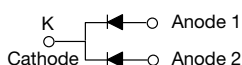


# High Current Density Surface-Mount Dual Common Cathode Schottky Rectifiers

## eSMP® Series



SMPC (TO-277A)



## 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)                                | total device   | 10          |          | A    |
|                                                                                   | per diode      | 5.0         |          |      |
| 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** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)

| PARAMETER                               | TEST CONDITIONS        |                         | SYMBOL                        | TYP.  | MAX. | UNIT |
|-----------------------------------------|------------------------|-------------------------|-------------------------------|-------|------|------|
| Instantaneous forward voltage per diode | I <sub>F</sub> = 2.5 A | T <sub>A</sub> = 25 °C  | V <sub>F</sub> <sup>(1)</sup> | 0.391 | -    | V    |
|                                         | I <sub>F</sub> = 5.0 A |                         |                               | 0.440 | 0.52 |      |
|                                         | I <sub>F</sub> = 2.5 A | T <sub>A</sub> = 125 °C |                               | 0.272 | -    |      |
|                                         | I <sub>F</sub> = 5.0 A |                         |                               | 0.338 | 0.42 |      |
| Reverse current per diode               | Rated V <sub>R</sub>   | T <sub>A</sub> = 25 °C  | I <sub>R</sub> <sup>(2)</sup> | 95    | 850  | μA   |
|                                         |                        | T <sub>A</sub> = 125 °C |                               | 37    | 55   | mA   |
| Typical junction capacitance per diode  | 4.0 V, 1 MHz           |                         | C <sub>J</sub>                | 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** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise specified)

| PARAMETER                            | SYMBOL                          | SS10P2CL | SS10P3CL | UNIT |
|--------------------------------------|---------------------------------|----------|----------|------|
| Typical thermal resistance per diode | R <sub>θJA</sub> <sup>(1)</sup> | 60       |          | °C/W |
|                                      | R <sub>θJL</sub>                | 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

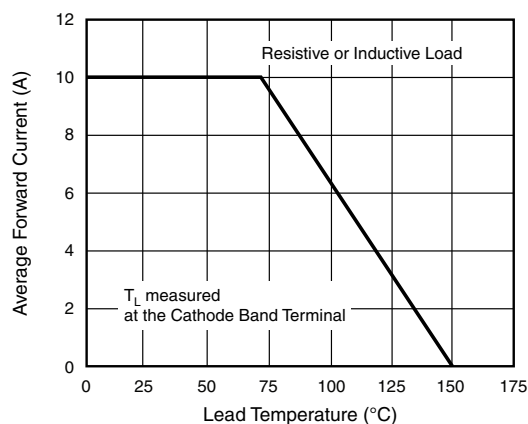
**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise specified)


