OM SENI

MBRS410ET3G

Surface Mount Schottky Power Rectifier

This device employs the Schottky Barrier principle in a large area metal−to−silicon power diode. State−of−the−art geometry features epitaxial construction with oxide passivation and metal overlay contact. Ideally suited for low voltage, high frequency rectification, or as free wheeling and polarity protection diodes, in surface mount applications where compact size and weight are critical to the system. Typical applications are AC−DC and DC−DC converters, reverse battery protection, and "ORing" of multiple supply voltages and any other application where performance and size are critical.

Features

- Very Low V_F Accompanied by Low I_R
- 1st in the Market Place with a 10 V_R Schottky Rectifier
- Small Compact Surface Mountable Package with J−Bend Leads
- Rectangular Package for Automated Handling
- Highly Stable Oxide Passivated Junction
- Designed for Low Leakage
- Excellent Ability to Withstand Reverse Avalanche Energy Transients
- Guard−Ring for Stress Protection
- These Devices are Pb−Free, Halogen Free/BFR Free and are RoHS Compliant

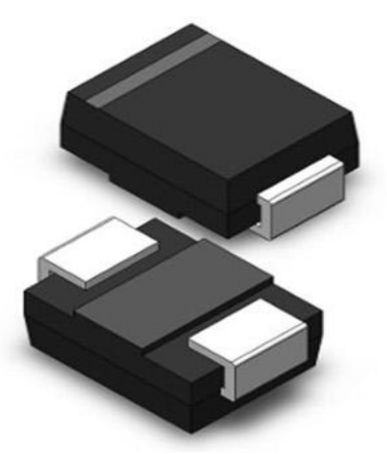
Mechanical Characteristics

- Case: Epoxy, Molded
- Weight: 217 mg (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
- Polarity: Polarity Band on Plastic Body Indicates Cathode Lead
- ESD Ratings: Machine Model = C
  Human Body Model = 3B

MAXIMUM RATINGS

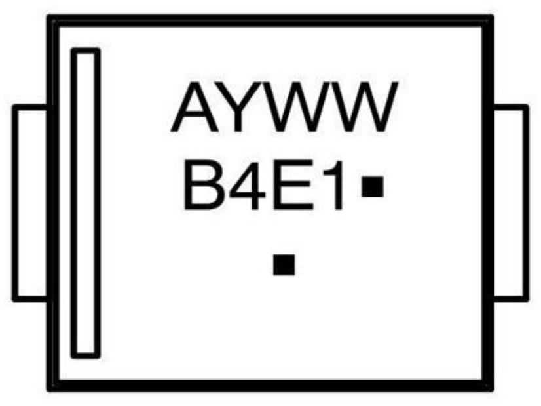
Rating	Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V_{RRM} V_{RWM} V_R	10	V
Average Rectified Forward Current (@ T_L = 130°C)	I_O	4.0	A
Non−Repetitive Peak Surge Current (Surge Applied at Rated Load Conditions Halfwave, Single Phase, 60 Hz)	I_{FSM}	250	A
Operating Junction Temperature	T_J	−65 to +150	°C

SCHOTTKY BARRIER RECTIFIERS 4.0 AMPERES, 10 VOLTS



SMC 2−LEAD
CASE 403AC

MARKING DIAGRAM



B4E1 = Specific Device Code
A = Assembly Location*
Y = Year
WW = Work Week
▪ = Pb−Free Package
(Note: Microdot may be in either location)

*The Assembly Location code (A) is front side optional. In cases where the Assembly Location is stamped in the package, the front side assembly code may be blank.

ORDERING INFORMATION

Device	Package	Shipping†
MBRS410ET3G	SMC (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 Specification Brochure, BRD8011/D.

THERMAL CHARACTERISTICS

Characteristic	Symbol	5 mm x 5 mm (Note 2)	1 Inch x 1/2 inch	Unit
Thermal Resistance, Junction−to−Lead	$R_{\theta JL}$	12	7.0	°C/W
Thermal Resistance, Junction−to−Ambient	$R_{\theta JA}$	109	59	

ELECTRICAL CHARACTERISTICS

Maximum Instantaneous Forward Voltage (Note 1)	V_F	**T_J = 25°C**	**T_J = 100°C**	V
(I_F = 2.0 A)		0.475	0.370	
(I_F = 4.0 A)		0.500	0.395	
(I_F = 8.0 A)		0.525	0.430	
Maximum Instantaneous Reverse Current (Note 1)	I_R	**T_J = 25°C**	**T_J = 100°C**	μA
(Rated dc Voltage, V_R = 5.0 V)		50	2000	
(Rated dc Voltage, V_R = 10 V)		150	4000	

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.

1. Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2%.
2. Mounted with Minimum Recommended Pad Size, PC Board FR4.

