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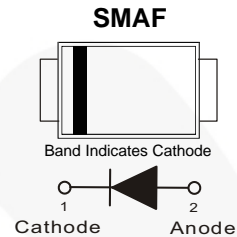


October 2015

ES1DAF / ES1JAF Surface Mount Ultrafast Rectifier

Features

- Fast Switching Speed – Maximum T_{rr} 35 ns
 - Ultra Thin Profile - Maximum Height of 1.0 mm
 - Glass Passivated Junction
 - UL Flammability 94V-0 Classification
 - MSL 1
 - RoHS Compliant / Green Mold Compound
 - Industrial Device Qualified per AEC-Q101 Standards.
- * see authorized use policy



Ordering Information

Part Number	Top Mark	Package	Packing Method
ES1DAF	ES1DAF	DO-214AD (SMAF)	Tape and Reel
ES1JAF	ES1JAF	DO-214AD (SMAF)	Tape and Reel

Absolute Maximum Ratings

Stresses exceeding the absolute maximum ratings may damage the device. The device may not function or be operable above the recommended operating conditions and stressing the parts to these levels is not recommended. In addition, extended exposure to stresses above the recommended operating conditions may affect device reliability. The absolute maximum ratings are stress ratings only. Values are at $T_A = 25^\circ\text{C}$ unless otherwise noted.

Symbol	Parameter	Value		Unit
		ES1DAF	ES1JAF	
V_{RRM}	Recurrent Peak Reverse Voltage	200	600	V
V_{RMS}	RMS Voltage	140	420	V
V_R	DC Blocking Voltage	200	600	V
$I_{F(AV)}$	Average Forward Current	1		A
I_{FSM}	Peak Forward Surge Current: 8.3 ms Single Half Sine-Wave Superimposed on Rated Load	30		A
T_J	Operating Junction Temperature Range	-55 to +150		$^\circ\text{C}$
T_{STG}	Storage Temperature Range	-55 to +150		$^\circ\text{C}$

ES1DAF / ES1JAF — Surface Mount Ultrafast Rectifier

Thermal Characteristics

Values are at $T_A = 25^\circ\text{C}$ unless otherwise noted.

Symbol	Parameter	Value	Unit
ψ_{JL}	Typical Thermal Characteristics, Junction-to-Lead ⁽¹⁾	24	$^\circ\text{C}/\text{W}$
$R_{\theta JA}$	Typical Thermal Resistance, Junction-to-Ambient ⁽²⁾	150	$^\circ\text{C}/\text{W}$

Notes:

1. Mounted on an FR4 PCB, single-sided copper, with 48cm^2 copper pad area.
2. Mounted on an FR4 PCB, single-sided copper, mini pad.

Electrical Characteristics

Values are at $T_A = 25^\circ\text{C}$ unless otherwise noted.

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V_F	Forward Voltage	$I_F = 1\text{ A}$	ES1DAF		0.95	V
			ES1JAF		1.70	
I_R	Reverse Current	$V_R = V_{DC}$			1	μA
t_{rr}	Reverse Recovery Time	$I_F = 0.5\text{ A}$, $I_R = 1\text{ A}$, $I_{rr} = 0.25\text{ A}$			34	ns
C_J	Junction Capacitance	$V_R = 4\text{ V}$, $f = 1\text{ MHz}$		15		pF

