

SE15PB, SE15PD, SE15PG, SE15PJ

Vishay General Semiconductor

AUTOMOTIVE

RoHS

COMPLIANT HALOGEN

FREE

Surface Mount ESD Capability Rectifiers



LINKS TO ADDITIONAL RESOURCES



| PRIMARY CHARACTERISTICS | | | | | |
|--|----------------------------|--|--|--|--|
| I _{F(AV)} | 1.5 A | | | | |
| V_{RRM} | 100 V, 200 V, 400 V, 600 V | | | | |
| I _{FSM} | 30 A | | | | |
| I _R | 5 μΑ | | | | |
| V _F at I _F = 1.0 A | 0.868 V | | | | |
| T _J max. | 175 °C | | | | |
| Package | SMP (DO-220AA) | | | | |
| Circuit configuration | Single | | | | |

FEATURES

- Very low profile typical height of 1.0 mm
- · Ideal for automated placement
- · Oxide planar chip junction
- Low forward voltage drop
- Typical I_R less than 0.1 μA
- ESD capability
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- AEC-Q101 qualified
- Material categorization: for definitions of compliance please see www.vishav.com/doc?99912

TYPICAL APPLICATIONS

General purpose, power line polarity protection and rail-to-rail protection in consumer, industrial, and automotive applications.

MECHANICAL DATA

Case: SMP (DO-220AA)

Molding compound meets UL 94 V-0 flammability rating Base P/N-M3 - halogen-free, RoHS-compliant, and commercial grade

Base P/NHM3 - halogen-free, RoHS-compliant, and automotive grade

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

M3 suffix meets JESD 201 class 1A whisker test, HM3 suffix meets JESD 201 class 2 whisker test

| MAXIMUM RATINGS (T _A = 25 °C unless otherwise noted) | | | | | | |
|---|-----------------------------------|-------------|--------|--------|--------|------|
| PARAMETER | SYMBOL | SE15PB | SE15PD | SE15PG | SE15PJ | UNIT |
| Device marking code | | 15B | 15D | 15G | 15J | |
| Max. repetitive peak reverse voltage | V_{RRM} | 100 | 200 | 400 | 600 | V |
| Average forward current (fig. 1) | I _{F(AV)} | 1.5 | | | | Α |
| Peak forward surge current 10 ms single half sine-wave superimposed on rated load | I _{FSM} | 30 | | | | Α |
| Operating junction and storage temperature range | T _J , T _{STG} | -55 to +175 | | | | °C |



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| ELECTRICAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted) | | | | | | |
|---|---|---|-------------------------------|-------|------|------|
| PARAMETER | TEST CONDITIONS | | SYMBOL | TYP. | MAX. | UNIT |
| Max. instantaneous | I _F = 1.5 A | T _A = 25 °C T _A = 125 °C | V _F ⁽¹⁾ | 0.968 | 1.05 | V |
| forward voltage | IF = 1.5 A | T _A = 125 °C | | 0.868 | 0.95 | |
| Max. reverse current | Rated V _R | T _A = 25 °C | I _R ⁽²⁾ | - | 5.0 | μА |
| Max. reverse current | | T _A = 125 °C | | 5.4 | 50 | |
| Max. reverse recovery time | I _F = 0.5 A, I _R = 1.0 A, I _{rr} = 0.25 A | | t _{rr} | 900 | - | ns |
| Typical junction capacitance | 4.0 V, 1 MI | Hz | CJ | 9.5 | - | pF |

Notes

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

(2) Pulse test: Pulse width ≤ 40 ms

| THERMAL CHARACTERISTICS (T _A = 25 °c unless otherwise noted) | | | | | | |
|---|---|-----|--|--|------|------|
| PARAMETER | SYMBOL SE15PB SE15PD SE15PG SE15PJ UNIT | | | | UNIT | |
| | R _{0JA} (1) | 105 | | | | |
| Typical thermal resistance | R _{0JL} (1) | 25 | | | | °C/W |
| | R ₀ JC (1) | 30 | | | | |

Note

(1) Thermal resistance from junction to ambient and junction to lead mounted on PCB with 5.0 mm x 5.0 mm copper pad areas. $R_{\theta JL}$ - is measured at the terminal of cathode band. $R_{\theta JC}$ is measured at the top center of the body.

