



MUR1620CT

MURB1620CT

MURB1620CT-1

Ultrafast Rectifier

Features

- Ultrafast Recovery Time
- Low Forward Voltage Drop
- Low Leakage Current
- 175°C Operating Junction Temperature

$$t_{rr} = 25\text{ns}$$

$$I_{F(AV)} = 16\text{Amp}$$

$$V_R = 200\text{V}$$

Description/Applications

International Rectifier's MUR... series are the state of the art Ultra fast recovery rectifiers specifically designed with optimized performance of forward voltage drop and ultra fast recovery time.

The planar structure and the platinum doped life time control, guarantee the best overall performance, ruggedness and reliability characteristics.

These devices are intended for use in the output rectification stage of SMPS, UPS, DC-DC converters as well as free-wheeling diode in low voltage inverters and chopper motor drives.

Their extremely optimized stored charge and low recovery current minimize the switching losses and reduce over dissipation in the switching element and snubbers.

Absolute Maximum Ratings

Parameters	Max	Units
V_{RRM} Peak Repetitive Peak Reverse Voltage	200	V
$I_{F(AV)}$ Average Rectified Forward Current	8.0	A
Per Leg		
Total Device, (Rated V_R), $T_C = 150^\circ\text{C}$	16	
Total Device		
I_{FSM} Non Repetitive Peak Surge Current	100	A
Per Leg		
I_{FM} Peak Repetitive Forward Current	16	
Per Leg		
(Rated V_R , Square wave, 20 KHz), $T_C = 150^\circ\text{C}$		
T_J, T_{STG} Operating Junction and Storage Temperatures	-65 to 175	$^\circ\text{C}$

Case Styles

MUR1620CT	MURB1620CT	MURB1620CT-1
		
TO-220AB	D ² PAK	TO-262

Electrical Characteristics @ T_J = 25°C (unless otherwise specified)

Parameters	Min	Typ	Max	Units	Test Conditions
V _{BR} , V _r Breakdown Voltage, Blocking Voltage	200	-	-	V	I _R = 100μA
V _F Forward Voltage	-	-	0.975	V	I _F = 8A
	-	-	0.895	V	I _F = 8A, T _J = 150°C
I _R Reverse Leakage Current	-	-	5	μA	V _R = V _R Rated
	-	-	250	μA	T _J = 150°C, V _R = V _R Rated
C _T Junction Capacitance	-	25	-	pF	V _R = 200V
L _S Series Inductance	-	8.0	-	nH	Measured lead to lead 5mm from package body

Dynamic Recovery Characteristics @ T_J = 25°C (unless otherwise specified)

Parameters	Min	Typ	Max	Units	Test Conditions
t _{rr} Reverse Recovery Time	-	-	35	ns	I _F = 1.0A, di _F /dt = 50A/μs, V _R = 30V
	-	-	25		I _F = 0.5A, I _R = 1.0A, I _{REC} = 0.25A
	-	20	-		T _J = 25°C
	-	34	-		T _J = 125°C
I _{RRM} Peak Recovery Current	-	1.7	-	A	T _J = 25°C
	-	4.2	-		T _J = 125°C
Q _{rr} Reverse Recovery Charge	-	23	-	nC	T _J = 25°C
	-	75	-		T _J = 125°C

Thermal - Mechanical Characteristics

Parameters	Min	Typ	Max	Units
T _J Max. Junction Temperature Range	-	-	- 65 to 175	°C
T _{Stg} Max. Storage Temperature Range	-	-	- 65 to 175	
R _{thJC} Thermal Resistance, Junction to Case Per Leg	-	-	3.0	°C/W
R _{thJA} Thermal Resistance, Junction to Ambient Per Leg	-	-	50	
R _{thCS} ^① Thermal Resistance, Case to Heatsink	-	0.5	-	
Wt Weight	-	2.0	-	g
	-	0.07	-	(oz)
Mounting Torque	6.0	-	12	Kg-cm
	5.0	-	10	lbf.in

