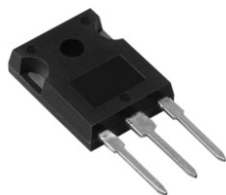
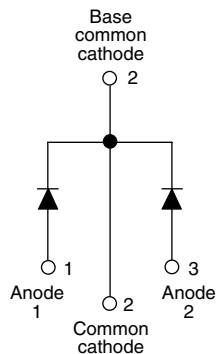


Schottky Rectifier, 2 x 40 A


TO-247AC


FEATURES

- 150 °C T_J operation
- Center tap configuration
- Optimized for 3.3 V application
- Ultra low forward voltage drop
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- Designed and qualified for industrial level

DESCRIPTION

This center tap Schottky rectifier has been optimized for ultra low forward voltage drop specifically for 3.3 V output power supplies. The proprietary barrier technology allows for reliable operation up to 150 °C junction temperature. Typical applications are in parallel switching power supplies, converters, reverse battery protection, and redundant power subsystems.

PRODUCT SUMMARY

$I_{F(AV)}$	2 x 40 A
V_R	20 V
I_{RM}	1100 mA at 125 °C

MAJOR RATINGS AND CHARACTERISTICS

SYMBOL	CHARACTERISTICS	VALUES	UNITS
$I_{F(AV)}$	Rectangular waveform	80	A
V_{RRM}		20	V
I_{FSM}	$t_p = 5 \mu s$ sine	2200	A
V_F	40 Apk, $T_J = 150$ °C (per leg)	0.32	V
T_J	Range	- 55 to 150	°C

VOLTAGE RATINGS

PARAMETER	SYMBOL	80CPQ020	UNITS
Maximum DC reverse voltage	V_R	20	V

ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum average forward current per leg per device	$I_{F(AV)}$	50 % duty cycle at $T_C = 138$ °C, rectangular waveform	40	A
			80	
Maximum peak one cycle non-repetitive surge current per leg	I_{FSM}	5 μs sine or 3 μs rect. pulse	2200	
		10 ms sine or 6 ms rect. pulse	500	
Non-repetitive avalanche energy per leg	E_{AS}	$T_J = 25$ °C, $I_{AS} = 6$ A, $L = 1.5$ mH	27	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	6	A

ELECTRICAL SPECIFICATIONS						
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS	
Maximum forward voltage drop per leg	V _{FM} ⁽¹⁾	40 A	T _J = 25 °C	0.46	V	
		80 A		0.55		
		40 A	T _J = 125 °C	0.36		
		80 A		0.46		
		40 A	T _J = 150 °C	0.32		
		80 A		0.43		
Maximum reverse leakage current per leg	I _{RM} ⁽¹⁾	T _J = 125 °C	V _R = 5 V	110	mA	
		T _J = 150 °C	V _R = 10 V	600		
		T _J = 25 °C	V _R = Rated V _R	5.5		
		T _J = 125 °C		1100		
Threshold voltage	V _{F(TO)}	T _J = T _J maximum		0.185	V	
Forward slope resistance	r _t			3.2	mΩ	
Maximum junction capacitance per leg	C _T	V _R = 5 V _{DC} (test signal range 100 kHz to 1 MHz) 25 °C		6500	pF	
Typical series inductance per leg	L _S	Measured lead to lead 5 mm from package body		7.5	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 150	°C
Maximum thermal resistance, junction to case per leg	R _{thJC}	DC operation	0.6	°C/W
Maximum thermal resistance, junction to case per package			0.3	
Typical thermal resistance, case to heatsink	R _{thCS}	Mounting surface, smooth and greased	0.25	
Approximate weight			6	g
			0.21	oz.
Mounting torque	minimum		6 (5)	kgf · cm (lbf · in)
	maximum		12 (10)	
Marking device		Case style TO-247AC (JEDEC)	80CPQ020	

