

## High Current Density Surface-Mount Dual Common Cathode Schottky Rectifiers



### FEATURES

- Very low profile - typical height of 1.1 mm
- Ideal for automated placement
- Low forward voltage drop, low power losses
- High efficiency
- Low thermal resistance
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- AEC-Q101 qualified available
  - Automotive ordering code: base P/NHM3
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



**RoHS**  
COMPLIANT  
HALOGEN  
FREE

### LINKS TO ADDITIONAL RESOURCES



| PRIMARY CHARACTERISTICS |                |
|-------------------------|----------------|
| $I_{F(AV)}$             | 2 x 5.0 A      |
| $V_{RRM}$               | 20 V, 30 V     |
| $I_{FSM}$               | 200 A          |
| $E_{AS}$                | 20 mJ          |
| $V_F$ at $I_F = 5$ A    | 0.338 V        |
| $T_J$ max.              | 150 °C         |
| Package                 | SMPC (TO-277A) |
| Circuit configuration   | Common cathode |

### TYPICAL APPLICATIONS

For use in high frequency rectifier of switching mode power supplies, freewheeling diodes, DC/DC converters, and polarity protection application.

### MECHANICAL DATA

**Case:** SMPC (TO-277A)

Molding compound meets UL 94 V-0 flammability rating  
Base P/N-M3 - halogen-free, RoHS-compliant, and commercial grade  
Base P/NHM3\_X - halogen-free, RoHS-compliant and AEC-Q101 qualified  
(“\_X” denotes revision code e.g. A, B,.....)

**Terminals:** matte tin plated leads, solderable per J-STD-002 and JESD 22-B102  
M3 suffix meets JESD 201 class 2 whisker test, HM3 suffix meets JESD 201 class 2 whisker test

| MAXIMUM RATINGS ( $T_A = 25$ °C unless otherwise noted)                           |                |              |          |      |
|---|----------------|--------------|----------|------|
| PARAMETER   | SYMBOL         | SS10P2CL     | SS10P3CL | UNIT |
| Device marking code   |                | S102CL       | S103CL   |      |
| Maximum repetitive peak reverse voltage   | $V_{RRM}$      | 20           | 30       | V    |
| Maximum average forward rectified current (fig. 1)                                | $I_{F(AV)}$    | total device |          | 10   |
| per diode   |                | 5.0          |          | A    |
| Peak forward surge current 10 ms single half sine-wave superimposed on rated load | $I_{FSM}$      | 200          |          | A    |
| Non-repetitive avalanche energy at 25 °C, $I_{AS} = 2$ A per diode                | $E_{AS}$       | 20           |          | mJ   |
| Operating junction and storage temperature range                                  | $T_J, T_{STG}$ | -55 to +150  |          | °C   |

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

| PARAMETER                               | TEST CONDITIONS       |                           | SYMBOL               | TYP.  | MAX. | UNIT          |  |
|---|-----------------------|---------------------------|----------------------|-------|------|---------------|--|
| Instantaneous forward voltage per diode | $I_F = 2.5 \text{ A}$ | $T_A = 25^\circ\text{C}$  | $V_F$ <sup>(1)</sup> | 0.391 | -    | V             |  |
|   | $I_F = 5.0 \text{ A}$ |                           |                      | 0.440 | 0.52 |               |  |
|   | $I_F = 2.5 \text{ A}$ | $T_A = 125^\circ\text{C}$ |                      | 0.272 | -    |               |  |
|   | $I_F = 5.0 \text{ A}$ |                           |                      | 0.338 | 0.42 |               |  |
| Reverse current per diode               | Rated $V_R$           | $T_A = 25^\circ\text{C}$  | $I_R$ <sup>(2)</sup> | 95    | 850  | $\mu\text{A}$ |  |
|   |                       | $T_A = 125^\circ\text{C}$ |                      | 37    | 55   | mA            |  |
| Typical junction capacitance per diode  | 4.0 V, 1 MHz          |                           | $C_J$                | 560   | -    | pF            |  |

**Notes**

(1) Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle

(2) Pulse test: Pulse width  $\leq 40 \text{ ms}$

**THERMAL CHARACTERISTICS** ( $T_A = 25^\circ\text{C}$  unless otherwise specified)

| PARAMETER                            | SYMBOL                         | SS10P2CL | SS10P3CL | UNIT               |
|--------------------------------------|--------------------------------|----------|----------|--------------------|
| Typical thermal resistance per diode | $R_{\theta JA}$ <sup>(1)</sup> | 60       |          | $^\circ\text{C/W}$ |
|                                      | $R_{\theta JL}$                | 3        |          |                    |

