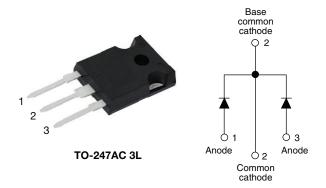


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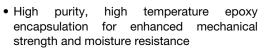
## High Performance Schottky Rectifier, 2 x 15 A



PRIMARY CHARACTERISTICS				
I <sub>F(AV)</sub>	2 x 15 A			
$V_{R}$	50 V, 60 V			
V <sub>F</sub> at I <sub>F</sub>	0.56 V			
I <sub>RM</sub> typ.	45 mA at 125 °C			
T <sub>J</sub> max.	150 °C			
E <sub>AS</sub>	13 mJ			
Package	TO-247AC 3L			
Circuit configuration	Common cathode			

### **FEATURES**

- 150 °C T<sub>J</sub> operation
- Very low forward voltage drop
- · High frequency operation





- Guard ring for enhanced ruggedness and long term reliability
- Designed and qualified according to JEDEC®-JESD 47
- Material categorization: for definitions of compliance please see <a href="https://www.vishay.com/doc?99912"><u>www.vishay.com/doc?99912</u></a>

### **DESCRIPTION**

The VS-30CPQ... center tap Schottky rectifier has been optimized for very low forward voltage drop, with moderate leakage. The proprietary barrier technology allows for reliable operation up to 150 °C junction temperature. Typical applications are in switching power supplies, converters, freewheeling diodes, and reverse battery protection.

MAJOR RATINGS AND CHARACTERISTICS						
SYMBOL	CHARACTERISTICS	VALUES	UNITS			
I <sub>F(AV)</sub>	Rectangular waveform	30	Α			
$V_{RRM}$		50/60	V			
I <sub>FSM</sub>	t <sub>p</sub> = 5 μs sine	1020	Α			
V <sub>F</sub>	15 A <sub>pk</sub> , T <sub>J</sub> = 125 °C (per leg)	0.56	V			
$T_J$		-55 to +150	°C			

VOLTAGE RATINGS				
PARAMETER	SYMBOL	VS-30CPQ050-N3	VS-30CPQ060-N3	UNITS
Maximum DC reverse voltage	$V_R$	50	60	V
Maximum working peak reverse voltage	$V_{RWM}$	50	80	V

ABSOLUTE MAXIMUM RATINGS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum average forward current See fig. 5	I <sub>F(AV)</sub>	50 % duty cycle at T <sub>C</sub> = 112 °C	C, rectangular waveform	30	
Maximum peak one cycle non-repetitive		5 μs sine or 3 μs rect. pulse	Following any rated load	1020	Α
surge current per leg See fig. 7	I <sub>FSM</sub>	10 ms sine or 6 ms rect. pulse	condition and with rated	265	
Non-repetitive avalanche energy per leg	E <sub>AS</sub>	$T_J = 25$ °C, $I_{AS} = 1.50$ A, L = 11.5 mH		13	mJ
Repetitive avalanche current per leg	I <sub>AR</sub>	Current decaying linearly to zero in 1 $\mu$ s Frequency limited by $T_J$ maximum $V_A = 1.5 \text{ x } V_R$ typical		Α	



# VS-30CPQ050-N3, VS-30CPQ060-N3

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ELECTRICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CONDITIONS V		VALUES	UNITS
	V <sub>FM</sub> <sup>(1)</sup>	15 A	T <sub>J</sub> = 25 °C	0.60	
Maximum forward voltage drop per leg		30 A		0.80	v
See fig. 1		15 A	T <sub>J</sub> = 125 °C	0.56	V
		30 A		0.70	
Maximum reverse leakage current per leg	I <sub>RM</sub> <sup>(1)</sup>	T <sub>J</sub> = 25 °C	V <sub>R</sub> = Rated V <sub>R</sub>	0.80	- mA
Maximum reverse leakage current per leg		T <sub>J</sub> = 125 °C		160	
Typical reverse leakage current per leg	I <sub>RM</sub> <sup>(1)</sup>	T <sub>J</sub> = 125 °C	V <sub>R</sub> = Rated V <sub>R</sub>	45	mA
Maximum junction capacitance per leg	C <sub>T</sub>	$V_R = 5 V_{DC}$ (test signal range 100 kHz to 1 MHz) 25 °C		720	pF
Typical series inductance per leg	L <sub>S</sub>	Measured lead to lead 5 mm from package body 7		7.5	nΗ
Maximum voltage rate of change	dV/dt	Rated V <sub>R</sub> 10 000 V/ <sub>k</sub>		V/µs	

