MSRD620CTRG

SWITCHMODE Soft Ultrafast Recovery Reverse Polarity Power Rectifier

State−of−the−art geometry features epitaxial construction with glass passivation. Ideally suited for low voltage, high frequency switching power supplies, free wheeling diode and polarity protection diodes.

Features

- Soft Ultrafast Recovery
- Matched Dual Die Construction − May Be Paralleled for High Current Output
- Short Heat Sink Tab Manufactured − Not Sheared
- Epoxy Meets UL 94 V−0 @ 0.125 in.
- This is a Pb−Free Device

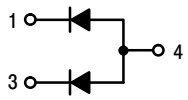
Mechanical Characteristics

- Case: Epoxy, Molded
- Weight: 0.4 Grams (Approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead and Mounting Surface Temperature for Soldering Purposes: 260°C Max. for 10 Seconds

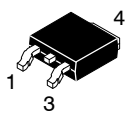
ON Semiconductor®

http://onsemi.com

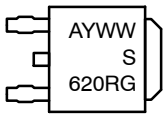
SOFT ULTRAFAST REVERSE POLARITY RECTIFIER 6.0 AMPERES, 200 VOLTS



MARKING DIAGRAM



DPAK
CASE 369C



A = Assembly Location
Y = Year
WW = Work Week
G = Pb−Free Package

ORDERING INFORMATION

Device	Package	Shipping†
MSRD620CTRG	DPAK (Pb−Free)	75 Units/Rail
MSRD620CTT4RG	DPAK (Pb−Free)	2500/Tape & Reel

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

MAXIMUM RATINGS

Rating		Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage		V_{RRM} V_{RWM} V_R	200	V
Average Rectified Forward Current (At Rated V_R, T_C = 162°C)	Per Leg Per Package	I_O	 3.0 6.0	A
Non−Repetitive Peak Surge Current (Surge Applied at Rated Load Conditions, Halfwave, Single Phase, 60 Hz)	Per Package	I_{FSM}	45	A
Storage / Operating Case Temperature		T_{stg}, T_c	−65 to +175	°C
Operating Junction Temperature		T_J	−65 to +175	°C

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

THERMAL CHARACTERISTICS

Rating		Symbol	Value	Unit
Thermal Resistance − Junction−to−Case (Note 1)	Per Leg	$R_{\theta JC}$	5.0	°C/W
Thermal Resistance − Junction−to−Ambient (Note 1)	Per Leg	$R_{\theta JA}$	60	°C/W
Thermal Resistance − Junction−to−Ambient (Note 2)	Per Leg	$R_{\theta JA}$	166	°C/W

ELECTRICAL CHARACTERISTICS

Rating		Symbol	Value		Unit
Maximum Instantaneous Forward Voltage (Note 3)	Per Leg	V_F	**T_J = 25°C**	**T_J = 125°C**	V
	(I_F = 3.0 A)		1.15	0.95	
	(I_F = 6.0 A)		1.30	1.15	
Maximum Instantaneous Reverse Current (Note 3)	Per Leg	I_R	**T_J = 25°C**	**T_J = 125°C**	μA
	(V_R = 200 V)		1.0	200	
Maximum Reverse Recovery Time (Note 4)	Per Leg	t_{rr}	75		ns
	(V_R = 30 V, I_F = 1.0 A, di/dt = 50 A/μs)				

1. Mounted with 700 mm^2 copper pad size (approximately 1 in^2) 1 oz FR4 board.
2. Mounted with pad size approximately 46 mm^2 copper, 1 oz FR4 board.
3. Pulse Test: Pulse Width ≤ 380 μs, Duty Cycle ≤ 2%.
4. t_{rr} measured projecting from 25% of I_{RM} to ground.