**Note**

(1) Units mounted on recommended PCB 1 oz. pad layout

**ORDERING INFORMATION** (Example)

| PREFERRED P/N                  | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE                      |
|--------------------------------|-----------------|--------------|---------------|------------------------------------|
| SS10P3CL-M3/86A                | 0.10            | 86A          | 1500          | 7" diameter plastic tape and reel  |
| SS10P3CL-M3/87A                | 0.10            | 87A          | 6500          | 13" diameter plastic tape and reel |
| SS10P3CLHM3_A/H <sup>(1)</sup> | 0.10            | H            | 1500          | 7" diameter plastic tape and reel  |
| SS10P3CLHM3_A/I <sup>(1)</sup> | 0.10            | I            | 6500          | 13" diameter plastic tape and reel |

**Note**

(1) AEC-Q101 qualified

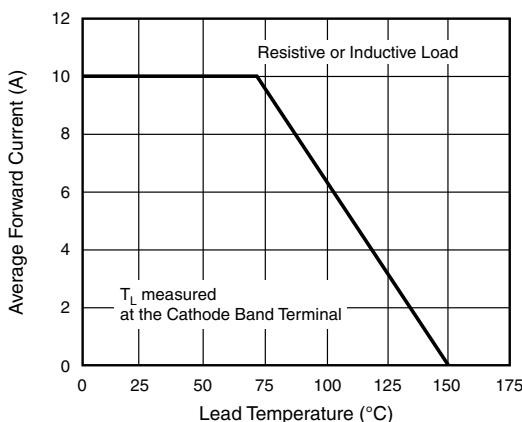
**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25^\circ\text{C}$  unless otherwise specified)