TYPICAL ELECTRICAL CHARACTERISTICS

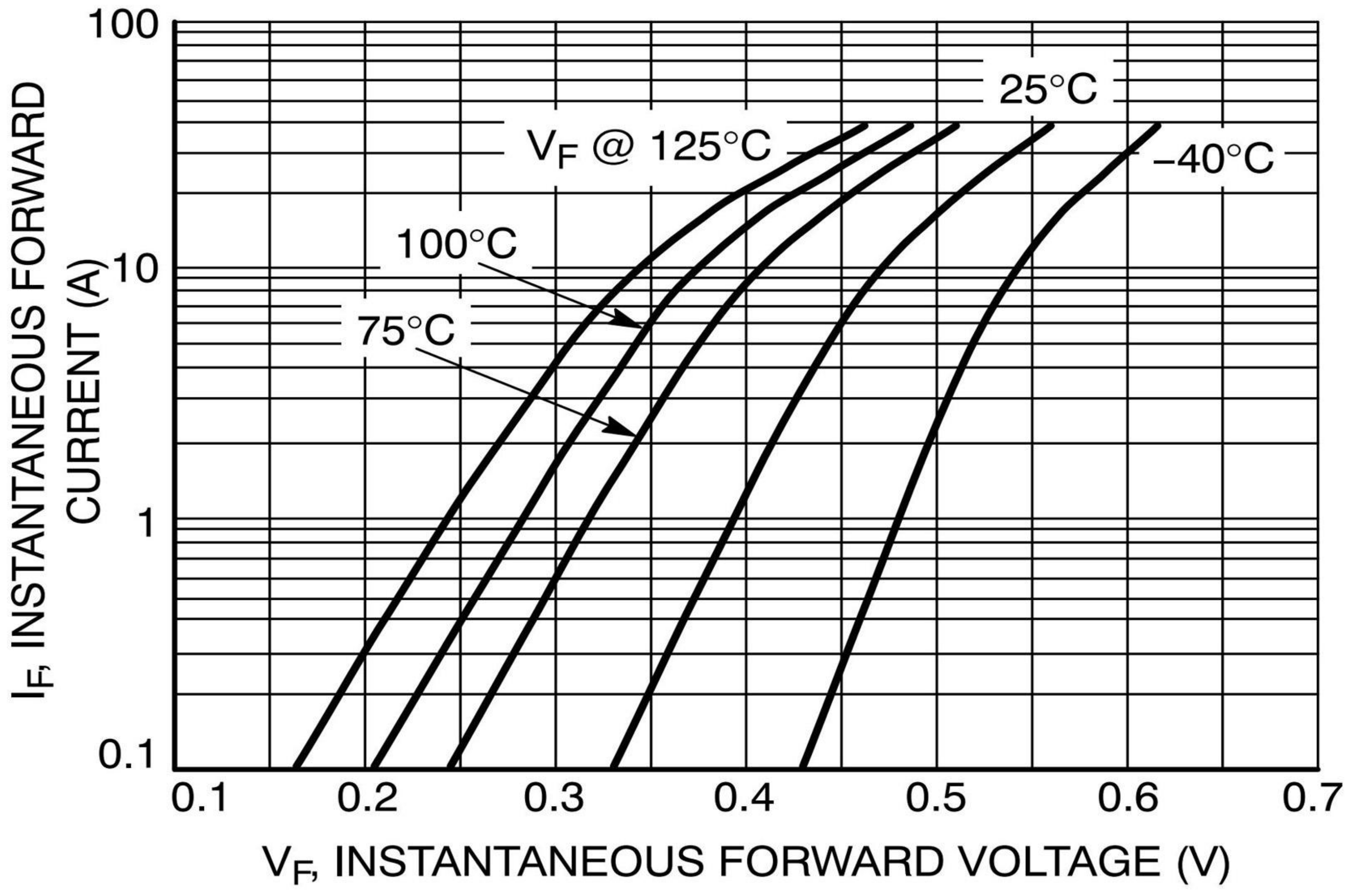


Figure 1. Typical Forward Voltage