① Mounting Surface, Flat, Smooth and Greased

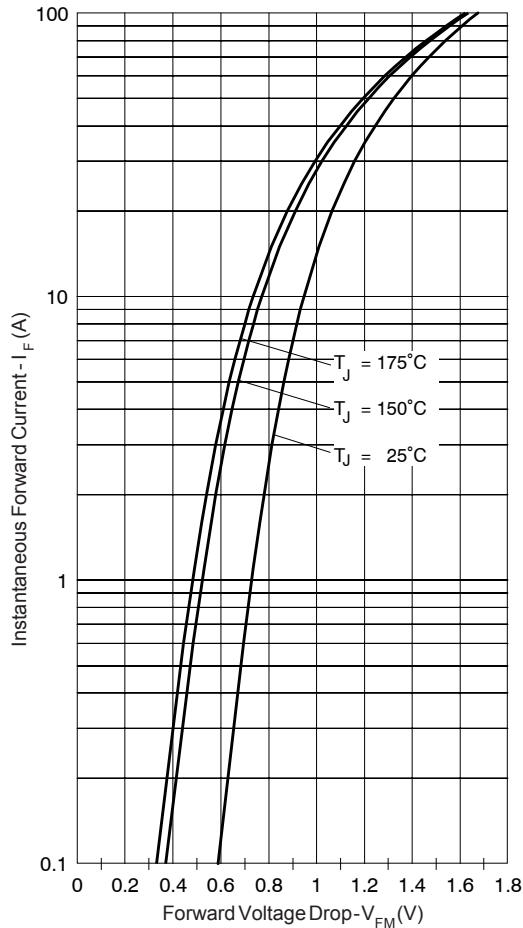


Fig. 1 - Typical Forward Voltage Drop Characteristics

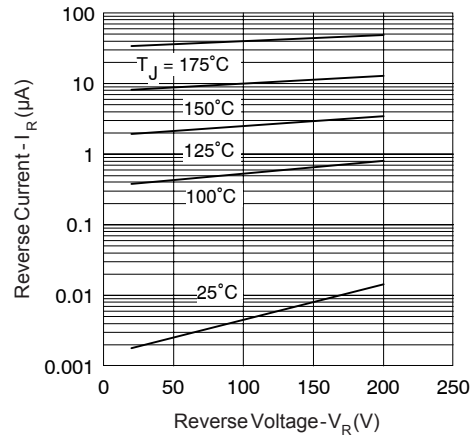


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage

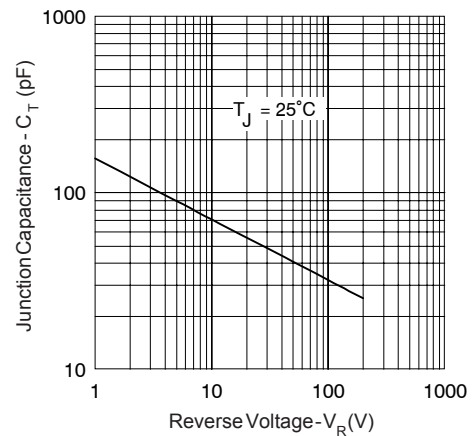


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

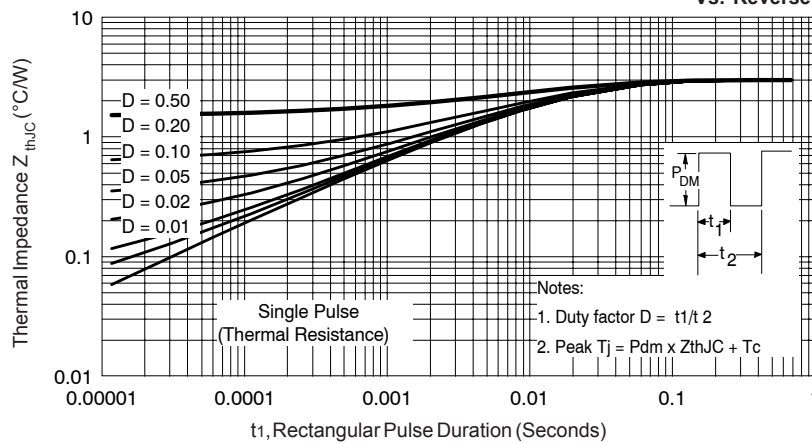


Fig. 4 - Max. Thermal Impedance Z_{thJC} Characteristics

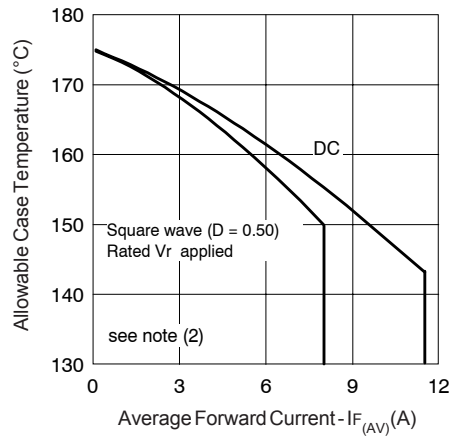


Fig. 5 - Max. Allowable Case Temperature Vs. Average Forward Current

