MSRD620CT

SWITCHMODE Soft Ultrafast Recovery Power Rectifier

Plastic DPAK Package

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

Features

- Pb−Free Packages are Available
- Soft Ultrafast Recovery (35 ns typ)
- Highly Stable Oxide Passivated Junction
- 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.

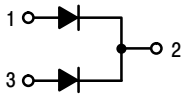
Mechanical Characteristics

- 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

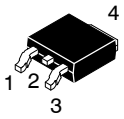
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http://onsemi.com

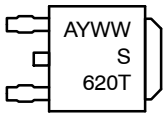
SOFT ULTRAFAST RECTIFIER 6.0 AMPERES, 200 VOLTS



MARKING DIAGRAM



DPAK
CASE 369C



A = Assembly Location
Y = Year
WW = Work Week

ORDERING INFORMATION

Device	Package	Shipping†
MSRD620CT	DPAK	75 Units/Rail
MSRD620CTG	DPAK (Pb−Free)	75 Units/Rail
MSRD620CTT4	DPAK	2500/Tape & Reel
MSRD620CTT4G	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.

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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 = 137°C)	Per Leg Per Package	I_O	 3.0 6.0	A
Peak Repetitive Forward Current (At Rated V_R, Square Wave, 20 kHz, T_C = 138°C)	Per Leg	I_{FRM}	6.0	A
Non−Repetitive Peak Surge Current (Surge Applied at Rated Load Conditions, Halfwave, Single Phase, 60 Hz)	Per Package	I_{FSM}	50	A
Storage / Operating Case Temperature		T_{stg}, T_c	−55 to +175	°C
Operating Junction Temperature		T_J	−55 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	Per Leg	$R_{\theta JC}$	9.0	°C/W
Thermal Resistance − Junction−to−Ambient	Per Leg	$R_{\theta JA}$	80	°C/W

ELECTRICAL CHARACTERISTICS

Rating		Symbol	Value		Unit
Maximum Instantaneous Forward Voltage (Note 1) (See Figure 2)	Per Leg	V_F	**T_J = 25°C**	**T_J = 150°C**	V
	(I_F = 3.0 A)		1.15	1.05	
	(I_F = 6.0 A)		1.35	1.30	
Maximum Instantaneous Reverse Current (See Figure 4)	Per Leg	I_R	**T_J = 25°C**	**T_J = 150°C**	μA
	(V_R = 200 V)		5.0	200	
	(V_R = 100 V)		2.0	100	
Maximum Reverse Recovery Time (Note 2)	Per Leg	t_{rr}			ns
	(V_R = 30 V, I_F = 1.0 A, di/dt = 50 A/μs)		45		
	(V_R = 30 V, I_F = 3.0 A, di/dt = 50 A/μs)		55		
Maximum Peak Reverse Recovery Current	Per Leg	I_{RM}			A
	(V_R = 30 V, I_F = 1.0 A, di/dt = 50 A/μs)		2.0		
	(V_R = 30 V, I_F = 3.0 A, di/dt = 50 A/μs)		3.0		

1. Pulse Test: Pulse Width ≤ 250 μs, Duty Cycle ≤ 2%.
2. t_{rr} measured projecting from 25% of I_{RM} to ground.

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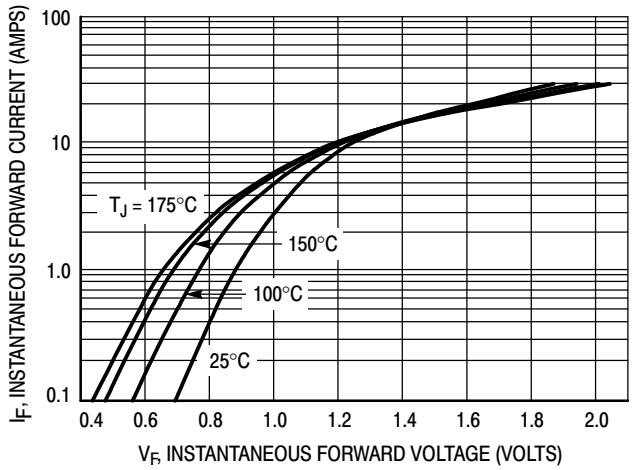