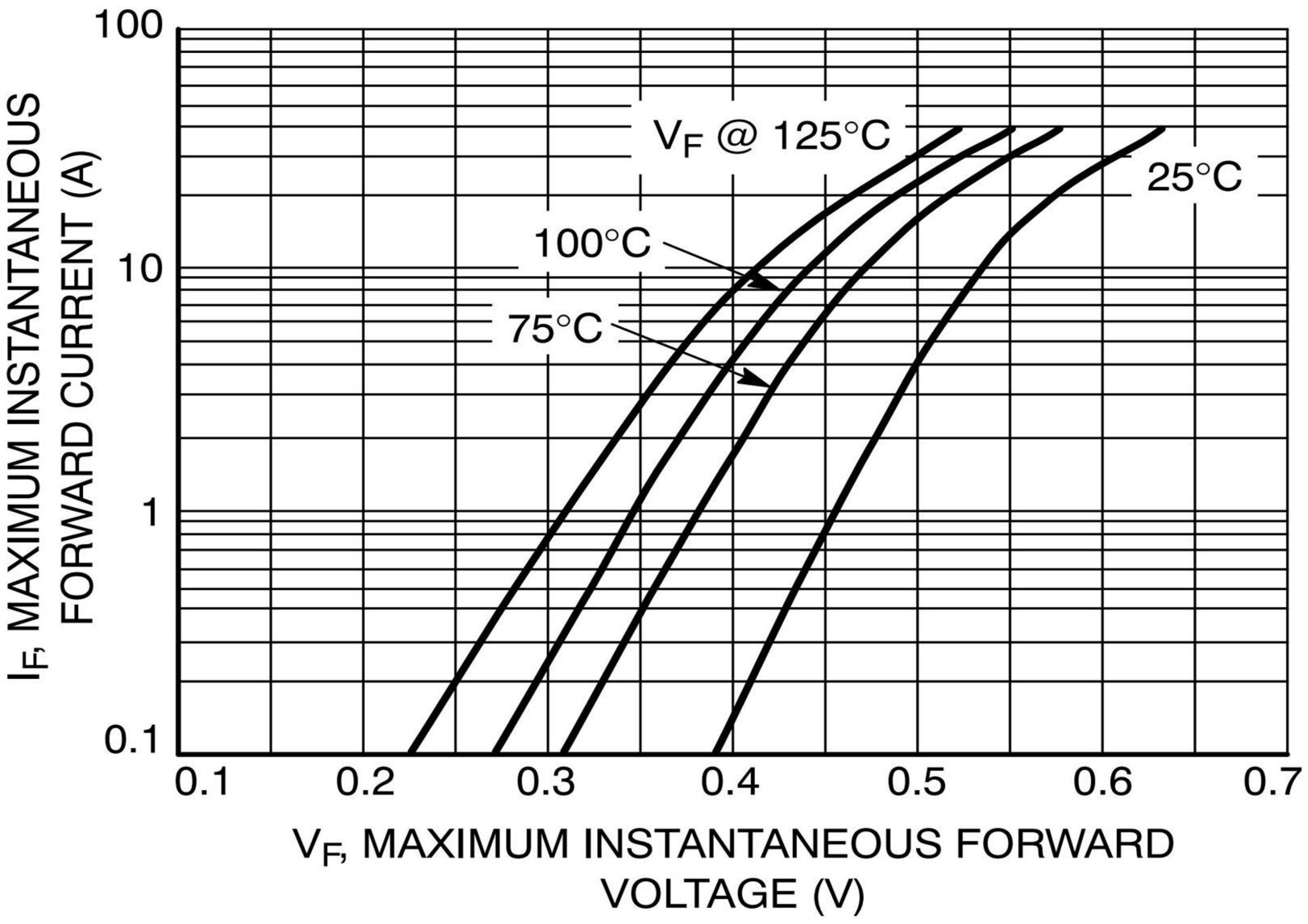


Figure 2. Maximum Forward Voltage

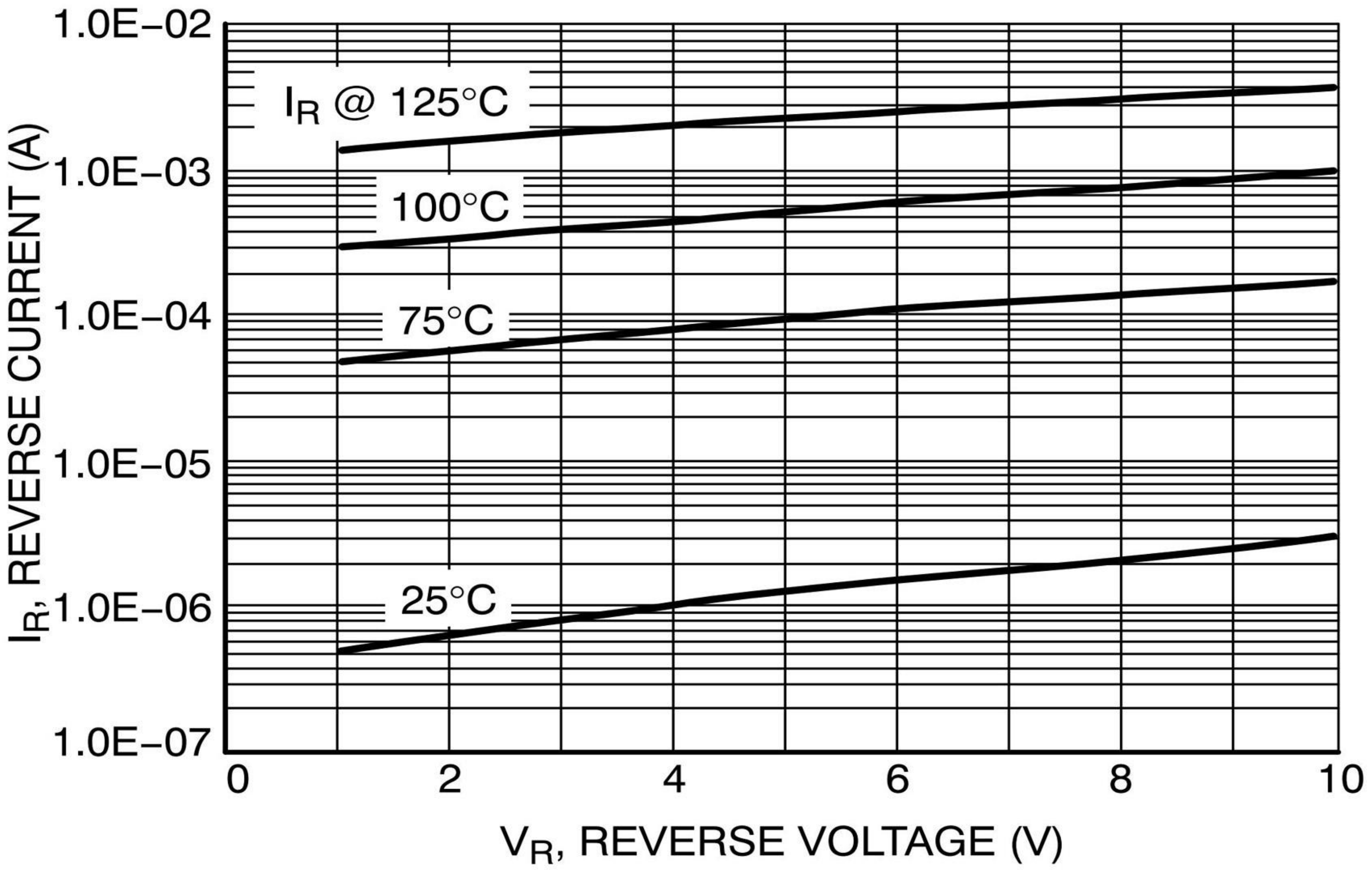


Figure 3. Typical Reverse Current

