

Surface-Mount Glass Passivated Rectifier



SMC (DO-214AB)

Cathode  Anode

LINKS TO ADDITIONAL RESOURCES



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

**AUTOMOTIVE
GRADE**
Available



**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, commercial grade

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

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	5.0 A
V_{RRM}	1200 V
I_{FSM}	120 A
I_R	5 μ A
V_F at $I_F = 5$ A ($T_J = 125$ °C)	0.88 V
T_J max.	150 °C
Package	SMC (DO-214AB)
Circuit configuration	Single

MAXIMUM RATINGS ($T_A = 25$ °C unless otherwise noted)			
PARAMETER	SYMBOL	S5Q	UNIT
Device marking code		5Q	
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	$I_{F(AV)}^{(1)}$	5.0	A
Maximum average forward rectified current	$I_{F(AV)}^{(2)}$	1.7	
Non-repetitive peak forward surge current 8.3 ms single sine-wave on rated load	I_{FSM}	120	A
Non-repetitive peak forward surge current 1.0 ms single sine-wave, $T_J = 25$ °C		240	
Operating junction and storage temperature range	T_J, T_{STG}	-55 to +150	°C

Notes

(1) Mounted on aluminum PCB 30 mm x 30 mm with aluminum heatsink

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

ELECTRICAL CHARACTERISTICS ($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)					
PARAMETER	TEST CONDITIONS	SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage	$I_F = 2.5\text{ A}$	$V_F^{(1)}$	0.91	-	V
	$I_F = 5.0\text{ A}$		0.98	1.1	
	$I_F = 2.5\text{ A}$		0.79	-	
	$I_F = 5.0\text{ A}$		0.88	-	
Reverse current	Rated V_R	I_R	-	5	μA
			53	250	
Typical reverse recovery time	$I_F = 0.5\text{ A}$, $I_R = 1.0\text{ A}$, $I_{rr} = 0.25\text{ A}$	t_{rr}	3	-	μs
Typical junction capacitance	4.0 V, 1 MHz	C_J	35	-	pF

THERMAL CHARACTERISTICS ($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)			
PARAMETER	SYMBOL	S5Q	UNIT
Typical thermal resistance	$R_{\theta JA}^{(1)(2)}$	90	$^{\circ}\text{C/W}$
	$R_{\theta JM}^{(3)}$	4.6	$^{\circ}\text{C/W}$

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
S5Q-M3/I	0.211	I	3500	13" diameter plastic tape and reel
S5QHM3/I ⁽¹⁾	0.211	I	3500	13" diameter plastic tape and reel

Note

- (1) AEC-Q101 qualified

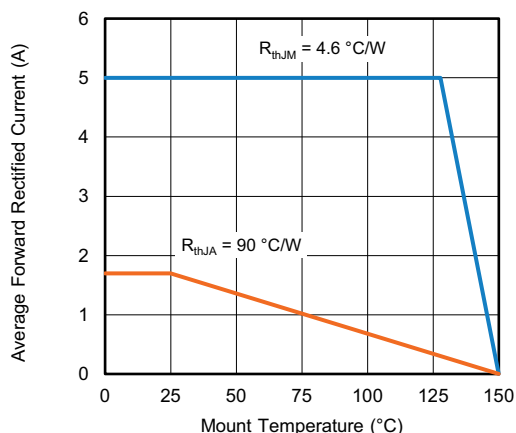
RATINGS AND CHARACTERISTICS CURVES ($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)


