Surface Mount Ultrafast Plastic Rectifier

DO-214AC (SMA)

FEATURES

- Low profile package
- Ideal for automated placement
- Glass passivated chip junction
- Ultrafast recovery times for high efficiency
- Low forward voltage, low power losses
- High forward surge capability
- Meets MSL level 1, per J-STD-020C, LF max peak of 260 °C
- Solder Dip 260 °C, 40 seconds
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC

TYPICAL APPLICATIONS

For use in high frequency rectification and free-wheeling application in switching mode converters and inverters for consumer, computer, automotive and telecommunication.

MECHANICAL DATA

Case: DO-214AC (SMA)

Epoxy meets UL 94V-0 flammability rating

Terminals: Matte tin plated leads, solderable per J-STD-002B and JESD22-B102D

E3 suffix for commercial grade, HE3 suffix for high reliability grade (AEC Q101 qualified)

Polarity: Color band denotes cathode end

MAJOR RATINGS AND CHARACTERISTICS	
$I_{F(AV)}$	1.0 A
V_{RRM}	50 V to 200 V
I_{FSM}	30 A
t_{rr}	15 ns
V_F	0.92 V
T_j max.	150 °C

MAXIMUM RATINGS (T_A = 25 °C unless otherwise noted)

PARAMETER	SYMBOL	ES1A	ES1B	ES1C	ES1D	UNIT
Device marking code		EA	EB	EC	ED	
Maximum repetitive peak reverse voltage	V_{RRM}	50	100	150	200	V
Maximum RMS voltage	V_{RMS}	35	70	105	140	V
Maximum DC blocking voltage	V_{DC}	50	100	150	200	V
Maximum average forward rectified current (Fig. 1)	$I_{F(AV)}$	1				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**	**VALUE**	**UNIT**
Maximum instantaneous forward voltage	at I_F = 0.6 A (1) at I_F = 1.0 A	V_F	0.865 0.920	V
Maximum DC reverse current at rated DC blocking voltage	T_A = 25 °C T_A = 100 °C	I_R	5.0 100	µA
Maximum reverse recovery time	I_F = 0.5 A, I_R = 1.0 A, I_{rr} = 0.25 A	t_{rr}	15	ns
Maximum reverse recovery time	I_F = 0.6 A, V_R = 30 V, di/dt = 50 A/µs, I_{rr} =10 % I_{RM} T_j = 25 °C T_j = 100 °C	t_{rr}	25 35	ns
Maximum stored charge	I_F = 0.6 A, V_R = 30 V, di/dt = 50 A/µs, I_{rr} =10 % I_{RM} T_j = 25 °C T_j = 100 °C	Q_{rr}	10 25	nC
Typical junction capacitance	at 4.0 V, 1 MHz	C_J	10	pF

Note:

(1) Pulse test: 300 µs pulse width, 1 % duty cycle

THERMAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)						
PARAMETER	**SYMBOL**	**ES1A**	**ES1B**	**ES1C**	**ES1D**	**UNIT**
Typical thermal resistance (1)	$R_{\theta JA}$ $R_{\theta JL}$	85 35				°C/W

Note:

(1) Units mounted on P.C.B. 5.0 x 5.0 mm (0.013 mm thick) land areas

ORDERING INFORMATION (Example)				
PREFERRED P/N	**UNIT WEIGHT (g)**	**PREFERRED PACKAGE CODE**	**BASE QUANTITY**	**DELIVERY MODE**
ES1D-E3/61T	0.064	61T	1800	7" Diameter Plastic Tape & Reel
ES1D-E3/5AT	0.064	5AT	7500	13" Diameter Plastic Tape & Reel
ES1DHE3/61T (1)	0.064	61T	1800	7" Diameter Plastic Tape & Reel
ES1DHE3/5AT (1)	0.064	5AT	7500	13" Diameter Plastic Tape & Reel

Note:

(1) Automotive grade AEC Q101 qualified

RATINGS AND CHARACTERISTICS CURVES

(T_A = 25 °C unless otherwise noted)

