pb−Free.

MUR405, MUR410, MUR415, MUR420

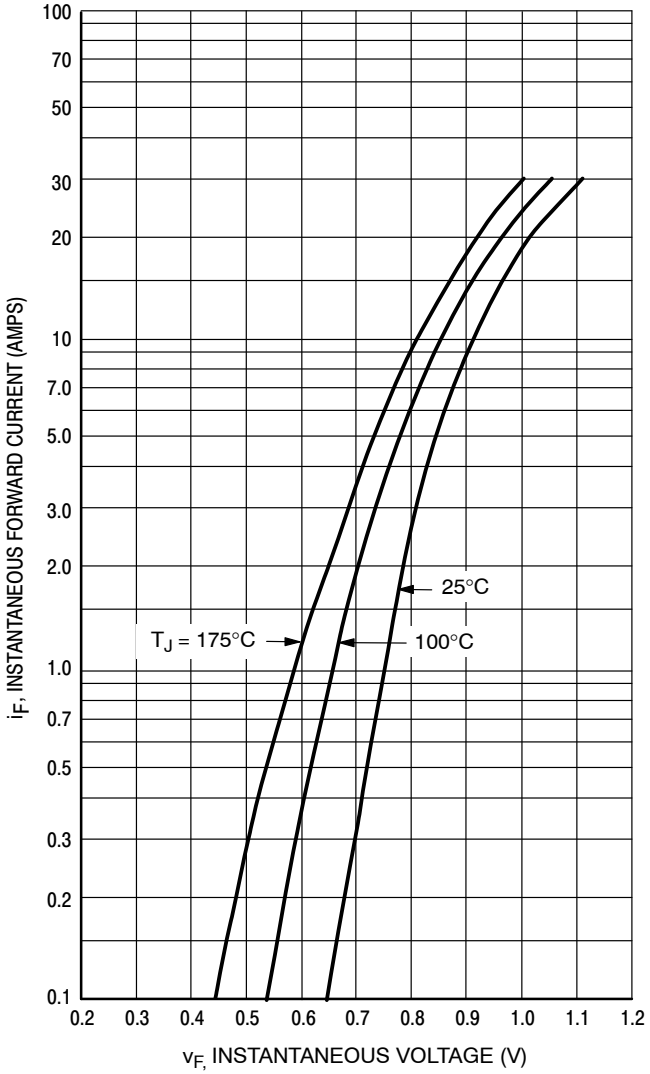


Figure 1. Typical Forward Voltage

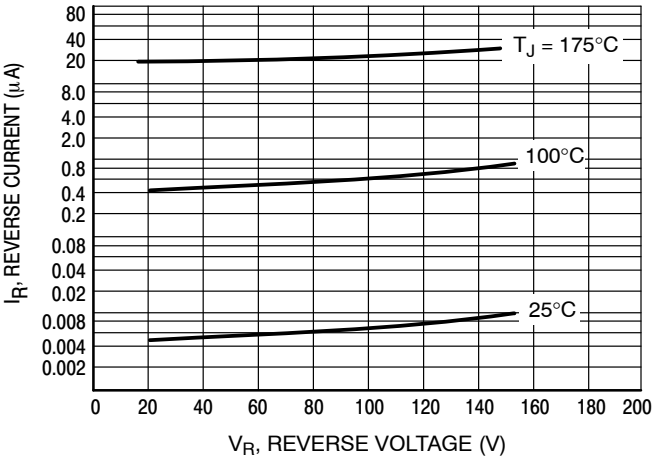


Figure 2. Typical Reverse Current

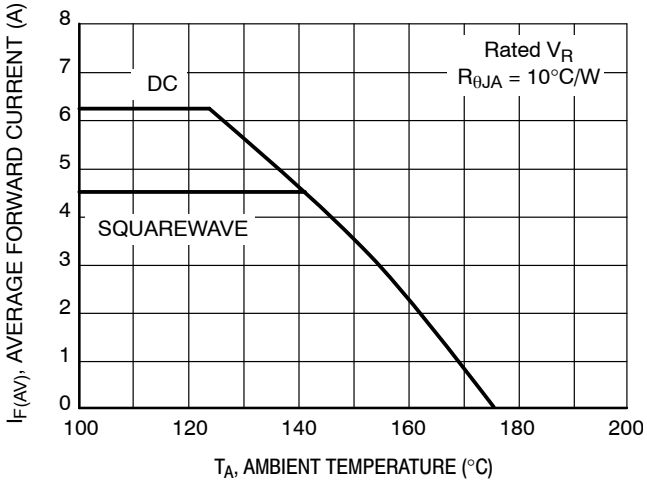


Figure 3. Current Derating (Mounting Method #3 Per Note 2)

