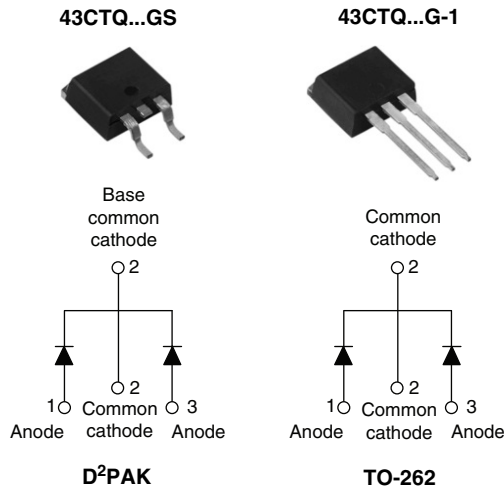


Schottky Rectifier, 2 x 20 A



FEATURES

- 175 °C T_J operation
- Center tap configuration
- Low forward voltage drop
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability
- Lead (Pb)-free ("PbF" suffix)
- Designed and qualified for industrial level



RoHS*
COMPLIANT

DESCRIPTION

This center tap Schottky rectifier series has been optimized for very 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 20 A
V_R	80/100 V

MAJOR RATINGS AND CHARACTERISTICS			
SYMBOL	CHARACTERISTICS	VALUES	UNITS
$I_{F(AV)}$	Rectangular waveform	40	A
V_{RRM}		80/100	V
I_{FSM}	$t_p = 5 \mu s$ sine	850	A
V_F	20 Apk, $T_J = 125 \text{ }^\circ\text{C}$ (per leg)	0.67	V
T_J	Range	- 55 to 175	$^\circ\text{C}$

VOLTAGE RATINGS				
PARAMETER	SYMBOL	43CTQ080GSPbF 43CTQ080G-1PbF	43CTQ100GSPbF 43CTQ100G-1PbF	UNITS
Maximum DC reverse voltage	V_R	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 $T_C = 135 \text{ }^\circ\text{C}$, rectangular waveform	per leg	20	A
			per device	40	
Maximum peak one cycle non-repetitive surge current per leg See fig. 7	I_{FSM}	5 μs sine or 3 μs rect. pulse 10 ms sine or 6 ms rect. pulse	Following any rated load condition and with rated V_{RRM} applied	850	
				275	
Non-repetitive avalanche energy per leg	E_{AS}	$T_J = 25 \text{ }^\circ\text{C}$, $I_{AS} = 0.5 \text{ A}$, $L = 60 \text{ mH}$		7.5	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		0.5	A

* Pb containing terminations are not RoHS compliant, exemptions may apply

ELECTRICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum forward voltage drop per leg See fig. 1	$V_{FM}^{(1)}$	20 A	$T_J = 25\text{ }^\circ\text{C}$	0.81	V
		40 A		0.98	
		20 A	$T_J = 125\text{ }^\circ\text{C}$	0.67	
		40 A		0.81	
Maximum reverse leakage current per leg See fig. 2	$I_{RM}^{(1)}$	$T_J = 25\text{ }^\circ\text{C}$	$V_R = \text{Rated } V_R$	0.36	mA
		$T_J = 125\text{ }^\circ\text{C}$		13	
Threshold voltage	$V_{F(TO)}$	$T_J = T_J \text{ maximum}$		0.71	V
Forward slope resistance	r_t			0.43	m Ω
Maximum junction capacitance per leg	C_T	$V_R = 5 V_{DC}$ (test signal range 100 kHz to 1 MHz) 25 $^\circ\text{C}$		1480	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 μs , 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		2.0	$^\circ\text{C/W}$
Maximum thermal resistance, junction to case per package				1.0	
Typical thermal resistance, case to heatsink	R_{thCS}	Mounting surface, smooth and greased		0.5	
Approximate weight				2	g
				0.07	oz.
Mounting torque	minimum			6 (5)	kgf · cm
	maximum			12 (10)	(lbf · in)
Marking device		Case style D ² PAK		43CTQ080GS	
				43CTQ100GS	
		Case style TO-262		43CTQ080G-1	
				43CTQ100G-1	



