

Surface Mount Ultrafast Plastic Rectifier



SMA (DO-214AC)

FEATURES

- Oxide planar chip junction
- Ultrafast recovery time
- Low forward voltage, low power losses
- High forward surge capability
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



RoHS
COMPLIANT
HALOGEN
FREE

TYPICAL APPLICATIONS

For use in low voltage, high frequency rectifier of switching power supplies, freewheeling diodes, DC/DC converters or polarity protection application.

MECHANICAL DATA

Case: SMA (DO-214AC)

Molding compound meets UL 94 V-0 flammability rating

Base P/N-E3 - RoHS-compliant, commercial grade

Base P/N-M3 - halogen-free, RoHS-compliant, and commercial grade

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

E3 and M3 suffix meets JESD 201 class 2 whisker test

Polarity: color band denotes cathode end

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	1.0 A
V_{RRM}	100 V, 150 V, 200 V
I_{FSM}	30 A
t_{rr}	15 ns
V_F at $I_F = 1.0$ A	0.76 V
T_J max.	150 °C
Package	SMA (DO-214AC)
Circuit configuration	Single

MAXIMUM RATINGS ($T_A = 25$ °C unless otherwise noted)					
PARAMETER	SYMBOL	U1B	U1C	U1D	UNIT
Device marking code		U1B	U1C	U1D	
Maximum repetitive peak reverse voltage	V_{RRM}	100	150	200	V
Maximum average forward rectified current (fig. 1)	$I_{F(AV)}$	1.0			A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I_{FSM}	30			A
Operating junction and storage temperature range	T_J, T_{STG}	-55 to +150			°C

ELECTRICAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage	I _F = 0.6 A	T _A = 25 °C	V _F ⁽¹⁾	0.82	0.87	V
	I _F = 1.0 A			0.87	0.92	
	I _F = 0.6 A	T _A = 100 °C		0.71	0.78	
	I _F = 1.0 A			0.76	0.84	
Reverse current	Rated V _R	T _A = 25 °C	I _R ⁽²⁾	-	5.0	μA
		T _A = 100 °C		55	100	
Reverse recovery time	I _F = 0.5 A, I _R = 1.0 A, I _{rr} = 0.25 A	T _A = 25 °C	t _{rr}	-	15	ns
	I _F = 0.6 A, dI/dt = 50 A/μs, V _R = 30 V, I _{rr} = 0.1 I _{RM}	T _A = 25 °C		24	-	
		T _A = 100 °C		29	-	
Storage charge	I _F = 0.6 A, dI/dt = 50 A/μs, V _R = 30 V, I _{rr} = 0.1 I _{RM}	T _A = 25 °C	Q _{rr}	7	-	nC
		T _A = 100 °C		13	-	
Typical junction capacitance	4.0 V, 1 MHz		C _J	6.8	-	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 °C unless otherwise noted)					
PARAMETER	SYMBOL	U1B	U1C	U1D	UNIT
Typical thermal resistance	R _{θJA} ⁽¹⁾	115			°C/W
	R _{θJM} ⁽¹⁾	22			

Note

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

ORDERING INFORMATION (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
U1D-E3/61T	0.064	61T	1800	7" diameter plastic tape and reel
U1D-E3/5AT	0.064	5AT	7500	13" diameter plastic tape and reel
U1D-M3/61T	0.064	61T	1800	7" diameter plastic tape and reel
U1D-M3/5AT	0.064	5AT	7500	13" diameter plastic tape and reel

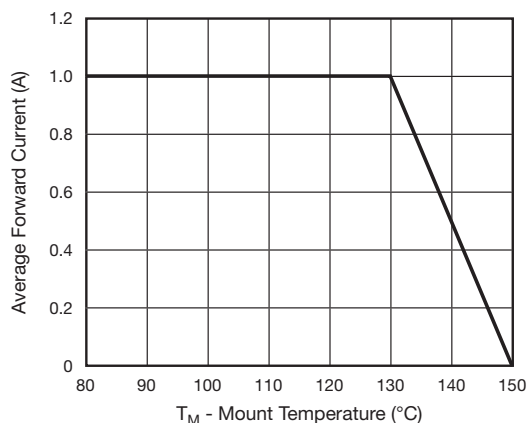
RATINGS AND CHARACTERISTICS CURVES ($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)


