

# Switch-mode Soft Ultrafast Recovery Reverse Polarity Power Rectifier

## MSRD620CT, NRVSRD620VCT, SSRD8620CT Series

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.

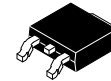
### Features

- 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.
- NRVSRD and SSRD8 Prefixes for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable
- These Devices are Pb-Free and are RoHS Compliant\*

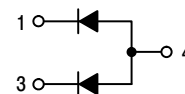
### Mechanical Characteristics

- 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
- ESD Ratings:
  - ◆ Machine Model = C
  - ◆ Human Body Model = 2

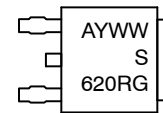
## SOFT ULTRAFAST REVERSE POLARITY RECTIFIER 6.0 AMPERES, 200 VOLTS



DPAK  
CASE 369C



### MARKING DIAGRAM



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

### ORDERING INFORMATION

Device	Package	Shipping†
NRVSRD620VCTT4RG	DPAK (Pb-Free)	2,500 / Tape & Reel

### DISCONTINUED (Note 1)

MSRD620CTRG	DPAK (Pb-Free)	75 Units/Rail
SSRD8620CTRG	DPAK (Pb-Free)	75 Units/Rail
MSRD620CTT4RG	DPAK (Pb-Free)	2,500 / Tape & Reel
SSRD8620CTT4RG	DPAK (Pb-Free)	2,500 / Tape & Reel

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification Brochure, [BRD8011/D](#).

1. **DISCONTINUED:** These devices are not recommended for new design. Please contact your **onsemi** representative for information. The most current information on these devices may be available on [www.onsemi.com](http://www.onsemi.com).

# MSRD620CT, NRVSRD620VCT, SSRD8620CT Series

## MAXIMUM RATINGS

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

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

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

1. Mounted with 700 mm<sup>2</sup> copper pad size (approximately 1 in<sup>2</sup>) 1 oz FR4 board.
2. Mounted with pad size approximately 46 mm<sup>2</sup> copper, 1 oz FR4 board.

## ELECTRICAL CHARACTERISTICS

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

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

3. Pulse Test: Pulse Width  $\leq 380\text{ }\mu\text{s}$ , Duty Cycle  $\leq 2\%$ .
4.  $t_{rr}$  measured projecting from 25% of  $I_{RM}$  to ground.

