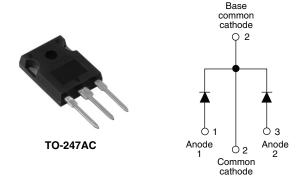


### Vishay High Power Products

## Schottky Rectifier, 2 x 35 A



PRODUCT SUMMARY				
I <sub>F(AV)</sub>	2 x 35 A			
$V_{R}$	30 V			

#### **FEATURES**

- 150 °C T<sub>J</sub> 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 72CPQ030 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 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	70	Α		
V <sub>RRM</sub>		30	V		
I <sub>FSM</sub>	$t_p = 5 \mu s sine$	2180	Α		
V <sub>F</sub>	35 Apk, T <sub>J</sub> = 125 °C (per leg)	0.43	V		
T <sub>J</sub>	Range	- 55 to 150	°C		

VOLTAGE RATINGS				
PARAMETER	SYMBOL	72CPQ030	UNITS	
Maximum DC reverse voltage	V <sub>R</sub>	30	V	
Maximum working peak reverse voltage	$V_{RWM}$	30		

ABSOLUTE MAXIMUM RATINGS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum average per l	eg			35	
forward current See fig. 5 per devi	ce I <sub>F(AV)</sub>	50 % duty cycle at T <sub>C</sub> = 125 °C	le at T <sub>C</sub> = 125 °C, rectangular waveform		A
Maximum peak one cycle non-repetitive		5 μs sine or 3 μs rect. pulse	Following any rated load condition and with rated	2180	
surge current per leg See fig. 7	I <sub>FSM</sub>	10 ms sine or 6 ms rect. pulse	V <sub>RRM</sub> applied	600	
Non-repetitive avalanche energy per leg	E <sub>AS</sub>	$T_J = 25 ^{\circ}\text{C},  I_{AS} = 6  \text{A},  L = 1.5  \text{mH}$		27	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 $V_A = 1.5 \times V_R$ typical		6	Α

# Vishay High Power Products Schottky Rectifier, 2 x 35 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>	35 A	T <sub>J</sub> = 25 °C	0.51	V
		70 A		0.61	
		35 A	- T <sub>J</sub> = 125 °C	0.43	
		70 A		0.58	
Maximum reverse leakage current per leg	J I <sub>RM</sub> (1)	T <sub>J</sub> = 25 °C	V <sub>R</sub> = Rated V <sub>R</sub>	1.9	mA
See fig. 2	'RM \''	T <sub>J</sub> = 125 °C		450	
Threshold voltage	$V_{F(TO)}$	T <sub>J</sub> = T <sub>J</sub> maximum		0.25	٧
Forward slope resistance	r <sub>t</sub>			4.7	mΩ
Maximum junction capacitance per leg	C <sub>T</sub>	$V_R = 5 V_{DC}$ (test signal range 100 kHz to 1 MHz) 25 °C		4600	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

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

THERMAL - MECHANICAL SPECIFICATIONS					
PARAMETER		SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum junction and storage temperature range	Э	T <sub>J</sub> , T <sub>Stg</sub>		- 55 to 150	°C
Maximum thermal resistance, junction to case per leg		Б	DC operation See fig. 4	0.8	
Maximum thermal resistance, junction to case per package		R <sub>thJC</sub>	DC operation	0.4	°C/W
Typical thermal resistance, case to heatsink		R <sub>thCS</sub> Mounting surface, smooth and greased		0.25	
A				6	g
Approximate weight			0.21	OZ.	
Mounting torque ——	minimum			6 (5)	kgf ⋅ cm
	maximum			12 (10)	(lbf $\cdot$ in)
Marking device	ing device Case style TO-247AC (JEDEC) 72CPQ(		Q030		