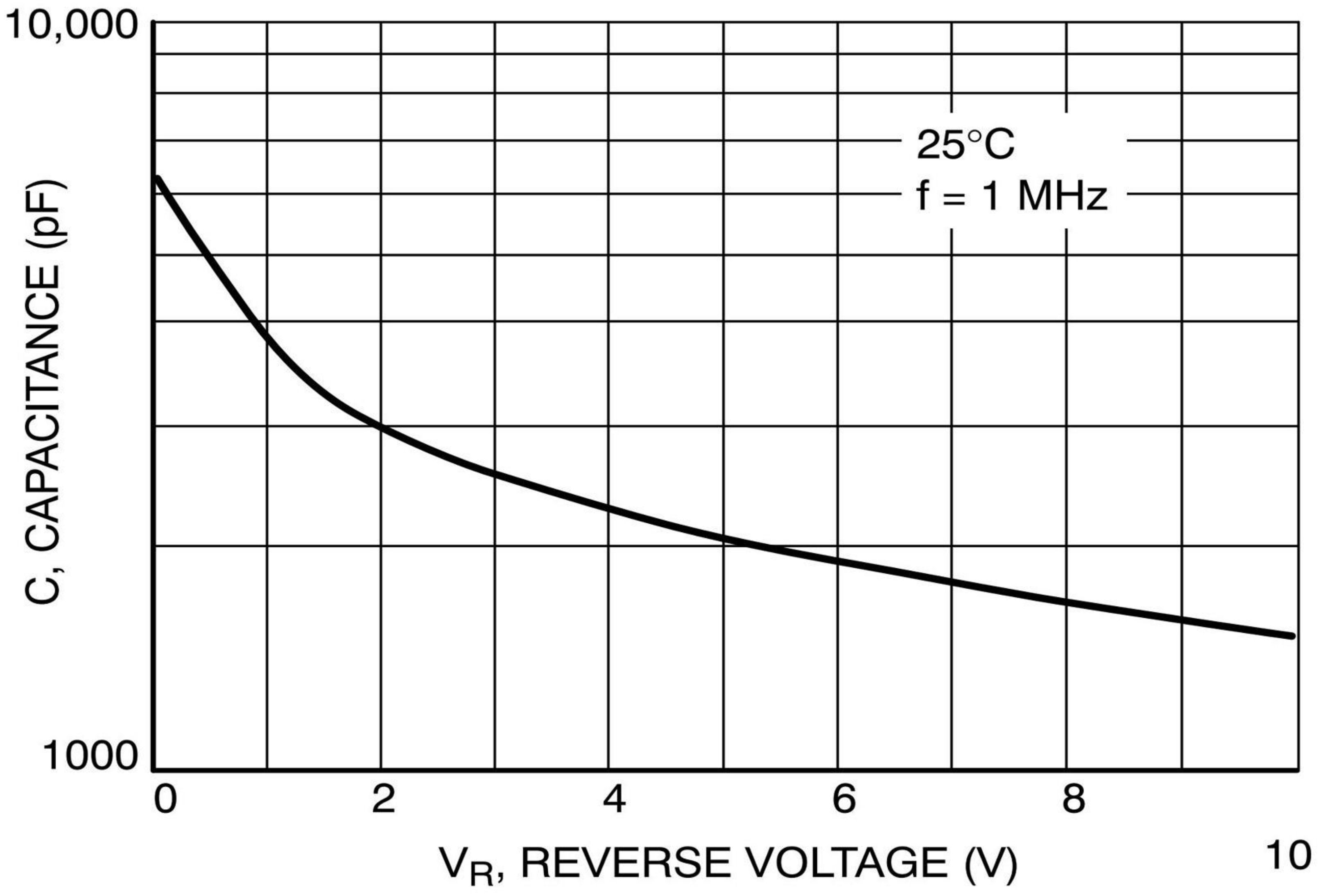


Figure 4. Typical Capacitance

TYPICAL ELECTRICAL CHARACTERISTICS (continued)