Figure 1. Typical Forward Voltage, Per Leg

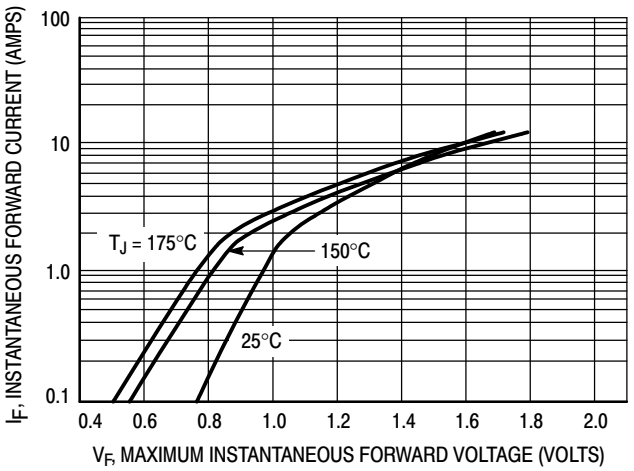


Figure 2. Maximum Forward Voltage, Per Leg

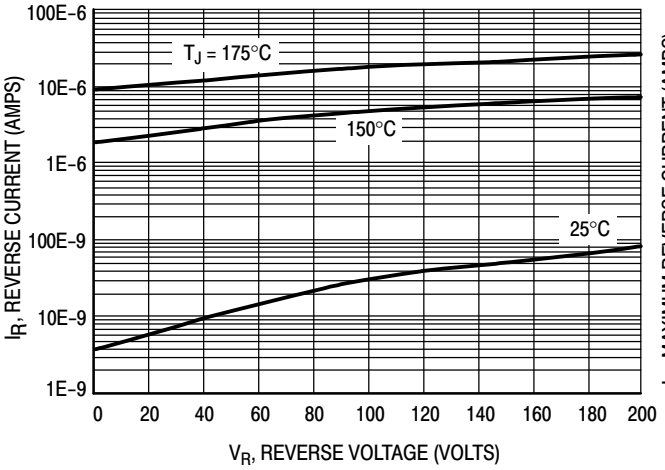


Figure 3. Typical Reverse Current, Per Leg

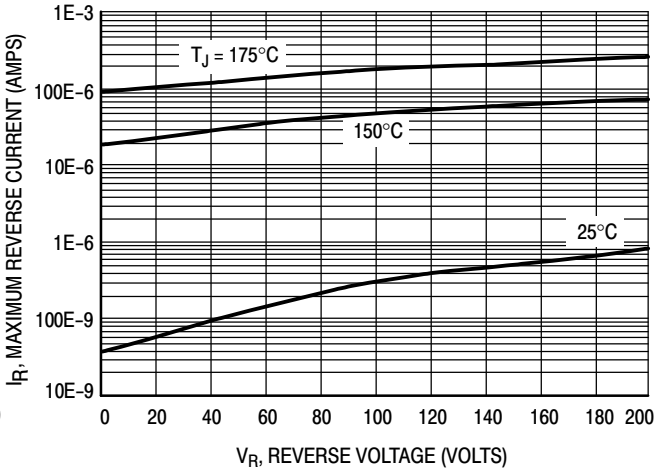


Figure 4. Maximum Reverse Current, Per Leg

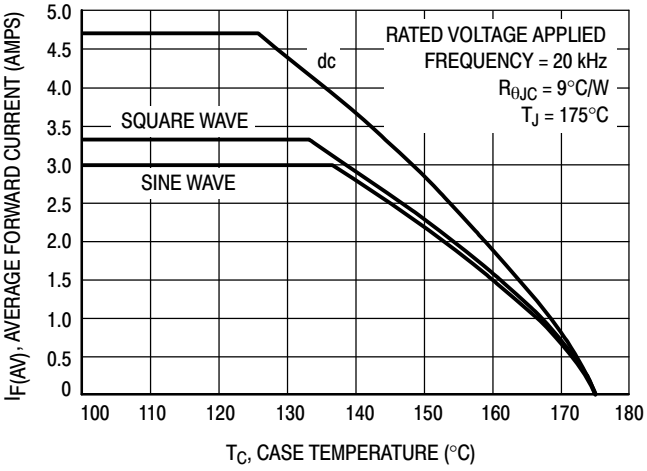


Figure 5. Current Derating, Case (Per Leg)