# MSRD620CT, NRVSRD620VCT, SSRD8620CT Series

## TYPICAL CHARACTERISTICS

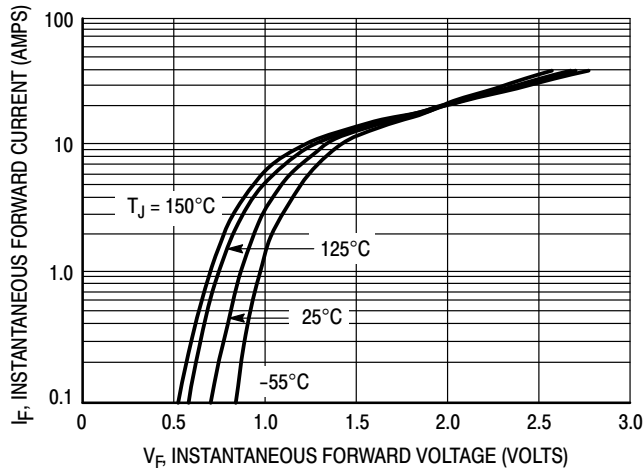


Figure 1. Typical Forward Voltage, Per Leg

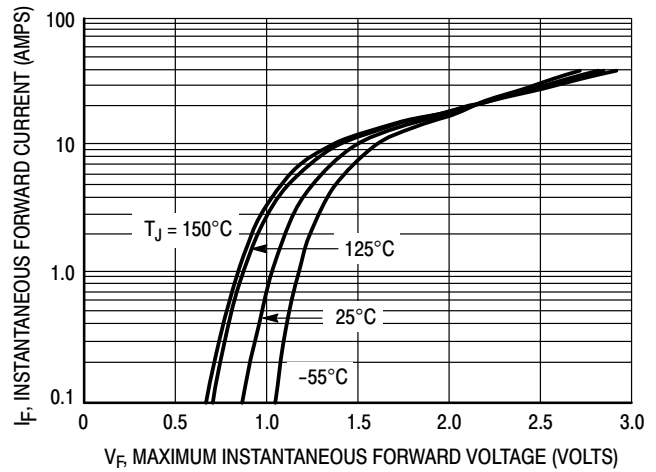


Figure 2. Maximum Forward Voltage, Per Leg

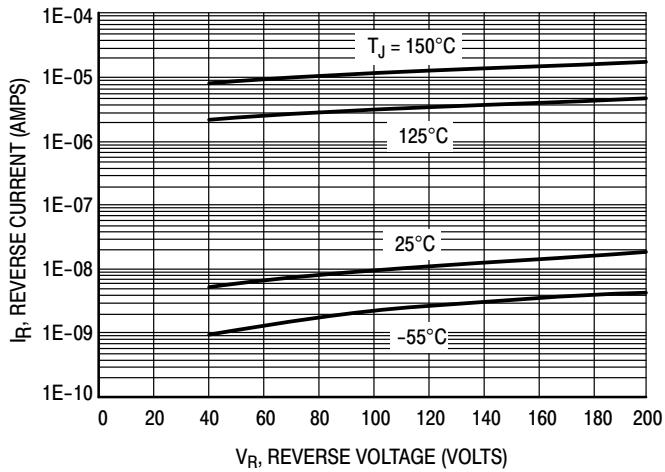


Figure 3. Typical Reverse Current, Per Leg

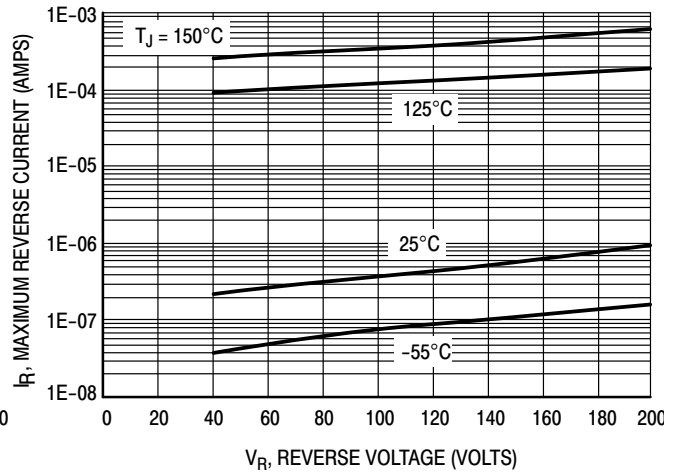


Figure 4. Maximum Reverse Current, Per Leg

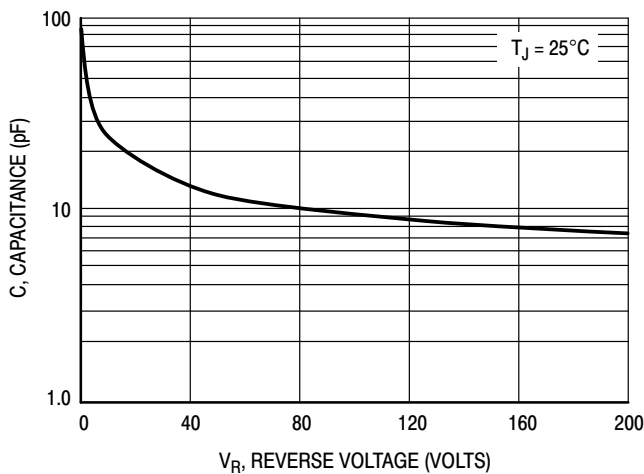


Figure 5. Typical Capacitance

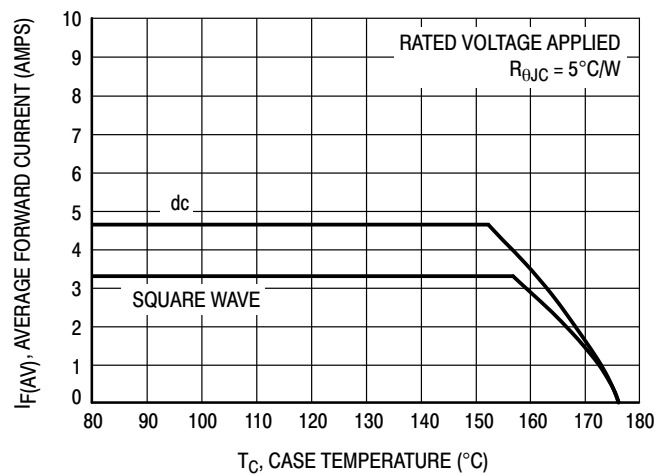


Figure 6. Typical Current Derating, Case (Per Leg)

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## TYPICAL CHARACTERISTICS (continued)