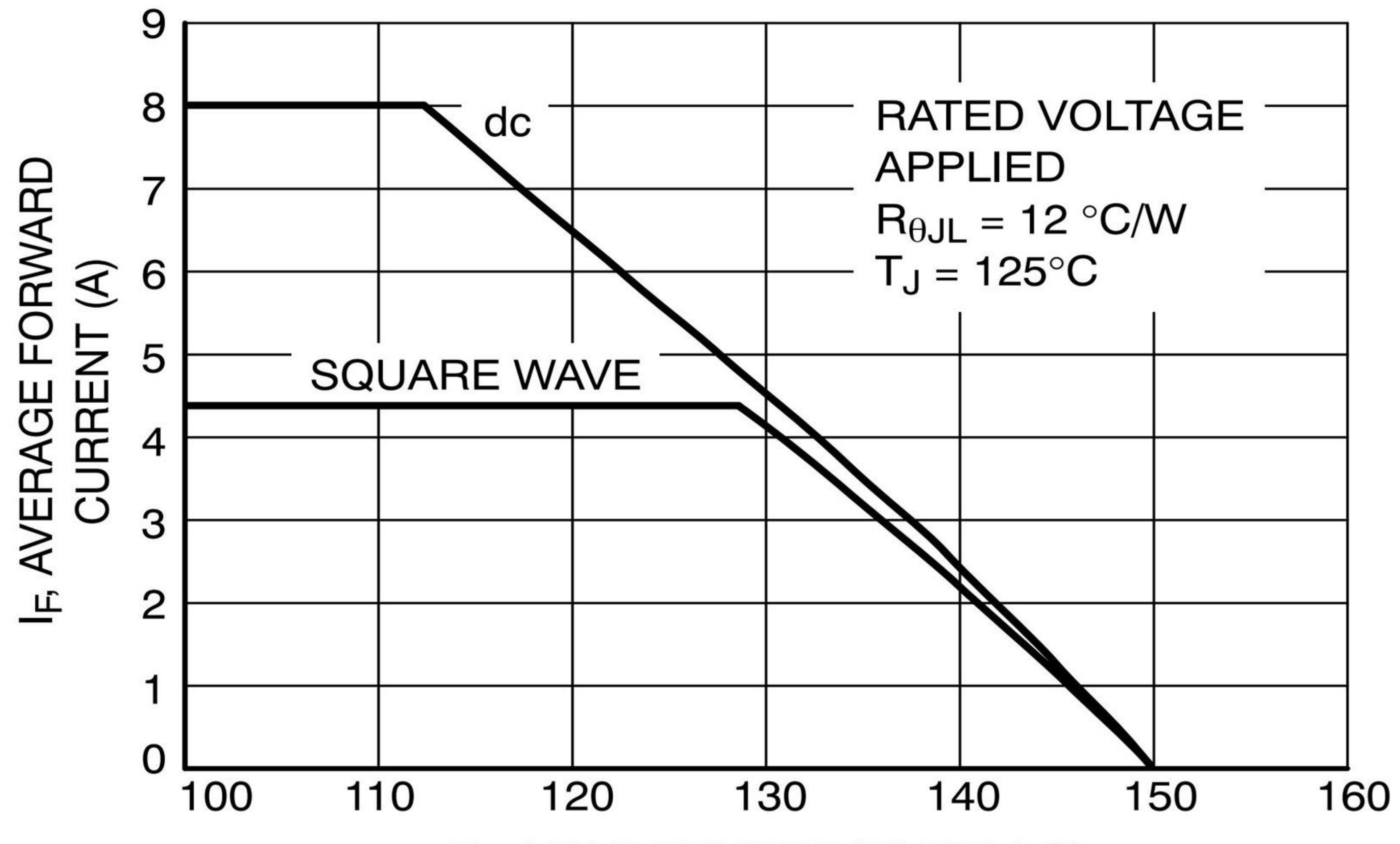


Figure 5. Current Derating, Junction−to−Lead

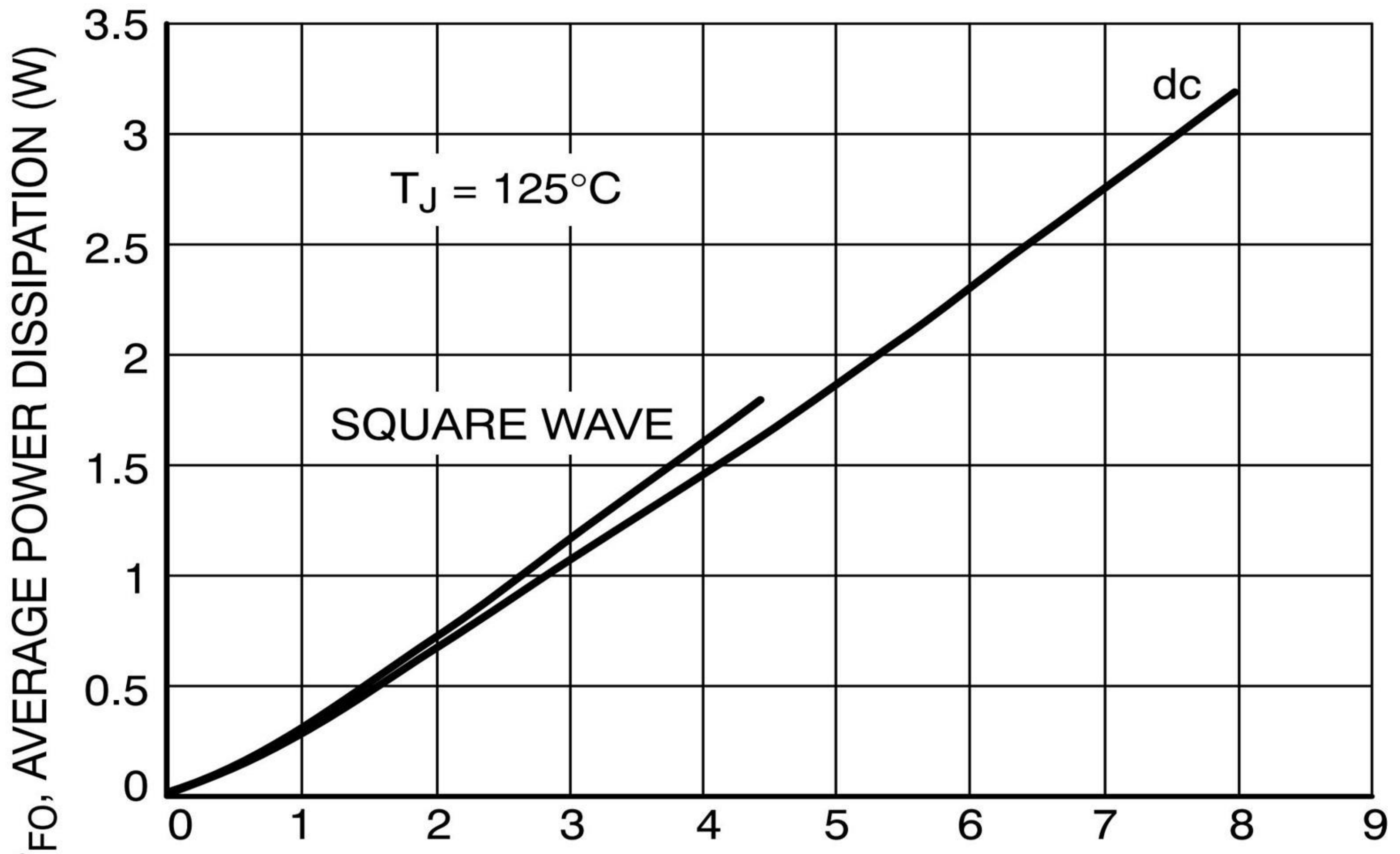


