SS12, SS14

Surface Mount Schottky Power Rectifier

SMA Power Surface Mount Package

These devices employ 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 diodes in surface mount applications where compact size and weight are critical to the system.

Features

- Small Compact Surface Mountable Package with J-Bent Leads
- Rectangular Package for Automated Handling
- Highly Stable Oxide Passivated Junction
- Guardring for Stress Protection
- Pb-Free Packages are Available

Mechanical Characteristics

- Case: Epoxy, Molded
- Epoxy Meets UL 94 V-0 @ 0.125 in
- Weight: 70 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
- Shipped in 12 mm tape, 5000 units per 13 inch reel
- Polarity: Cathode Lead Indicated by Polarity Band
- Device Meets MSL 1 Requirements
- ESD Ratings: Human Body Model, 3B (> 8000 V) Machine Model, B (> 200 V)



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SCHOTTKY BARRIER RECTIFIER 1.0 AMPERES 20, 40 VOLTS



SMA CASE 403D PLASTIC

MARKING DIAGRAM



SS1x = Specific Device Code

x = 2 or 4

A = Assembly Location

Y = Year WW = Work Week = Pb-Free Package

ORDERING INFORMATION

Device	Package	Shipping [†]		
SS12T3	SMA	5000/Tape & Reel		
SS12T3G	SMA (Pb-Free)	5000/Tape & Reel		
SS14T3	SMA	5000/Tape & Reel		
SS14T3G	SMA (Pb-Free)	5000/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.

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
	SS12 V _{RRM} V _{RWM} V _R	20 40	V
Average Rectified Forward Current (At Rated V _R , T _C = 120°C)	Io	1.0	А
Peak Repetitive Forward Current (At Rated V _R , Square Wave, 20 kHz, T _C = 120°C)	I _{FRM}	2.0	А
Non-Repetitive Peak Surge Current (Surge Applied at Rated Load Conditions Halfwave, Single Ph	ase, 60 Hz)	60	А
Storage/Operating Case Temperature	T _{stg} , T _C	−55 to +150	°C
Operating Junction Temperature	T _J	−55 to +150	°C
Voltage Rate of Change (Rated V_R , $T_J = 25$ °C)	dv/dt	10,000	V/µs

Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

THERMAL CHARACTERISTICS

Characteristic	Symbol	Value	Unit
Thermal Resistance,			°C/W
Junction-to-Lead (Note 1)	$R_{ heta JL}$	35	
Thermal Resistance, Junction-to-Ambient (Note 1)	$R_{ heta JA}$	86	

ELECTRICAL CHARACTERISTICS

Maximum Instantaneous Forward Voltage (Note 2)		V _F	T _J = 25°C		V
see Figure 2for other Values	$(I_F = 1.0 A)$		0.47		
Maximum Instantaneous Reverse Current		I _R	T _J = 25°C	T _J = 100°C	mA
see Figure 4 for other Values	$(V_R = 20 \text{ V})$ $(V_R = 40 \text{ V})$		0.045 0.1	2.0 5.0	

- 1. Mounted on 2 in Square PC Board with 1 in Square Total Pad Size, PC Board FR4.
- 2. Pulse Test: Pulse Width \leq 250 $\mu s, \ Duty \ Cycle \leq$ 2.0%.

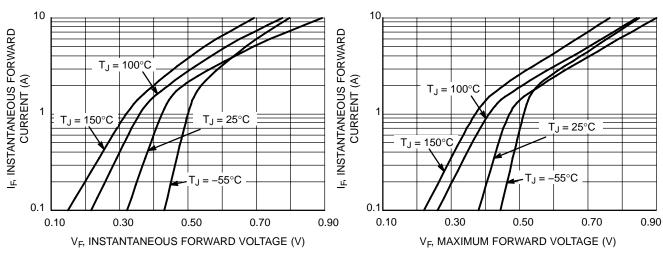


Figure 1. Typical Forward Voltage

Figure 2. Maximum Forward Voltage

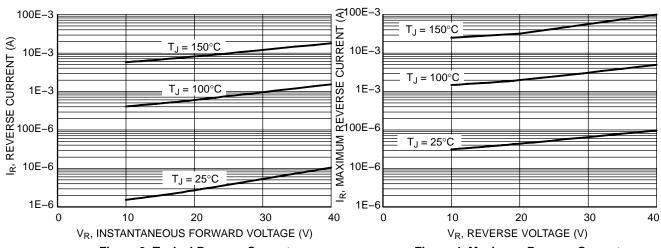


Figure 3. Typical Reverse Current

Figure 4. Maximum Reverse Current

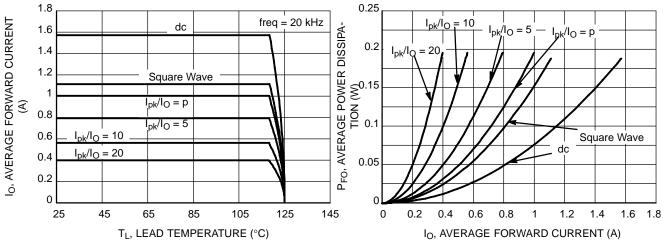


Figure 5. Current Derating

Figure 6. Forward Power Dissipation

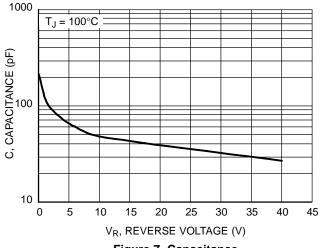


Figure 7. Capacitance

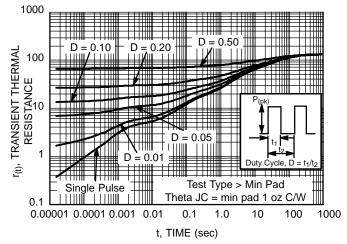
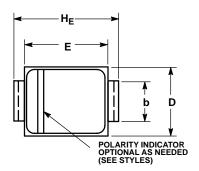


Figure 8. Thermal Response

PACKAGE DIMENSIONS

SMA CASE 403D-02 ISSUE C

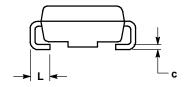


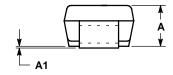


- 1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982. 2. CONTROLLING DIMENSION: INCH.

- 403D-01 OBSOLETE, NEW STANDARD IS 403D-02.

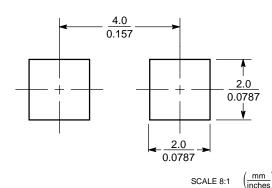
		MILLIMETERS			INCHES		
DII	И	MIN	NOM	MAX	MIN	NOM	MAX
Α		1.91	2.16	2.41	0.075	0.085	0.095
A1		0.05	0.10	0.15	0.002	0.004	0.006
b		1.27	1.45	1.63	0.050	0.057	0.064
С		0.15	0.28	0.41	0.006	0.011	0.016
D		2.29	2.60	2.92	0.090	0.103	0.115
E		4.06	4.32	4.57	0.160	0.170	0.180
H	≣]	4.83	5.21	5.59	0.190	0.205	0.220
L		0.76	1.14	1.52	0.030	0.045	0.060





PIN 1. CATHODE (POLARITY BAND)

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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