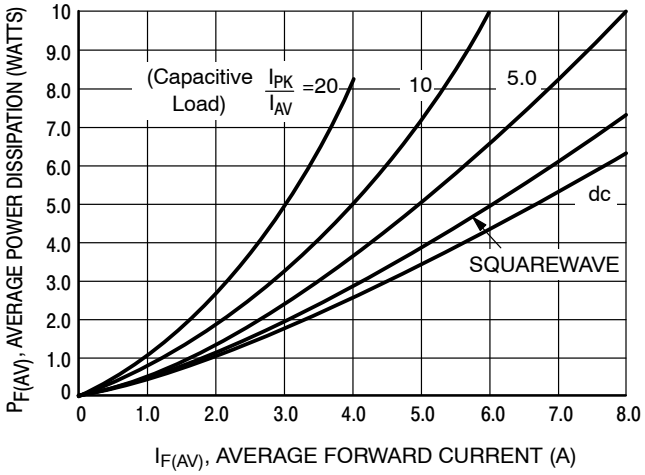


Figure 4. Power Dissipation

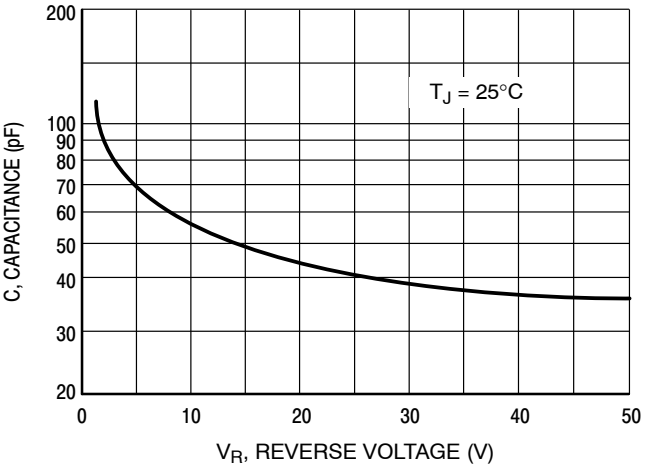


Figure 5. Typical Capacitance

MUR440, MUR460

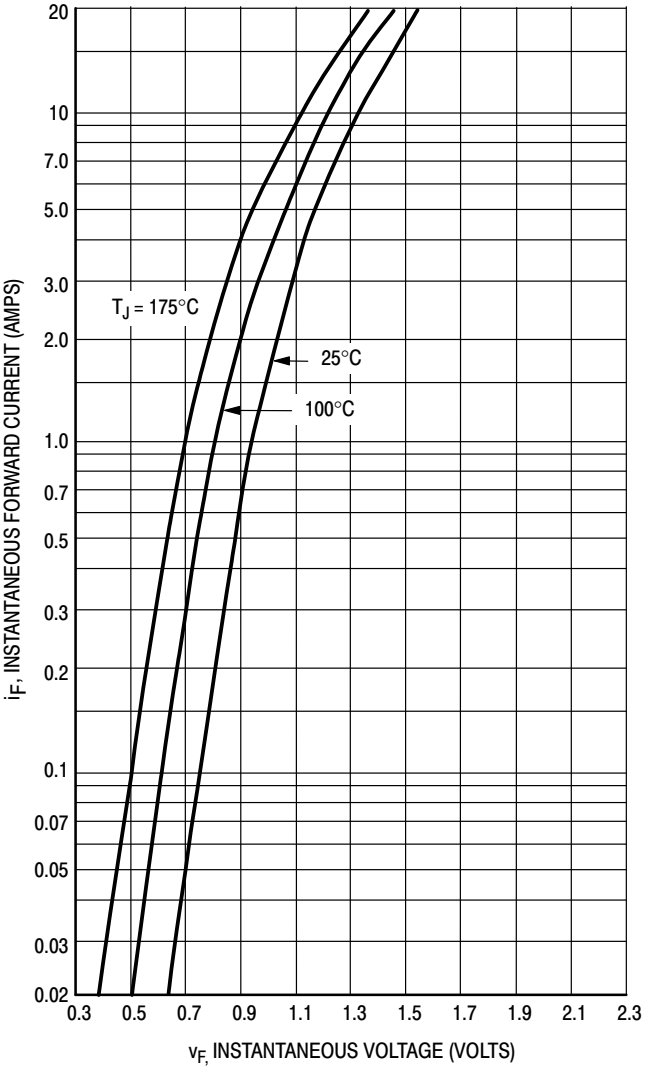


