ESH1PA thru ESH1PD

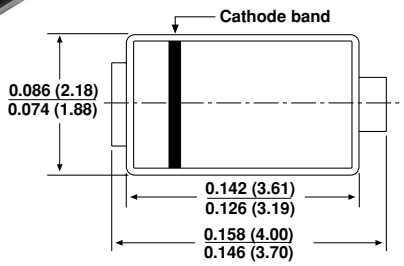
New Product

Vishay Semiconductors
formerly General Semiconductor

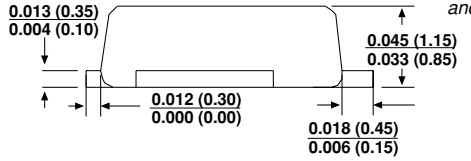
High Current Density Surface Mount Ultrafast Rectifiers

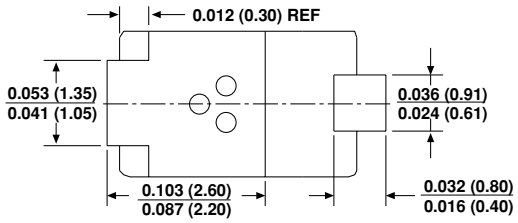
Cas Style SMP

Reverse Voltage 50 to 200 V
Forward Current 1.0 A
Reverse Recovery Time 25ns



Dimensions in inches and (millimeters)





Features

- Very low profile - typical height of 1.0mm
- For surface mount application
- Glass passivated chip junction
- Ultrafast recovery times for high efficiency
- Low forward voltage, low power loss
- High operation temperature up to 175°C
- Built-in strain relief, ideal for automated placement
- High temperature soldering guaranteed: 260°C/10 seconds at terminals
- Meets MSL Level 1 per J-STD-020C

Mechanical Data

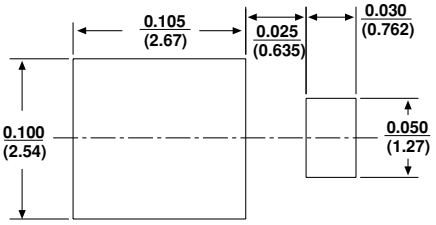
Case: SMP

Terminals: Matte Tin plated (E3 Suffix) leads, solderable per J-STD-002B and MIL-STD-750, Method 2026
Polarity: Color band denotes cathode end

Weight: 0.0009 oz., 0.024g

Epoxy meets UL 94V-0 flammability rating

Mounting Pad Layout



Maximum Ratings & Thermal Characteristics (T_A = 25°C unless otherwise noted.)

Parameter	Symbol	ESH1PA	ESH1PB	ESH1PC	ESH1PD	Unit
Device marking code		PA	PB	PC	PD	
Maximum reverse voltage	V_{RM}	50	100	150	200	V
Maximum average forward rectified current Fig.1	$I_{F(AV)}$	1.0				A
Peak forward surge current 10ms single half sine-wave superimposed on rated load	I_{FSM}	50				A
Typical thermal resistance (1)	$R_{\theta JA}$ $R_{\theta JL}$ $R_{\theta JC}$	105 15 20				°C/W
Operating junction and Storage temperature range	T_J, T_{STG}	–55 to +175				°C

Electrical Characteristics (T_A = 25°C unless otherwise noted.)

Parameter	Symbol	Value	Unit
Maximum instantaneous forward voltage(2) at I_F=0.7A, T_J=25°C at I_F=1A, T_J=25°C	V_F	0.86 0.90	V
Maximum reverse current T_J = 25°C at rated VRM(2) T_J =125°C	I_R	1.0 25	µA
Maximum reverse current at V_R = 20V, T_J =150°C	I_R	50	µA
Maximum reverse recovery time at I_F=0.5A, I_R=1A, I_{rr}=0.25A	trr	25	ns
Typical reverse recovery time at T_J=25°C at I_F = 1.0A, V_R = 30V di/dt = 50A/µs, I_{rr} = 10% IRM T_J=100°C	trr	25 35	ns
Typical reverse recovery time at T_J=25°C at I_F = 1.0A, V_R = 30V di/dt = 50A/µs, I_{rr} = 10% IRM T_J=100°C	Qrr	10 15	nC
Typical junction capacitance at 4.0V, 1MHz	C_J	25	pF

Notes: (1) Thermal resistance from junction to ambient and junction to lead mounted on P.C.B. with 5.0 x 5.0mm copper pad areas. $R_{\theta JL}$ is measured at the terminal of cathode band. $R_{\theta JC}$ is measured at the top centre of the body
(2) Pulse test: 300µs pulse width, 1% duty cycle

Ratings and Characteristic Curves (T_A = 25°C unless otherwise noted)

