

Surface-Mount Glass Passivated Rectifier


SMC (DO-214AB)

Cathode ○ —► Anode

LINKS TO ADDITIONAL RESOURCES



3D Models

FEATURES

- Low profile package
- 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, 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 meet JESD 201 class 2 whisker test

Polarity: color band denotes cathode end

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	3.0 A
V_{RRM}	1200 V
I_{FSM}	120 A
I_R	5 μ A
V_F at $I_F = 3$ A ($T_J = 125$ °C)	0.81 V
T_J max.	150 °C
Package	SMC (DO-214AB)
Circuit configuration	Single

MAXIMUM RATINGS ($T_A = 25$ °C unless otherwise noted)			
PARAMETER	SYMBOL	S3Q	UNIT
Device marking code		3Q	
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
	$I_{F(AV)}^{(2)}$	1.7	
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 8 mm x 8 mm pad areas, 2 oz. FR4 PCB

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

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted)							
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT	
Instantaneous forward voltage	$I_F = 1.5\text{A}$	$T_J = 25^\circ\text{C}$	$V_F^{(1)}$	0.87	-	V	
	$I_F = 3.0\text{ A}$			0.93	1.1		
	$I_F = 1.5\text{ A}$	$T_J = 125^\circ\text{C}$		0.74	-		
	$I_F = 3.0\text{ A}$			0.81	-		
Reverse current	Rated V_R	$T_J = 25^\circ\text{C}$	I_R	-	5	μA	
		$T_J = 125^\circ\text{C}$		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 ($T_A = 25^\circ\text{C}$ unless otherwise noted)			
PARAMETER	SYMBOL	S3Q	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
S3Q-M3/I	0.211	I	3500	13" diameter plastic tape and reel
S3QHM3/I ⁽¹⁾	0.211	I	3500	13" diameter plastic tape and reel

Note

- (1) AEC-Q101 qualified

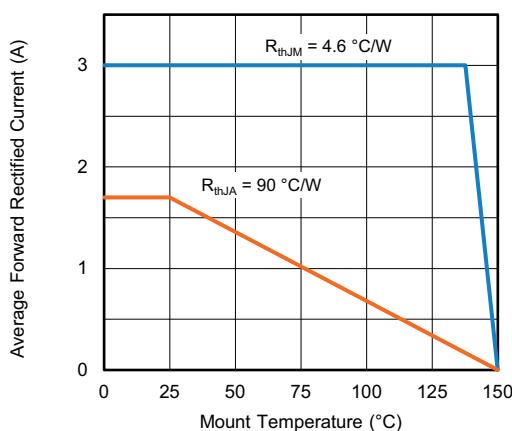
RATINGS AND CHARACTERISTICS CURVES ($T_A = 25^\circ\text{C}$ unless otherwise noted)


