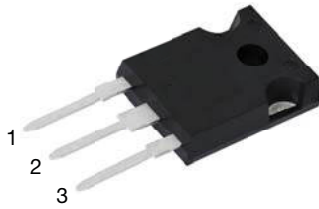
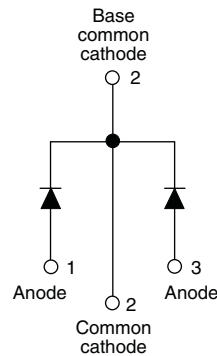


## High Performance Schottky Rectifier, 2 x 15 A


**TO-247AC 3L**


### FEATURES

- 175 °C  $T_J$  operation
- Low forward voltage drop
- High frequency operation
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- 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 [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)


**RoHS**  
 COMPLIANT  
 HALOGEN  
**FREE**

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	2 x 15 A
$V_R$	80 V, 90 V, 100 V
$V_F$ at $I_F$	0.67 V
$I_{RM}$ max.	7 mA at 125 °C
$T_J$ max.	175 °C
$E_{AS}$	7.5 mJ
Package	TO-247AC 3L
Circuit configuration	Common cathode

### DESCRIPTION

The VS-30CPQ... center tap Schottky rectifier has been optimized for low reverse leakage at high temperature. The proprietary barrier technology allows for reliable operation up to 175 °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
$I_{F(AV)}$	Rectangular waveform	30	A
$V_{RRM}$		80/100	V
$I_{FSM}$	$t_p = 5 \mu s$ sine	920	A
$V_F$	15 A <sub>pk</sub> , $T_J = 125$ °C (per leg)	0.67	V
$T_J$		-55 to +175	°C

VOLTAGE RATINGS					
PARAMETER	SYMBOL	VS-30CPQ080-N3	VS-30CPQ090-N3	VS-30CPQ100-N3	UNITS
Maximum DC reverse voltage	$V_R$	80	90	100	V
Maximum working peak reverse voltage	$V_{RWM}$				

ABSOLUTE MAXIMUM RATINGS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum average forward current see fig. 5	$I_{F(AV)}$	50 % duty cycle at $T_C = 140$ °C, rectangular waveform		30	A
Maximum peak one cycle non-repetitive surge current per leg, see fig. 7	$I_{FSM}$	5 $\mu s$ sine or 3 $\mu s$ rect. pulse	Following any rated load condition and with rated $V_{RRM}$ applied	920	
		10 ms sine or 6 ms rect. pulse		240	
Non-repetitive avalanche energy per leg	$E_{AS}$	$T_J = 25$ °C, $I_{AS} = 0.50$ A, $L = 60$ mH		7.50	mJ
Repetitive avalanche current per leg	$I_{AR}$	Current decaying linearly to zero in 1 $\mu s$ Frequency limited by $T_J$ maximum $V_A = 1.5 \times V_R$ typical		0.50	A



ELECTRICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum forward voltage drop per leg, see fig. 1	$V_{FM}^{(1)}$	15 A	$T_J = 25\text{ }^\circ\text{C}$	0.86	V
		30 A		1.05	
		15 A	$T_J = 125\text{ }^\circ\text{C}$	0.67	
		30 A		0.81	
Maximum reverse leakage current per leg, see fig. 2	$I_{RM}^{(1)}$	$T_J = 25\text{ }^\circ\text{C}$	$V_R = \text{Rated } V_R$	0.55	mA
		$T_J = 125\text{ }^\circ\text{C}$		7	
Maximum junction capacitance per leg	$C_T$	$V_R = 5 V_{DC}$ (test signal range 100 kHz to 1 MHz) $25\text{ }^\circ\text{C}$		500	pF
Typical series inductance per leg	$L_S$	Measured lead to lead 5 mm from package body		7.5	nH
Maximum voltage rate of change	dV/dt	Rated $V_R$		10 000	V/ $\mu$ s

**Note**(1) Pulse width < 300  $\mu$ s, duty cycle < 2 %

THERMAL - MECHANICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum junction and storage temperature range	$T_J, T_{Stg}$			-55 to 175	$^\circ\text{C}$
Maximum thermal resistance, junction to case per leg	$R_{thJC}$	DC operation See fig. 4		2.20	$^\circ\text{C/W}$
Maximum thermal resistance, junction to case per package		DC operation		1.10	
Typical thermal resistance, case to heatsink	$R_{thCS}$	Mounting surface, smooth and greased		0.24	
Approximate weight				6	g
				0.21	oz.
Mounting torque	minimum maximum		Non-lubricated threads	6 (5)	kgf · cm (lbf · in)
				12 (10)	
Marking device			Case style TO-247AC 3L	30CPQ080	
				30CPQ090	
				30CPQ100	

