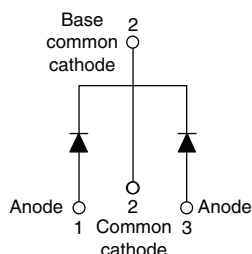


Schottky Rectifier, 2 x 15 A


TO-220AB


FEATURES

- 175 °C T_J 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 industrial 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.

PRODUCT SUMMARY

$I_{F(AV)}$	2 x 15 A
V_R	35 to 45 V

MAJOR RATINGS AND CHARACTERISTICS

SYMBOL	CHARACTERISTICS	VALUES	UNITS
$I_{F(AV)}$	Rectangular waveform	30	A
V_{RRM}		35 to 45	V
I_{FSM}	$t_p = 5 \mu s$ sine	1060	A
V_F	15 Apk, $T_J = 125^\circ C$ (per leg)	0.56	V
T_J		- 55 to 175	°C

VOLTAGE RATINGS

PARAMETER	SYMBOL	30CTQ035	30CTQ040	30CTQ045	UNITS
Maximum DC reverse voltage	V_R	35	40	45	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 $T_C = 127^\circ C$, rectangular waveform	30	A
Maximum peak one cycle non-repetitive surge current per leg See fig. 7	I_{FSM}	5 μs sine or 3 μs rect. pulse	1060	
		10 ms sine or 6 ms rect. pulse	265	
Non-repetitive avalanche energy per leg	E_{AS}	$T_J = 25^\circ C$, $I_{AS} = 3.0$ A, $L = 4.40$ mH	20	mJ
Repetitive avalanche current per leg	I_{AR}	Current decaying linearly to zero in 1 μs Frequency limited by T_J maximum $V_A = 1.5 \times V_R$ typical	3.0	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 °C	0.62	V	
		30 A		0.76		
		15 A	T _J = 125 °C	0.56		
		30 A		0.70		
Maximum reverse leakage current per leg See fig. 2	I _{RM} ⁽¹⁾	T _J = 25 °C	V _R = Rated V _R	2	mA	
		T _J = 125 °C		15		
Maximum junction capacitance per leg	C _T	V _R = 5 V _{DC} (test signal range 100 kHz to 1 MHz) 25 °C		900	pF	
Typical series inductance per leg	L _S	Measured lead to lead 5 mm from package body		8.0	nH	
Maximum voltage rate of change	dV/dt	Rated V _R		10 000	V/μs	

Note(1) Pulse width < 300 μ 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	3.25	$^{\circ}\text{C/W}$
Maximum thermal resistance, junction to case per package		DC operation	1.63	
Typical thermal resistance, case to heatsink	R_{thCS}	Mounting surface, smooth and greased	0.50	
Approximate weight			2.0	g
			0.07	oz.
Mounting torque	minimum		6 (5)	kgf · cm
	maximum		12 (10)	(lbf · in)
Marking device		Case style TO-220AB	30CTQ035	
			30CTQ040	
			30CTQ045	

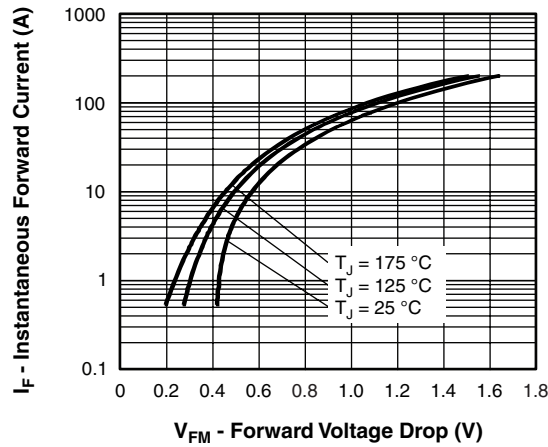


Fig. 1 - Maximum Forward Voltage Drop Characteristics (Per Leg)

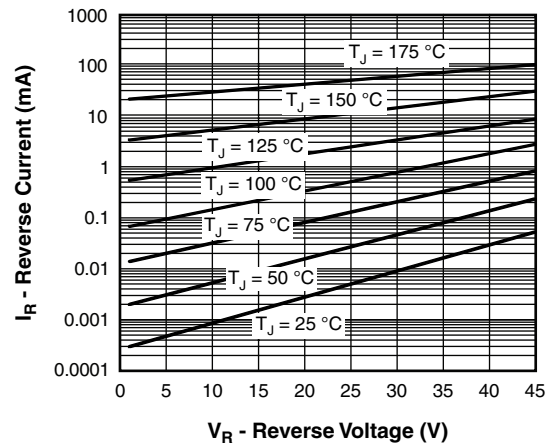


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage (Per Leg)

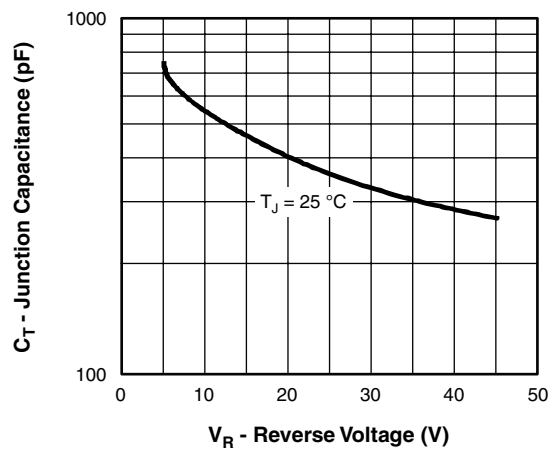


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage (Per Leg)