Figure 6. Forward Power Dissipation

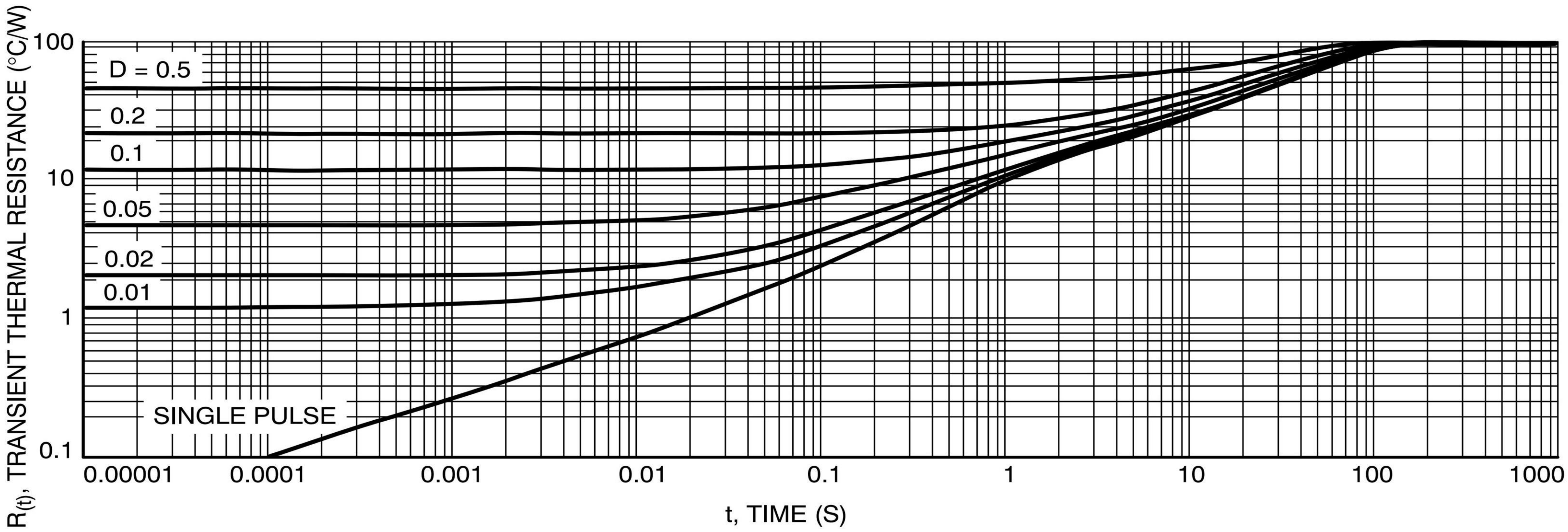


Figure 7. Thermal Response, Junction−to−Ambient (min pad)