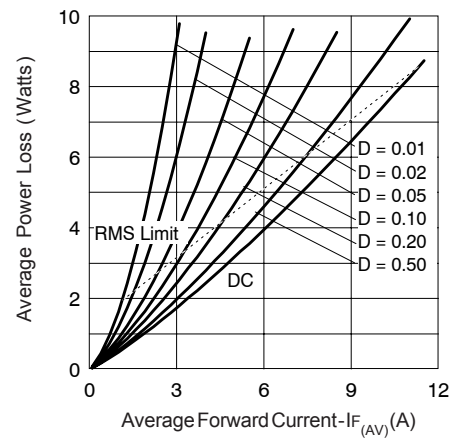


Fig. 6 - Forward Power Loss Characteristics

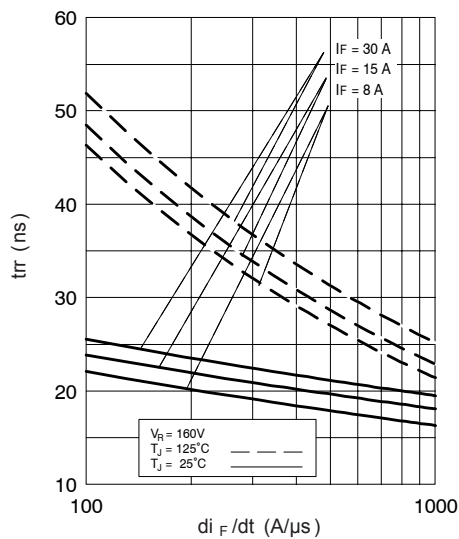


Fig. 7 - Typical Reverse Recovery vs. di_F / dt

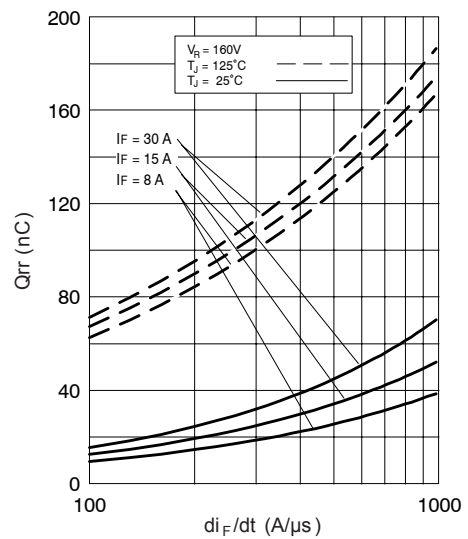


Fig. 8 - Typical Stored Charge vs. di_F / dt

(2) Formula used: $T_C = T_J - (P_d + P_{d_{REV}}) \times R_{thJC}$;

P_d = Forward Power Loss = $I_{F(AV)} \times V_{FM} @ (I_{F(AV)} / D)$ (see Fig. 6);

$P_{d_{REV}}$ = Inverse Power Loss = $V_{R1} \times I_R (1 - D)$; $I_R @ V_{R1}$ = rated V_R

