

Surface-Mount Glass Passivated Rectifier



SMC (DO-214AB)

Cathode  Anode

LINKS TO ADDITIONAL RESOURCES



PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	3.0 A
V_{RRM}	1200 V
I_{FSM}	110 A
I_R	5 μ A
V_F at $I_F = 3$ A ($T_J = 125$ °C)	0.83 V
T_J max.	150 °C
Package	SMC (DO-214AB)
Circuit configuration	Single

FEATURES

- Ideal for automated placement
- Glass passivated pellet chip junction
- Low forward voltage drop
- Low leakage current
- High forward surge capability
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- AEC-Q101 qualified available
 - Automotive ordering code: base P/NHM3
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



RoHS
COMPLIANT
HALOGEN
FREE

TYPICAL APPLICATIONS

For use in general purpose rectification of power supplies, inverters, converters, and freewheeling diodes for consumer, automotive, and telecommunication.

MECHANICAL DATA

Case: SMC (DO-214AB)

Molding compound meets UL 94 V-0 flammability rating
Base P/N-M3 - halogen-free, RoHS-compliant

Base P/NHM3 - halogen-free, RoHS-compliant, and AEC-Q101 qualified

Terminals: matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

M3 and HM3 suffix meets JESD 201 class 2 whisker test

Polarity: color band denotes cathode end

MAXIMUM RATINGS ($T_A = 25$ °C unless otherwise noted)			
PARAMETER	SYMBOL	S3QS	UNIT
Device marking code		3QS	
Maximum repetitive peak reverse voltage	V_{RRM}	1200	V
Maximum RMS voltage	V_{RMS}	840	V
Maximum DC blocking voltage	V_{DC}	1200	V
Maximum average forward rectified current	$I_{F(AV)}$ ⁽¹⁾	3.0	A
	$I_{F(AV)}$ ⁽²⁾	1.4	A
Non-repetitive peak forward surge current 8.3 ms single sine-wave on rated load	I_{FSM}	110	A
Non-repetitive peak forward surge current 1.0 ms single sine-wave, $T_J = 25$ °C		220	
Operating junction and storage temperature range	T_J, T_{STG}	-55 to +150	°C

Notes

⁽¹⁾ Mounted on 12 mm x 12 mm pad areas, 2 oz. FR4 PCB

⁽²⁾ Free air, mounted on recommended copper pad area

ELECTRICAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage	I _F = 1.5 A	T _J = 25 °C	V _F ⁽¹⁾	0.89	-	V
	I _F = 3.0 A			0.95	1.1	
	I _F = 1.5 A	T _J = 125 °C		0.76	-	
	I _F = 3.0 A			0.83	-	
Reverse current	Rated V _R	T _J = 25 °C	I _R ⁽²⁾	-	5	μA
		T _J = 125 °C		-	250	
Typical reverse recovery time	I _F = 0.5 A, I _R = 1.0 A, I _{rr} = 0.25 A		t _{rr}	2.5	-	μs
Typical junction capacitance	4.0 V, 1 MHz		C _J	30.8	-	pF

Notes

- (1) Pulse test: 300 μs pulse width; 1 % duty cycle
(2) Pulse test: pulse width $\leq 40\text{ ms}$

THERMAL CHARACTERISTICS ($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)			
PARAMETER	SYMBOL	S3QS	UNIT
Typical thermal resistance	$R_{\theta JA}^{(1)(2)}$	90	$^{\circ}\text{C/W}$
	$R_{\theta JM}^{(2)}$	4.8	

Notes

- (1) The heat generated must be less than the thermal conductivity from junction-to-ambient: $dP_D/dT_J < 1/R_{\theta JA}$
(2) Thermal resistance junction-to-ambient to follow JEDEC® 51-2A, device mounted on FR4 PCB, 2 oz. standard footprint
(3) Thermal resistance junction-to-mount to follow JEDEC® 51-14, transient dual interface test method (TDIM)

ORDERING INFORMATION (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
S3QS-M3/I	0.211	I	3500	13" diameter plastic tape and reel
S3QSHM3/I ⁽¹⁾	0.211	I	3500	13" diameter plastic tape and reel

Note

- (1) AEC-Q101 qualified

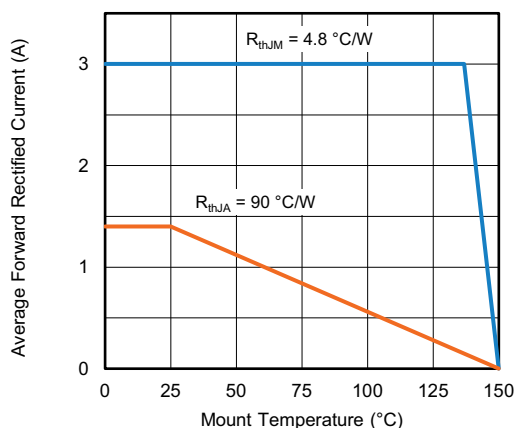
RATINGS AND CHARACTERISTICS CURVES ($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)