Fig. 1 – Forward Current Derating Curve

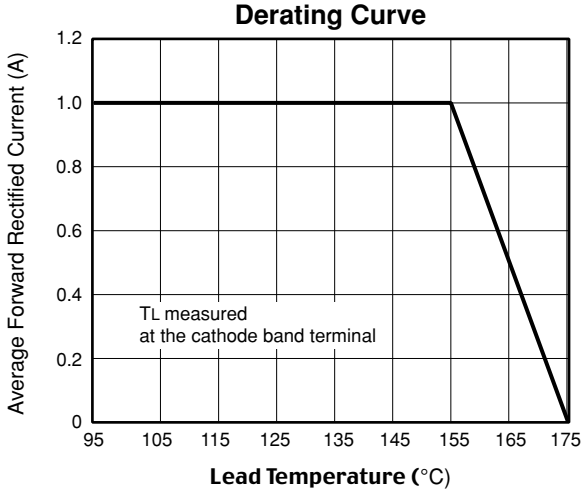


Fig. 2 – Maximum Non-Repetitive Peak Forward Surge Current

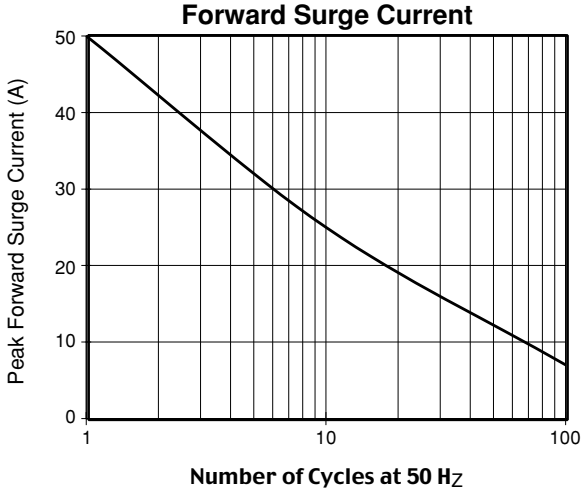


Fig. 3 – Typical Instantaneous Forward Characteristics

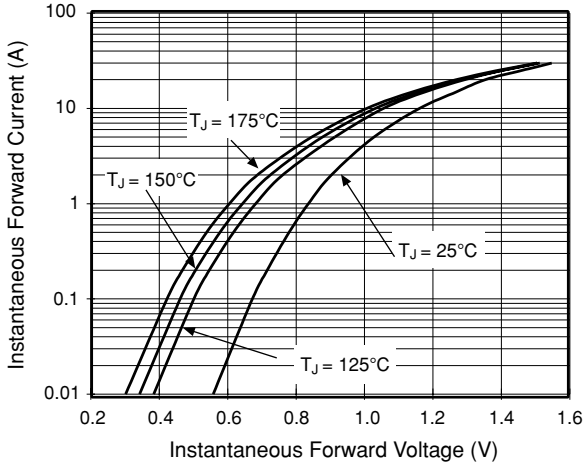


Fig. 4 – Typical Reverse Leakage Characteristics

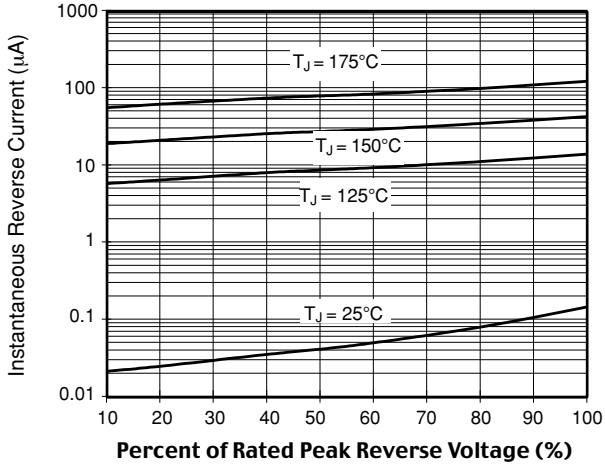


Fig. 5 – Typical Junction Capacitance

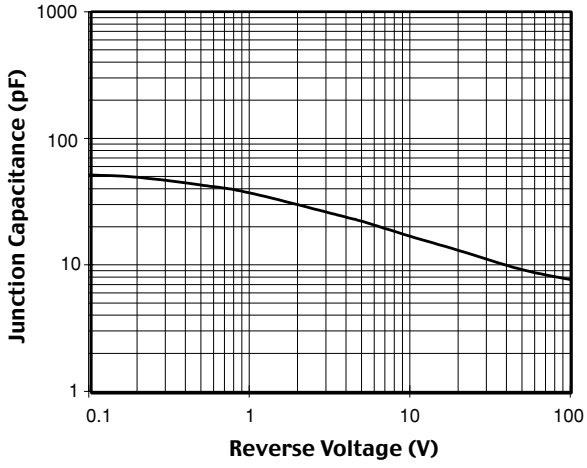


Fig. 6 – Typical Transient Thermal Impedance