

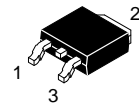
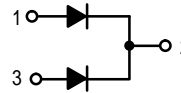
*Designer's™ Data Sheet*  
**SWITCHMODE™**  
**Soft Ultrafast Recovery**  
**Power Rectifier**  
**Plastic DPAK Package**

**MSRD620CT**

**SOFT ULTRAFAST  
RECTIFIER  
6.0 AMPERES  
200 VOLTS**

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

- 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 UL94, V<sub>O</sub> at 1/8"



**CASE 369A-13  
DPAK**

**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
- Shipped in 75 units per plastic tube
- Available in 16 mm Tape and Reel, 2500 units per Reel, Add "T4" to Suffix part number
- Marking: S620T

**MAXIMUM RATINGS**

Rating	Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V <sub>RRM</sub> V <sub>RWM</sub> V <sub>R</sub>	200	V
Average Rectified Forward Current (At Rated V <sub>R</sub> , T <sub>C</sub> = 137°C)	I <sub>O</sub>	3.0 6.0	A
Peak Repetitive Forward Current (At Rated V <sub>R</sub> , Square Wave, 20 kHz, T <sub>C</sub> = 138°C)	I <sub>FRM</sub>	6.0	A
Non-Repetitive Peak Surge Current (Surge applied at rated load conditions, halfwave, single phase, 60 Hz)	I <sub>FSM</sub>	50	A
Storage / Operating Case Temperature	T <sub>stg</sub> , T <sub>C</sub>	-55 to +175	°C
Operating Junction Temperature	T <sub>J</sub>	-55 to +175	°C

**THERMAL CHARACTERISTICS**

Thermal Resistance — Junction to Case	Per Leg	R <sub>θJC</sub>	9.0	°C/W
— Junction to Ambient	Per Leg	R <sub>θJA</sub>	80	

**Designer's Data for "Worst Case" Conditions** — The Designer's Data Sheet permits the design of most circuits entirely from the information presented. SOA Limit curves — representing boundaries on device characteristics — are given to facilitate "worst case" design.

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# MSRD620CT

## ELECTRICAL CHARACTERISTICS

Rating		Symbol	Value		Unit
Maximum Instantaneous Forward Voltage <sup>(1)</sup> , see Figure 2 ( $I_F = 3.0\text{ A}$ ) ( $I_F = 6.0\text{ A}$ )	Per Leg	$V_F$	$T_J = 25^\circ\text{C}$	$T_J = 150^\circ\text{C}$	V
			1.15 1.35	1.05 1.30	
Maximum Instantaneous Reverse Current, see Figure 4 ( $V_R = 200\text{ V}$ ) ( $V_R = 100\text{ V}$ )	Per Leg	$I_R$	$T_J = 25^\circ\text{C}$	$T_J = 150^\circ\text{C}$	$\mu\text{A}$
			5.0 2.0	200 100	
Maximum Reverse Recovery Time <sup>(2)</sup> ( $V_R = 30\text{ V}$ , $I_F = 1.0\text{ A}$ , $di/dt = 50\text{ A}/\mu\text{s}$ ) ( $V_R = 30\text{ V}$ , $I_F = 3.0\text{ A}$ , $di/dt = 50\text{ A}/\mu\text{s}$ )	Per Leg	$t_{rr}$	45 55		ns
Maximum Peak Reverse Recovery Current ( $V_R = 30\text{ V}$ , $I_F = 1.0\text{ A}$ , $di/dt = 50\text{ A}/\mu\text{s}$ ) ( $V_R = 30\text{ V}$ , $I_F = 3.0\text{ A}$ , $di/dt = 50\text{ A}/\mu\text{s}$ )	Per Leg	$I_{RM}$	2.0 3.0		A

(1) Pulse Test: Pulse Width  $\leq 250\ \mu\text{s}$ , Duty Cycle  $\leq 2\%$ .

(2)  $t_{rr}$  measured projecting from 25% of  $I_{RM}$  to ground.