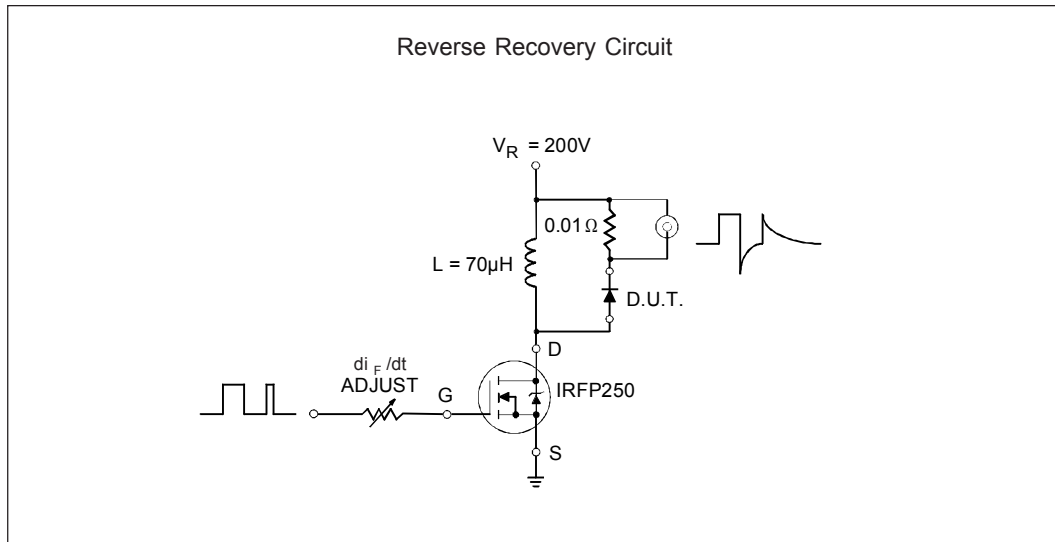


Fig. 9- Reverse Recovery Parameter Test Circuit

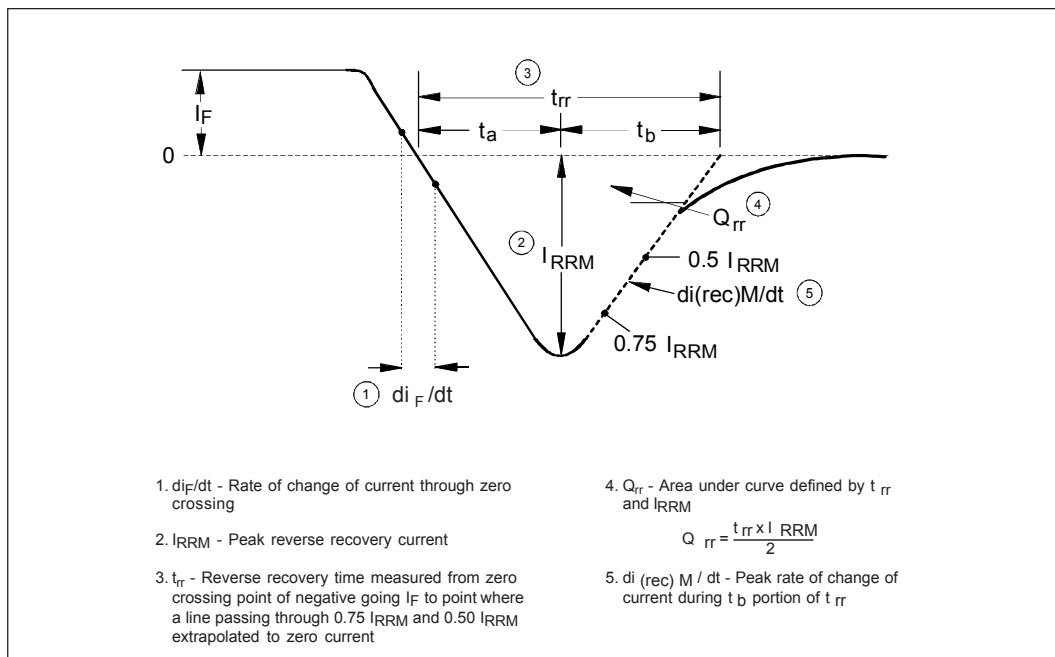