Fig. 1 - Forward Current Derating Curve

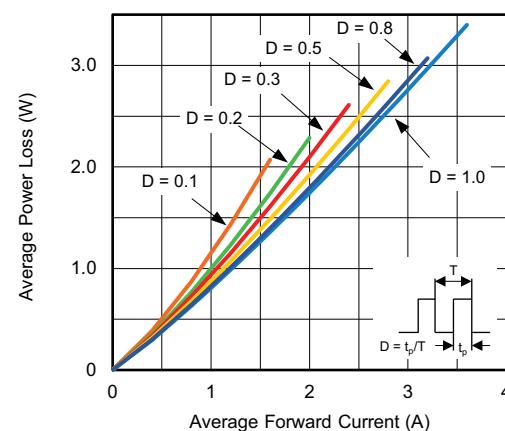


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

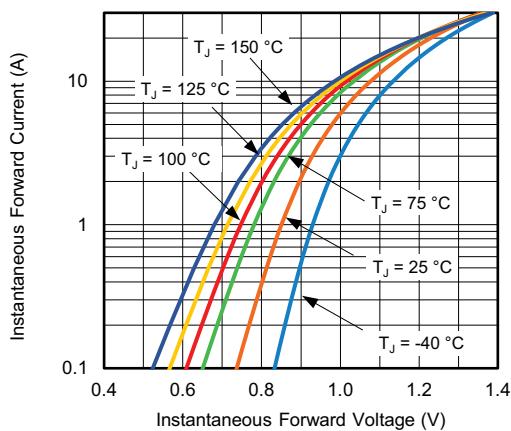


Fig. 3 - Typical Instantaneous Forward Characteristics

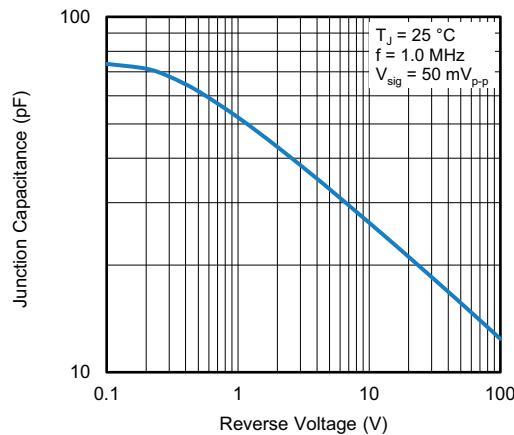


Fig. 5 - Typical Junction Capacitance

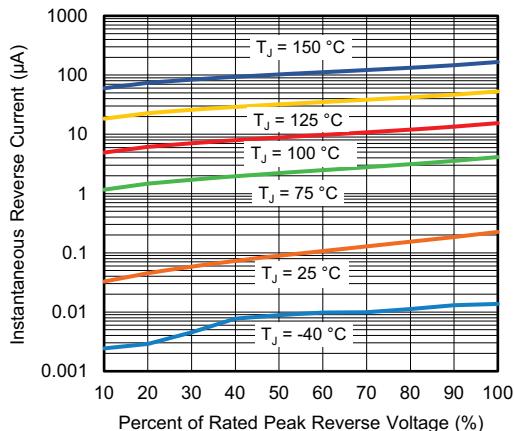


Fig. 4 - Typical Reverse Characteristics

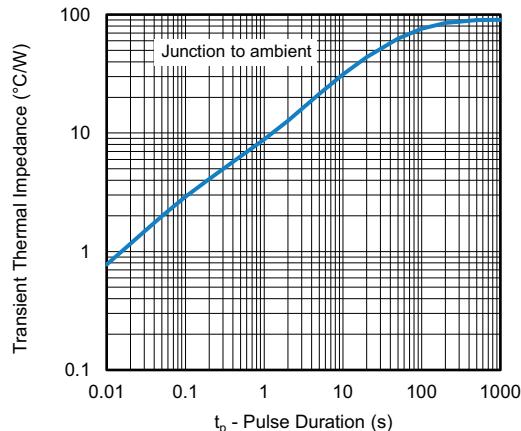
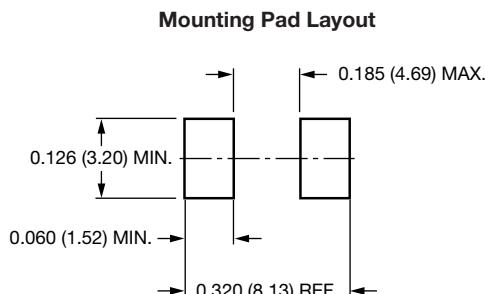
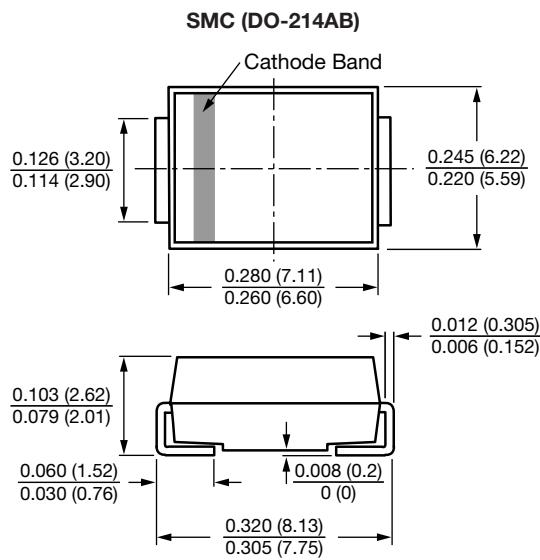


Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)



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