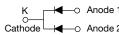


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# Vishay General Semiconductor

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

# eSMP® Series K SMPC (TO-277A)

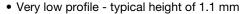


#### **LINKS TO ADDITIONAL RESOURCES**



PRIMARY CHARACTERISTICS					
I <sub>F(AV)</sub>	2 x 5.0 A				
$V_{RRM}$	20 V, 30 V				
I <sub>FSM</sub>	200 A				
E <sub>AS</sub>	20 mJ				
$V_F$ at $I_F = 5$ A	0.338 V				
T <sub>J</sub> max.	150 °C				
Package	SMPC (TO-277A)				
Circuit configuration	Common cathode				

#### **FEATURES**





COMPLIANT

HALOGEN FREE

- · 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 <a href="https://www.vishay.com/doc?99912">www.vishay.com/doc?99912</a>

#### 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

J-51D-002 and JE5D 22-B102

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

<b>MAXIMUM RATINGS</b> (T <sub>A</sub> = 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	I	10		Α	
	per diode	I <sub>F(AV)</sub>	5	.0		
Peak forward surge current 10 ms single half sine-wave superimposed on rated load		I <sub>FSM</sub>	200		А	
Non-repetitive avalanche energy at 25 °C, I <sub>AS</sub> = 2 A per diode		E <sub>AS</sub>	20		mJ	
Operating junction and storage temperature range		T <sub>J</sub> , T <sub>STG</sub>	-55 to +150		°C	



# SS10P2CL, SS10P3CL

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<b>ELECTRICAL CHARACTERISTICS</b> (T <sub>A</sub> = 25 °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	μΑ	
		T <sub>A</sub> = 125 °C		37	55	mA	
Typical junction capacitance per diode	4.0 V, 1 MHz		CJ	560	-	pF	

#### Notes

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

(2) Pulse test: Pulse width ≤ 40 ms

THERMAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise specified)						
PARAMETER	SYMBOL	SS10P2CL	SS10P3CL	UNIT		
Typical thermal resistance per diode	R <sub>0JA</sub> <sup>(1)</sup>	60		°C/W		
Typical thermal resistance per diode	$R_{ heta JL}$	3		G/ VV		

#### Note

<sup>(1)</sup> 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 (1)	0.10	Н	1500	7" diameter plastic tape and reel			
SS10P3CLHM3_A/I (1)	0.10	I	6500	13" diameter plastic tape and reel			

#### Note

(1) AEC-Q101 qualified

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### RATINGS AND CHARACTERISTICS CURVES (T<sub>A</sub> = 25 °C unless otherwise specified)

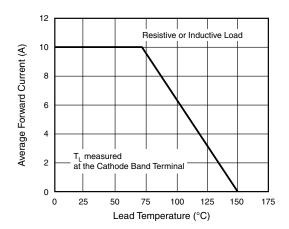


Fig. 1 - Maximum Forward Current Derating Curve

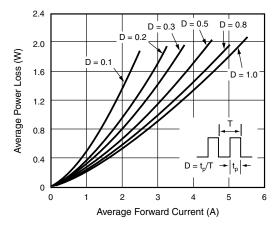


Fig. 2 - Forward Power Loss Characteristics Per Diode

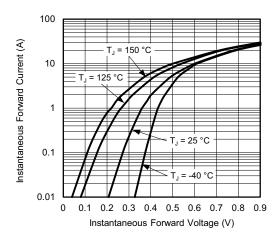


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

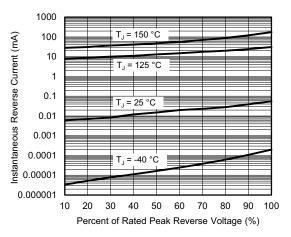


Fig. 4 - Typical Reverse Leakage Characteristics Per Diode

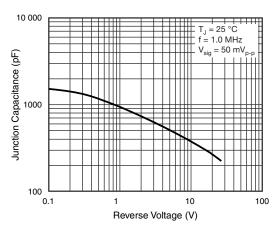


Fig. 5 - Typical Junction Capacitance Per Diode

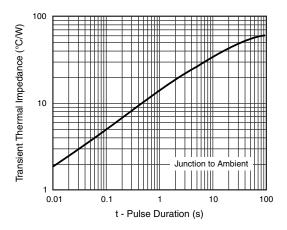
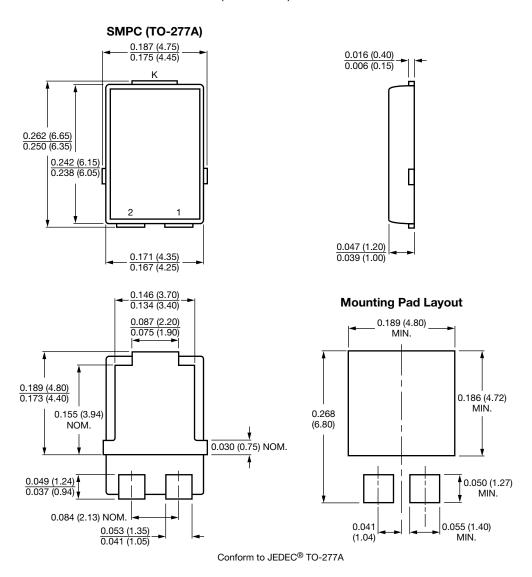


Fig. 6 - Typical Transient Thermal Impedance Per Diode



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





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