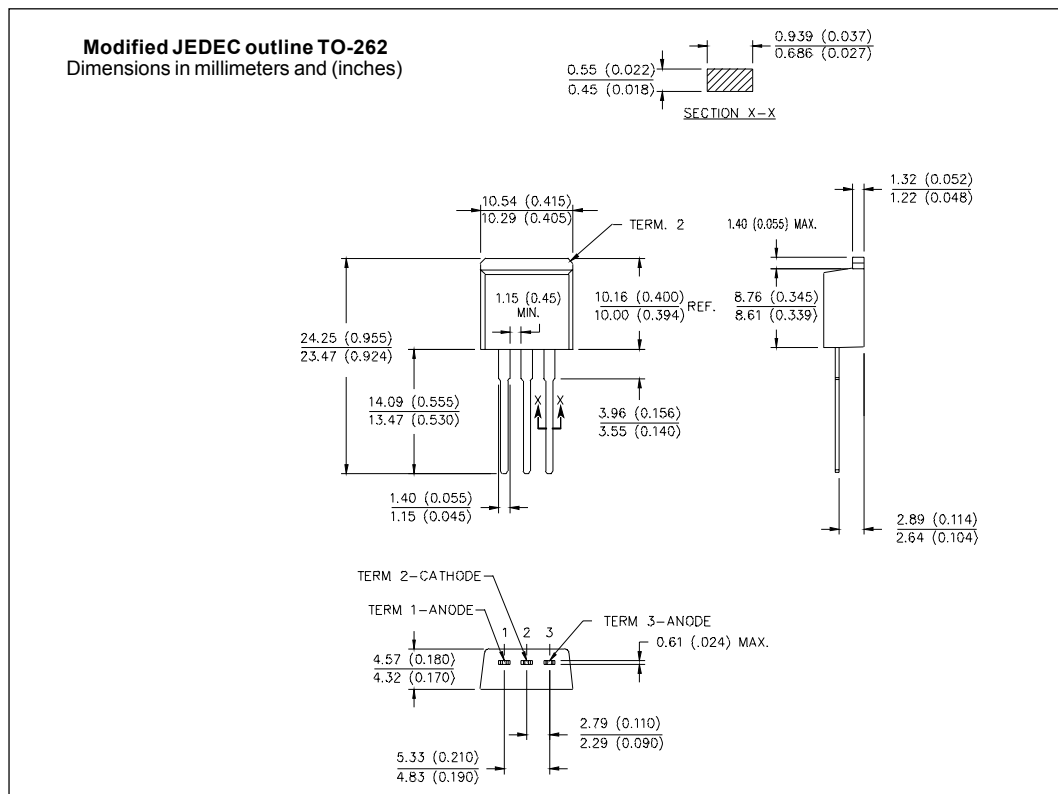
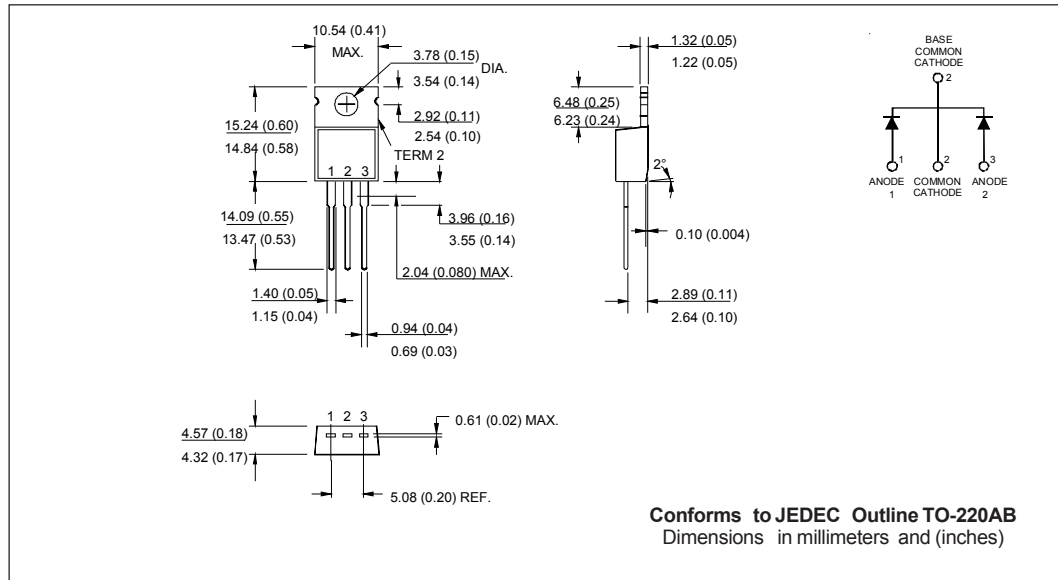
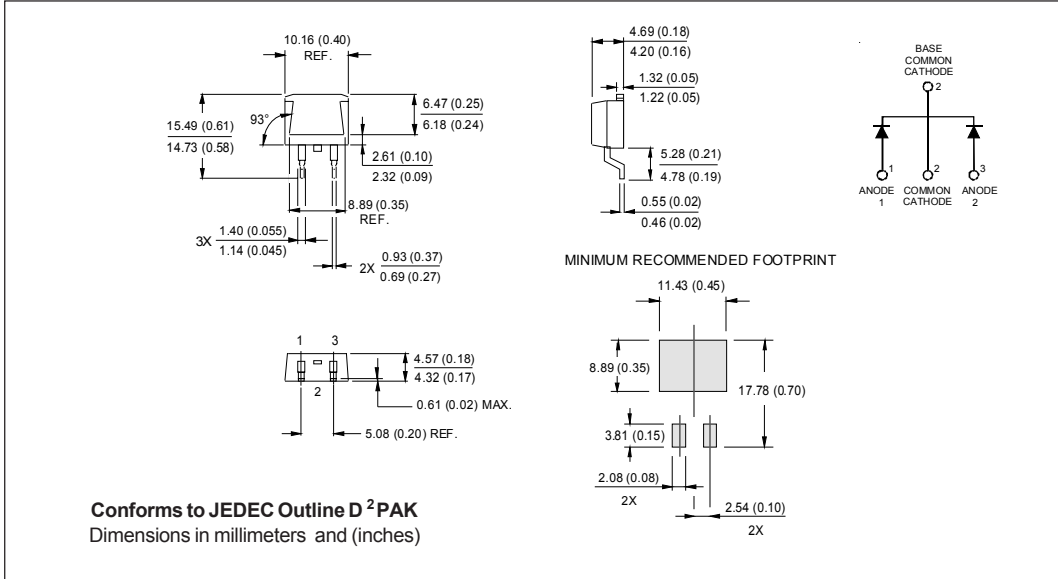


