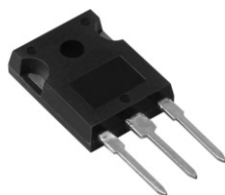
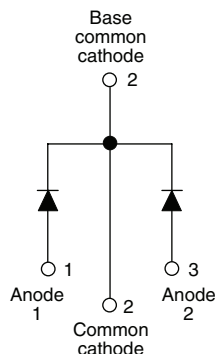


# Schottky Rectifier, 2 x 15 A



TO-247AC



## FEATURES

- 175 °C  $T_J$  operation
- Center tap TO-247 package
- 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 for industrial level

## DESCRIPTION

The 30CPQ150 center tap Schottky rectifier series 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.

## PRODUCT SUMMARY

$I_{F(AV)}$	2 x 15 A
$V_R$	150 V

## MAJOR RATINGS AND CHARACTERISTICS

SYMBOL	CHARACTERISTICS	VALUES	UNITS
$I_{F(AV)}$	Rectangular waveform	30	A
$V_{RRM}$		150	V
$I_{FSM}$	$t_p = 5 \mu s$ sine	1000	A
$V_F$	15 Apk, $T_J = 125^\circ C$ (per leg)	0.78	V
$T_J$		- 55 to 175	°C

## VOLTAGE RATINGS

PARAMETER	SYMBOL	30CPQ150	UNITS
Maximum DC reverse voltage	$V_R$	150	V
Maximum working peak reverse voltage	$V_{RWM}$		

## ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum average forward current per device See fig. 5	$I_{F(AV)}$	50 % duty cycle at $T_C = 135^\circ C$ , rectangular waveform	30	A
per leg			15	
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	1000	
		10 ms sine or 6 ms rect. pulse	340	
Non-repetitive avalanche energy per leg	$E_{AS}$	$T_J = 25^\circ C$ , $I_{AS} = 0.50$ A, $L = 90$ mH	11.25	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 <sub>FM</sub> <sup>(1)</sup>	15 A	T <sub>J</sub> = 25 °C	1.00	V
		30 A		1.19	
		15 A	T <sub>J</sub> = 125 °C	0.78	
		30 A		0.93	
Maximum reverse leakage current per leg See fig. 2	I <sub>RM</sub> <sup>(1)</sup>	T <sub>J</sub> = 25 °C	V <sub>R</sub> = Rated V <sub>R</sub>	0.1	mA
		T <sub>J</sub> = 125 °C		15	
Maximum junction capacitance per leg	C <sub>T</sub>	V <sub>R</sub> = 5 V <sub>DC</sub> (test signal range 100 kHz to 1 MHz) 25 °C		340	pF
Typical series inductance per leg	L <sub>S</sub>	Measured lead to lead 5 mm from package body		7.5	nH
Maximum voltage rate of change	dV/dt	Rated V <sub>R</sub>		10 000	V/μs

**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		6 (5)	kgf · cm
	maximum		12 (10)	(lbf · in)
Marking device		Case style TO-247AC (JEDEC)	30CPQ150	

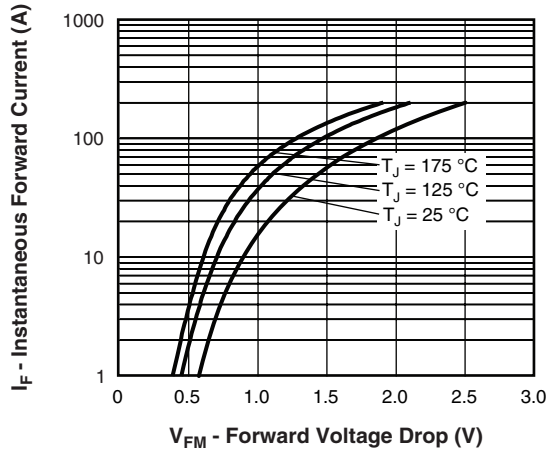


Fig. 1 - Maximum Forward Voltage Drop Characteristics (Per Leg)

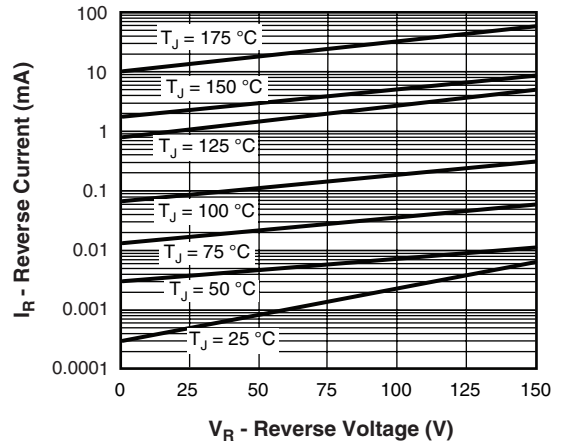


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage (Per Leg)

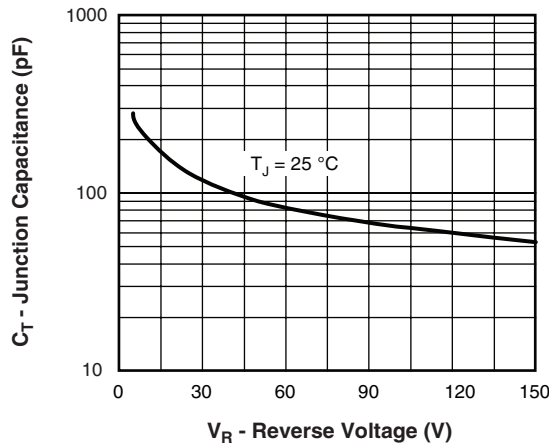


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage (Per Leg)