43CTQ...GSPbF/43CTQ...G-1PbF

Schottky Rectifier, 2 x 20 A Vishay High Power Products

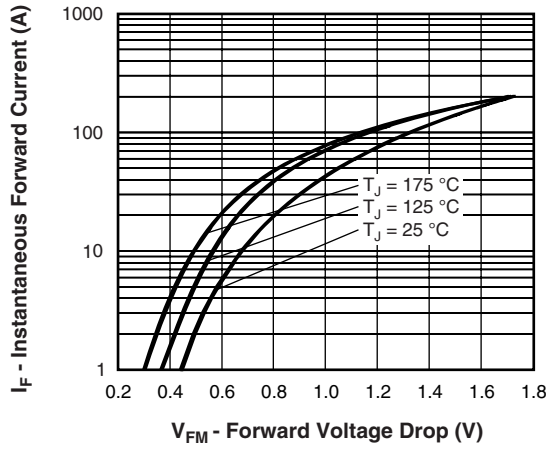


Fig. 1 - Maximum Forward Voltage Drop Characteristics (Per Leg)

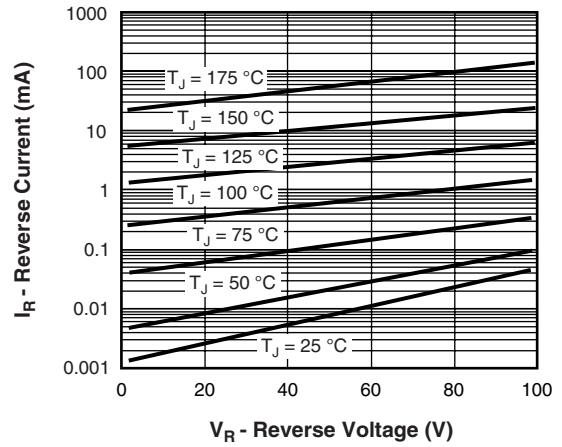


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage (Per Leg)

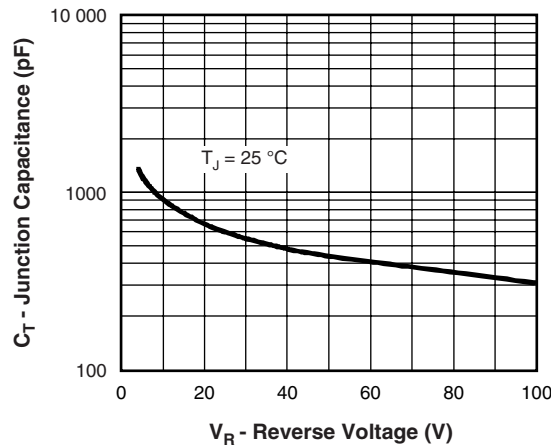


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage (Per Leg)

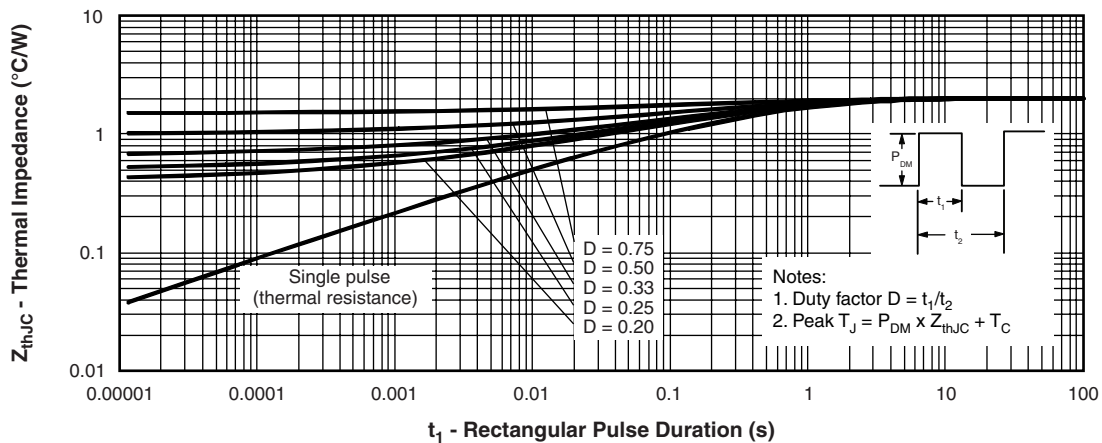


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics (Per Leg)

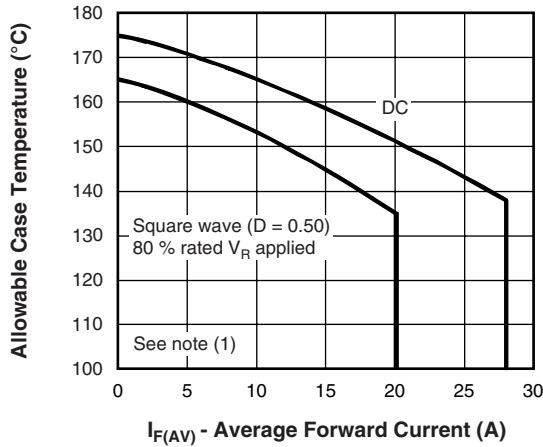


Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current (Per Leg)