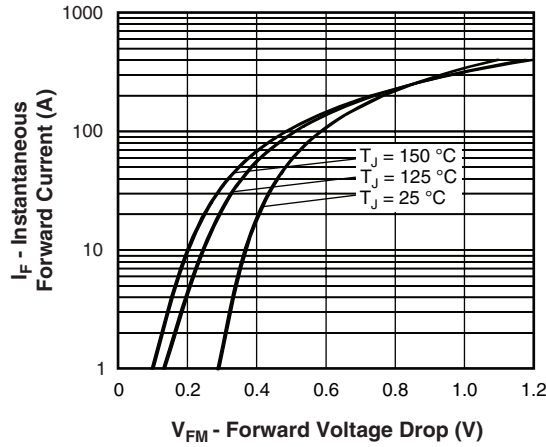


Fig. 1 - Maximum Forward Voltage Drop Characteristics (Per Leg)

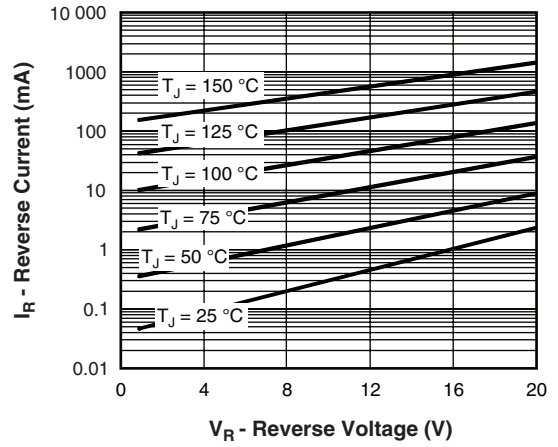


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage (Per Leg)

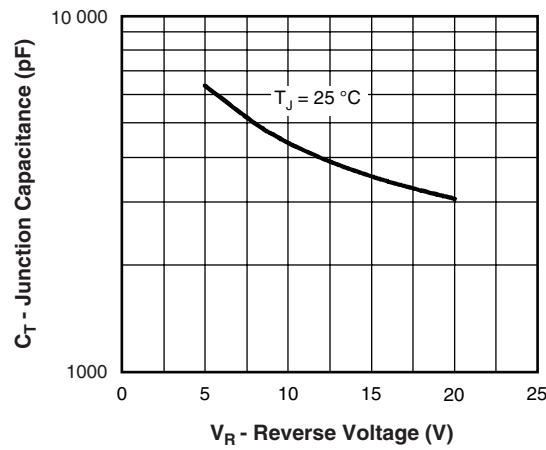


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage (Per Leg)

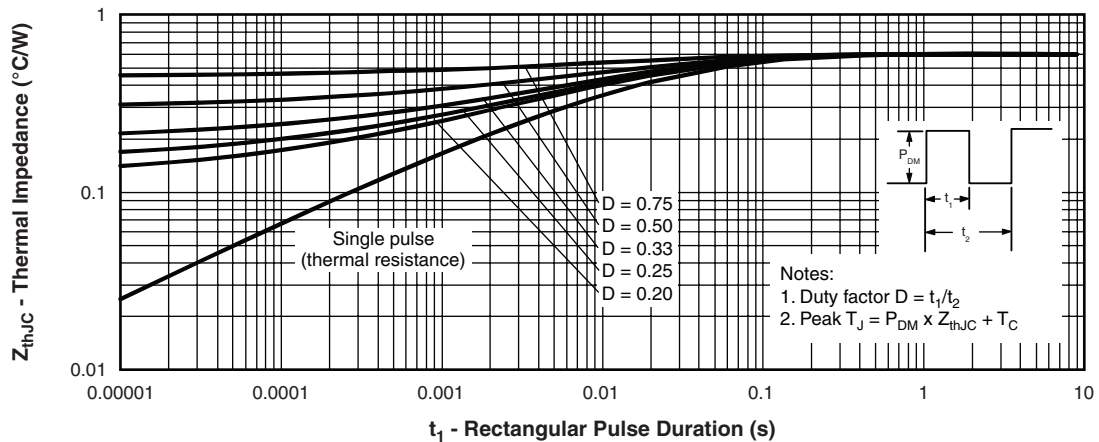


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics (Per Leg)