Fig. 1 - Forward Current Derating Curve

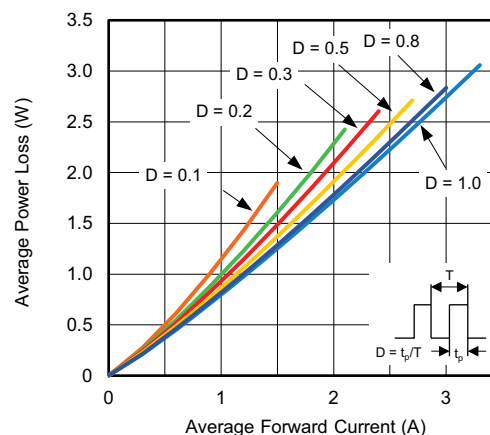


Fig. 2 - Average Power Loss Characteristics

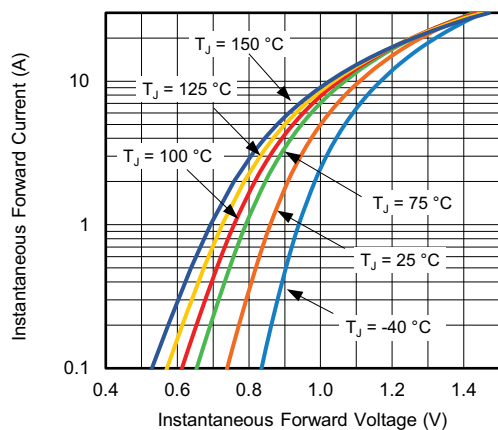


Fig. 3 - Typical Instantaneous Forward Characteristics

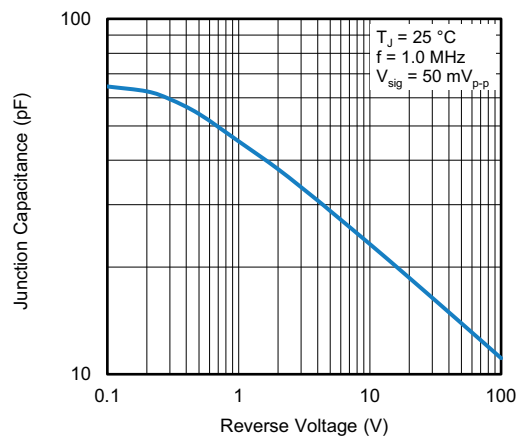


Fig. 5 - Typical Junction Capacitance

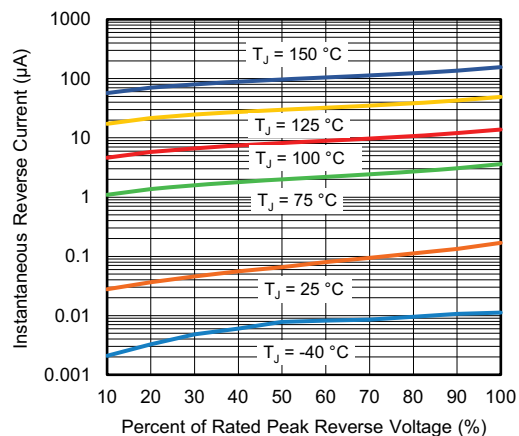


Fig. 4 - Typical Reverse Characteristics

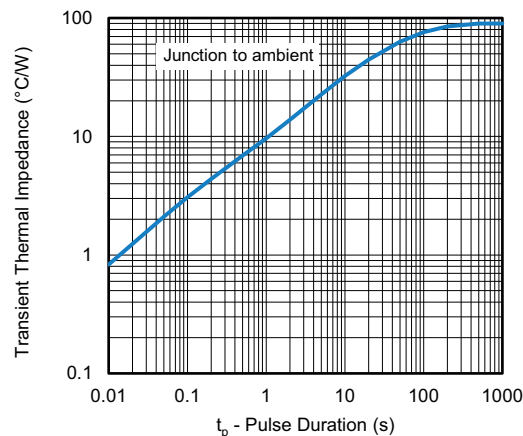
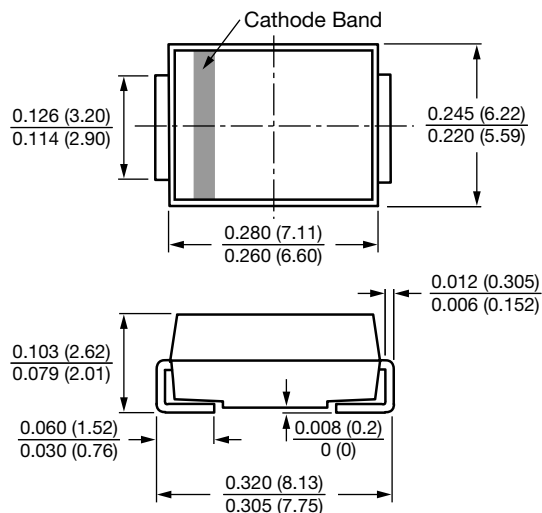


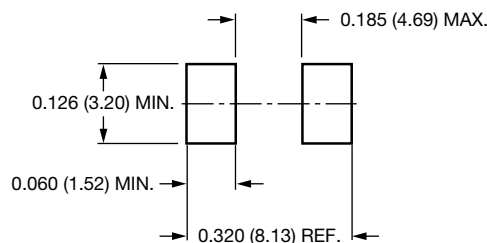
Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SMC (DO-214AB)



Mounting Pad Layout





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