

Surface-Mount Ultrafast Avalanche Rectifiers

eSMP® Series



Top view

Bottom view

SMF (DO-219AB)

Cathode  Anode

LINKS TO ADDITIONAL RESOURCES



PRIMARY CHARACTERISTICS

$I_{F(AV)}$	1.0 A
V_{RRM}	200 V, 400 V, 600 V, 800 V, 1000 V
I_{FSM}	30 A, 25 A
t_{rr}	75 ns
I_R	1 μ A
V_F at $I_F = 1$ A	1.4, 1.6 V
E_{AS}	20 mJ
T_J max.	175 °C
Package	SMF (DO-219AB)
Circuit configuration	Single

FEATURES

- Low profile package
- Ideal for automated placement
- Glass passivated pellet chip junction
- Ultrafast recovery times for high frequency
- Low reverse current
- Meets MSL level 1, per J-STD-020; LF maximum peak of 260 °C
- Wave and reflow solderable
- AEC-Q101 qualified
- Automotive ordering code: base P/NHM3
- Compatible to SOD-123W package case outline
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

AUTOMOTIVE
GRADE
Available

RoHS
COMPLIANT
HALOGEN
FREE

TYPICAL APPLICATIONS

For use in general purpose rectification of power supplies, inverters, converters, and freewheeling diodes for consumer, automotive, and telecommunication.

MECHANICAL DATA

Case: SMF (DO-219AB)

Molding compound meets UL 94 V-0 flammability rating

Base P/N-M3 - halogen-free, RoHS-compliant

Base P/NHM3 - halogen-free, RoHS-compliant and AEC-Q101 qualified

Terminals: matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

M3 and HM3 suffix meets JESD 201 class 2 whisker test

Polarity: color band denotes cathode end

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

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PARAMETER	SYMBOL	AU1FD	AU1FG	AU1FJ	AU1FK	AU1FM	UNIT
Device marking code		AUD	AUG	AUJ	AUK	AUM	
Max. repetitive peak reverse voltage	V _{RRM}	200	400	600	800	1000	V
Average forward current	I _{F(AV)}	1					A
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	I _{FSM}	30			25		A
Non-repetitive avalanche energy at I _{AS} = 1.0 A, T _A = 25 °C	E _{AS}	20					mJ
Operating junction and storage temperature range	T _J , T _{STG}	-55 to +175					°C

**ELECTRICAL CHARACTERISTICS** ($T_J = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)

PARAMETER	TEST CONDITIONS	SYMBOL	AU1FD	AU1FG	AU1FJ	AU1FK	AU1FM	UNIT
Maximum instantaneous forward voltage	$I_F = 1.0\text{ A}$ $T_J = 25\text{ }^{\circ}\text{C}$ $T_J = 125\text{ }^{\circ}\text{C}$	$V_F^{(1)}$	1.5 1.4			1.85 1.6		V
Maximum reverse current	Rated V_R $T_J = 25\text{ }^{\circ}\text{C}$ $T_J = 125\text{ }^{\circ}\text{C}$	$I_R^{(2)}$	1 100					μA
Maximum reverse recovery time	$I_F = 0.5\text{ A}$, $I_R = 1.0\text{ A}$, $I_{rr} = 0.25\text{ A}$	t_{rr}	75					ns
Typical junction capacitance	4.0 V, 1 MHz	C_J	12.2			8.2		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	AU1FD	AU1FG	AU1FJ	AU1FK	AU1FM	UNIT
Typical thermal resistance	$R_{\theta JA}^{(1)(2)}$	130					°C/W
	$R_{\theta JM}^{(1)}$	20					

Notes(1) Free air, mounted on recommended PCB, 2 oz. pad area; thermal resistance $R_{\theta JA}$ - junction to ambient; $R_{\theta JM}$ - junction to mount(2) The heat generated must be less than the thermal conductivity from junction-to-ambient: $dP_D/dT_J < 1/R_{\theta JA}$ **ORDERING INFORMATION** (Example)

PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
AU1FM-M3/H	0.0145	H	3000	7" diameter plastic tape and reel
AU1FM-M3/I	0.0145	I	10 000	13" diameter plastic tape and reel
AU1FMHM3/H ⁽¹⁾	0.0145	H	3000	7" diameter plastic tape and reel
AU1FMHM3/I ⁽¹⁾	0.0145	I	10 000	13" diameter plastic tape and reel

