

Surface Mount Ultrafast Plastic Rectifier



DO-214AC (SMA)

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
- Solder dip 260 °C, 40 s
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC


RoHS
COMPLIANT

TYPICAL APPLICATIONS

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

MECHANICAL DATA

Case: DO-214AC (SMA)

Epoxy meets UL 94V-0 flammability rating

Terminals: Matte tin plated leads, solderable per J-STD-002 and JESD22-B102

E3 suffix for consumer grade, meets JESD 201 class 1A 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

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 ⁽¹⁾	I _F = 0.6 A I _F = 1.0 A	T _A = 25 °C	V _F	0.82 0.87	0.87 0.92	V
	I _F = 0.6 A I _F = 1.0 A	T _A = 100 °C		0.71 0.76	0.78 0.84	
Reverse current ⁽²⁾	rated V _R	T _A = 25 °C T _A = 100 °C	I _R	- 55	5.0 100	μA
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 T _A = 100 °C	t _{rr}	24 29	- -	ns
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 T _A = 100 °C	Q _{rr}	7 13	- -	nC
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 ($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)					
PARAMETER	SYMBOL	U1B	U1C	U1D	UNIT
Typical thermal resistance ⁽¹⁾	$R_{\theta JA}$ $R_{\theta JM}$		115 22		$^{\circ}\text{C}/\text{W}$

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

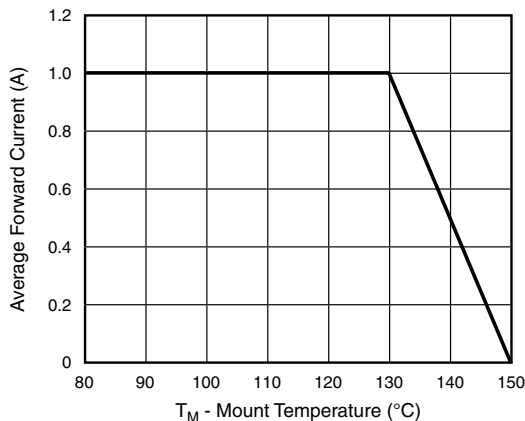
RATINGS AND CHARACTERISTICS CURVES($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)