Fig. 1 - Forward Current Derating Curve

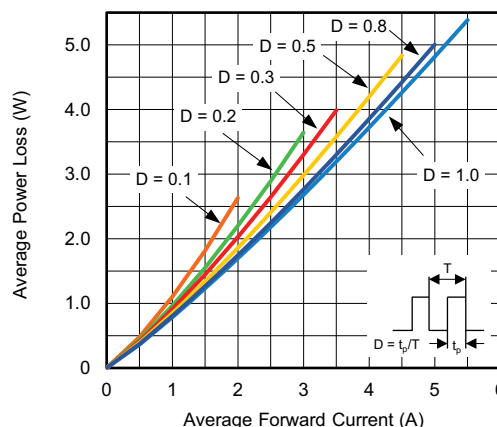


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

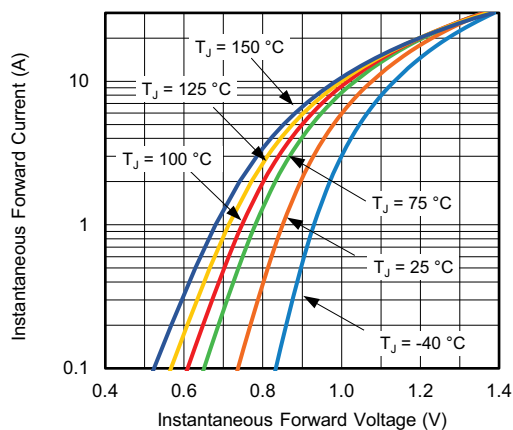


Fig. 3 - Typical Instantaneous Forward Characteristics

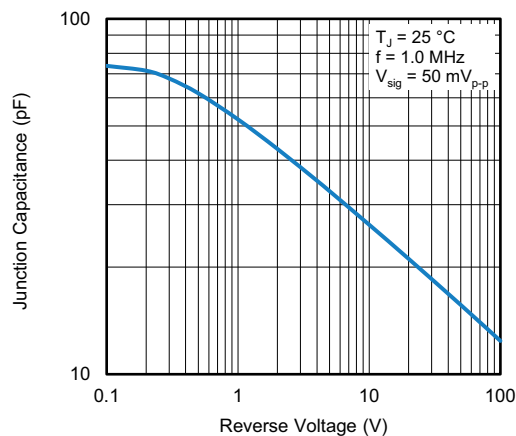


Fig. 5 - Typical Junction Capacitance

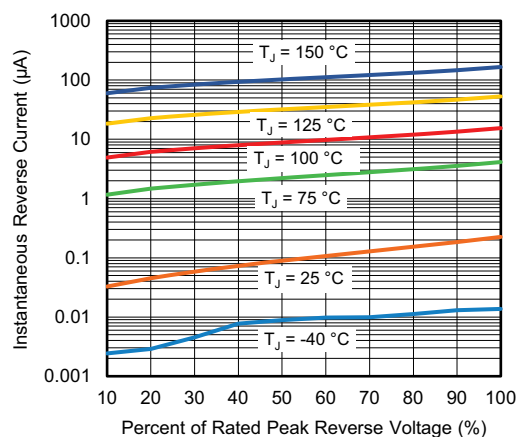


Fig. 4 - Typical Reverse Characteristics

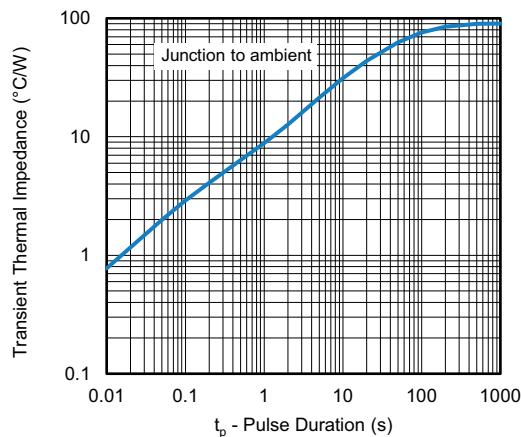
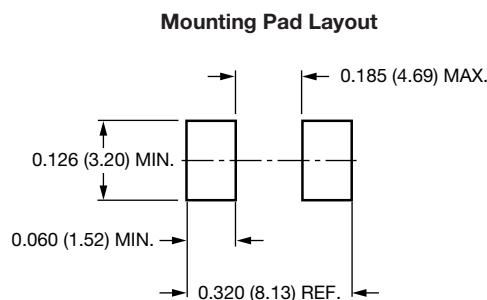
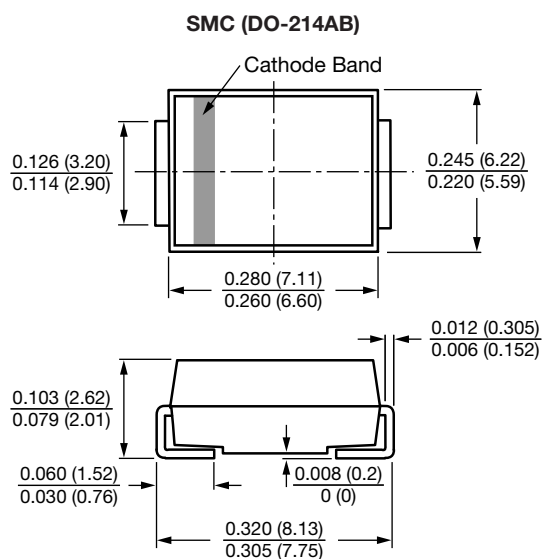


Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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