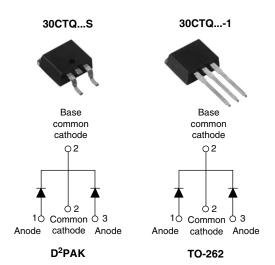


### Vishay High Power Products

## Schottky Rectifier, 2 x 15 A



PRODUCT SUMMARY				
I <sub>F(AV)</sub>	2 x 15 A			
$V_{R}$	35 to 45 V			

#### **FEATURES**

- 175 °C T<sub>J</sub> operation
- Center tap TO-220 package
- Very 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 Q101 level

#### **DESCRIPTION**

The 30CTQ... 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 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 <sub>F(AV)</sub>	Rectangular waveform	30	Α	
V <sub>RRM</sub>		35 to 45	V	
I <sub>FSM</sub>	$t_p = 5 \mu s sine$	1060	Α	
V <sub>F</sub>	15 Apk, T <sub>J</sub> = 125 °C (per leg)	0.56	V	
T <sub>J</sub>	Range	- 55 to 175	°C	

VOLTAGE RATINGS					
PARAMETER	SYMBOL	30CTQ035S 30CTQ035-1	30CTQ040S 30CTQ040-1	30CTQ045S 30CTQ045-1	UNITS
Maximum DC reverse voltage	$V_R$	35	40	45	V
Maximum working peak reverse voltage	$V_{RWM}$	33	40	45	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> = 127 °C, rectangular waveform		30		
Maximum peak one cycle non-repetitive surge current per leg			Following any rated load condition and with rated	1060	Α
See fig. 7	IFSM	10 ms sine or 6 ms rect. pulse	V <sub>RRM</sub> applied	265	
Non-repetitive avalanche energy per leg	E <sub>AS</sub>	$T_J = 25 ^{\circ}\text{C},  I_{AS} = 3.0 \text{A},  L = 4.40 \text{mH}$		20	mJ
Repetitive avalanche current per leg	I <sub>AR</sub>	Current decaying linearly to zero in 1 $\mu$ s  Frequency limited by T <sub>J</sub> maximum V <sub>A</sub> = 1.5 x V <sub>R</sub> typical  3.0		А	

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# 30CTQ...S/30CTQ...-1

#### Vishay High Power Products Schottky Rectifier, 2 x 15 A



ELECTRICAL SPECIFICATIONS						
PARAMETER	SYMBOL	L TEST CONDITIONS VALUES		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	0.62	V	
		30 A		0.76		
		15 A	T <sub>J</sub> = 125 °C	0.56		
		30 A		0.70		
Maximum reverse leakage current per leg	I <sub>RM</sub> <sup>(1)</sup>	T <sub>J</sub> = 25 °C	$V_B = Rated V_B$	2	mA	
See fig. 2		T <sub>J</sub> = 125 °C	V <sub>R</sub> = nateu V <sub>R</sub>	15	IIIA	
Maximum junction capacitance per leg	C <sub>T</sub>	$V_R = 5 V_{DC}$ (test signal range 100 kHz to 1 MHz) 25 °C		900	pF	
Typical series inductance per leg	L <sub>S</sub>	Measured lead to lead 5 mm from package body 8.0		8.0	nH	
Maximum voltage rate of change	dV/dt	Rated V <sub>R</sub> 10 000		V/µs		

#### Note

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

PARAMETER		SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum junction and storage temperature range		T <sub>J</sub> , T <sub>Stg</sub>		- 55 to 175	°C
Maximum thermal resistance, junction to case per leg		В	DC operation See fig. 4	3.25	°C/W
Maximum thermal resistance, junction to case per package		R <sub>thJC</sub>	DC operation	1.63	
Typical thermal resistance, case to heatsink		R <sub>thCS</sub>	Mounting surface, smooth and greased	0.50	
Approximate weight				2	g
				0.07	OZ.
Mounting torque	minimum			6 (5)	kgf · cm
	maximum			12 (10)	(lbf ⋅ in)
				30CTC	
			Case style D <sup>2</sup> PAK	30CTQ040S	
Marking device			30CTQ045S		
				30CTQ	035-1
		Case style TO-262		30CTQ040-1	
				30CTQ	045-1