TYPICAL CHARACTERISTICS

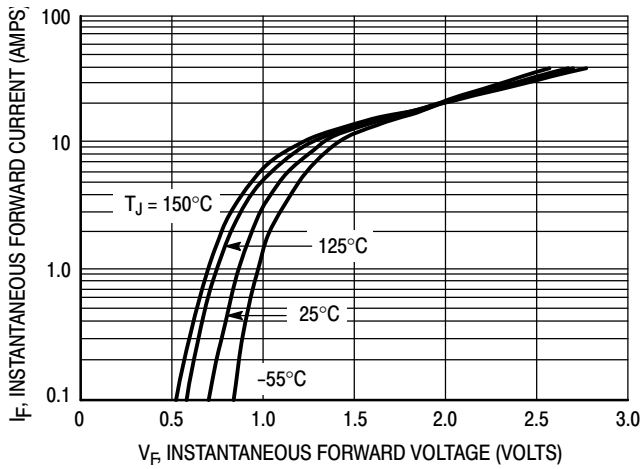


Figure 1. Typical Forward Voltage, Per Leg

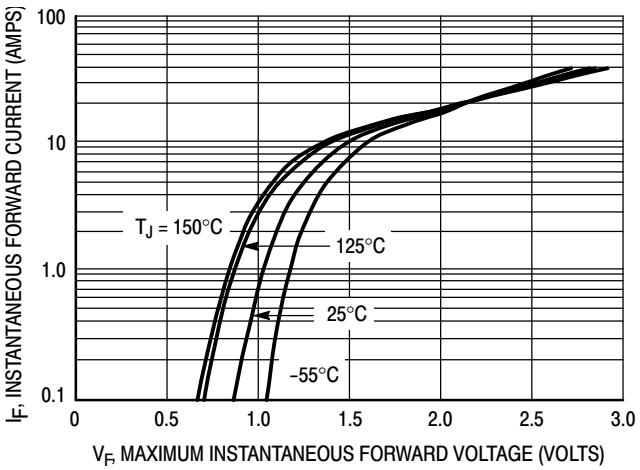


Figure 2. Maximum Forward Voltage, Per Leg

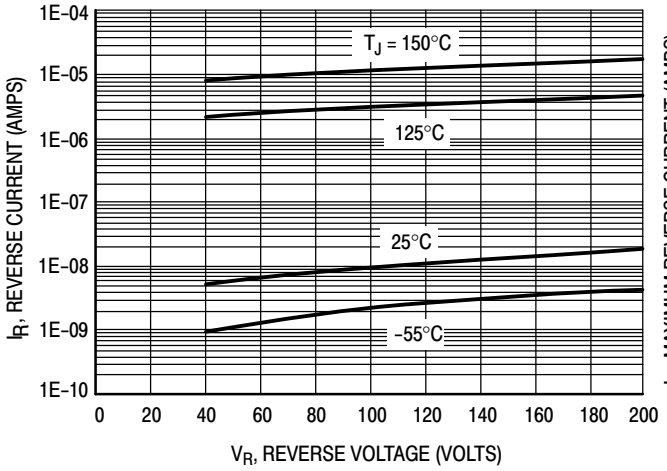


Figure 3. Typical Reverse Current, Per Leg

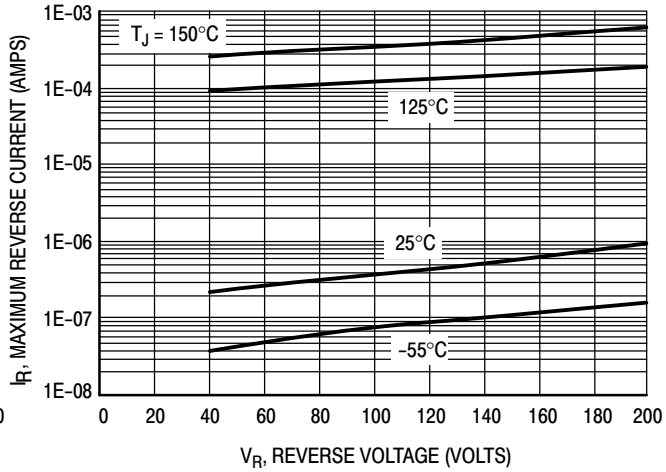


