Designer's™ Data Sheet

SWITCHMODE™ Soft Ultrafast Recovery Power Rectifier

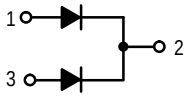
Plastic DPAK Package

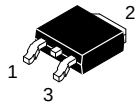
MSRD620CT

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_O 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_{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

THERMAL CHARACTERISTICS

Thermal Resistance – Junction to Case – Junction to Ambient	Per Leg Per Leg	$R_{\theta JC}$ $R_{\theta JA}$	9.0 80	°C/W

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.

Designer's and SWITCHMODE are trademarks of Motorola, Inc.

ELECTRICAL CHARACTERISTICS

Rating		Symbol	Value		Unit
Maximum Instantaneous Forward Voltage (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 (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.

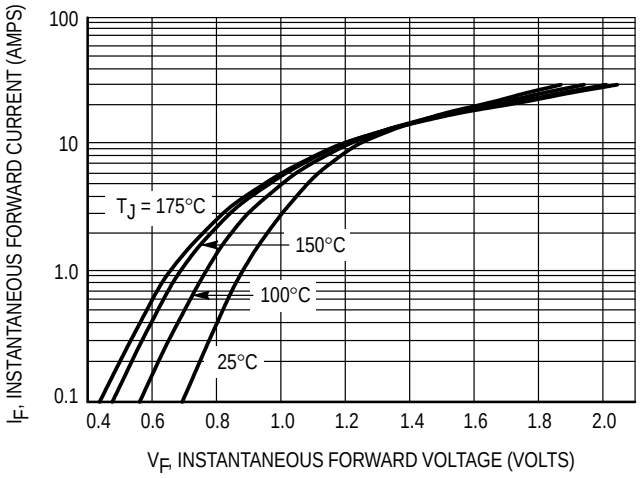


Figure 1. Typical Forward Voltage, Per Leg

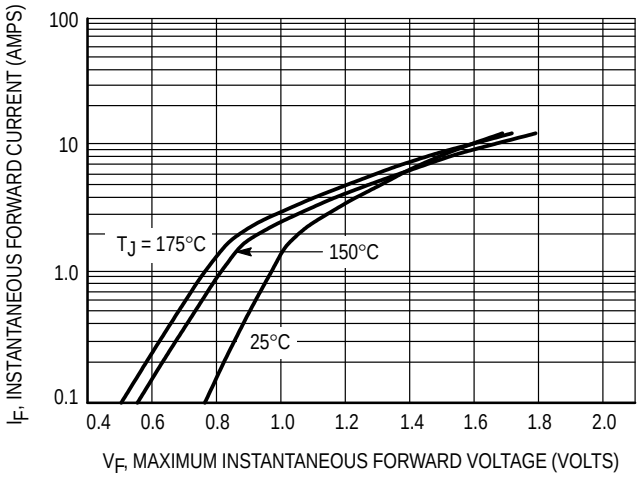


Figure 2. Maximum Forward Voltage, Per Leg

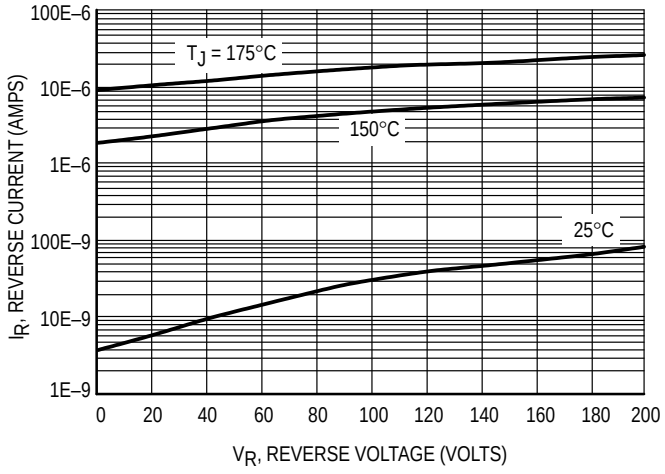


Figure 3. Typical Reverse Current, Per Leg

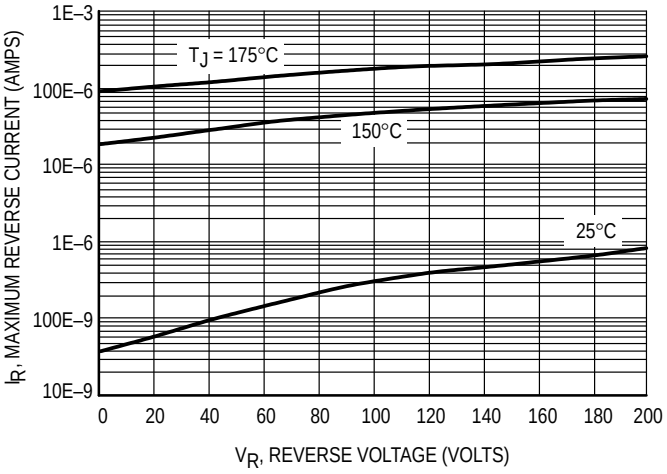


Figure 4. Maximum Reverse Current, Per Leg

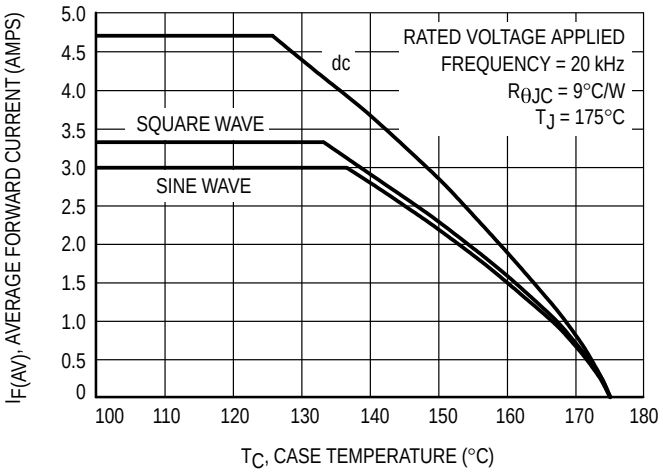


Figure 5. Current Derating, Case (Per Leg)

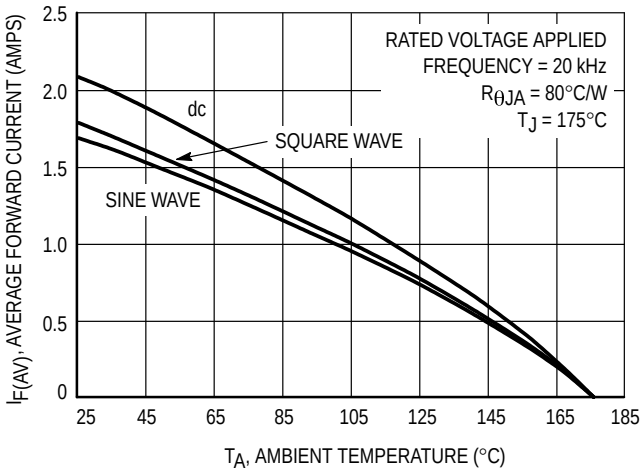


Figure 6. Current Derating, Ambient (Per Leg)

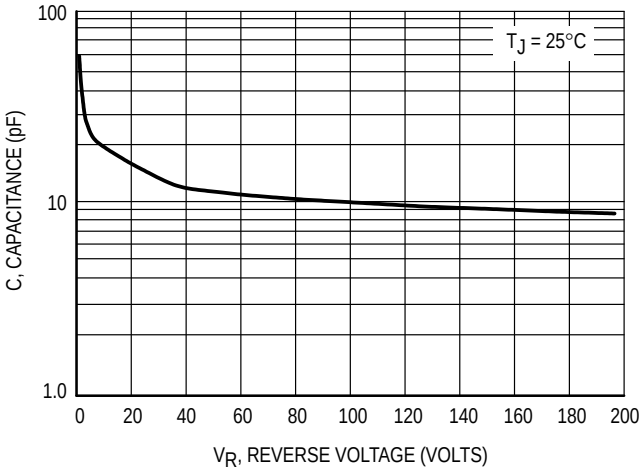


Figure 7. Typical Capacitance (Per Leg)

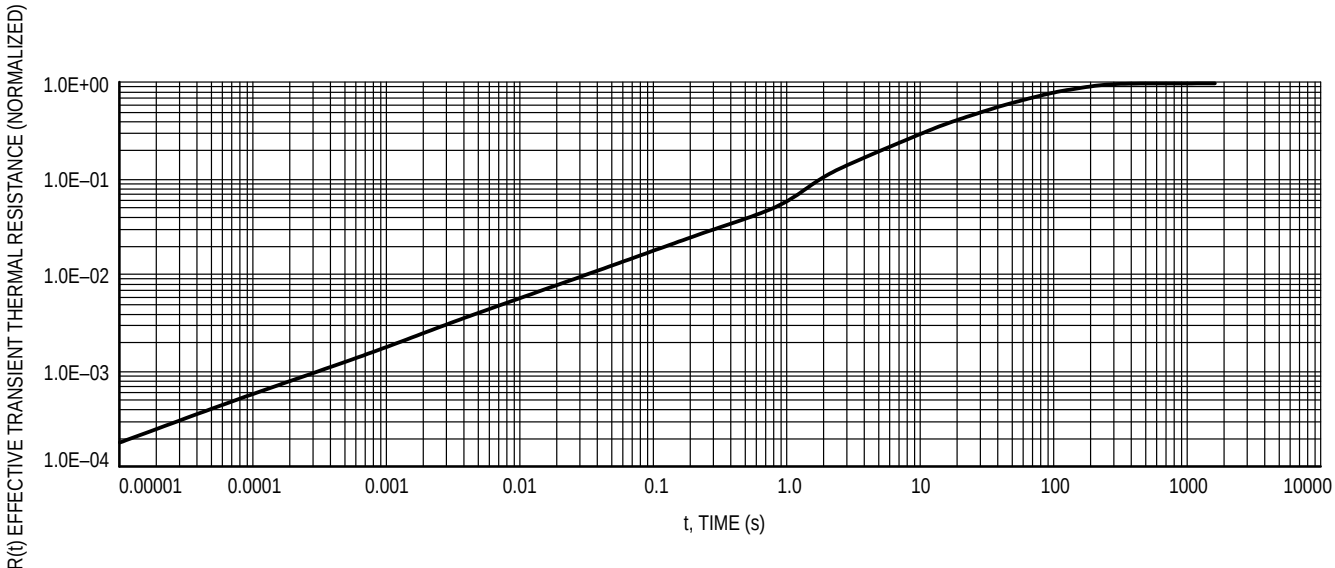


Figure 8. Transient Thermal Response ($R_{\theta JA}$)