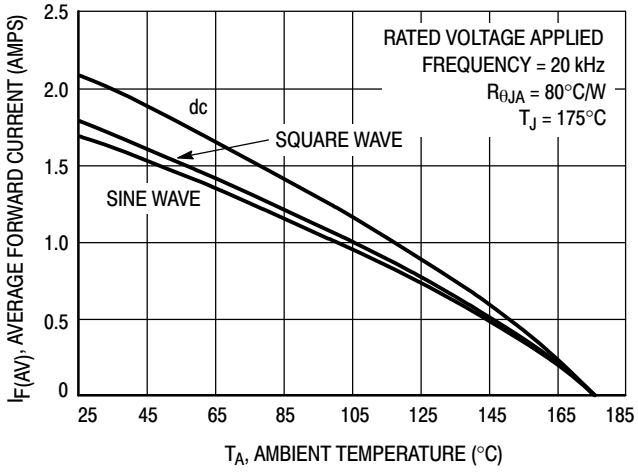


Figure 6. Current Derating, Ambient (Per Leg)

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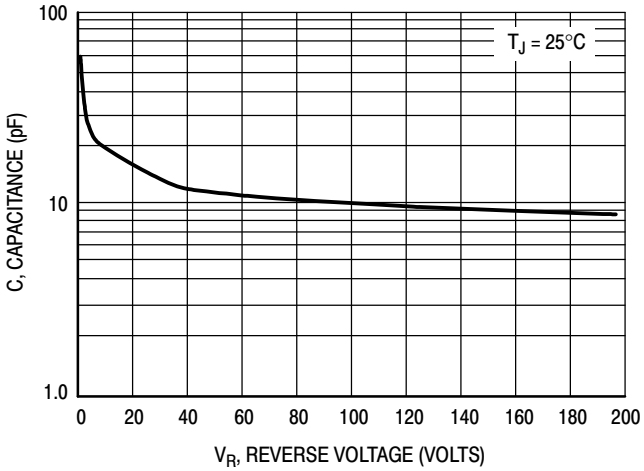


Figure 7. Typical Capacitance (Per Leg)

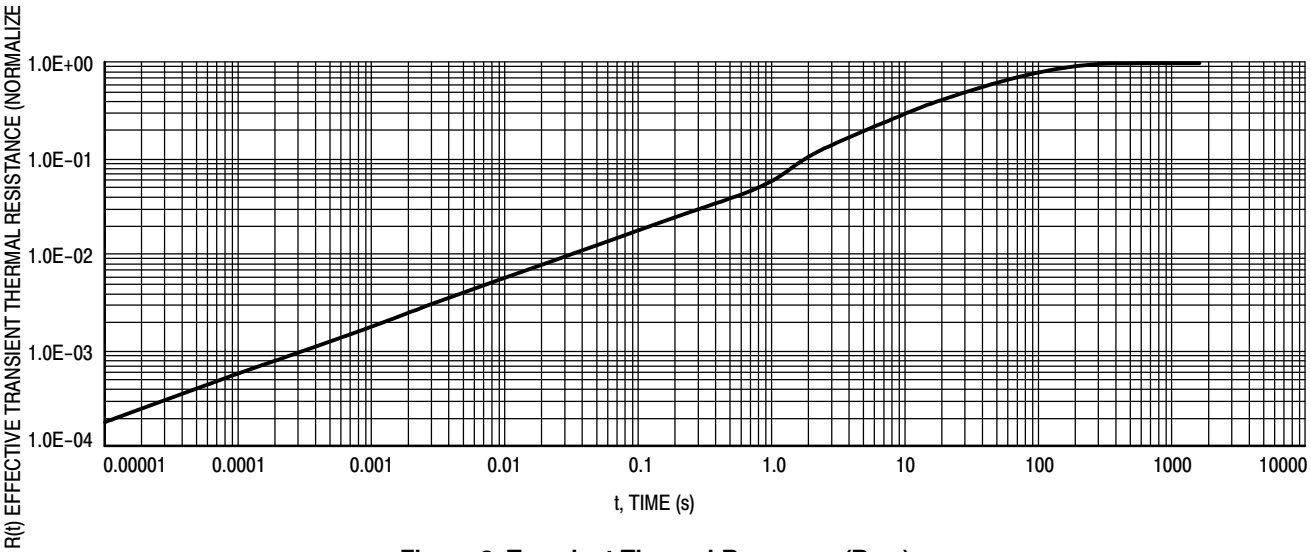


Figure 8. Transient Thermal Response ($R_{\theta JA}$)

