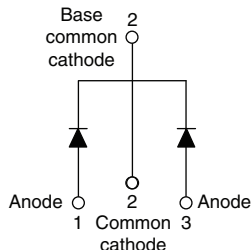


## Schottky Rectifier, 2 x 8 A


**TO-220AB**


### FEATURES

- 175 °C  $T_J$  operation
- Center tap configuration
- 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

This 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 8 A
$V_R$	60 to 100 V

### MAJOR RATINGS AND CHARACTERISTICS

SYMBOL	CHARACTERISTICS	VALUES	UNITS
$I_{F(AV)}$	Rectangular waveform	16	A
$V_{RRM}$		60 to 100	V
$I_{FSM}$	$t_p = 5 \mu s$ sine	850	A
$V_F$	8 Apk, $T_J = 125^\circ C$ (per leg)	0.58	V
$T_J$	Range	- 55 to 175	°C

### VOLTAGE RATINGS

PARAMETER	SYMBOL	16CTQ060	16CTQ080	16CTQ100	UNITS
Maximum DC reverse voltage	$V_R$	60	80	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 $T_C = 148\text{ }^{\circ}\text{C}$ , rectangular waveform		8	A
per leg per device				16	
Maximum peak one cycle non-repetitive surge current per leg See fig. 7	$I_{FSM}$	5 $\mu\text{s}$ sine or 3 $\mu\text{s}$ rect. pulse	Following any rated load condition and with rated $V_{RRM}$ applied	850	A
		10 ms sine or 6 ms rect. pulse		275	
Non-repetitive avalanche energy per leg	$E_{AS}$	$T_J = 25\text{ }^{\circ}\text{C}$ , $I_{AS} = 0.50\text{ A}$ , $L = 60\text{ mH}$		7.50	mJ
Repetitive avalanche current per leg	$I_{AR}$	Current decaying linearly to zero in 1 $\mu\text{s}$ 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	$V_{FM}^{(1)}$	8 A	$T_J = 25\text{ }^{\circ}\text{C}$	0.72	V	
		16 A		0.88		
		8 A	$T_J = 125\text{ }^{\circ}\text{C}$	0.58		
		16 A		0.69		
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	
		$T_J = 125\text{ }^{\circ}\text{C}$		7.0		
Threshold voltage	$V_{F(TO)}$	$T_J = T_J \text{ maximum}$		0.415	V	
Forward slope resistance	$r_t$			11.07	mΩ	
Maximum junction capacitance per leg	$C_T$	$V_R = 5\text{ V}_{DC}$ (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		8.0	nH	
Maximum voltage rate of change	dV/dt	Rated $V_R$		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 <sub>J</sub> , T <sub>Stg</sub>		- 55 to 175	°C
Maximum thermal resistance, junction to case per leg	R <sub>thJC</sub>	DC operation	3.25	°C/W
Maximum thermal resistance junction to case per package	R <sub>thJC</sub>		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 (lbf · in)
	maximum		12 (10)	
Marking device		Case style TO-220AB	16CTQ060	
			16CTQ080	
			16CTQ100	

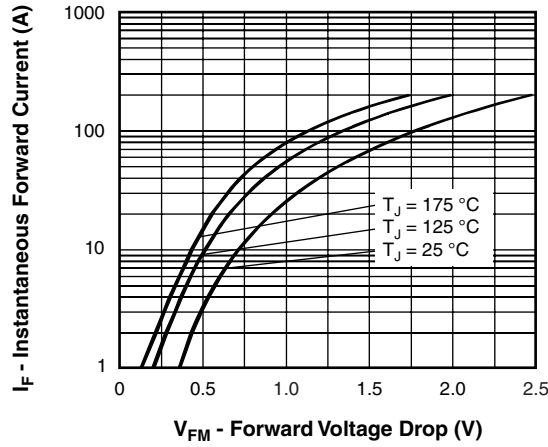


Fig. 1 - Maximum Forward Voltage Drop Characteristics (Per Leg)

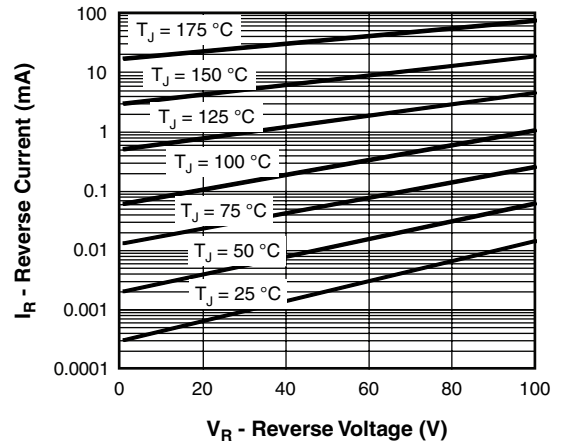


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage (Per Leg)

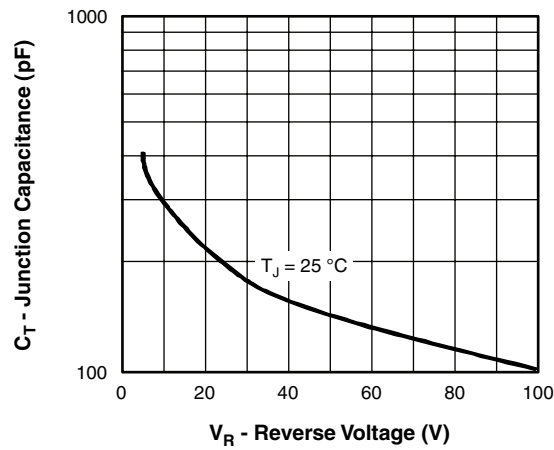


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage (Per Leg)

