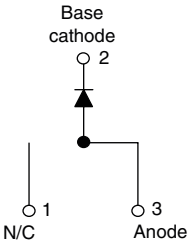
Schottky Rectifier, 19 A

D²PAK



FEATURES

- 125 °C T_J operation (V_R < 5 V)
- Optimized for OR-ing applications
- 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 Q101 level

DESCRIPTION

The 19TQ015.. Schottky rectifier has been optimized for ultra low forward voltage drop specifically for the OR-ing of parallel power supplies. The proprietary barrier technology allows for reliable operation up to 125 °C junction temperature. Typical applications are in parallel switching power supplies, converters, reverse battery protection, and redundant power subsystems.

PRODUCT SUMMARY	
$I_{F(AV)}$	19 A
V_R	15 V

MAJOR RATINGS AND CHARACTERISTICS			
SYMBOL	CHARACTERISTICS	VALUES	UNITS
$I_{F(AV)}$	Rectangular waveform	19	A
V_{RRM}		15	V
I_{FSM}	t_p = 5 µs sine	700	A
V_F	19 Apk, T_J = 75 °C	0.32	V
T_J	Range	- 55 to 125	°C

VOLTAGE RATINGS			
PARAMETER	SYMBOL	19TQ015S	UNITS
Maximum DC reverse voltage	V_R	15	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 = 80 °C, rectangular waveform		19	A
Maximum peak one cycle non-repetitive surge current See fig. 7	I_{FSM}	5 µs sine or 3 µs rect. pulse	Following any rated load condition and with rated V_{RRM} applied	700	A
		10 ms sine or 6 ms rect. pulse		330	
Non-repetitive avalanche energy	E_{AS}	T_J = 25 °C, I_{AS} = 1.50 A, L = 6 mH		6.75	mJ
Repetitive avalanche current	I_{AR}	Current decaying linearly to zero in 1 µs Frequency limited by T_J maximum V_A = 3 x V_R typical		1.50	A

ELECTRICAL SPECIFICATIONS

PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum forward voltage drop See fig. 1	V_{FM} (1)	19 A	T_J = 25 °C	0.36	V
		38 A		0.46	
		19 A	T_J = 75 °C	0.32	
		38 A		0.43	
Maximum reverse leakage current See fig. 2	I_{RM} (1)	T_J = 100 °C, V_R = 12 V		465	mA
		T_J = 100 °C, V_R = 5 V		285	
		T_J = 25 °C	V_R = Rated V_R	10.5	
		T_J = 100 °C		522	
Maximum junction capacitance	C_T	V_R = 5 V_{DC} (test signal range 100 kHz to 1 MHz) 25 °C		2000	pF
Typical series inductance	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 temperature range		T_J		- 55 to 125	°C
Maximum storage temperature range		T_{Stg}		- 55 to 150	
Maximum thermal resistance, junction to case		R_{thJC}	DC operation See fig. 4	1.50	°C/W
Typical thermal resistance, case to heatsink		R_{thCS}	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 D^2PAK	19TQ015S	