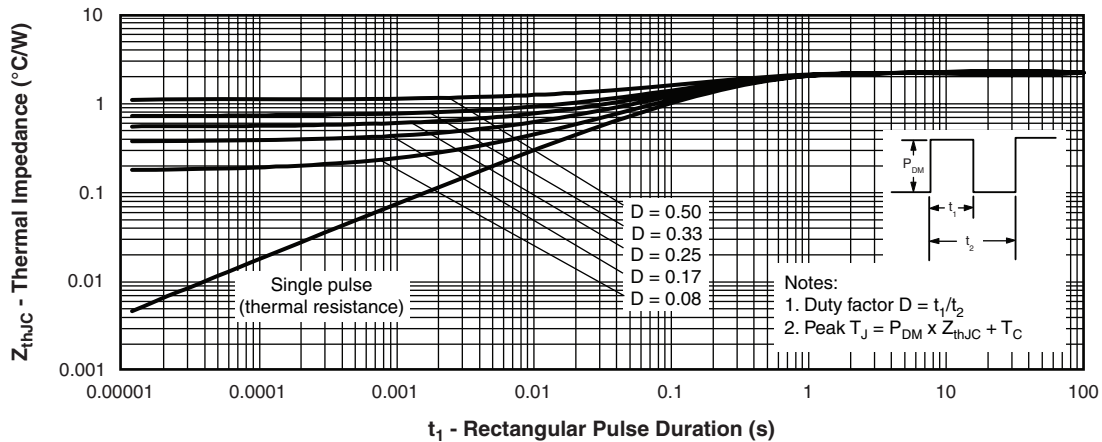


Fig. 4 - Maximum Thermal Impedance  $Z_{thJC}$  Characteristics (Per Leg)

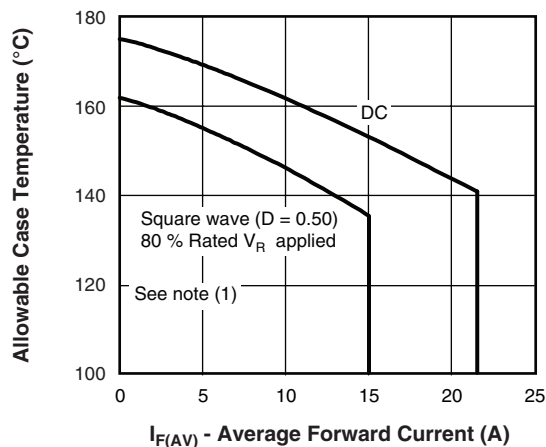


Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current (Per Leg)

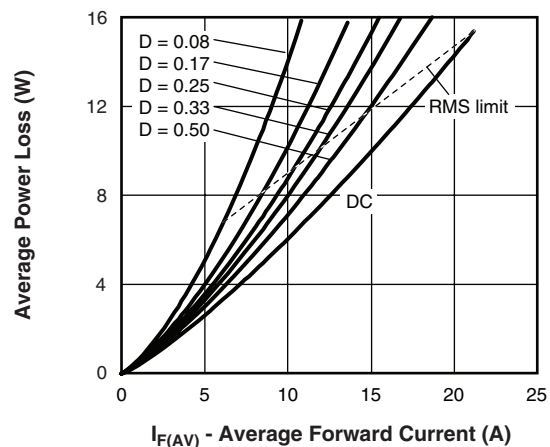


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

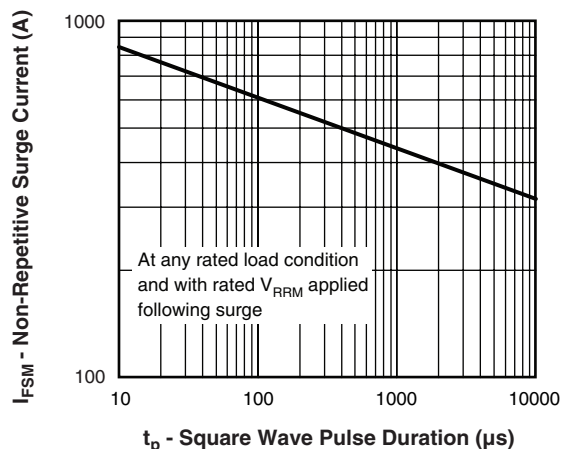


Fig. 7 - Maximum Non-Repetitive Surge Current (Per Leg)



Fig. 8 - Unclamped Inductive Test Circuit

### Note

- (1) Formula used:  $T_C = T_J - (P_d + P_{dREV}) \times R_{thJC}$ ;  
 $P_d$  = Forward power loss =  $I_{F(AV)} \times V_{FM}$  at  $(I_{F(AV)}/D)$  (see fig. 6);  
 $P_{dREV}$  = Inverse power loss =  $V_{R1} \times I_R (1 - D)$ ;  $I_R$  at  $V_{R1} = 80\%$  rated  $V_R$

**ORDERING INFORMATION TABLE**

Device code	30	C	P	Q	150	-
	1	2	3	4	5	6
	1	-	Current rating (30 = 30 A)			
	2	-	Circuit configuration: C = Common cathode			
	3	-	Package: P = TO-247			
	4	-	Schottky "Q" series			
	5	-	Voltage code (150 = 150 V)			
	6	-	• None = Standard production • PbF = Lead (Pb)-free			

Tube standard pack quantity: 25 pieces

LINKS TO RELATED DOCUMENTS	
Dimensions	<a href="http://www.vishay.com/doc?95223">http://www.vishay.com/doc?95223</a>
Part marking information	<a href="http://www.vishay.com/doc?95226">http://www.vishay.com/doc?95226</a>



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