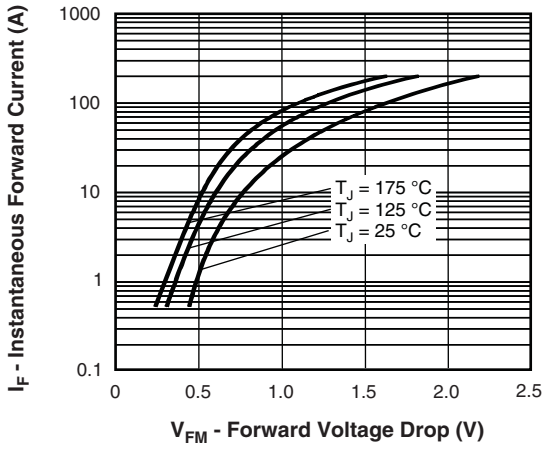


Fig. 1 - Maximum Forward Voltage Drop Characteristics (Per Leg)

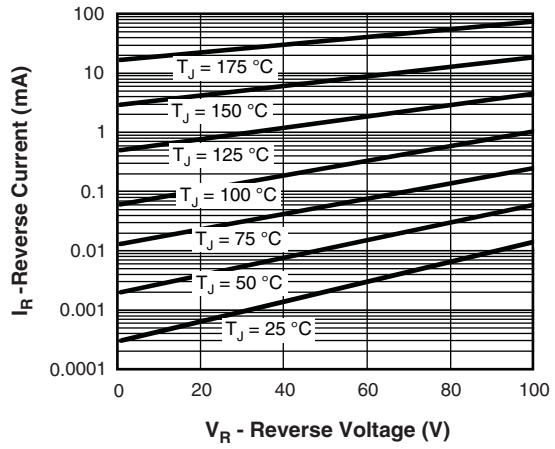


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage (Per Leg)

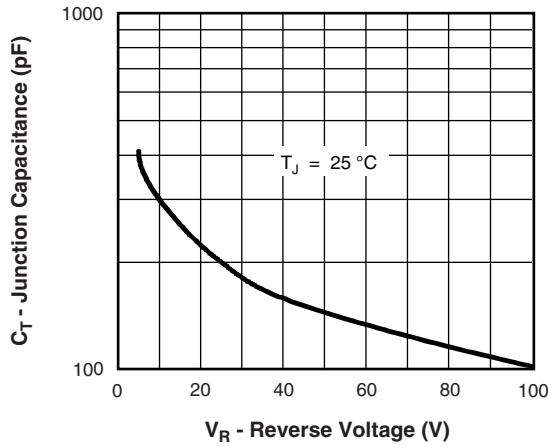


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage (Per Leg)

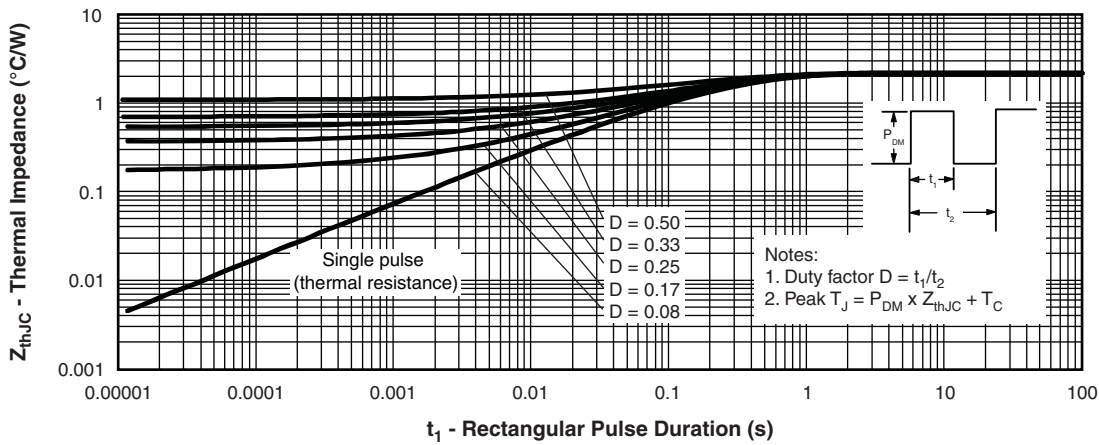


Fig. 4 - Maximum Thermal Impedance  $Z_{thJC}$  Characteristics (Per Leg)