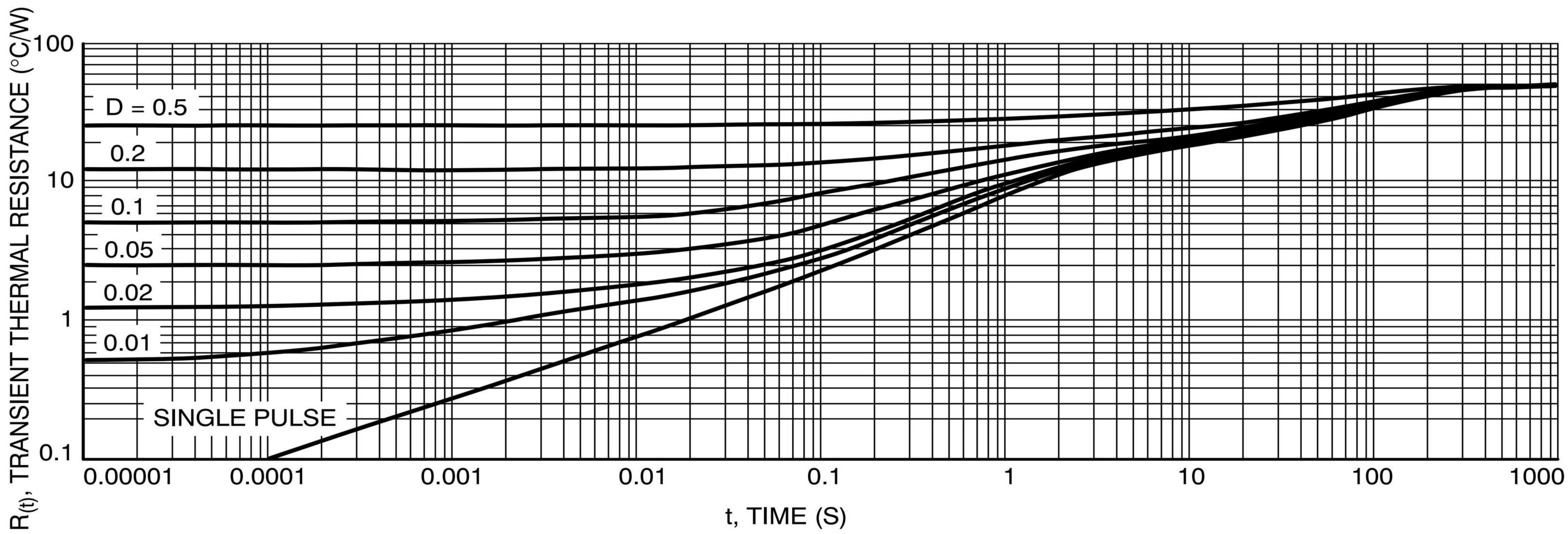
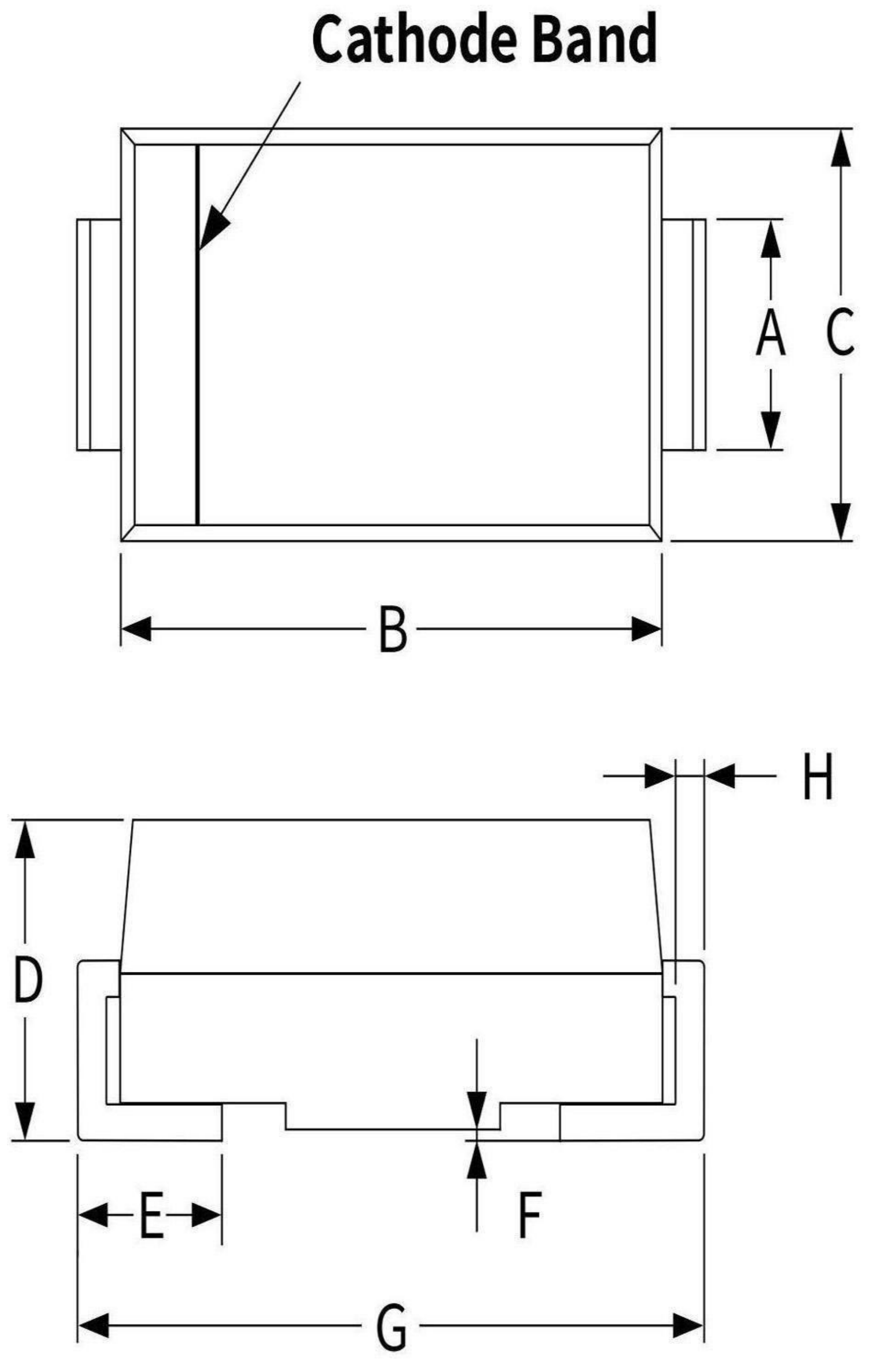