## Schottky Rectifier, 2 x 35 A Vishay High Power Products

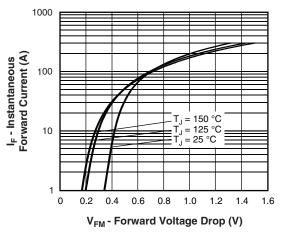


Fig. 1 - Maximum Forward Voltage Drop Characteristics (Per Leg)

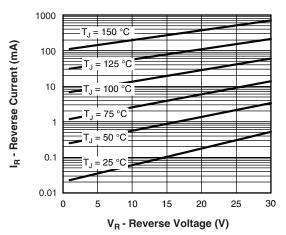


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage (Per Leg)

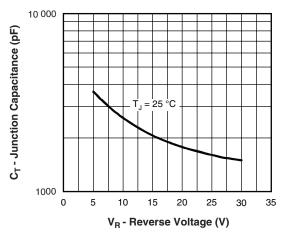


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage (Per Leg)

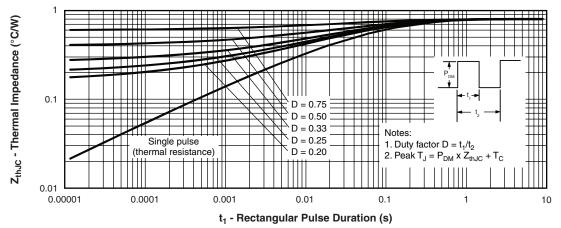


Fig. 4 - Maximum Thermal Impedance Z<sub>thJC</sub> Characteristics (Per Leg)

### Vishay High Power Products Schottky Rectifier, 2 x 35 A



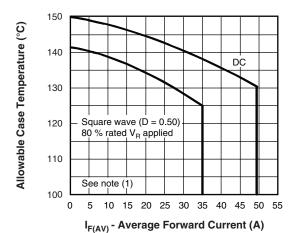


Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current (Per Leg)

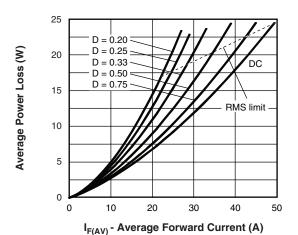


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

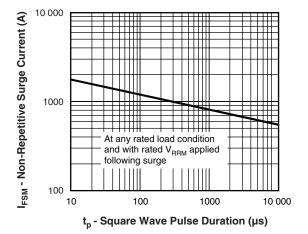


Fig. 7 - Maximum Non-Repetitive Surge Current (Per Leg)

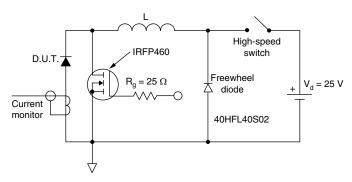


Fig. 8 - Unclamped Inductive Test Circuit

#### Note

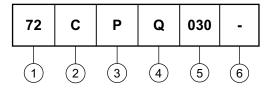
Formula used:  $T_C = T_J - (Pd + Pd_{REV}) \times R_{thJC}$ ;  $Pd = Forward power loss = I_{F(AV)} \times V_{FM} \text{ at } (I_{F(AV)}/D) \text{ (see fig. 6)}$ ;  $Pd_{REV} = Inverse power loss = V_{R1} \times I_R (1 - D)$ ;  $I_R \text{ at } V_{R1} = 80 \% \text{ rated } V_R$ 



## Schottky Rectifier, 2 x 35 A Vishay High Power Products

### **ORDERING INFORMATION TABLE**

**Device code** 



1 - Current rating (70 A)

2 - Circuit configuration:

C = Common cathode

3 - Package:

P = TO-247

4 - Schottky "Q" series

5 - Voltage code (030 = 30 V)

6 - • None = Standard production

• PbF = Lead (Pb)-free

Tube standard pack quantity: 25 pieces

LINKS TO RELATED DOCUMENTS			
Dimensions http://www.vishay.com/doc?95223			
Part marking information	http://www.vishay.com/doc?95226		



Vishay

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