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.

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

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

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 ≤ 40 ms

THERMAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)					
PARAMETER	**SYMBOL**	**U1B**	**U1C**	**U1D**	**UNIT**
Typical thermal resistance (1)	$R_{\theta JA}$ $R_{\theta JM}$	115 22			°C/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 °C unless otherwise noted)

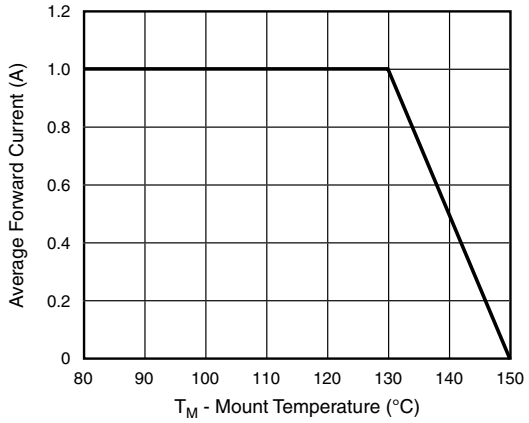


Figure 1. Forward Derating Curve

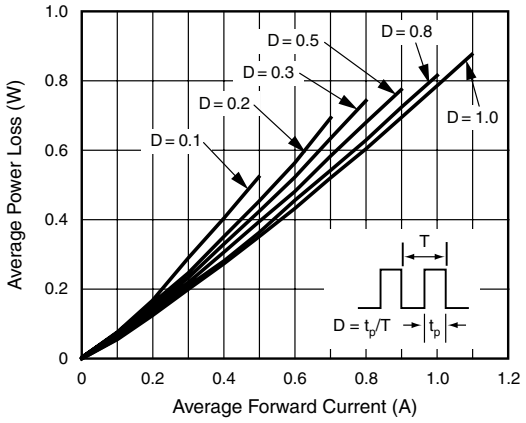


Figure 2. Forward Power Loss Characteristics

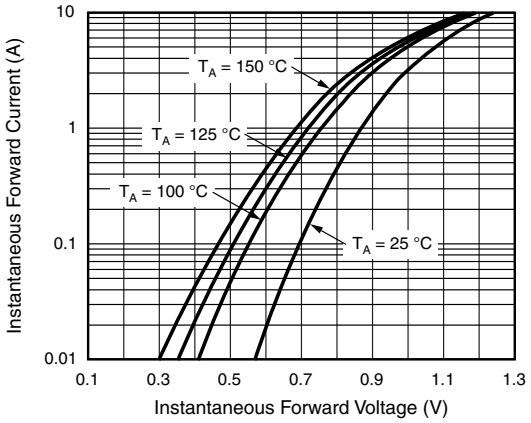


Figure 3. Typical Instantaneous Forward Characteristics

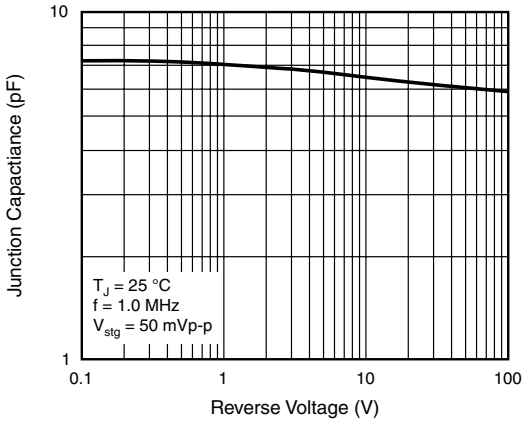


Figure 5. Typical Junction Capacitance

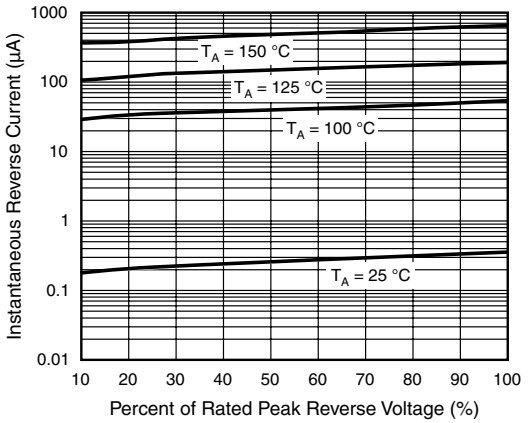


Figure 4. Typical Reverse Characteristics

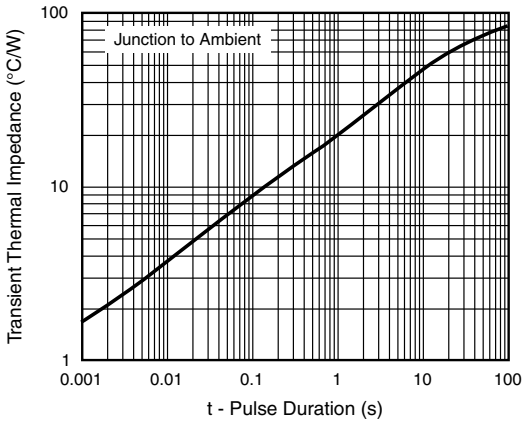
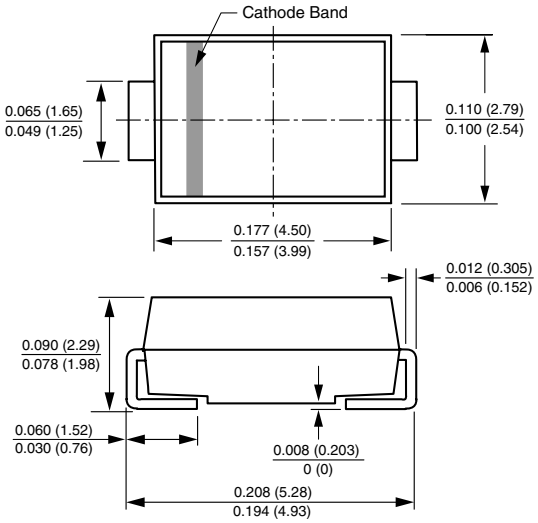


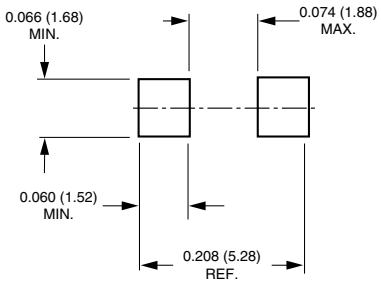
Figure 6. Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-214AC (SMA)



Mounting Pad Layout



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