Figure 1. Forward Derating Curve

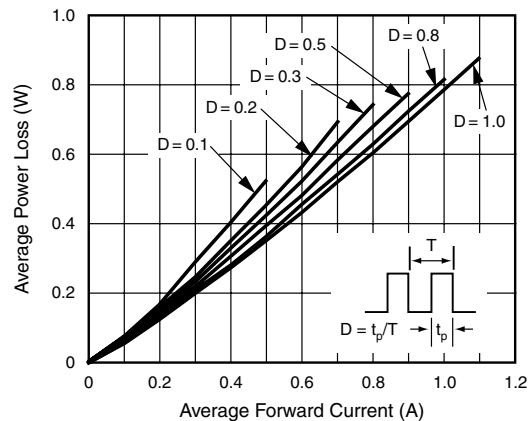


Figure 2. Forward Power Loss Characteristics

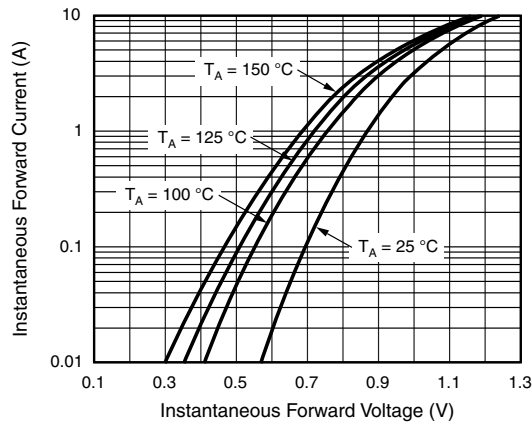


Figure 3. Typical Instantaneous Forward Characteristics

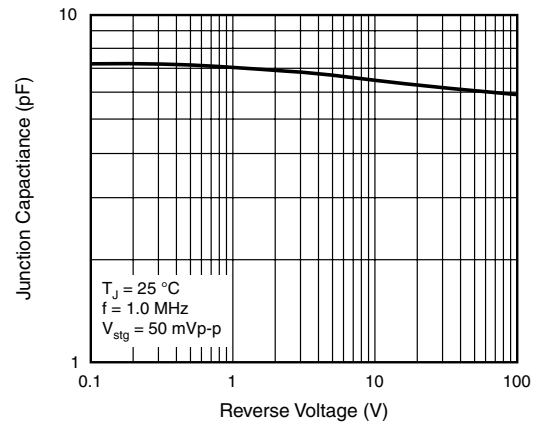


Figure 5. Typical Junction Capacitance

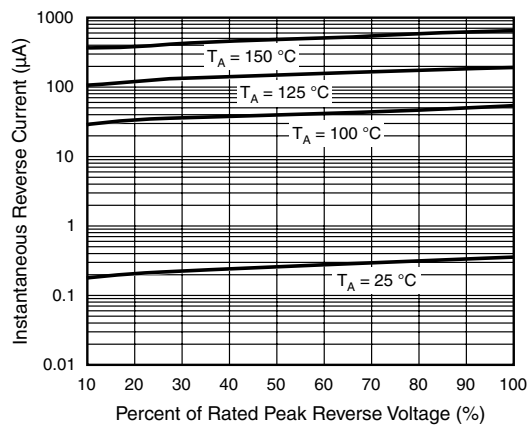


Figure 4. Typical Reverse Characteristics

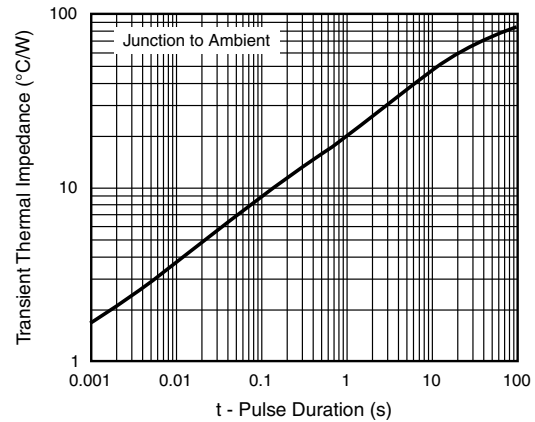
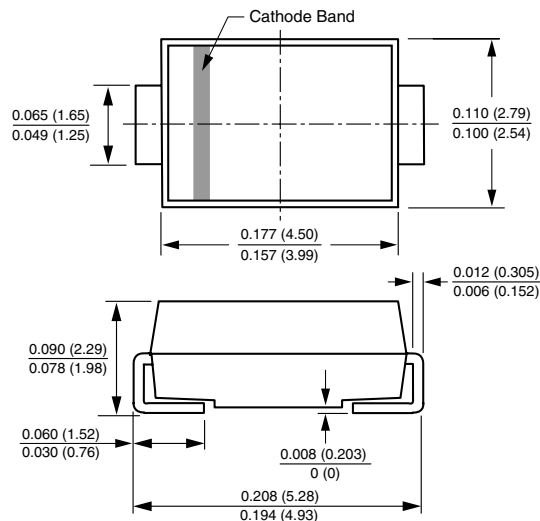


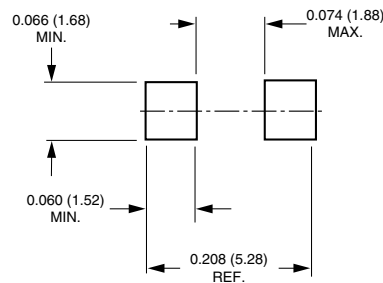
Figure 6. Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-214AC (SMA)



Mounting Pad Layout





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