Figure 6. Typical Forward Voltage

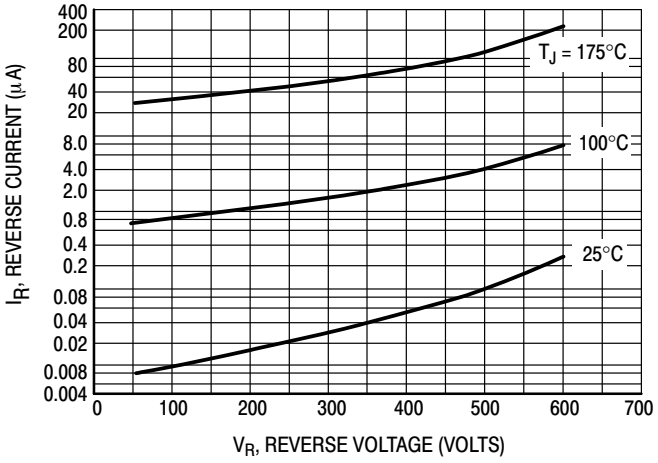


Figure 7. Typical Reverse Current

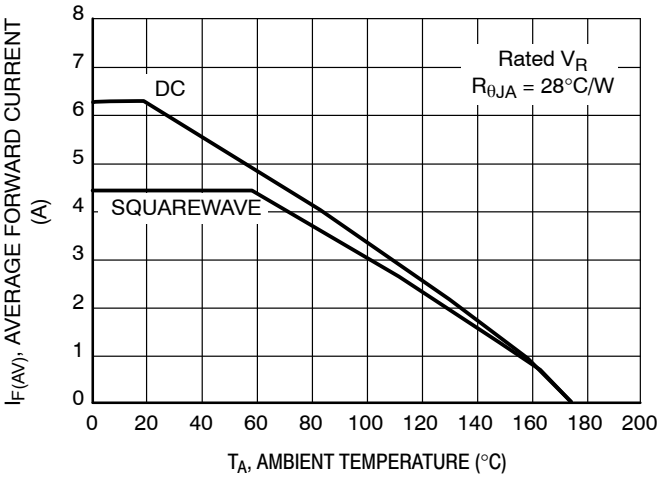


Figure 8. Current Derating (Mounting Method #3 Per Note 2)