Figure 4. Maximum Reverse Current, Per Leg

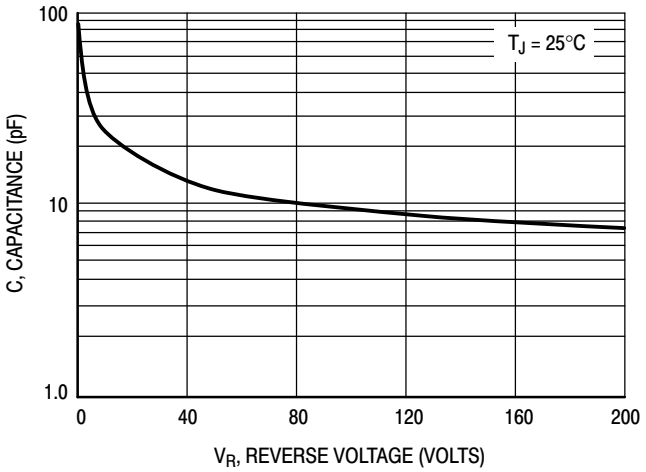


Figure 5. Typical Capacitance

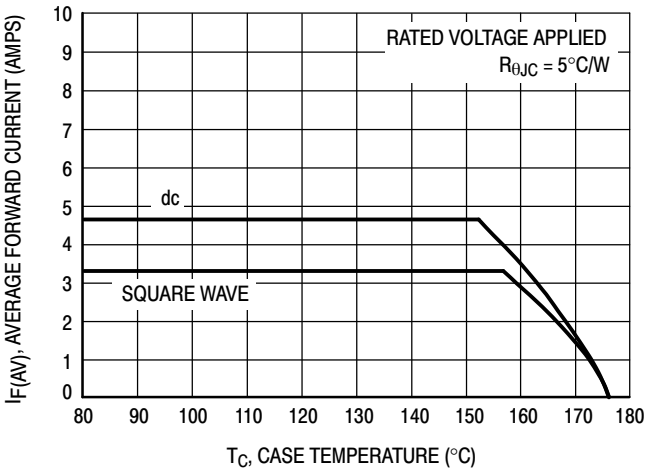


Figure 6. Typical Current Derating, Case (Per Leg)

TYPICAL CHARACTERISTICS

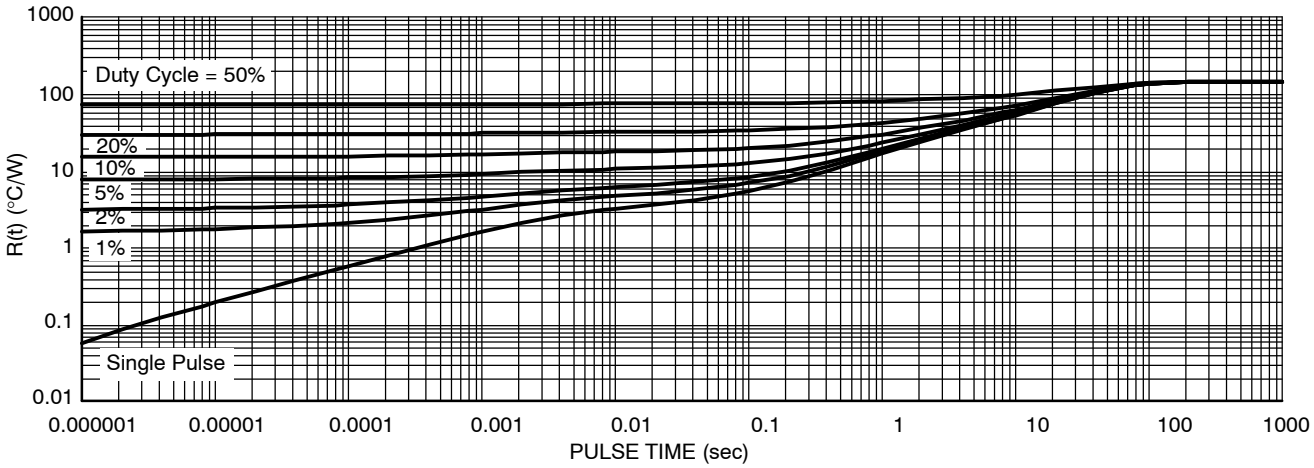


Figure 7. Thermal Response, Junction−to−Ambient (46 mm^2 pad)

