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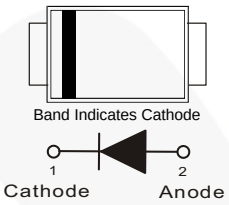
October 2015

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

SMAF



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°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		°C
T_{STG}	Storage Temperature Range	-55 to +150		°C

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Thermal Characteristics

Values are at T_A = 25°C unless otherwise noted.

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

Symbol	Parameter	Conditions		Min.	Typ.	Max.	Unit
V_F	Forward Voltage	I_F = 1 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 A, I_R = 1 A, I_{rr} = 0.25 A				34	ns
C_J	Junction Capacitance	V_R = 4 V, f = 1 MHz			15		pF

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Typical Performance Characteristics

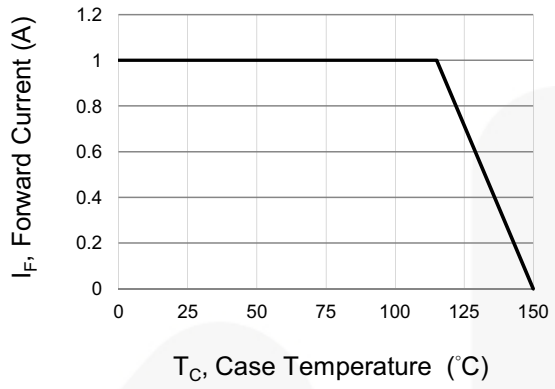

Figure 1. Forward Current Derating Curve

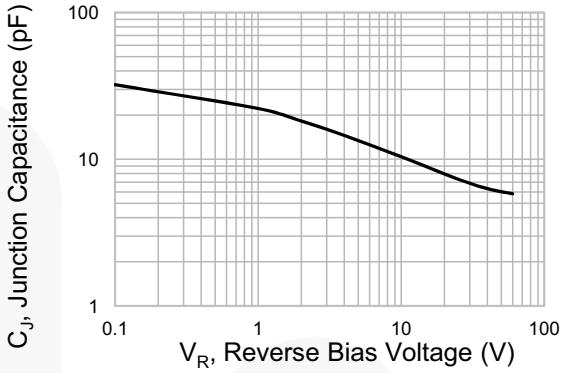

Figure 2. Typical Junction Capacitance

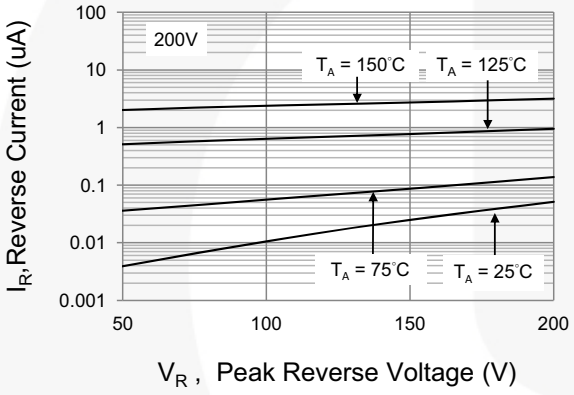

Figure 3. Typical Reverse Characteristics

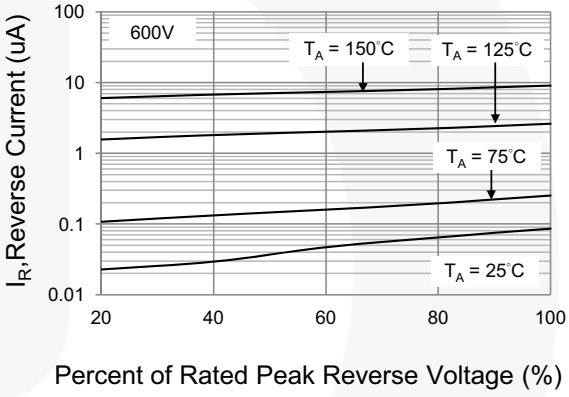

Figure 4. Typical Reverse Characteristics

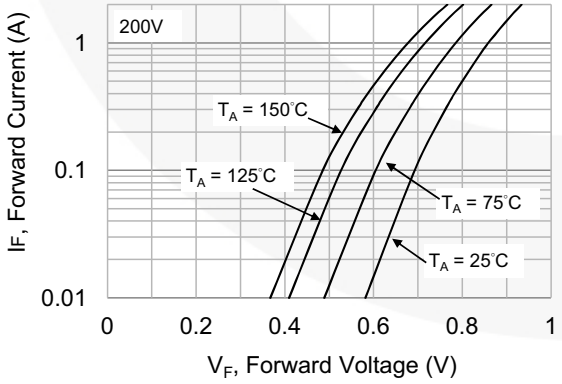

Figure 5. Typical Forward Characteristics

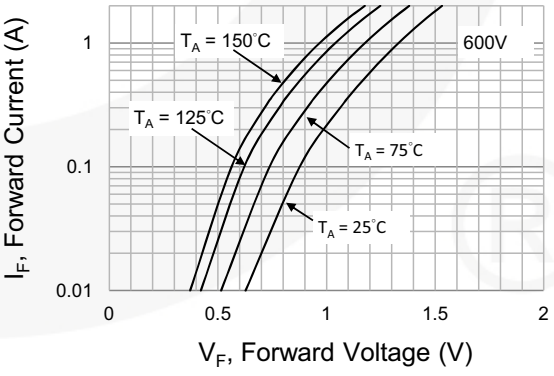

Figure 6. Typical Forward Characteristics

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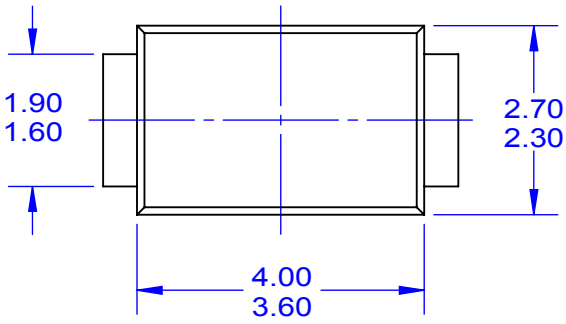

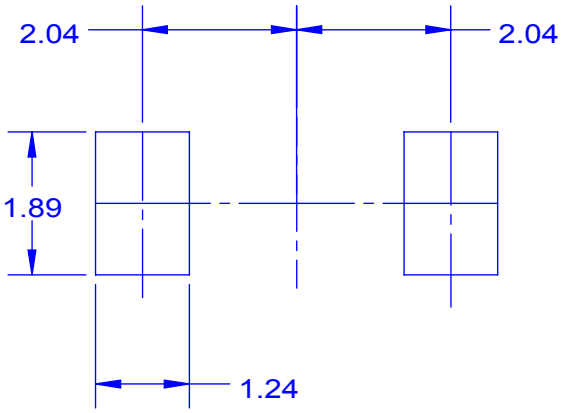

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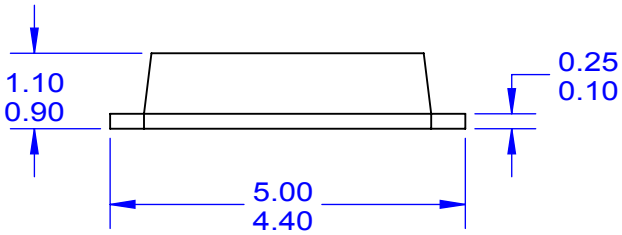

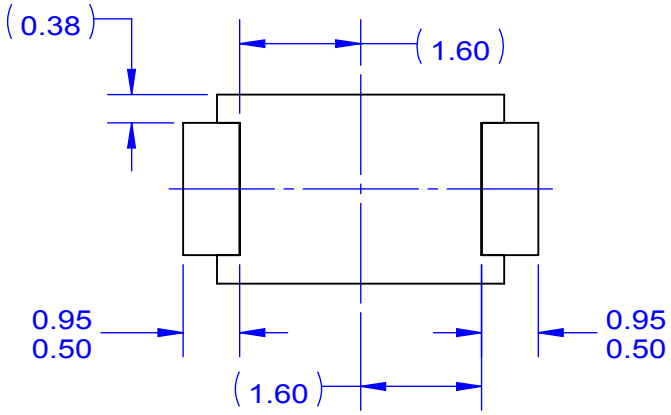

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