Typical Performance Characteristics

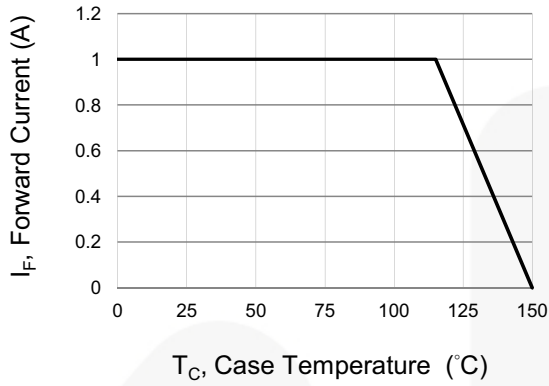


Figure 1. Forward Current Derating Curve

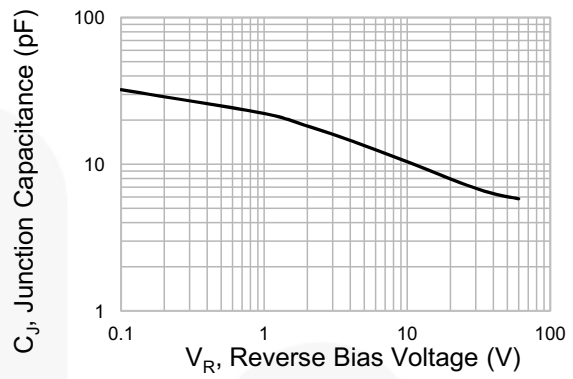


Figure 2. Typical Junction Capacitance

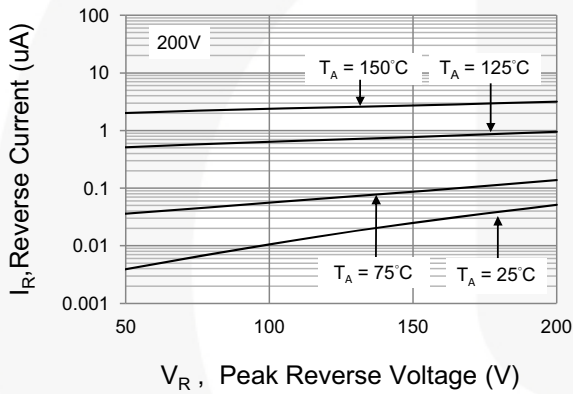


Figure 3. Typical Reverse Characteristics

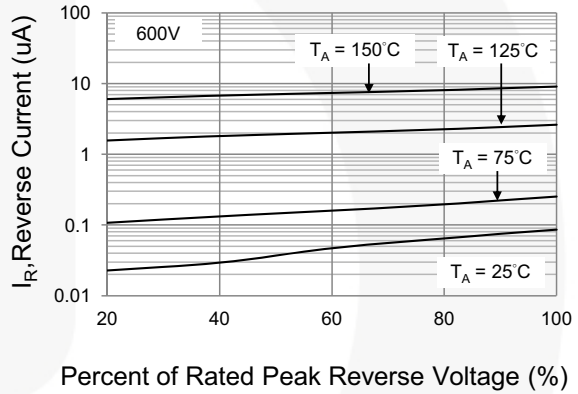


Figure 4. Typical Reverse Characteristics

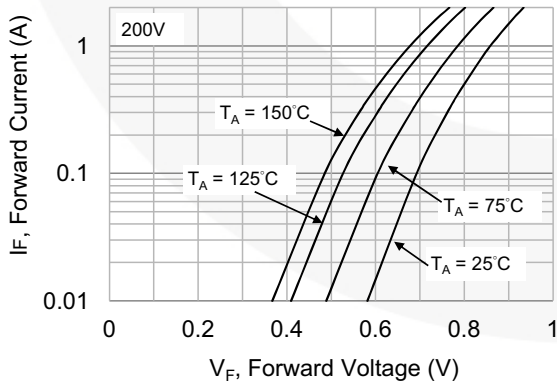


Figure 5. Typical Forward Characteristics

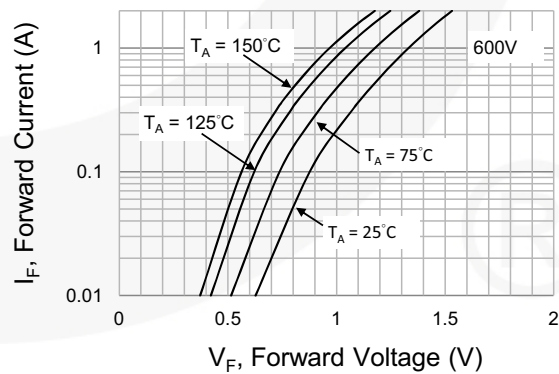
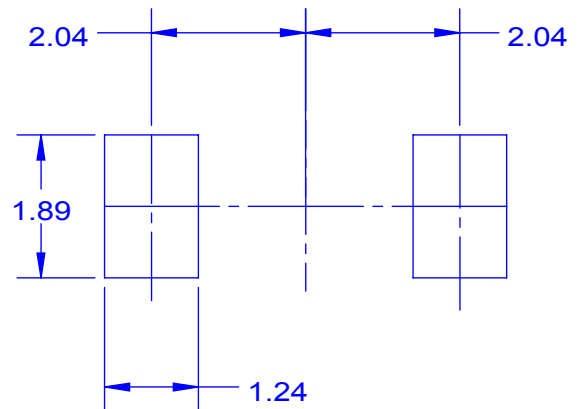
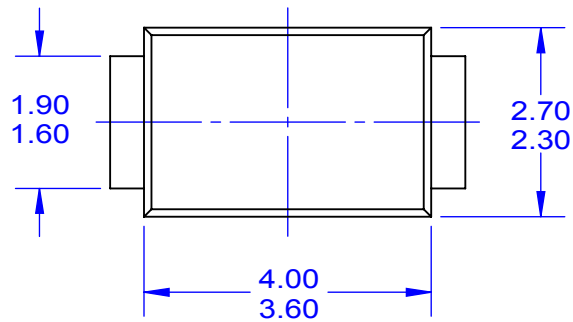
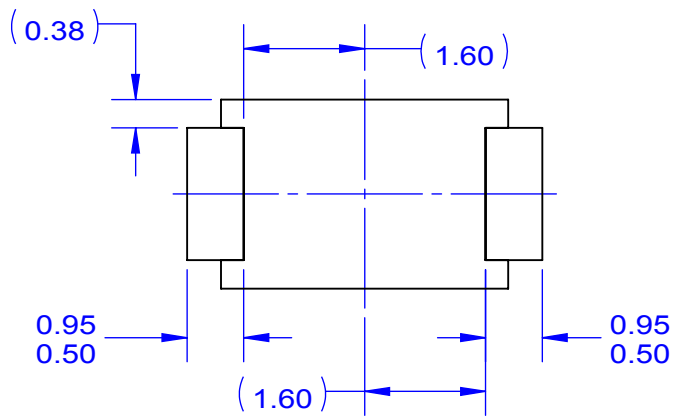
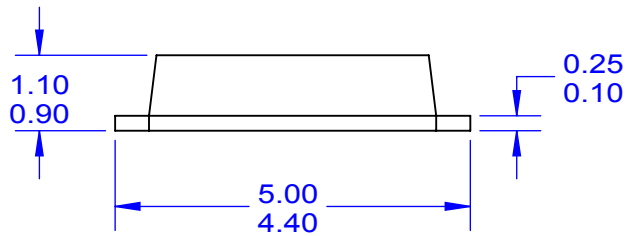


Figure 6. Typical Forward Characteristics



LAND PATTERN RECOMMENDATION



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- B. ALL DIMENSIONS ARE IN MILLIMETERS.
- C. DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH AND TIE BAR PROTRUSIONS.
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