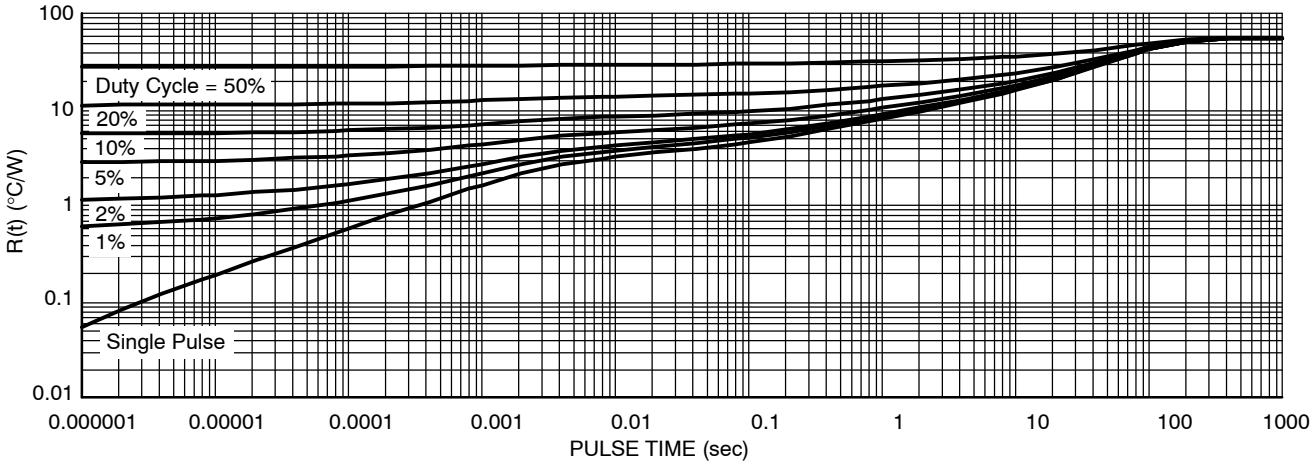
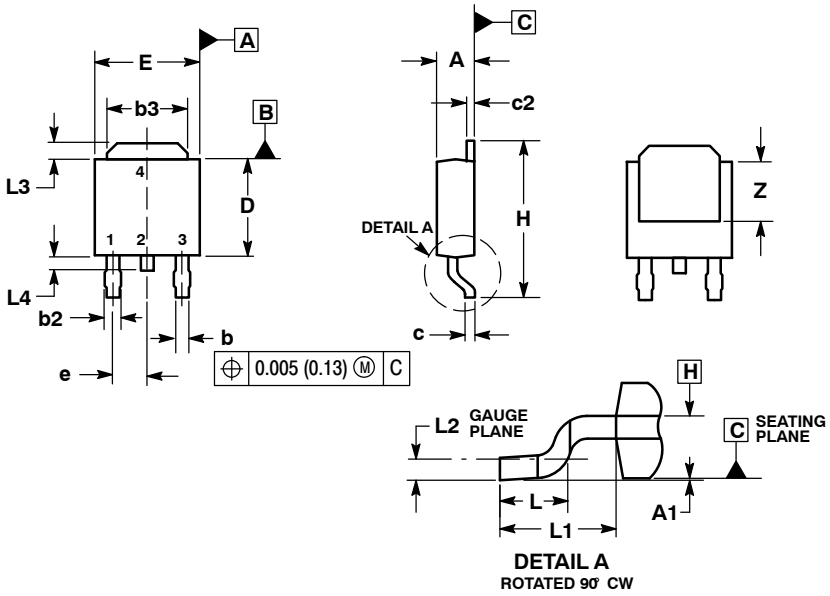


Figure 8. Thermal Response, Junction−to−Ambient (1 in^2 pad)

MSRD620CTRG

PACKAGE DIMENSIONS

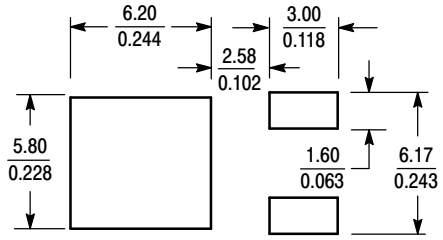
DPAK (SINGLE GAUGE)
CASE 369C−01
ISSUE D



NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: INCHES.
3. THERMAL PAD CONTOUR OPTIONAL WITHIN DIMENSIONS b3, L3 and Z.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR BURRS. MOLD FLASH, PROTRUSIONS, OR GATE BURRS SHALL NOT EXCEED 0.006 INCHES PER SIDE.
5. DIMENSIONS D AND E ARE DETERMINED AT THE OUTERMOST EXTREMES OF THE PLASTIC BODY.
6. DATUMS A AND B ARE DETERMINED AT DATUM PLANE H.

	INCHES		MILLIMETERS	
DIM	MIN	MAX	MIN	MAX
A	0.086	0.094	2.18	2.38
A1	0.000	0.005	0.00	0.13
b	0.025	0.035	0.63	0.89
b2	0.030	0.045	0.76	1.14
b3	0.180	0.215	4.57	5.46
c	0.018	0.024	0.46	0.61
c2	0.018	0.024	0.46	0.61
D	0.235	0.245	5.97	6.22
E	0.250	0.265	6.35	6.73
e	0.090 BSC		2.29 BSC	
H	0.370	0.410	9.40	10.41
L	0.055	0.070	1.40	1.78
L1	0.108 REF		2.74 REF	
L2	0.020 BSC		0.51 BSC	
L3	0.035	0.050	0.89	1.27
L4	−−−	0.040	−−−	1.01
Z	0.155	−−−	3.93	−−−

SOLDERING FOOTPRINT*



SCALE 3:1 $\left(\frac{\text{mm}}{\text{inches}}\right)$

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

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:
Literature Distribution Center for ON Semiconductor
P.O. Box 5163, Denver, Colorado 80217 USA
Phone: 303−675−2175 or 800−344−3860 Toll Free USA/Canada
Fax: 303−675−2176 or 800−344−3867 Toll Free USA/Canada
Email: orderlit@onsemi.com

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MSRD620CTR/D