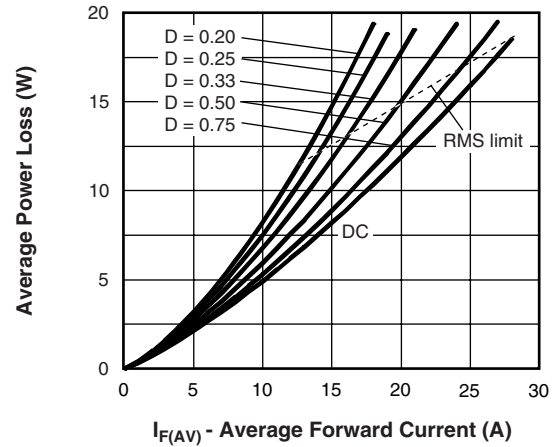


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

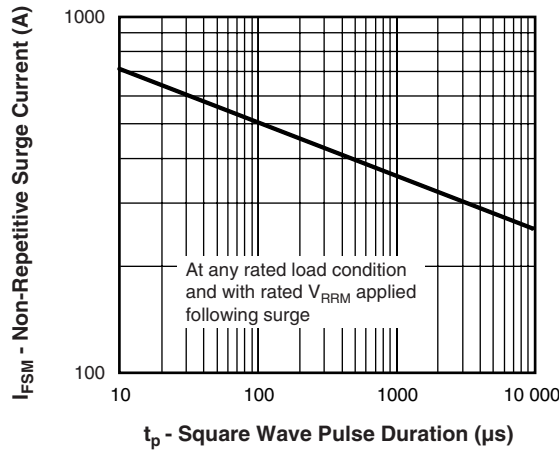


Fig. 7 - Maximum Non-Repetitive Surge Current (Per Leg)

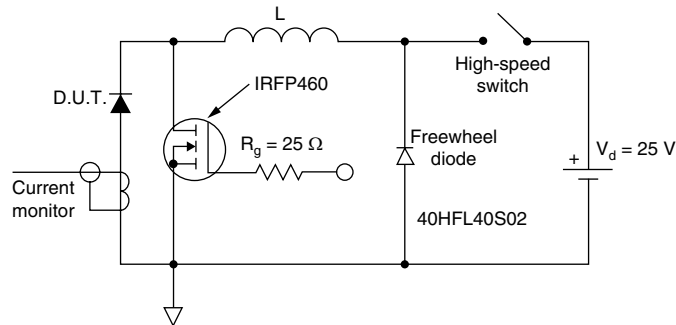


Fig. 8 - Unclamped Inductive Test Circuit

Note

- (1) Formula used: $T_C = T_J - (P_d + P_{d_{REV}}) \times R_{thJC}$;
- P_d = Forward power loss = $I_{F(AV)} \times V_{FM}$ at $(I_{F(AV)}/D)$ (see fig. 6);
- $P_{d_{REV}}$ = Inverse power loss = $V_{R1} \times I_R (1 - D)$; I_R at $V_{R1} = 10 V$



ORDERING INFORMATION TABLE

Device code	43	C	T	Q	100	G	S	TRL	PbF
	①	②	③	④	⑤	⑥	⑦	⑧	⑨

- 1** - Current rating (40 = 40 A)
- 2** - C = Common cathode
- 3** - T = TO-220, TO-262, D²PAK
- 4** - Q = Schottky "Q" series
- 5** - Voltage ratings 080 = 80 V
100 = 100 V
- 6** - G = Schottky generation
- 7** -
 - None = TO-220
 - -1 = TO-262
 - S = D²PAK
- 8** -
 - None = Tube (50 pieces)
 - TRL = Tape and reel (left oriented - for D²PAK only)
 - TRR = Tape and reel (right oriented - for D²PAK only)
- 9** -
 - None = Standard production
 - PbF = Lead (Pb)-free (for D²PAK tube and TO-262)
 - P = Lead (Pb)-free (for D²PAK TRL and TRR)

LINKS TO RELATED DOCUMENTS	
Dimensions	http://www.vishay.com/doc?95014
Part marking information	http://www.vishay.com/doc?95057
Packaging information	http://www.vishay.com/doc?95032



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