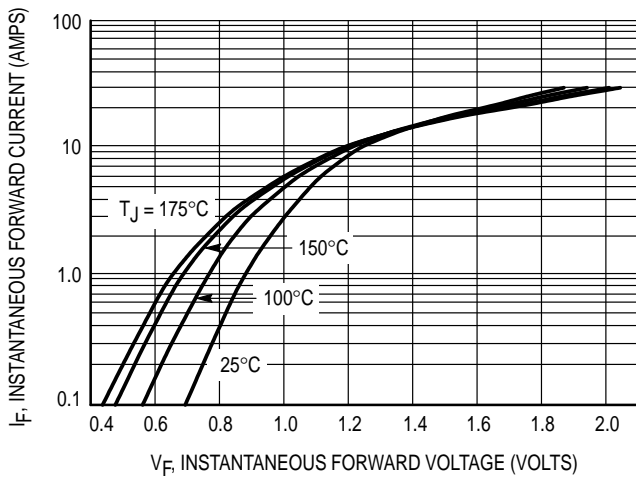


Figure 1. Typical Forward Voltage, Per Leg

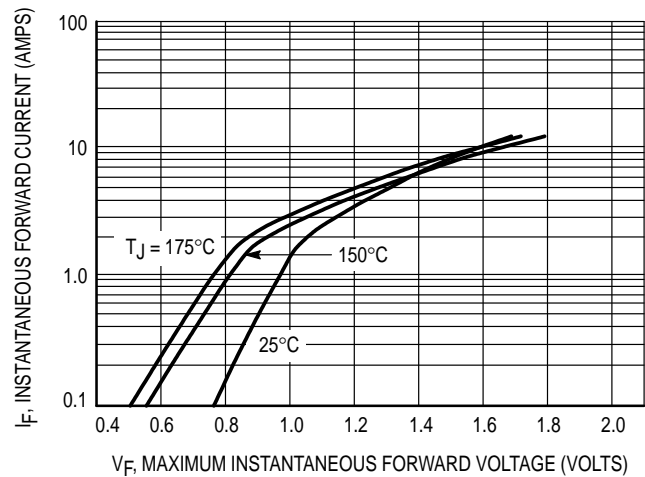


Figure 2. Maximum Forward Voltage, Per Leg

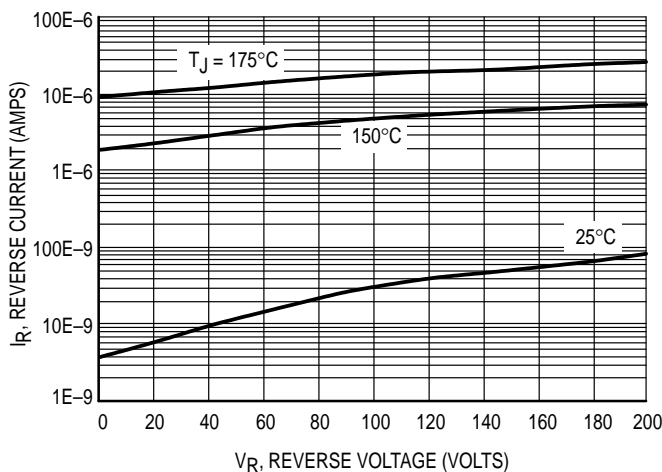


Figure 3. Typical Reverse Current, Per Leg

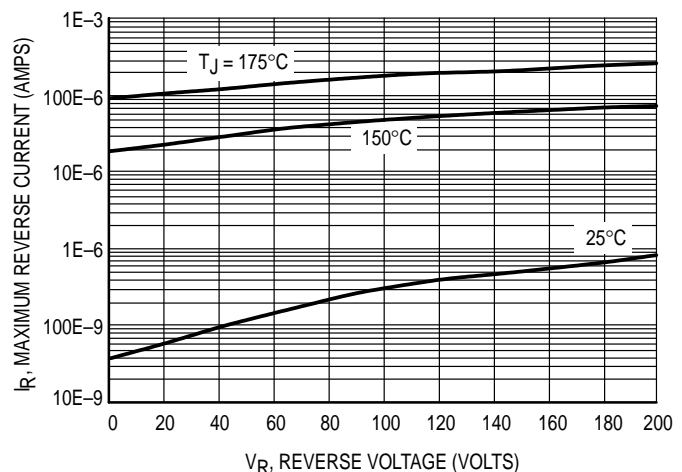