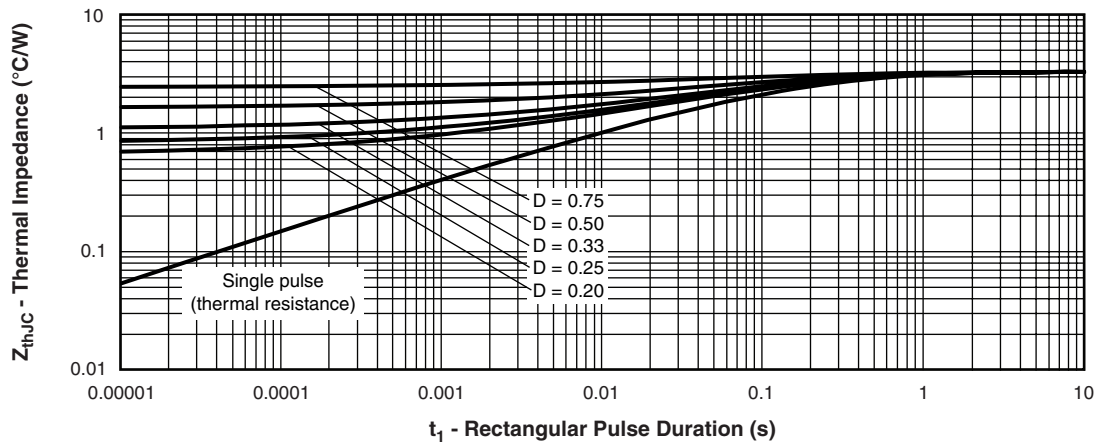


Fig. 4 - Maximum Thermal Impedance  $Z_{thJC}$  Characteristics (Per Leg)

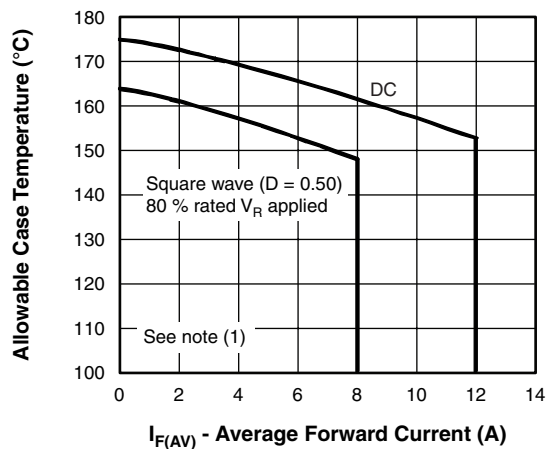


Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current (Per Leg)

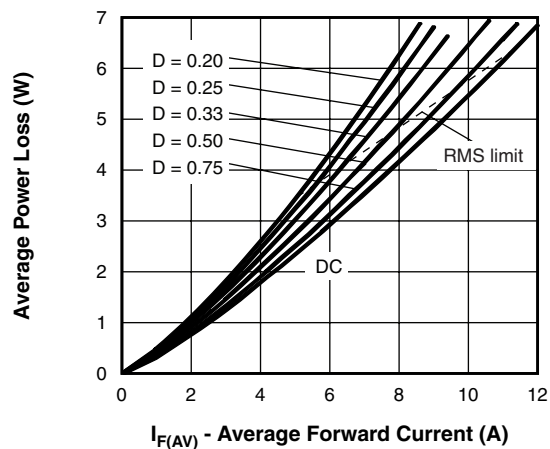


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

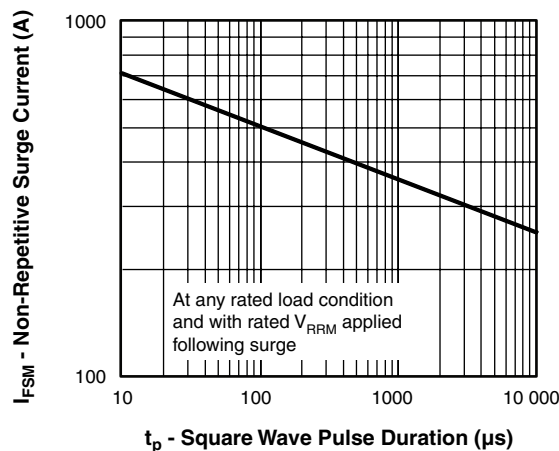


Fig. 7 - Maximum Non-Repetitive Surge Current (Per Leg)



Fig. 8 - Unclamped Inductive Test Circuit

### Note

- (9) 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  $V_R$  applied



### ORDERING INFORMATION TABLE

Device code	16	C	T	Q	100	-
	1	2	3	4	5	6
	1	-	Current rating (16 = 16 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			

060 = 60 V
080 = 80 V
100 = 100 V

Tube standard pack quantity: 50 pieces

LINKS TO RELATED DOCUMENTS	
Dimensions	<a href="http://www.vishay.com/doc?95222">http://www.vishay.com/doc?95222</a>
Part marking information	<a href="http://www.vishay.com/doc?95225">http://www.vishay.com/doc?95225</a>
SPICE model	<a href="http://www.vishay.com/doc?95279">http://www.vishay.com/doc?95279</a>



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