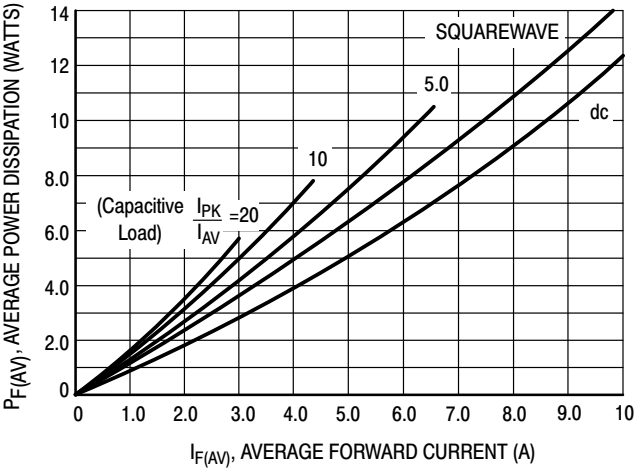


Figure 9. Power Dissipation

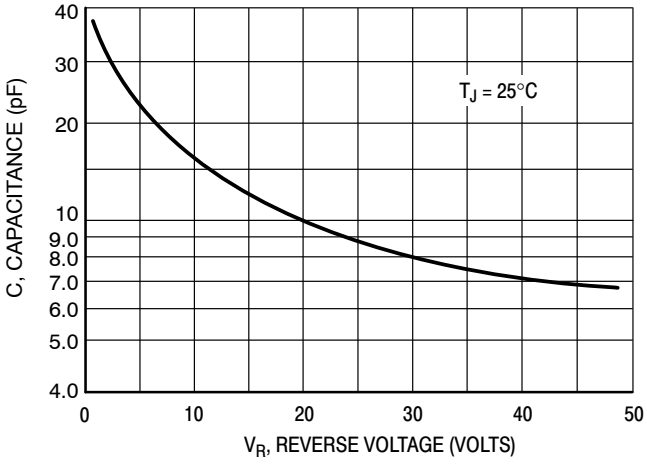


Figure 10. Typical Capacitance

MUR440, MUR460

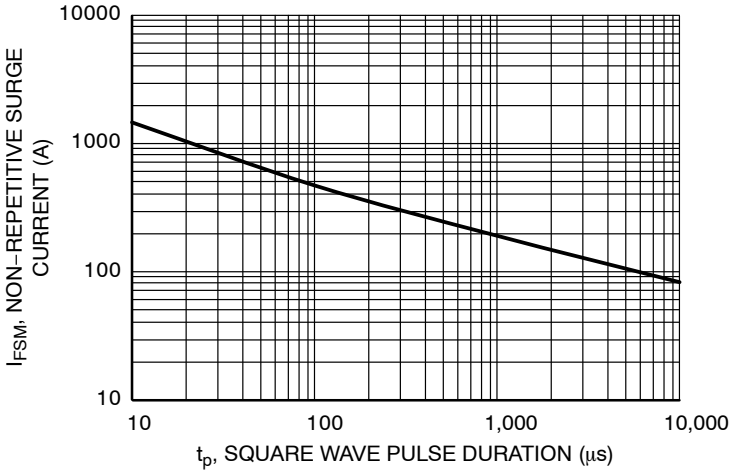


Figure 11. Typical Non−Repetitive Surge Current

*Typical performance based on a limited sample size. ON Semiconductor does not guarantee ratings not listed in the Maximum Ratings table.

NOTE 2 — AMBIENT MOUNTING DATA

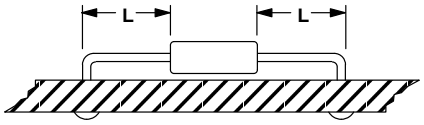
Data shown for thermal resistance junction−to−ambient ($R_{\theta JA}$) for the mountings shown is to be used as typical guideline values for preliminary engineering or in case the tie point temperature cannot be measured.

TYPICAL VALUES FOR $R_{\theta JA}$ IN STILL AIR

Mounting Method		Lead Length, L (IN)				Units
		1/8	1/4	1/2	3/4	
1	$R_{\theta JA}$	50	51	53	55	°C/W
2		58	59	61	63	°C/W
3		28				°C/W

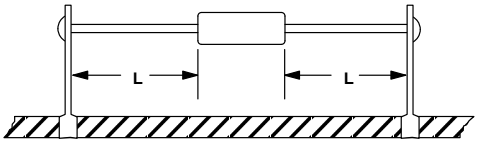
MOUNTING METHOD 1

P.C. Board Where Available Copper Surface area is small.



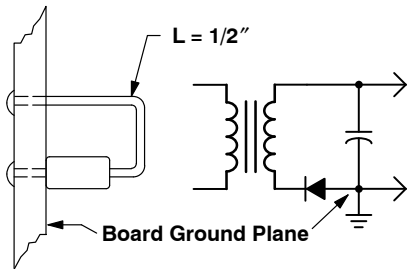
MOUNTING METHOD 2

Vector Push−In Terminals T−28



MOUNTING METHOD 3

P.C. Board with 1−1/2″ x 1−1/2″ Copper Surface

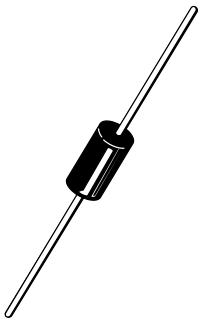


MECHANICAL CASE OUTLINE
PACKAGE DIMENSIONS

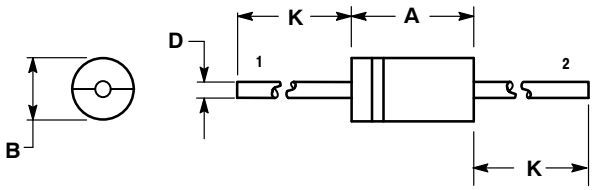
ON Semiconductor®

AXIAL LEAD
CASE 267–05
ISSUE G

DATE 06/06/2000



SCALE 1:1



NOTES:
1. DIMENSIONS AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. 267-04 OBSOLETE, NEW STANDARD 267-05.

	INCHES		MILLIMETERS	
DIM	MIN	MAX	MIN	MAX
A	0.287	0.374	7.30	9.50
B	0.189	0.209	4.80	5.30
D	0.047	0.051	1.20	1.30
K	1.000	---	25.40	---

STYLE 1:
PIN 1. CATHODE (POLARITY BAND)
2. ANODE

STYLE 2:
NO POLARITY

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