### Note

 $<sup>^{(1)}\,</sup>$  Pulse width < 300  $\mu s,$  duty cycle < 2 %

THERMAL - MECHANICAL SPECIFICATIONS					
PARAMETER		SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum junction and storage temperature range	Ф	$T_J$ , $T_{Stg}$		-55 to 150	°C
Maximum thermal resistance, junction to case per leg		D	DC operation See fig. 4	2.20	
Maximum thermal resistance, junction to case per package		$R_{thJC}$	DC operation	1.10	°C/W
Typical thermal resistance, case to heatsink		R <sub>thCS</sub>	Mounting surface, smooth and greased	0.24	
Approximate weight				6	g
Approximate weight				0.21	OZ.
Mounting torque ———	minimum		Non-lubricated threads	6 (5)	kgf · cm
	maximum		INOTIFICATED THEADS	12 (10)	(lbf ⋅ in)
Marking device			Coop at do TO 247AC 21	30CP	Q050
			Case style TO-247AC 3L	30CPQ060	

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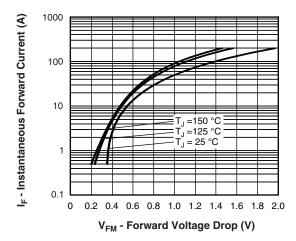


Fig. 1 - Maximum Forward Voltage Drop Characteristics (Per Leg)

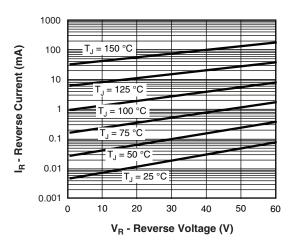


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage (Per Leg)

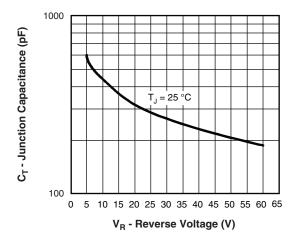


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage (Per Leg)

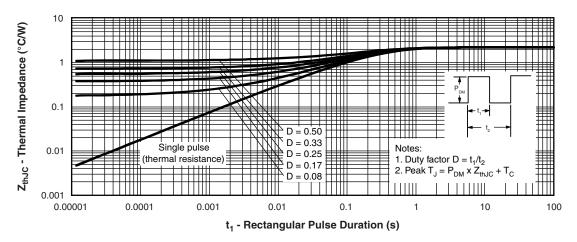


Fig. 4 - Maximum Thermal Impedance ZthJC Characteristics (Per Leg)

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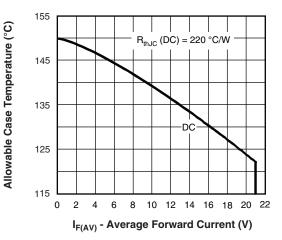


Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current (Per Leg)

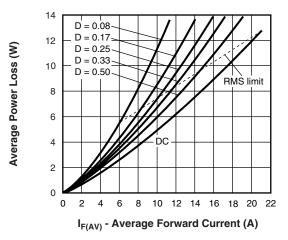


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

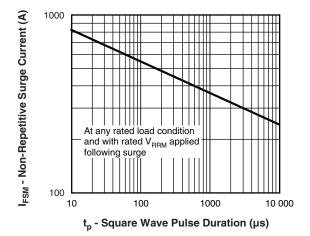


Fig. 7 - Maximum Non-Repetitive Surge Current (Per Leg)

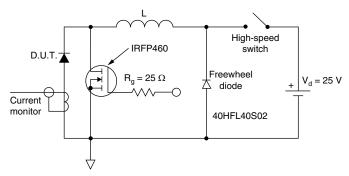
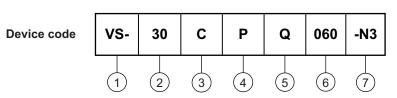


Fig. 8 - Unclamped Inductive Test Circuit

## VS-30CPQ050-N3, VS-30CPQ060-N3

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### **ORDERING INFORMATION TABLE**



- Vishay Semiconductors product

2 - Current rating (30 = 30 A)

Circuit configuration:

C = common cathode

4 - Package:

P = TO-247

5 - Schottky "Q" series

050 = 50 V

6 - Voltage code

060 = 60 V

7 - Environmental digit

-N3 = halogen-free, RoHS-compliant, and totally lead (Pb)-free

ORDERING INFORMATION (Example)				
PREFERRED P/N	QUANTITY PER T/R	MINIMUM ORDER QUANTITY	PACKAGING DESCRIPTION	
VS-30CPQ050-N3	25	500	Antistatic plastic tube	
VS-30CPQ060-N3	25	500	Antistatic plastic tube	

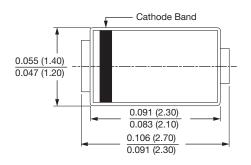
LINKS TO RELATED DOCUMENTS				
Dimensions <u>www.vishay.com/doc?96138</u>				
Part marking information	www.vishay.com/doc?95007			

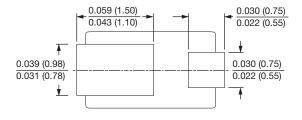


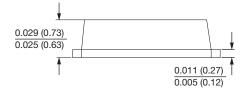
Vishay Semiconductors

# MicroSMP (DO-219AD), FRED Pt®

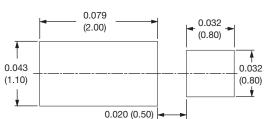
### **DIMENSIONS** in inches (millimeters)







### Mounting Pad Layout





## **Legal Disclaimer Notice**

Vishay

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