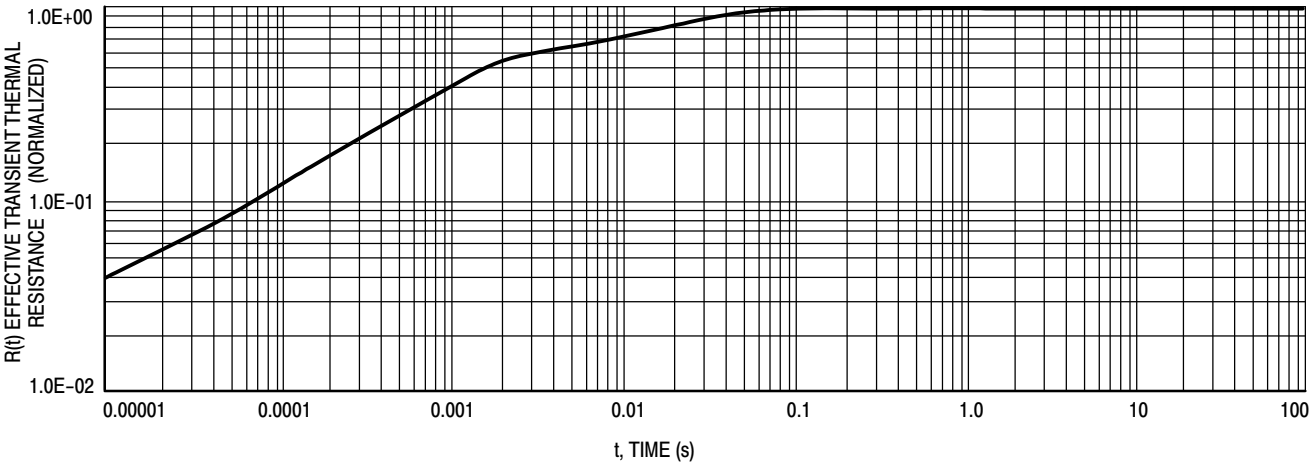


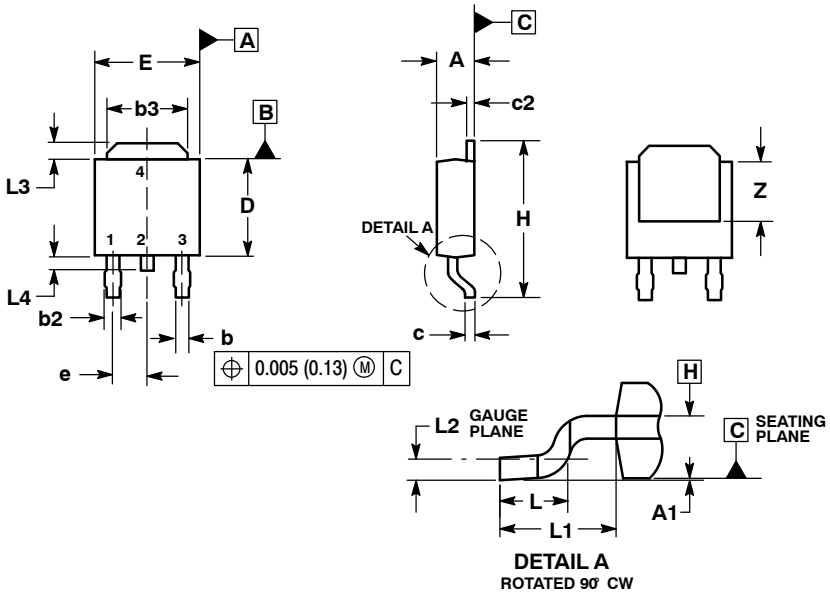
Figure 9. Transient Thermal Response ($R_{\theta JC}$)

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PACKAGE DIMENSIONS

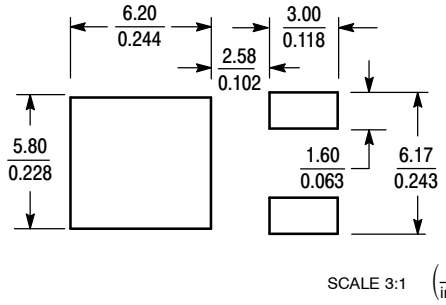
DPAK (SINGLE GAUGE)
CASE 369C−01
ISSUE D



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*



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

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