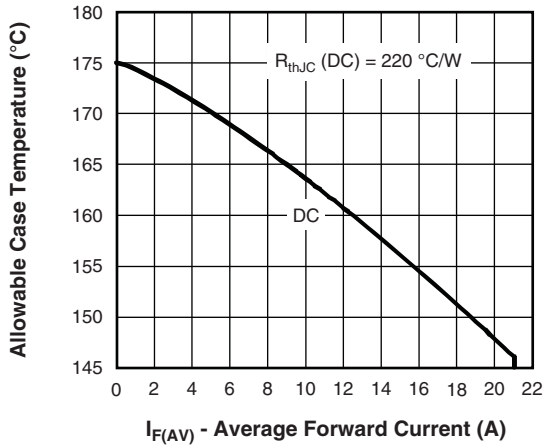


Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current (Per Leg)

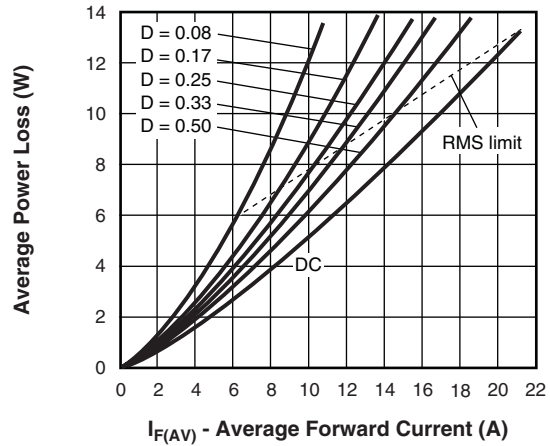


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

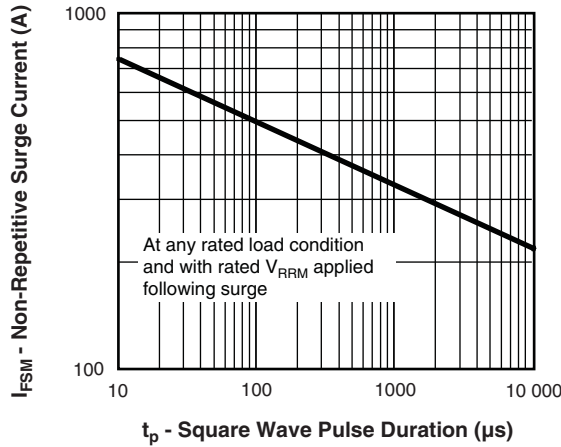


Fig. 7 - Maximum Non-Repetitive Surge Current (Per Leg)

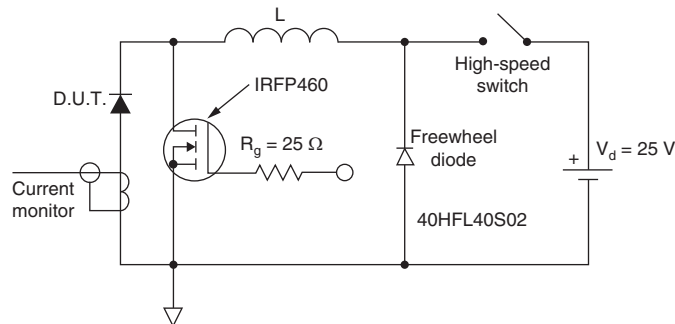
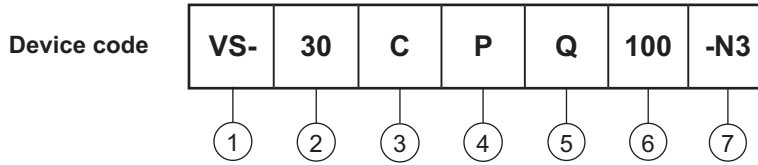


Fig. 8 - Unclamped Inductive Test Circuit



## ORDERING INFORMATION TABLE



- 1** - Vishay Semiconductors product
  - 2** - Current rating
  - 3** - Circuit configuration:  
C = common cathode
  - 4** - Package:  
P = TO-247
  - 5** - Schottky "Q" series
  - 6** - Voltage code
 

080 = 80 V
090 = 90 V
100 = 100 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-30CPQ080-N3	25	500	Antistatic plastic tube
VS-30CPQ090-N3	25	500	Antistatic plastic tube
VS-30CPQ100-N3	25	500	Antistatic plastic tube

LINKS TO RELATED DOCUMENTS	
Dimensions	<a href="http://www.vishay.com/doc?96138">www.vishay.com/doc?96138</a>
Part marking information	<a href="http://www.vishay.com/doc?95007">www.vishay.com/doc?95007</a>
SPIICE model	<a href="http://www.vishay.com/doc?95470">www.vishay.com/doc?95470</a>





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