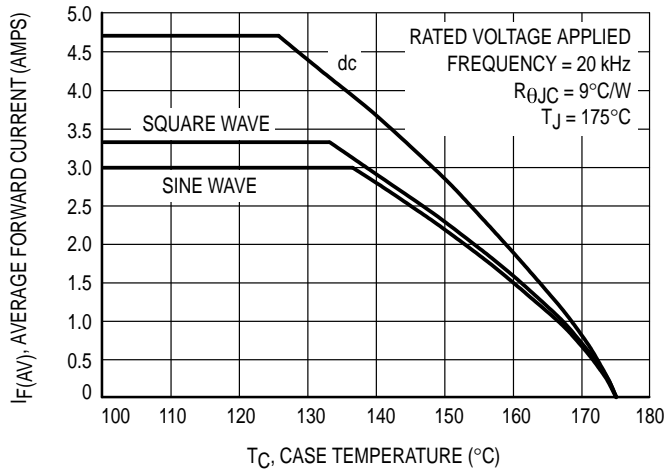
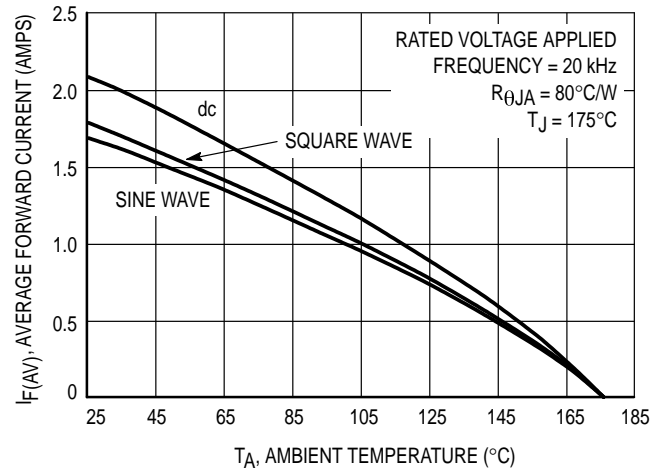


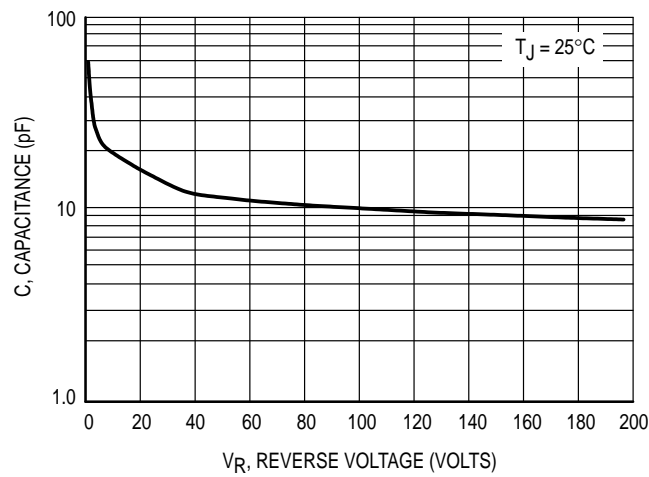
Figure 4. Maximum Reverse Current, Per Leg



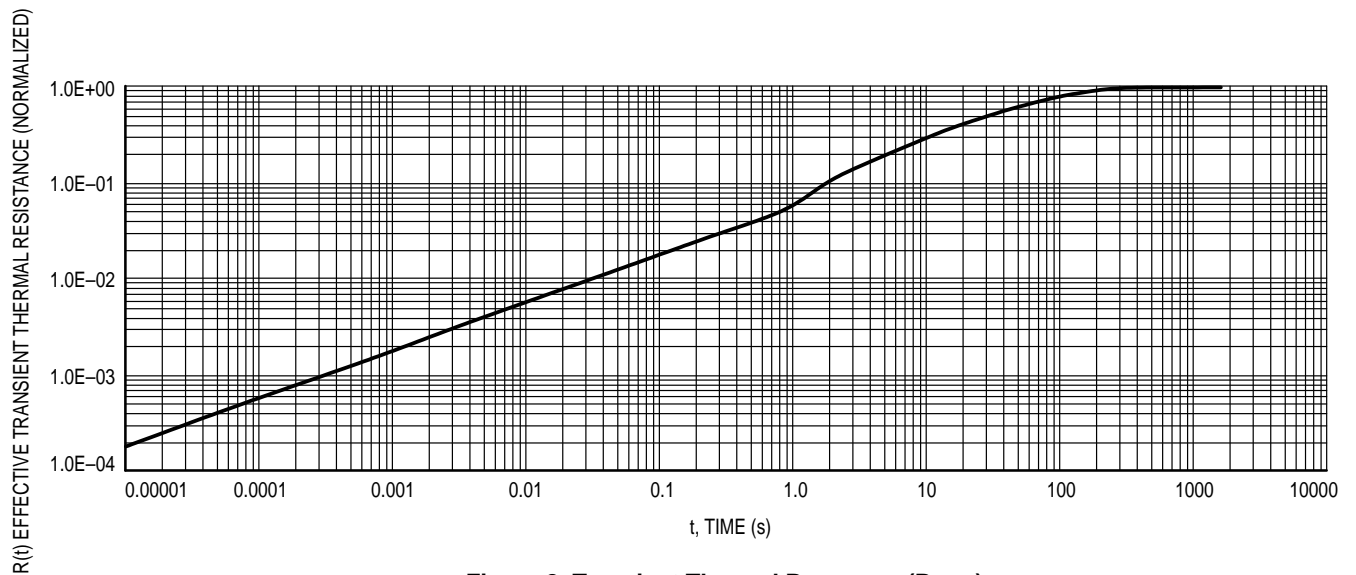
**Figure 5. Current Derating, Case (Per Leg)**