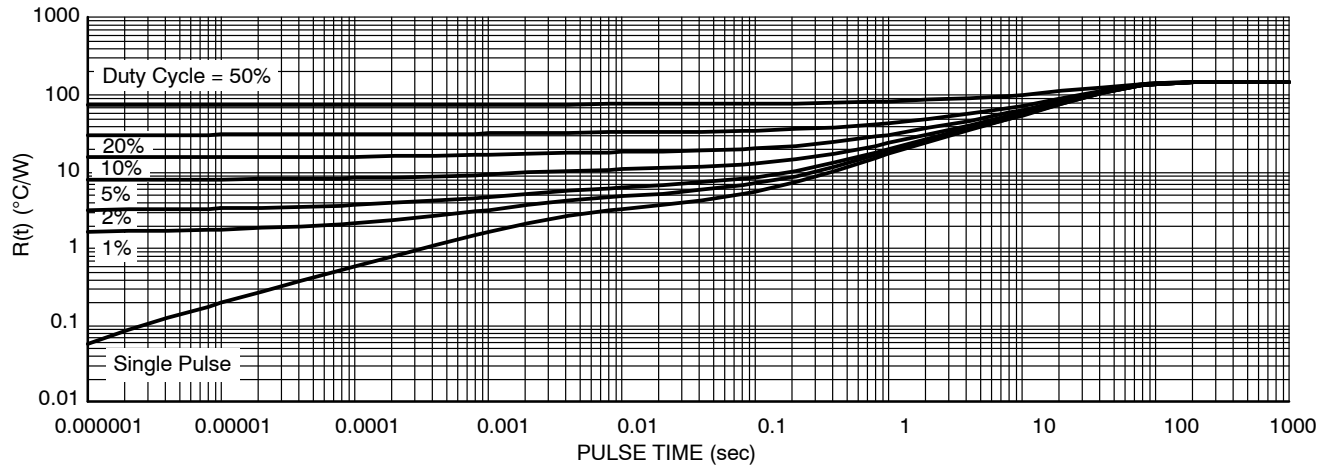


Figure 7. Thermal Response, Junction-to-Ambient (46 mm<sup>2</sup> pad)

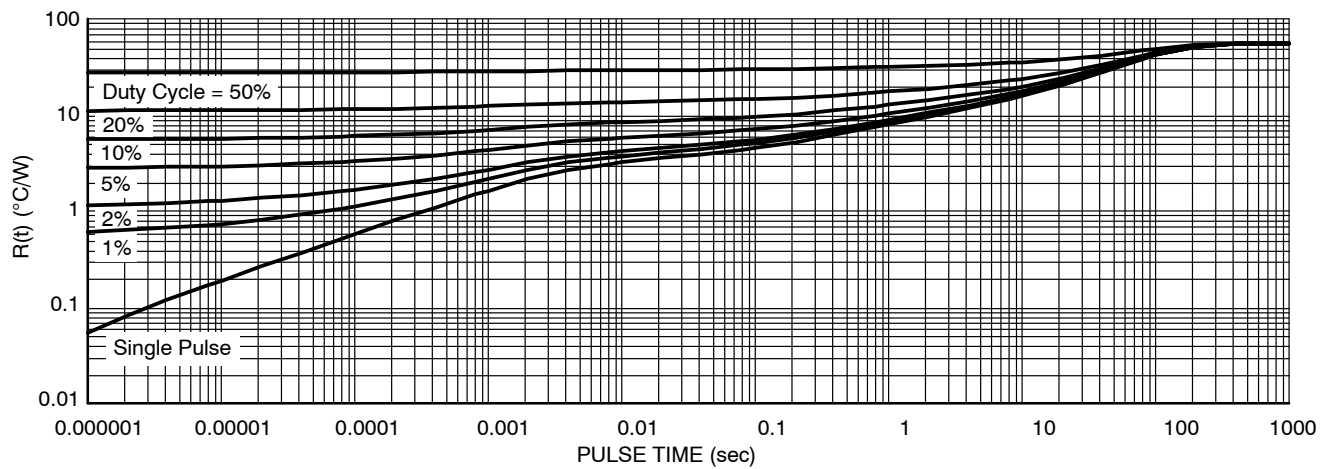
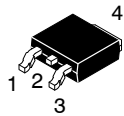


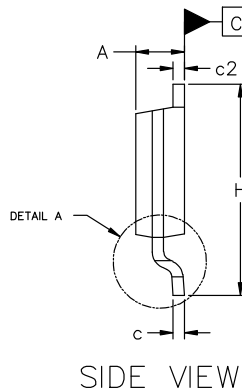
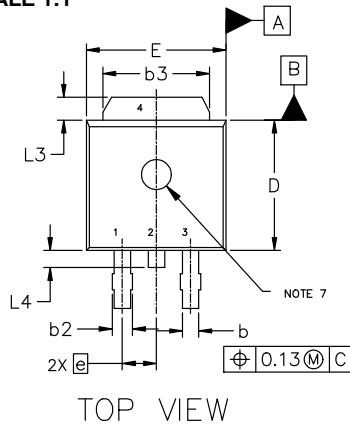
Figure 8. Thermal Response, Junction-to-Ambient (1 in<sup>2</sup> pad)