Note

(1) AEC-Q101 qualified



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

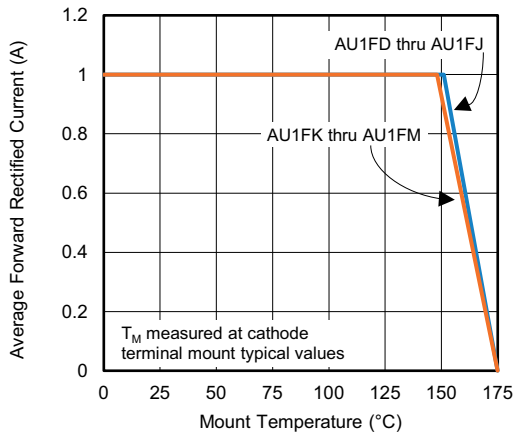


Fig. 1 - Maximum Forward Current Derating Curve

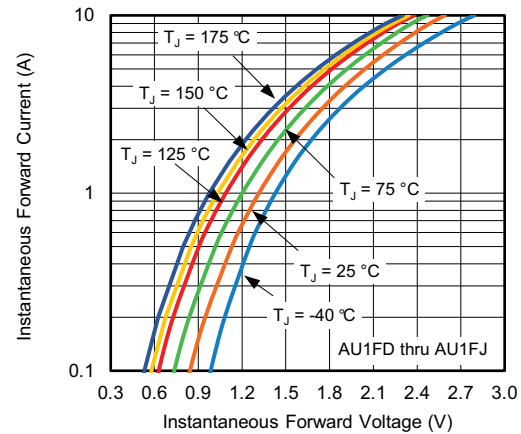


Fig. 4 - Typical Instantaneous Forward Characteristics

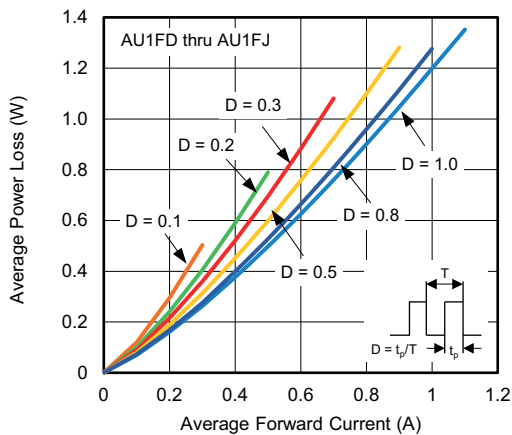


Fig. 2 - Forward Power Loss Characteristics

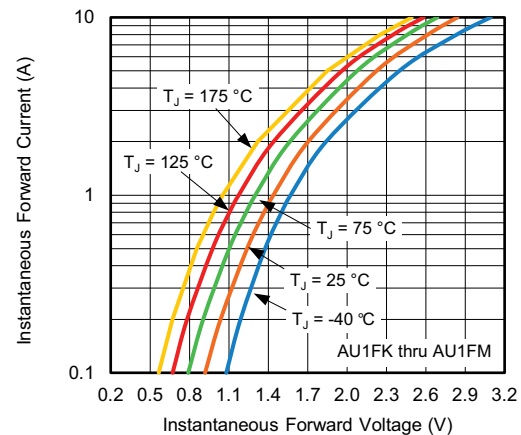


Fig. 5 - Typical Instantaneous Forward Characteristics

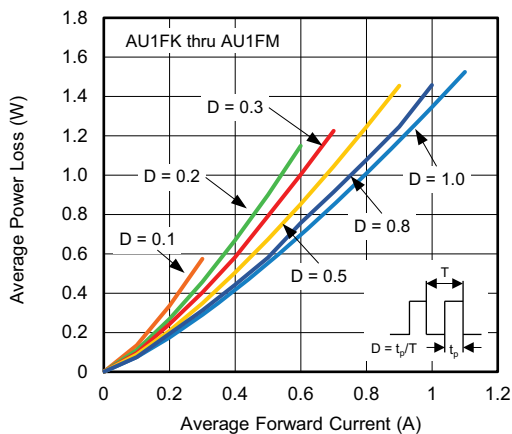


Fig. 3 - Forward Power Loss Characteristics

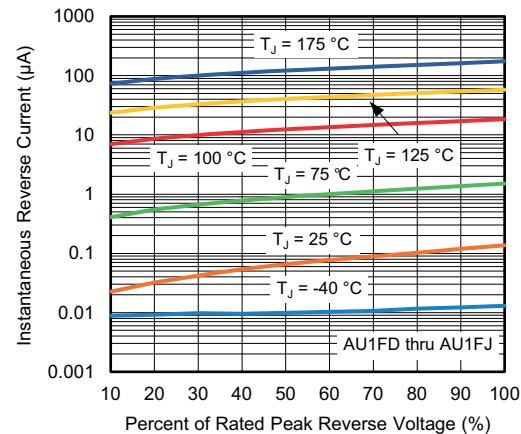