Fig. 1 - Maximum Forward Current Derating Curve

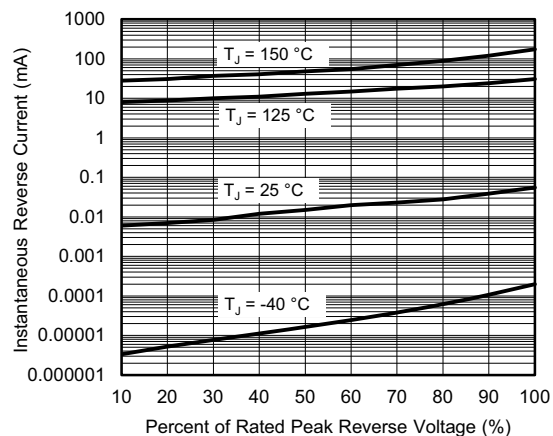


Fig. 4 - Typical Reverse Leakage Characteristics Per Diode

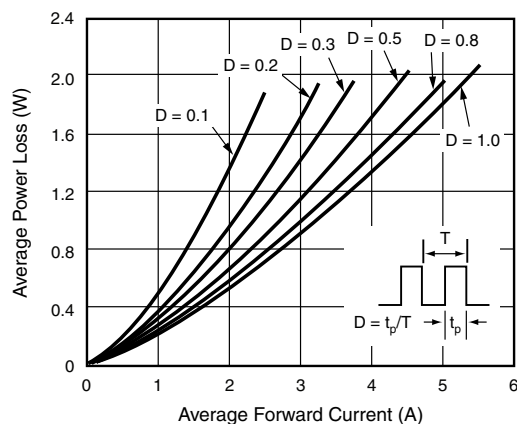


Fig. 2 - Forward Power Loss Characteristics Per Diode

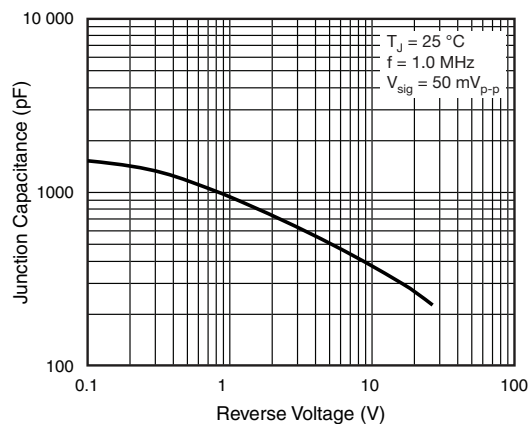


Fig. 5 - Typical Junction Capacitance Per Diode

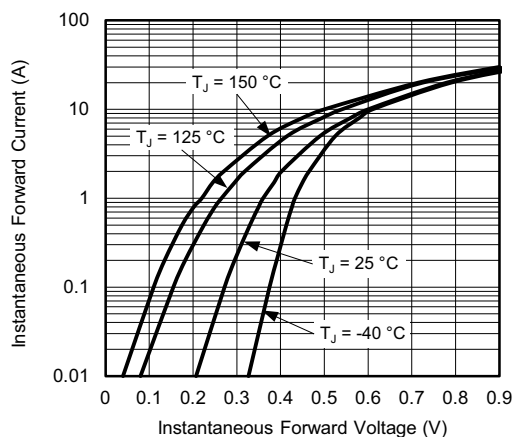


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

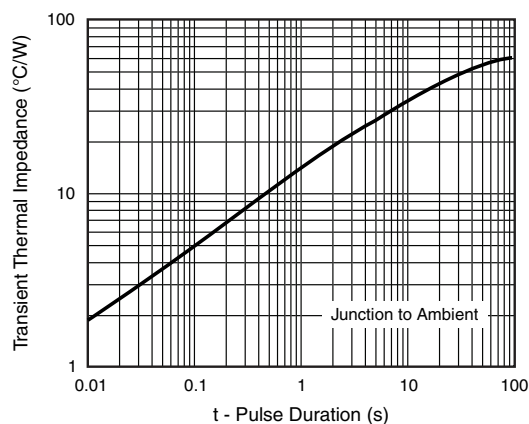
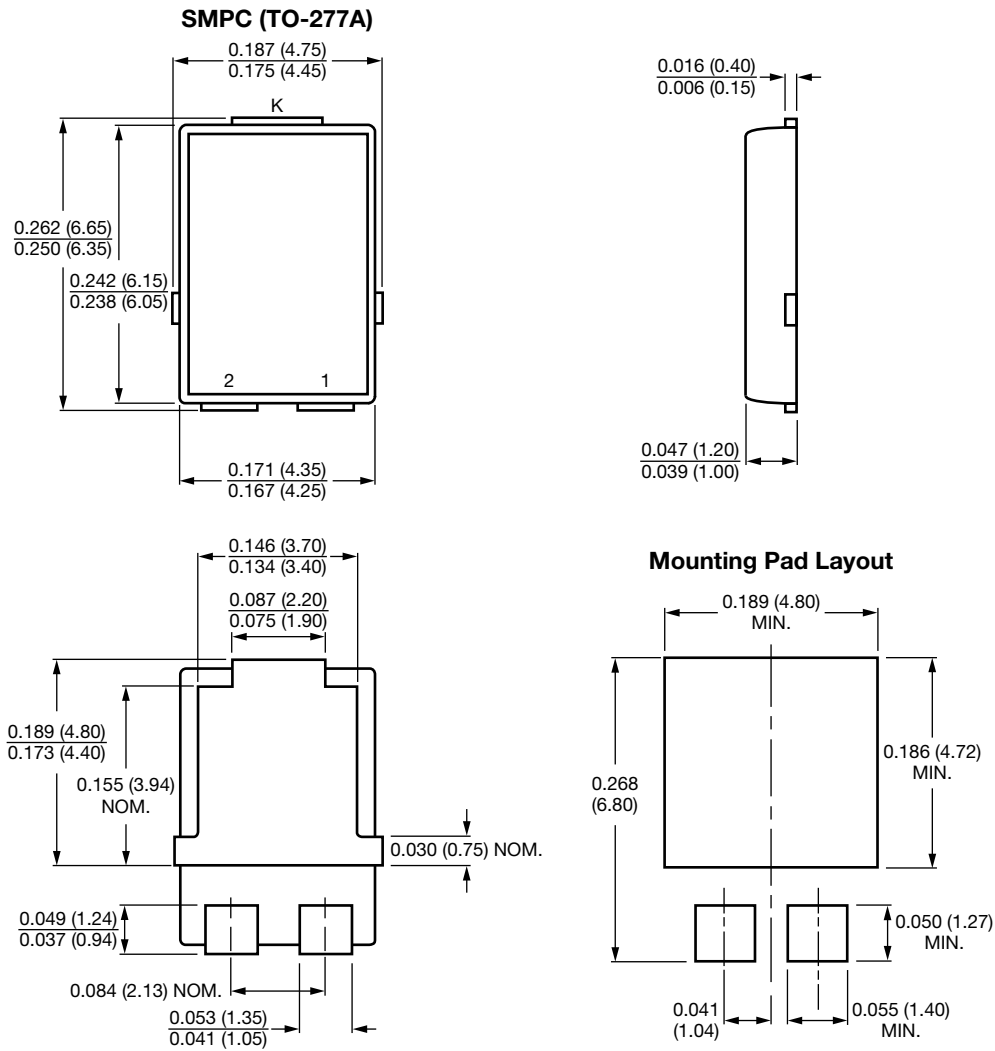


Fig. 6 - Typical Transient Thermal Impedance Per Diode



## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)



Conform to JEDEC® TO-277A



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