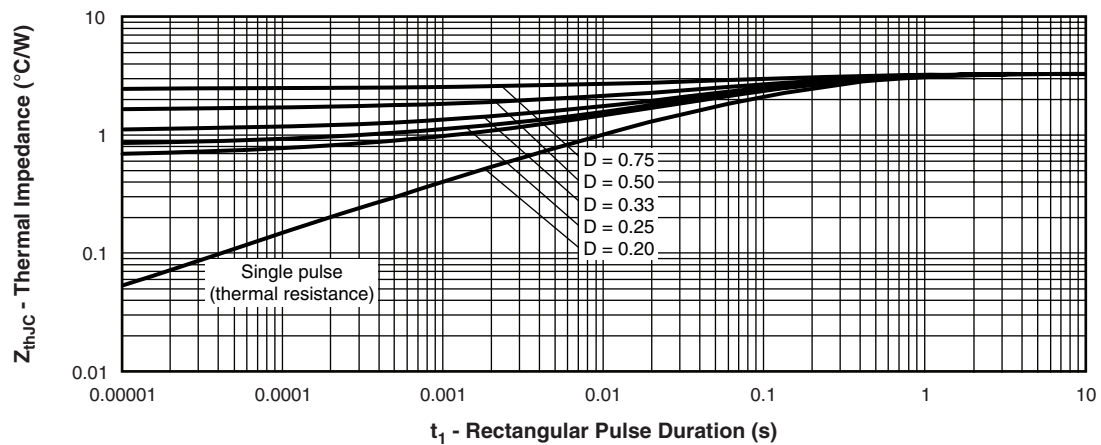


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics (Per Leg)

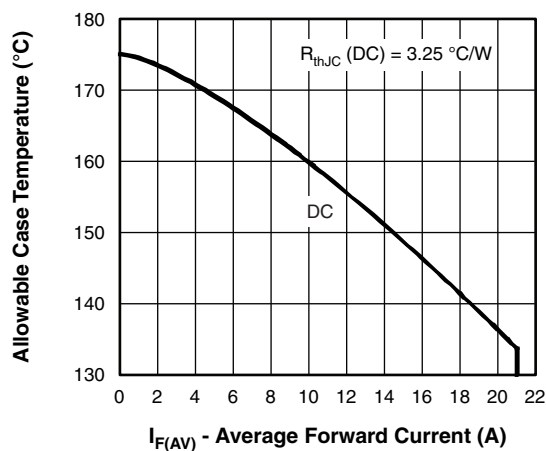


Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current (Per Leg)

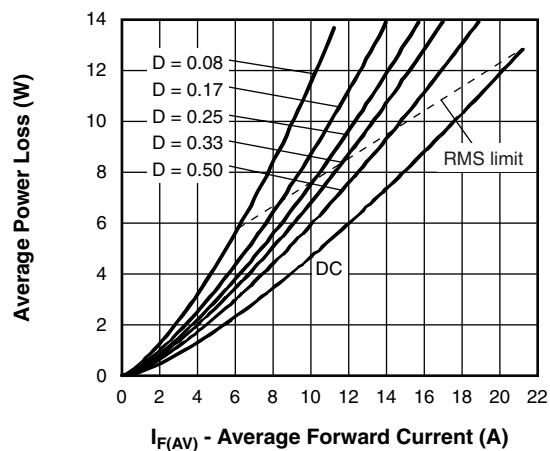


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

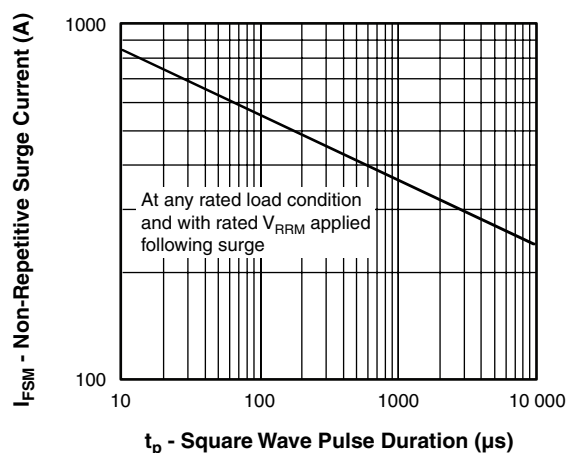


Fig. 7 - Maximum Non-Repetitive Surge Current (Per Leg)



Fig. 8 - Unclamped Inductive Test Circuit



ORDERING INFORMATION TABLE

Device code	30	C	T	Q	045	-
	1	2	3	4	5	6
	1	-	Current rating (30 = 30 A)			
	2	-	Circuit configuration			
			C = Common cathode			
	3	-	Package			
			T = TO-220			
	4	-	Schottky "Q" series			
	5	-	Voltage ratings			
	6	-	• None = Standard production			
			• PbF = Lead (Pb)-free			
						035 = 35 V 040 = 40 V 045 = 45 V

Tube standard pack quantity: 50 pieces

LINKS TO RELATED DOCUMENTS	
Dimensions	http://www.vishay.com/doc?95222
Part marking information	http://www.vishay.com/doc?95225



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