Fig. 6 - Typical Reverse Characteristics

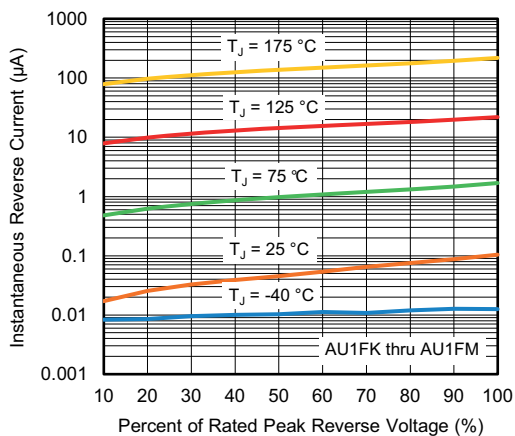


Fig. 7 - Typical Reverse Characteristics

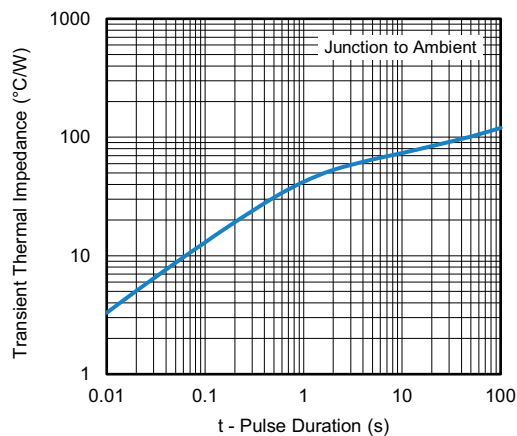


Fig. 9 - Typical Transient Thermal Impedance

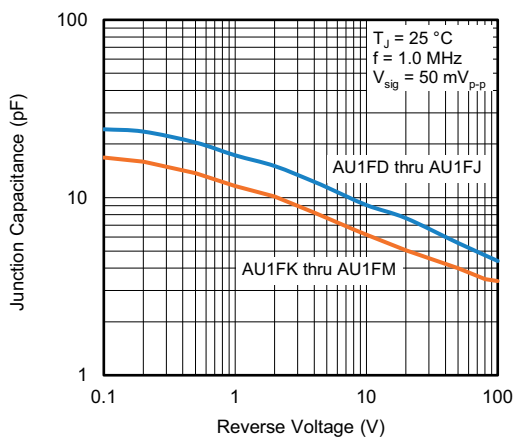
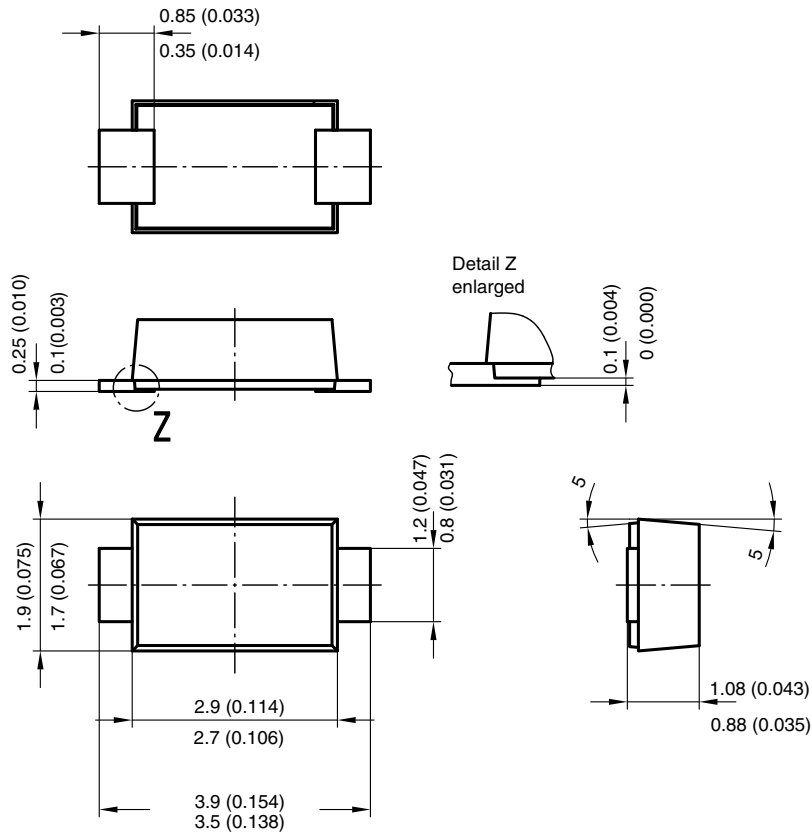


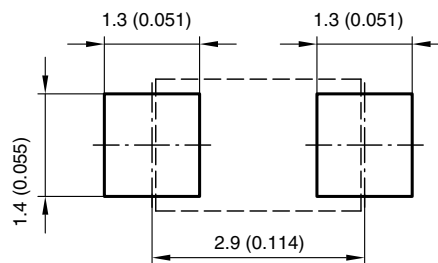
Fig. 8 - Typical Junction Capacitance



PACKAGE OUTLINE DIMENSIONS in millimeters (inches)



Foot print recommendation:



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17247



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