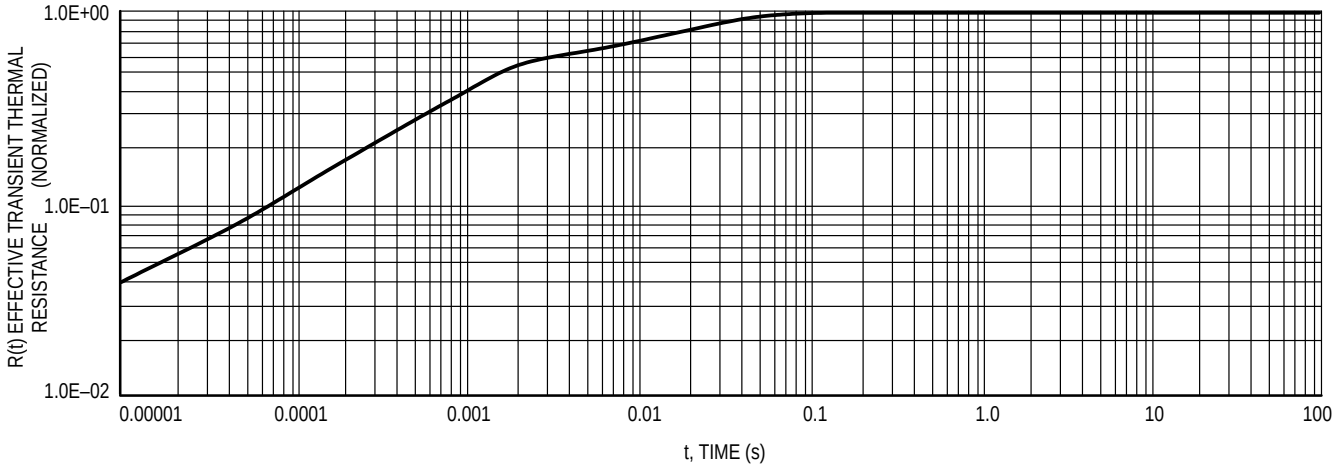
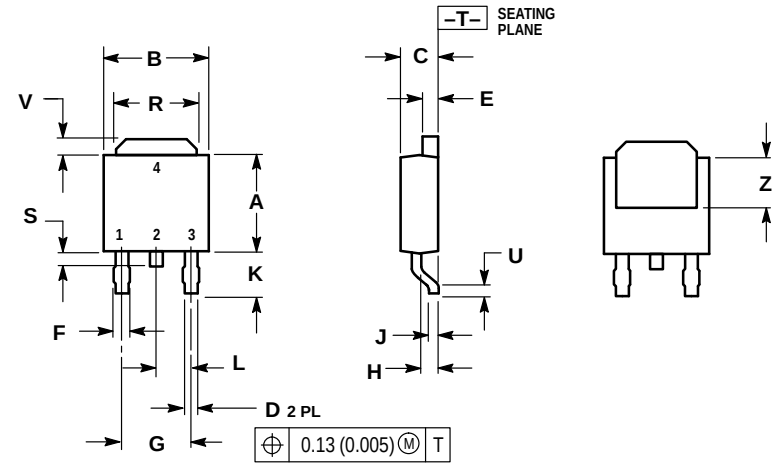


Figure 9. Transient Thermal Response ($R_{\theta JC}$)

PACKAGE DIMENSIONS



NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

	INCHES		MILLIMETERS	
DIM	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

How to reach us:
USA / EUROPE / Locations Not Listed: Motorola Literature Distribution;
P.O. Box 5405, Denver, Colorado 80217. 1–303–675–2140 or 1–800–441–2447

JAPAN: Nippon Motorola Ltd.; SPD, Strategic Planning Office, 141,
4–32–1 Nishi–Gotanda, Shinagawa–ku, Tokyo, Japan. 81–3–5487–8488

Customer Focus Center: 1–800–521–6274

Mfax™: RMFAX0@email.sps.mot.com – TOUCHTONE 1–602–244–6609
Motorola Fax Back System – US & Canada ONLY 1–800–774–1848
– http://sps.motorola.com/mfax/

ASIA / PACIFIC: Motorola Semiconductors H.K. Ltd.; 8B Tai Ping Industrial Park,
51 Ting Kok Road, Tai Po, N.T., Hong Kong. 852–26629298

HOME PAGE: http://motorola.com/sps/