Figure 8. Thermal Response, Junction−to−Ambient (1 inch pad)

Ordering Information

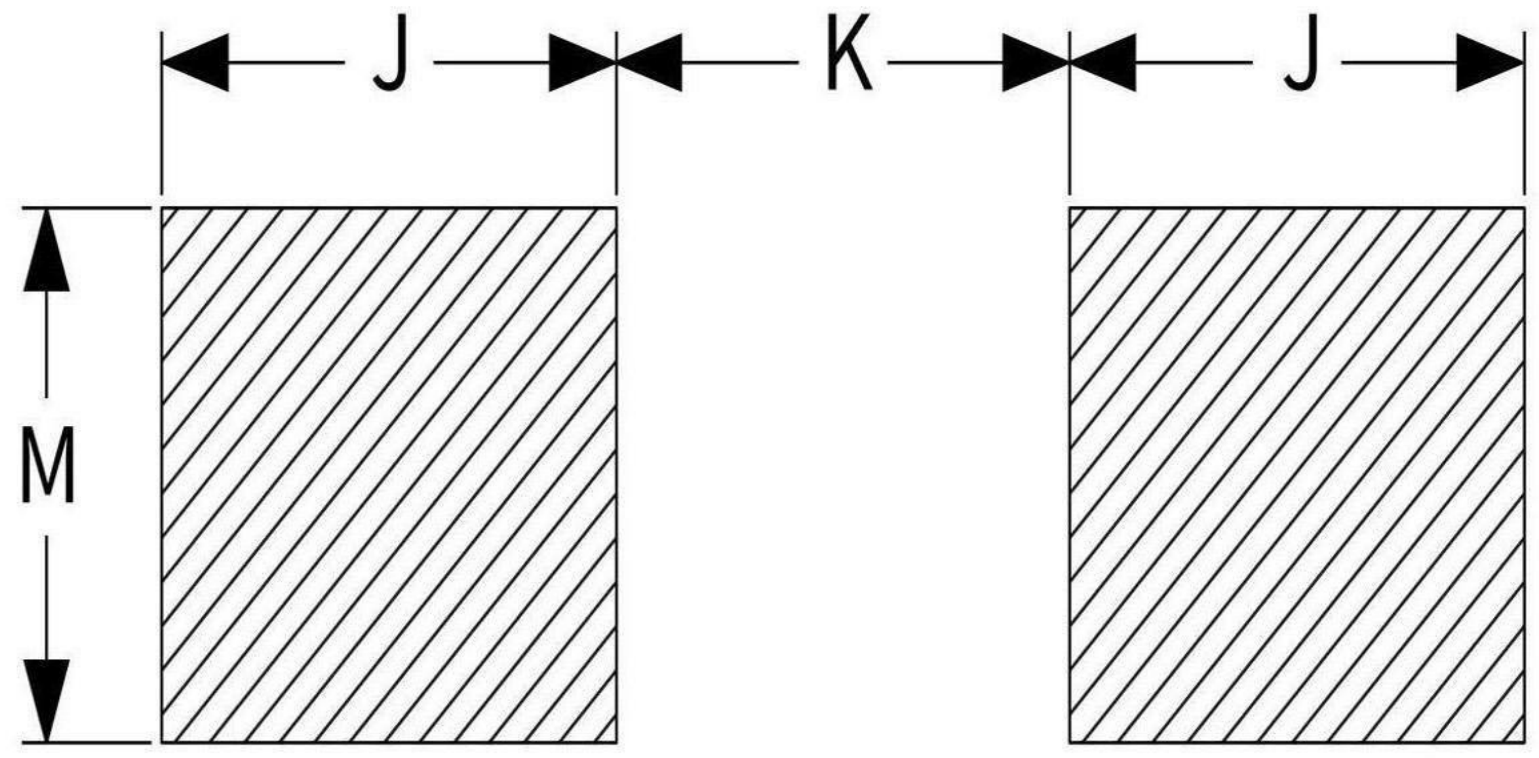
PACKAGE	PACKAGE CODE	UNIT WEIGHT(g)	REEL(pcs)	BOX(pcs)	CARTON(pcs)	DELIVERY MODE
SMC	R3	0.098	2500	5000	25000	13

Package Outline Dimensions (SMC/DO-214AB)



Symbol	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	2.85	3.27	0.112	0.129
B	6.60	7.11	0.261	0.281
C	5.59	6.22	0.221	0.246
D	1.99	2.61	0.078	0.103
E	0.76	1.52	0.030	0.060
F	-	0.20	-	0.008
G	7.75	8.13	0.306	0.321
H	0.15	0.31	0.006	0.012

Suggested Pad Layout



Symbol	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
M	3.82	-	0.151	-
J	3.03	-	0.120	-
K	-	3.84	-	0.152