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## Schottky Rectifier, 2 x 15 A Vishay High Power Products

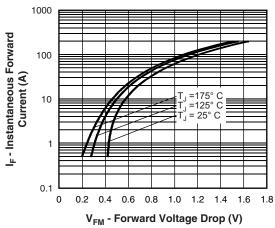


Fig. 1 - Maximum Forward Voltage Drop Characteristics (Per Leg)

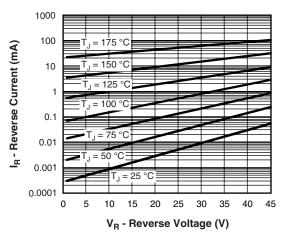


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage (Per Leg)

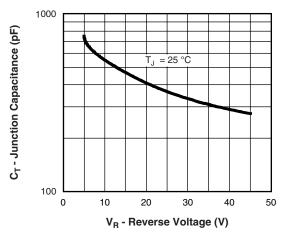


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage (Per Leg)

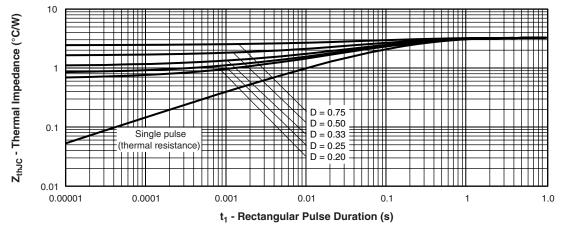


Fig. 4 - Maximum Thermal Impedance Z<sub>thJC</sub> Characteristics (Per Leg)

## Vishay High Power Products School

### Schottky Rectifier, 2 x 15 A



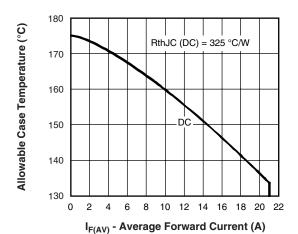


Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current (Per Leg)

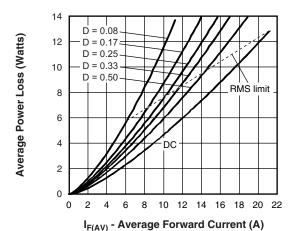


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

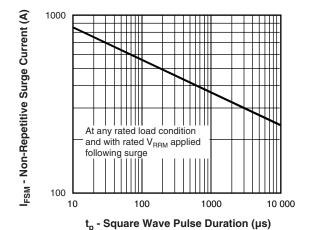


Fig. 7 - Maximum Non-Repetitive Surge Current (Per Leg)

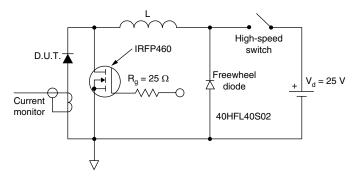


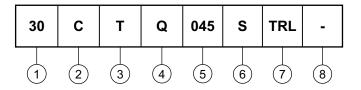
Fig. 8 - Unclamped Inductive Test Circuit



## Schottky Rectifier, 2 x 15 A Vishay High Power Products

#### **ORDERING INFORMATION TABLE**

**Device code** 



Current rating (30 A)

2 - Circuit configuration:

C = Common cathode

**3** - T = TO-220

- Schottky "Q" series 035 = 35 V

5 - Voltage ratings — 040 = 40 V 045 = 45 V

• S = D<sup>2</sup>PAK • -1 = TO-262

7 - None = Tube (50 pieces)

• TRL = Tape and reel (left oriented - for D<sup>2</sup>PAK only)

• TRR = Tape and reel (right oriented - for D<sup>2</sup>PAK only)

8 - • None = Standard production

• PbF = Lead (Pb)-free

LINKS TO RELATED DOCUMENTS					
Dimensions http://www.vishay.com/doc?95014					
Part marking information	http://www.vishay.com/doc?95008				
Packaging information	http://www.vishay.com/doc?95032				

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