



New Product

ESH1PA thru ESH1PD

Vishay Semiconductors
formerly General Semiconductor



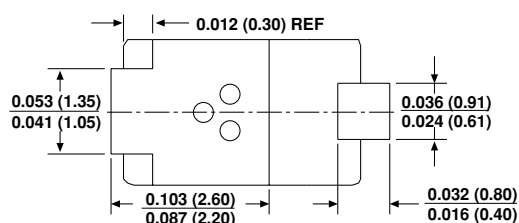
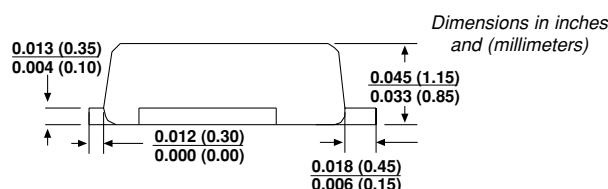
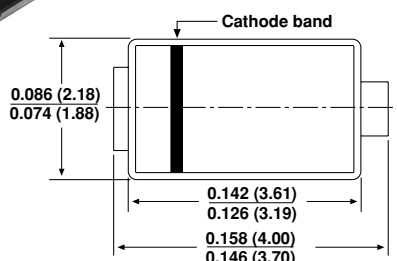
High Current Density Surface Mount Ultrafast Rectifiers

Cas Style SMP

Reverse Voltage 50 to 200 V

Forward Current 1.0 A

Reverse Recovery Time 25ns



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

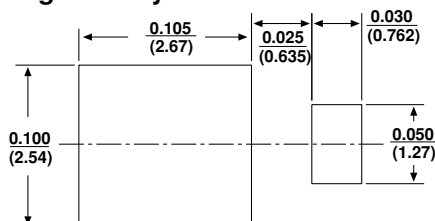
Terminals: Matte Tin plated (E3 Suffix) leads, solderable per J-STD-002B and MIL-STD-750, Method 2026

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 _{θJA} R _{θJL} R _{θJC}	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 V _{RM} ⁽²⁾	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	t _{rr}	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% I _{RM}	t _{rr}	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% I _{RM}	Q _{rr}	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_{θJL} is measured at the terminal of cathode band. R_{θJC} is measured at the top centre of the body

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

Ratings and Characteristic Curves ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Fig. 1 – Forward Current Derating Curve

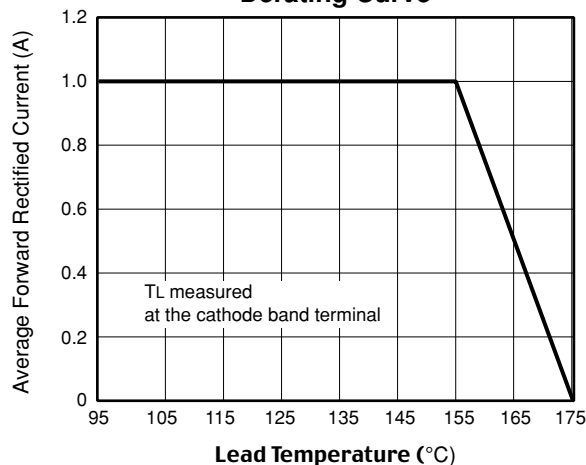


Fig. 2 – Maximum Non-Repetitive Peak Forward Surge Current

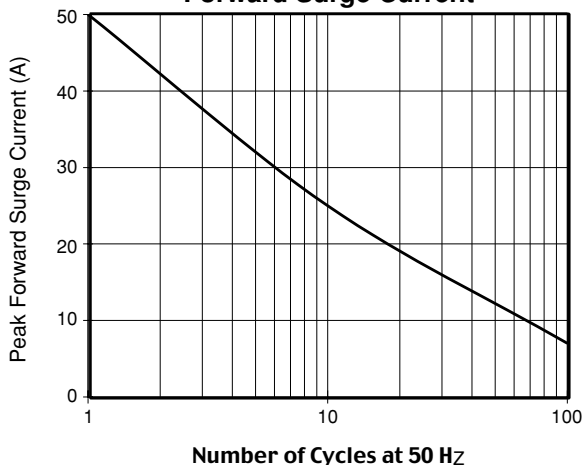


Fig. 3 – Typical Instantaneous Forward Characteristics

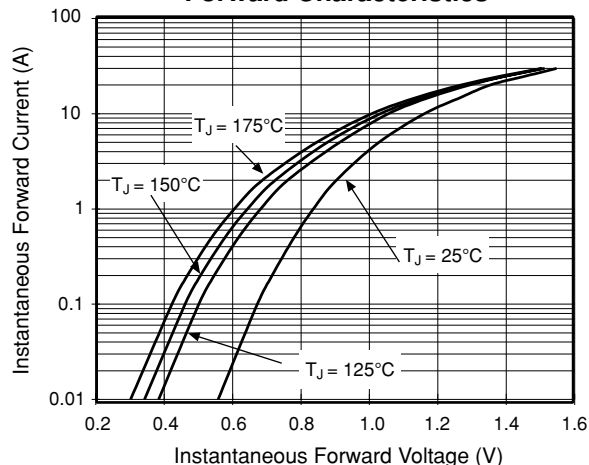


Fig. 4 – Typical Reverse Leakage Characteristics

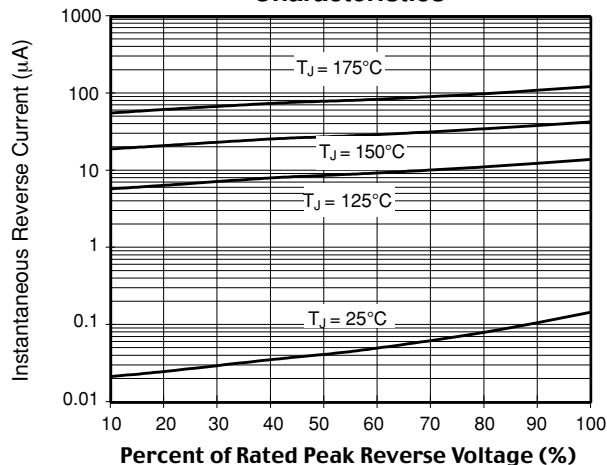


Fig. 5 – Typical Junction Capacitance

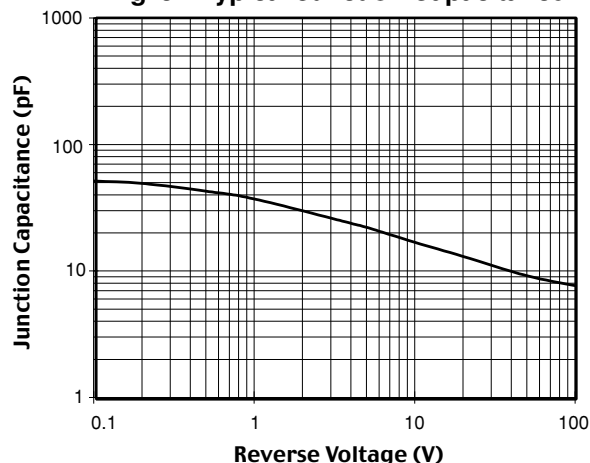


Fig. 6 – Typical Transient Thermal Impedance