Fig. 1 - Maximum Forward Current Derating Curve

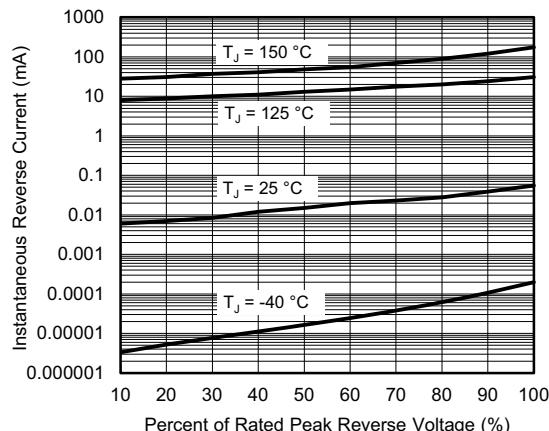


Fig. 4 - Typical Reverse Leakage Characteristics Per Diode

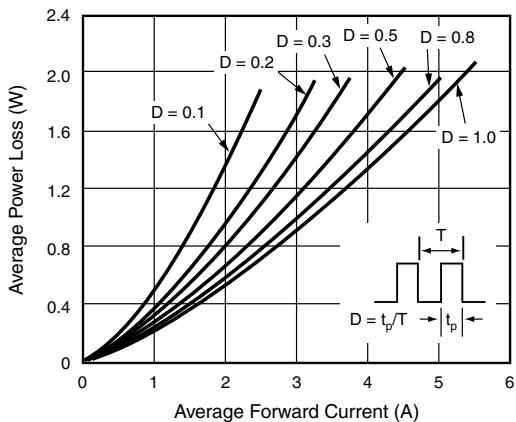


Fig. 2 - Forward Power Loss Characteristics Per Diode

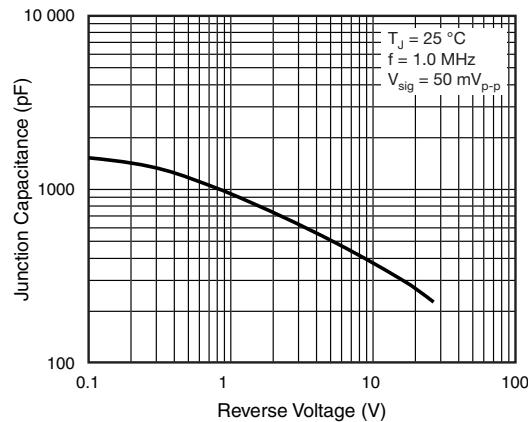


Fig. 5 - Typical Junction Capacitance Per Diode

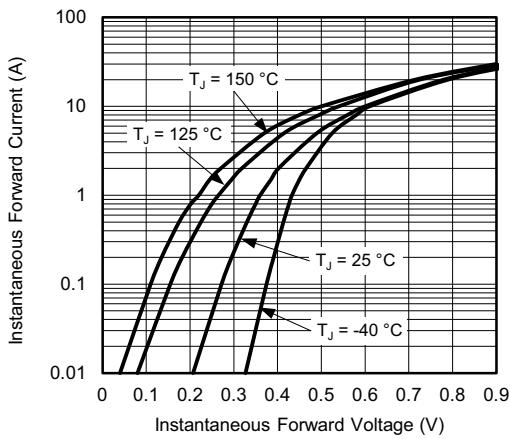


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

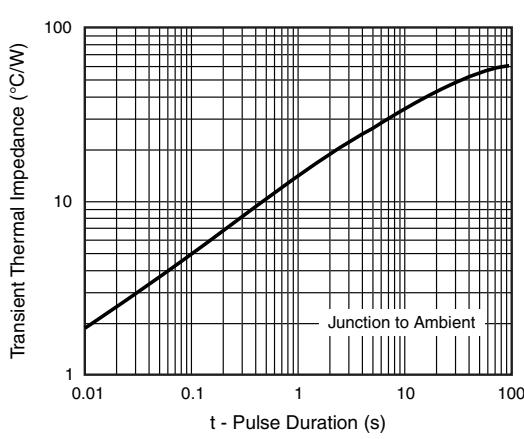
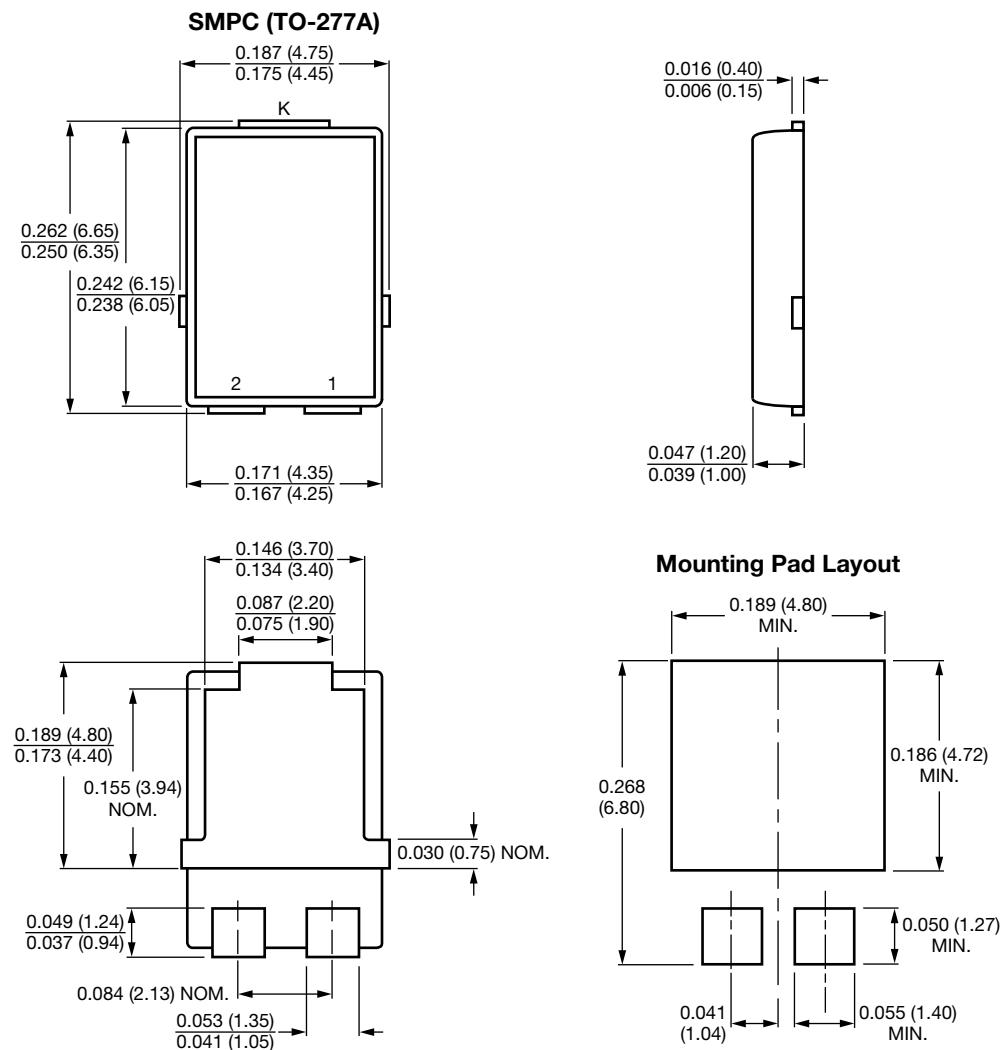


Fig. 6 - Typical Transient Thermal Impedance Per Diode

**PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)


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