| IMMUNITY TO ELECTRICAL STATIC DISCHARGE TO THE FOLLOWING STANDARDS ($T_A = 25~^{\circ}\text{C}$ unless otherwise noted) | | | | | | | | |
|--|--|---|-------------|-----|---------|--|--|--|
| STANDARD | TANDARD TEST TYPE TEST CONDITIONS SYMBOL CLASS VALUE | | | | | | | |
| AEC-Q101-001 | Human body model (contact mode) | C = 100 pF, R = 1.5 k Ω | | H3B | > 8 kV | | | |
| AEC-Q101-002 | Machine model (contact mode) | $C = 200 \text{ pF}, R = 0 \Omega$ | | M4 | > 400 V | | | |
| JESD22-A114 | Human body model (contact mode) | $C = 100 \text{ pF}, R = 1.5 \text{ k}\Omega$ | $V_{\rm C}$ | 3B | > 8 kV | | | |
| JESD22-A115 | Machine model (contact mode) | $C = 200 \text{ pF}, R = 0 \Omega$ | v C | С | > 400 V | | | |
| IEC 61000-4-2 ⁽²⁾ | Human body model (contact mode) | C = 150 pF, R = 330 Ω | | 4 | > 8 kV | | | |
| | Human body model (air-discharge mode) (1) | C = 150 pF, R = 330 Ω | | 4 | > 15 kV | | | |

Notes

(1) Immunity to IEC 61000-4-2 air discharge mode has a typical performance > 30 kV

⁽²⁾ System ESD standard

| ORDERING INFORMATION (Example) | | | | | | |
|--------------------------------|-----------------|------------------------|---------------|------------------------------------|--|--|
| PREFERRED P/N | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE | | |
| SE15PJ-M3/84A | 0.024 | 84A | 3000 | 7" diameter plastic tape and reel | | |
| SE15PJ-M3/85A | 0.024 | 85A | 10 000 | 13" diameter plastic tape and reel | | |
| SE15PJHM3/84A (1) | 0.024 | 84A | 3000 | 7" diameter plastic tape and reel | | |
| SE15PJHM3/85A (1) | 0.024 | 85A | 10 000 | 13" diameter plastic tape and reel | | |

Note

(1) Automotive grade

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RATINGS AND CHARACTERISTICS CURVES (T_A = 25 °C unless otherwise noted)

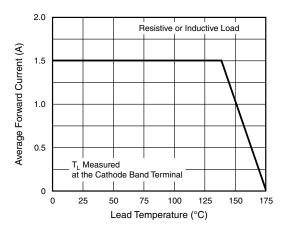


Fig. 1 - Max. Forward Current Derating Curve

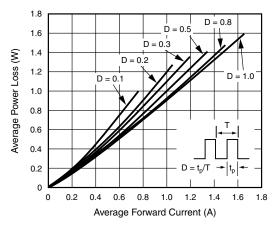


Fig. 2 - Forward Power Loss Characteristics

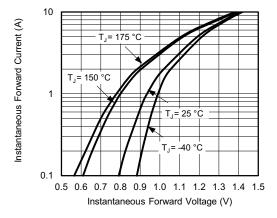


Fig. 3 - Forward Power Loss Characteristics

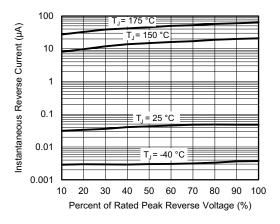


Fig. 4 - Typical Instantaneous Forward Characteristics

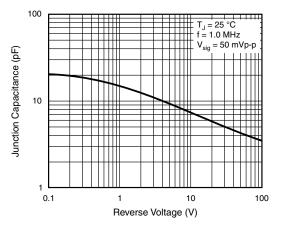


Fig. 5 - Typical Instantaneous Forward Characteristics

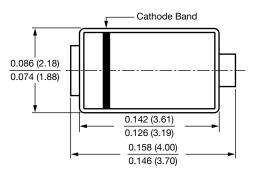


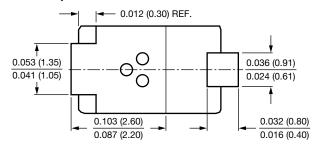
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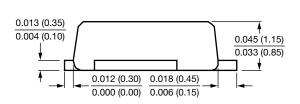
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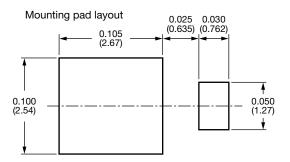
PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SMP (DO-220AA)











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