Fig. 1 - Forward Derating Curve

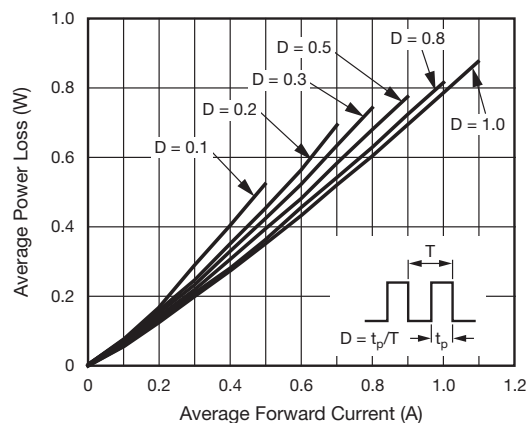


Fig. 2 - Forward Power Loss Characteristics

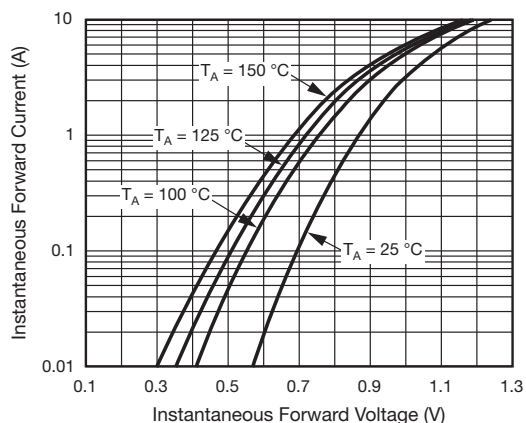


Fig. 3 - Typical Instantaneous Forward Characteristics

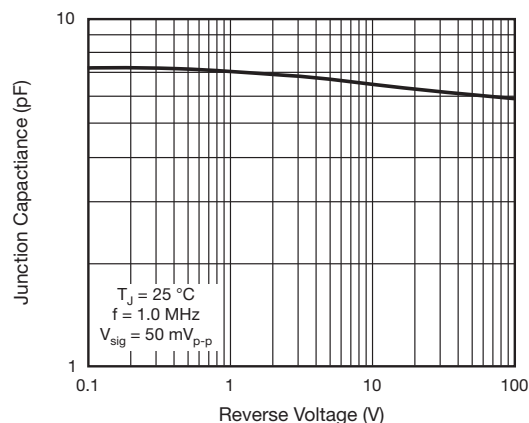


Fig. 5 - Typical Junction Capacitance

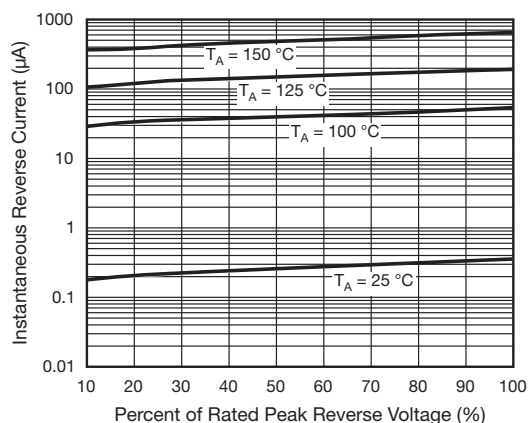


Fig. 4 - Typical Reverse Characteristics

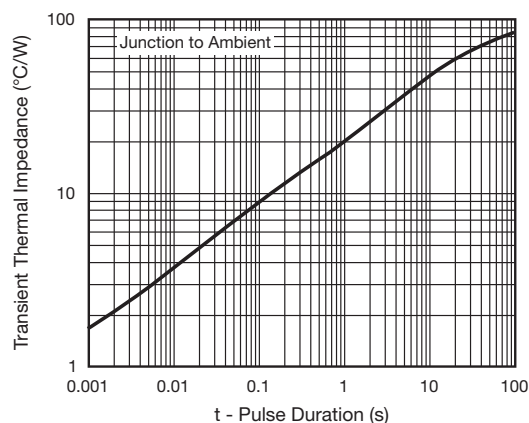
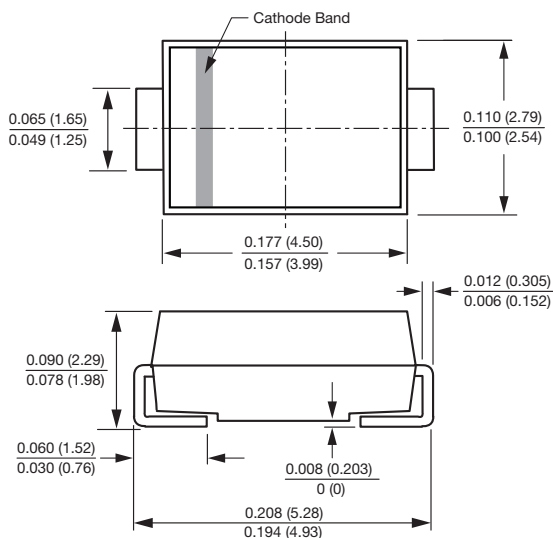
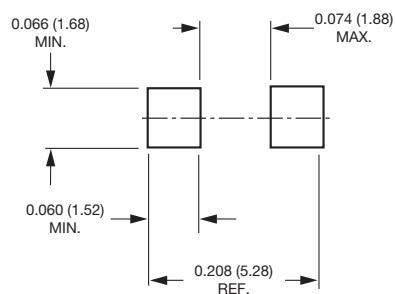


Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SMA (DO-214AC)

Mounting Pad Layout




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