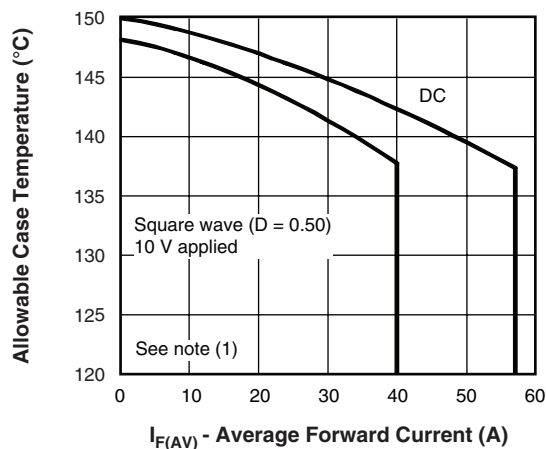


Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current (Per Leg)

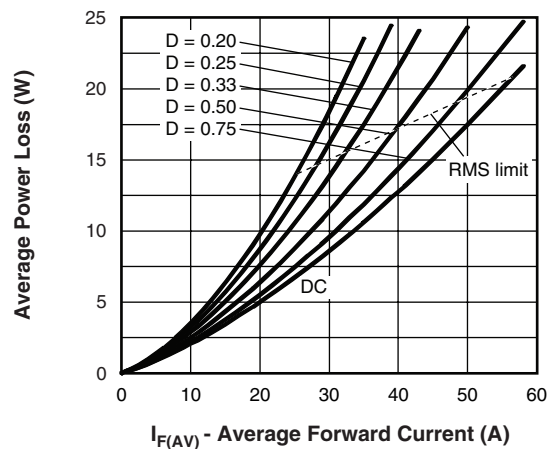


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

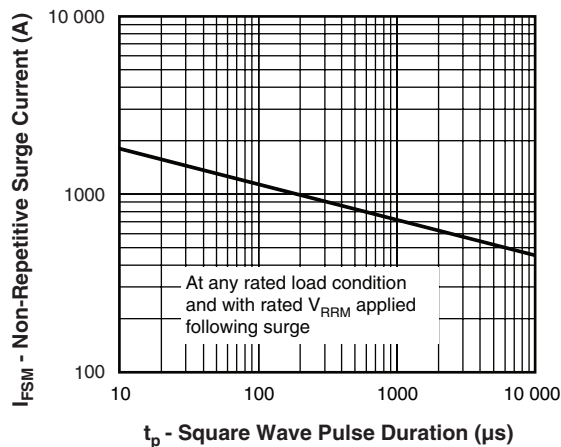


Fig. 7 - Maximum Non-Repetitive Surge Current (Per Leg)

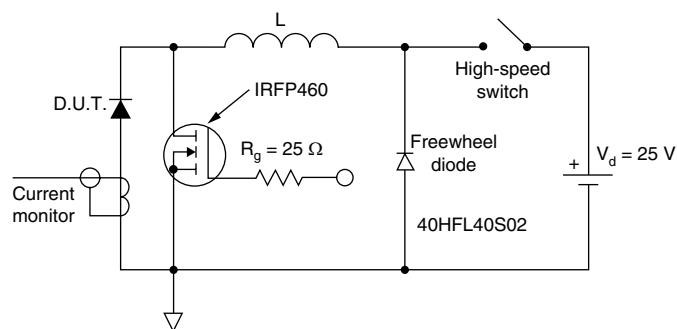


Fig. 8 - Unclamped Inductive Test Circuit

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 $V_{R1} = 10$ V

**ORDERING INFORMATION TABLE**

Device code	80	C	P	Q	020	-
	1	2	3	4	5	6

- | | | |
|----------|---|--|
| 1 | - | Current rating (80 = 80 A) |
| 2 | - | Circuit configuration:
C = Common cathode |
| 3 | - | Package:
P = TO-247 |
| 4 | - | Schottky "Q" series |
| 5 | - | Voltage code (020 = 20 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
SPICE model	http://www.vishay.com/doc?95289



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