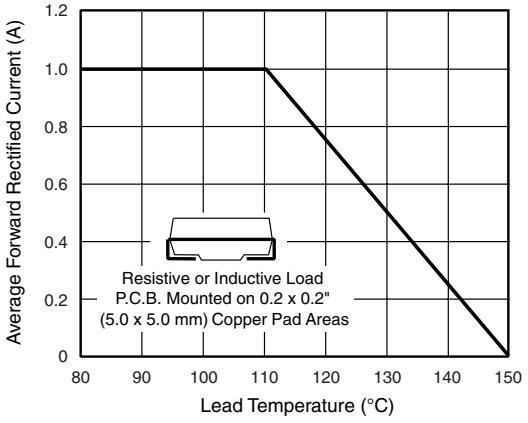


Figure 1. Maximum Forward Current Derating Curve

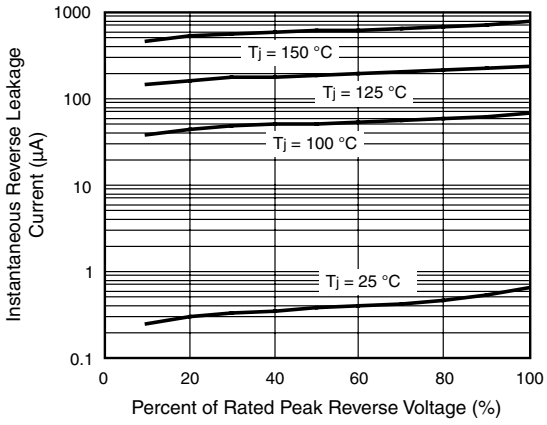


Figure 4. Typical Reverse Leakage Characteristics

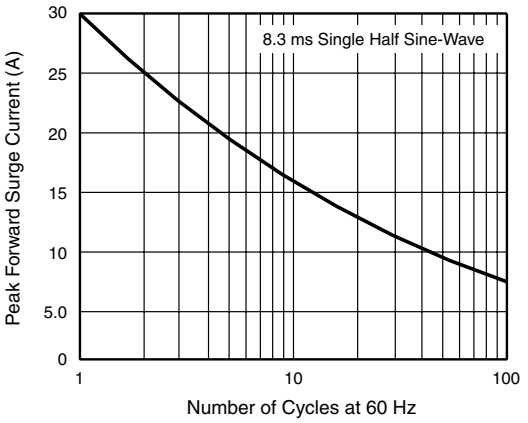


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current

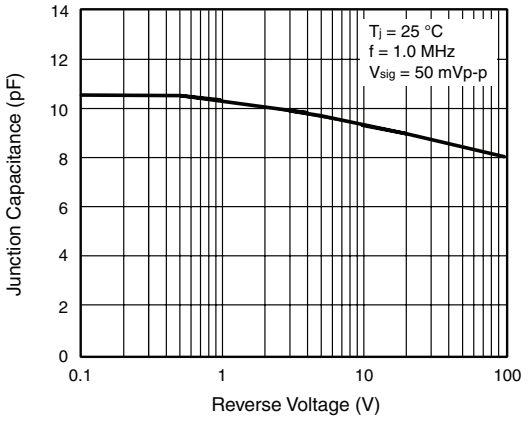


Figure 5. Typical Junction Capacitance

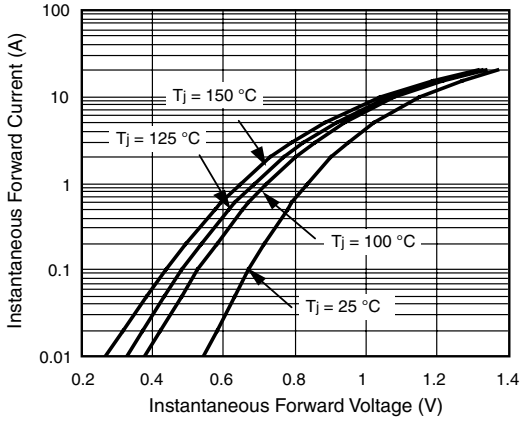


Figure 3. Typical Instantaneous Forward Characteristics

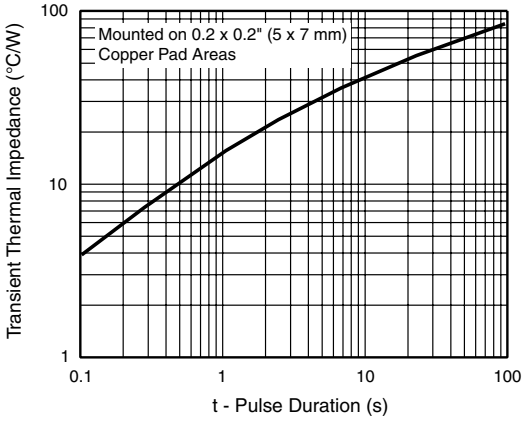
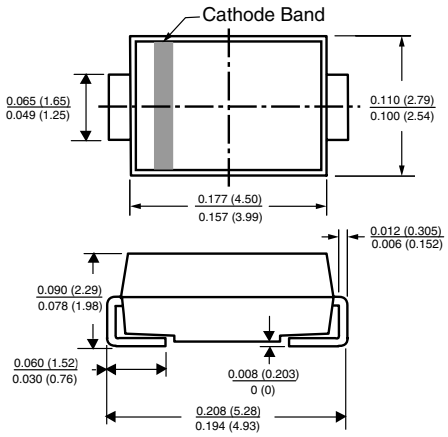


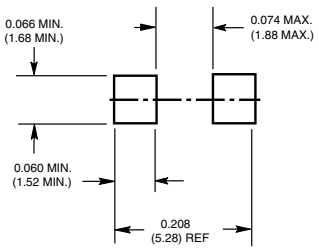
Figure 6. Typical Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-214AC (SMA)



Mounting Pad Layout



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