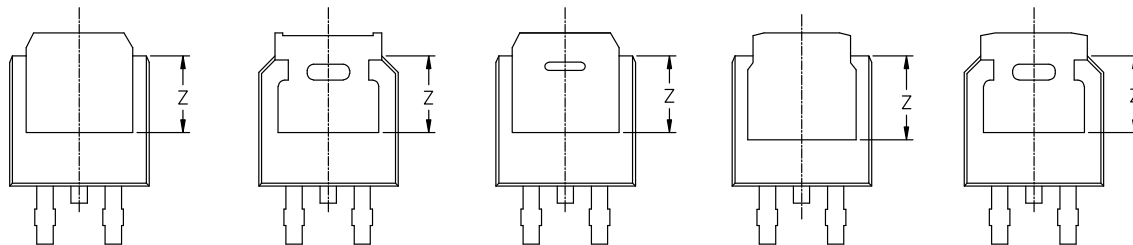
DPAK3 6.10x6.54x2.28, 2.29P  
CASE 369C  
ISSUE J

DATE 12 AUG 2025

SCALE 1:1

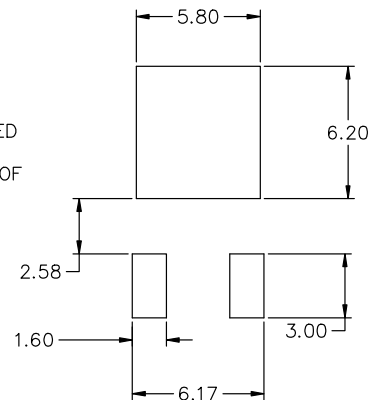
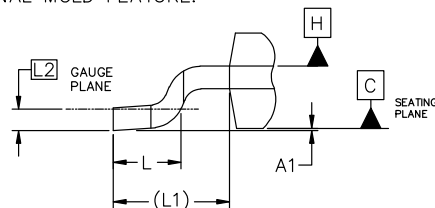


MILLIMETERS			
DIM	MIN	NOM	MAX
A	2.18	2.28	2.38
A1	0.00	---	0.13
b	0.63	0.76	0.89
b2	0.72	0.93	1.14
b3	4.57	5.02	5.46
c	0.46	0.54	0.61
c2	0.46	0.54	0.61
D	5.97	6.10	6.22
E	6.35	6.54	6.73
e	2.29 BSC		
H	9.40	9.91	10.41
L	1.40	1.59	1.78
L1	2.90 REF		
L2	0.51 BSC		
L3	0.89	---	1.27
L4	---	---	1.01
Z	3.93	---	---



NOTES:

1. DIMENSIONING AND TOLERANCING ASME Y14.5M, 2018.
2. CONTROLLING DIMENSION: MILLIMETERS.
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 0.15mm 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.
7. OPTIONAL MOLD FEATURE.



RECOMMENDED MOUNTING FOOTPRINT\*

\*FOR ADDITIONAL INFORMATION ON OUR PB-FREE STRATEGY AND SOLDERING DETAILS, PLEASE DOWNLOAD THE ONSEMI SOLDERING AND MOUNTING TECHNIQUES REFERENCE MANUAL, SOLDERRM/D.

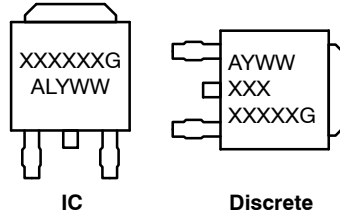
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**DPAK3 6.10x6.54x2.28, 2.29P**  
CASE 369C  
ISSUE J

DATE 12 AUG 2025

**GENERIC  
MARKING DIAGRAM\***



XXXXXX = Device Code  
A = Assembly Location  
L = Wafer Lot  
Y = Year  
WW = Work Week  
G = Pb-Free Package

\*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "▪", may or may not be present. Some products may not follow the Generic Marking.

STYLE 1: PIN 1. BASE 2. COLLECTOR 3. EMITTER 4. COLLECTOR	STYLE 2: PIN 1. GATE 2. DRAIN 3. SOURCE 4. DRAIN	STYLE 3: PIN 1. ANODE 2. CATHODE 3. ANODE 4. CATHODE	STYLE 4: PIN 1. CATHODE 2. ANODE 3. GATE 4. ANODE	STYLE 5: PIN 1. GATE 2. ANODE 3. CATHODE 4. ANODE
STYLE 6: PIN 1. MT1 2. MT2 3. GATE 4. MT2	STYLE 7: PIN 1. GATE 2. COLLECTOR 3. EMITTER 4. COLLECTOR	STYLE 8: PIN 1. N/C 2. CATHODE 3. ANODE 4. CATHODE	STYLE 9: PIN 1. ANODE 2. CATHODE 3. RESISTOR ADJUST 4. CATHODE	STYLE 10: PIN 1. CATHODE 2. ANODE 3. CATHODE 4. ANODE

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