Fig. 10 - Reverse Recovery Waveform and Definitions

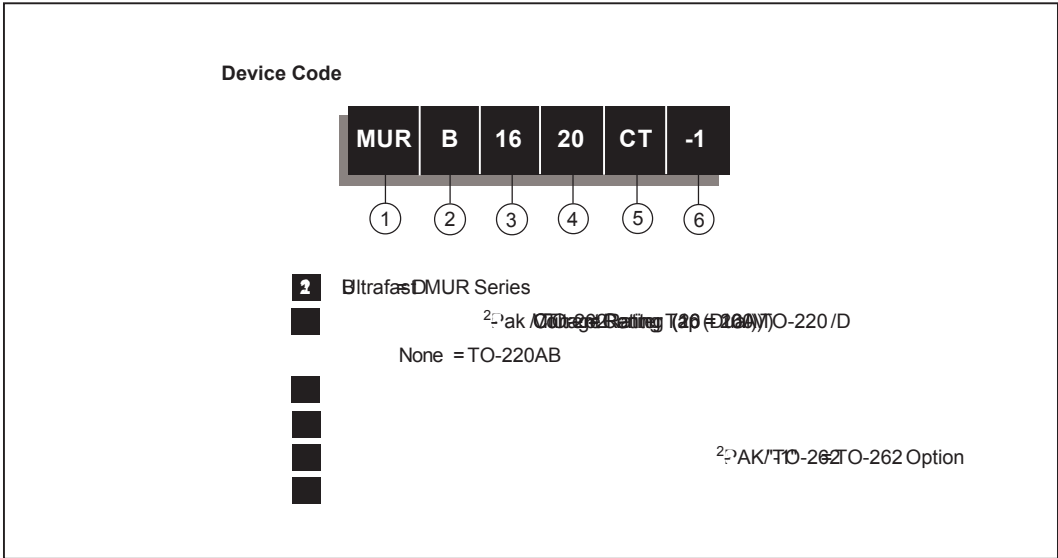
Outline Table



Outline Table



Ordering Information Table



MUR1620CT, MURB1620CT, MURB1620CT-1

Bulletin PD-20718 rev. C 12/03

International
IOR Rectifier

Data and specifications subject to change without notice.
This product has been designed and qualified for Industrial Level.
Qualification Standards can be found on IR's Web site.

International
IOR Rectifier

IR WORLD HEADQUARTERS: 233 Kansas St., El Segundo, California 90245, USA Tel: (310) 252-7105
TAC Fax: (310) 252-7309
12/03



Notice

The products described herein were acquired by Vishay Intertechnology, Inc., as part of its acquisition of International Rectifier's Power Control Systems (PCS) business, which closed in April 2007. Specifications of the products displayed herein are pending review by Vishay and are subject to the terms and conditions shown below.

Specifications of the products displayed herein are subject to change without notice. Vishay Intertechnology, Inc., or anyone on its behalf, assumes no responsibility or liability for any errors or inaccuracies.

Information contained herein is intended to provide a product description only. No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document. Except as provided in Vishay's terms and conditions of sale for such products, Vishay assumes no liability whatsoever, and disclaims any express or implied warranty, relating to sale and/or use of Vishay products including liability or warranties relating to fitness for a particular purpose, merchantability, or infringement of any patent, copyright, or other intellectual property right.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications. Customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Vishay for any damages resulting from such improper use or sale.

International Rectifier®, IR®, the IR logo, HEXFET®, HEXSense®, HEXDIP®, DOL®, INTERO®, and POWIRTRAIN® are registered trademarks of International Rectifier Corporation in the U.S. and other countries. All other product names noted herein may be trademarks of their respective owners.