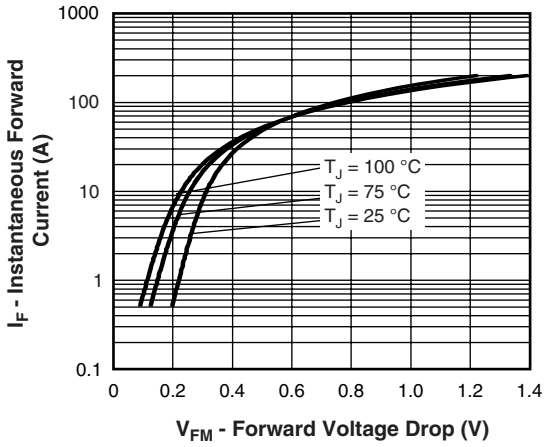


Fig. 1 - Maximum Forward Voltage Drop Characteristics

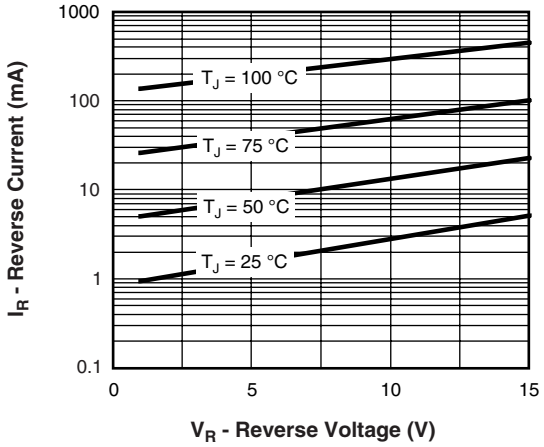


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage

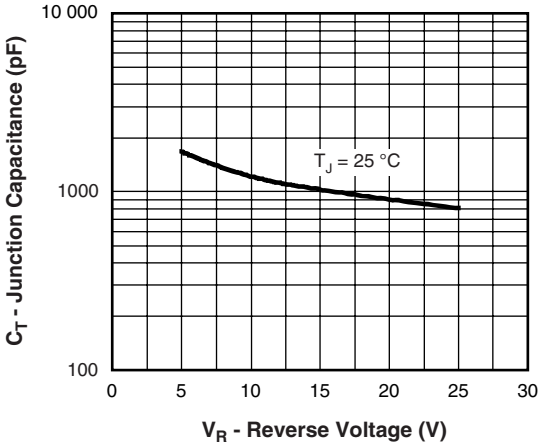


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage

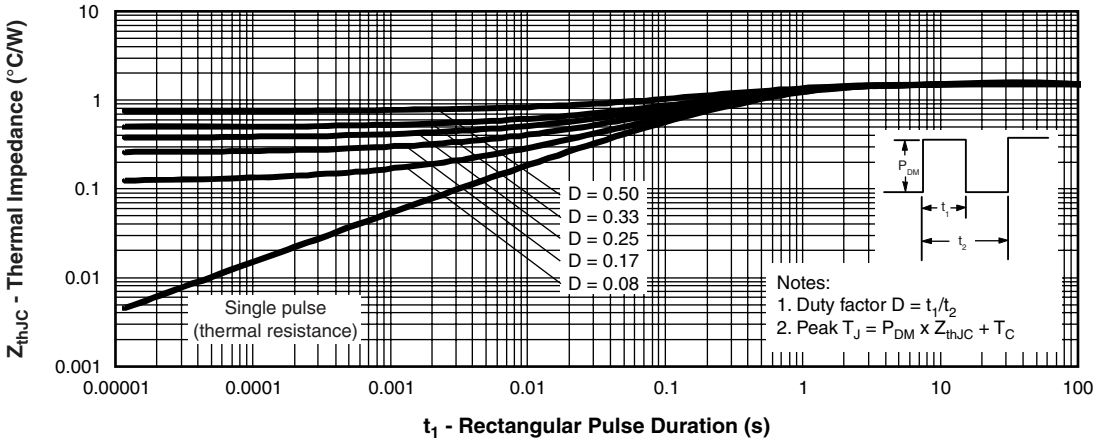


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics

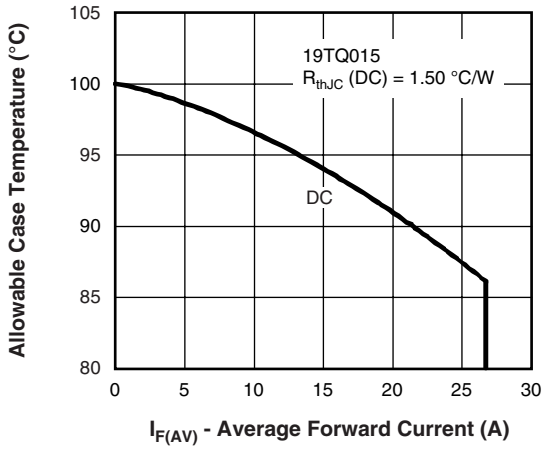


Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current

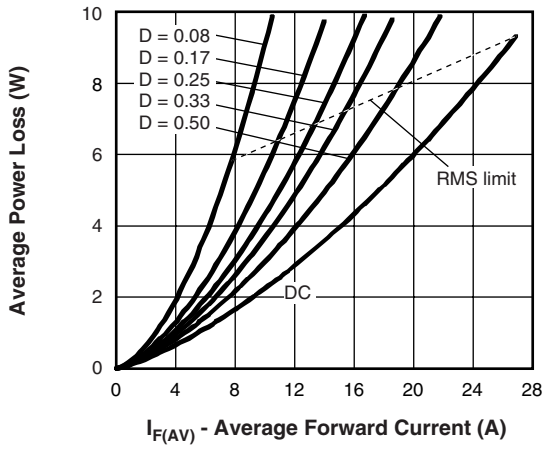


Fig. 6 - Forward Power Loss Characteristics

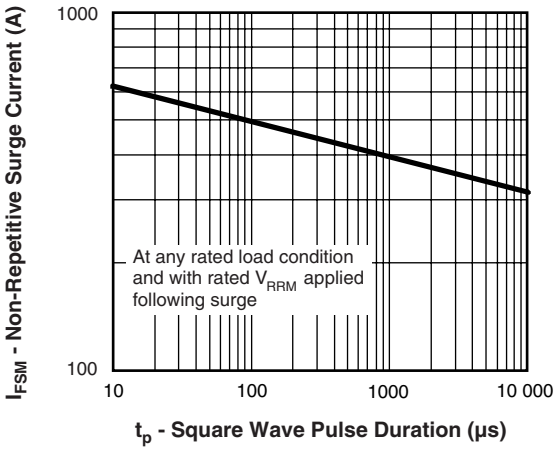


Fig. 7 - Maximum Non-Repetitive Surge Current

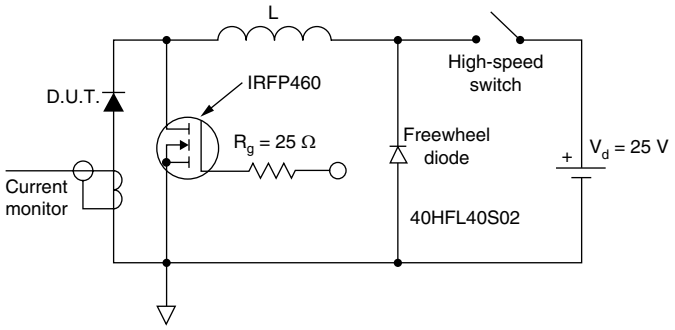


Fig. 8 - Unclamped Inductive Test Circuit

ORDERING INFORMATION TABLE

Device code

19	T	Q	015	S	TRL	-
1	2	3	4	5	6	7

1 - Current rating (19 A)

2 - Circuit configuration:
T = TO-220

3 - Schottky “Q” series

4 - Voltage rating (015 = 15 V)

5 - • S = D^2PAK

6 - • None = Tube (50 pieces)
• TRL = Tape and reel (left oriented)
• TRR = Tape and reel (right oriented)

7 - • 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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