**Figure 6. Current Derating, Ambient (Per Leg)**

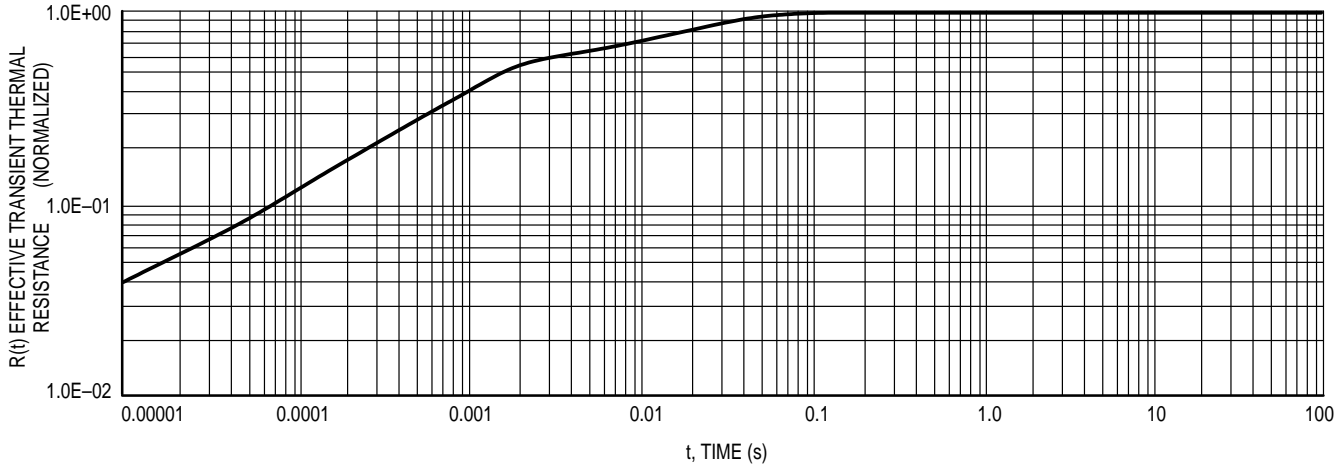


**Figure 7. Typical Capacitance (Per Leg)**



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

**MSRD620CT**



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

**PACKAGE DIMENSIONS**

NOTES:

- DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
- CONTROLLING DIMENSION: INCH.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.235	0.250	5.97	6.35
B	0.250	0.265	6.35	6.73
C	0.086	0.094	2.19	2.38
D	0.027	0.035	0.69	0.88
E	0.033	0.040	0.84	1.01
F	0.037	0.047	0.94	1.19
G	0.180 BSC		4.58 BSC	
H	0.034	0.040	0.87	1.01
J	0.018	0.023	0.46	0.58
K	0.102	0.114	2.60	2.89
L	0.090 BSC		2.29 BSC	
R	0.175	0.215	4.45	5.46
S	0.020	0.050	0.51	1.27
U	0.020	—	0.51	—
V	0.030	0.050	0.77	1.27
Z	0.138	—	3.51	—

**CASE 369A-13  
ISSUE Y**

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