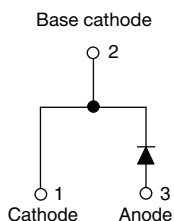


# High Performance Schottky Rectifier, 19 A



TO-220AC 2L



## FEATURES

- 125 °C  $T_J$  operation ( $V_R < 5$  V)
- Optimized for OR-ing applications
- Ultralow 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 according to JEDEC®-JESD 47
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



**RoHS**  
COMPLIANT  
HALOGEN  
FREE

## DESCRIPTION

The VS-19TQ015... Schottky rectifier has been optimized for ultralow 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.

## PRIMARY CHARACTERISTICS

$I_{F(AV)}$	19 A
$V_R$	15 V
$V_F$ at $I_F$	0.32 V
$I_{RM}$ max.	522 mA at 100 °C
$T_J$ max.	125 °C
$E_{AS}$	6.75 mJ
Package	TO-220AC 2L
Circuit configuration	Single

## MAJOR RATINGS AND CHARACTERISTICS

SYMBOL	CHARACTERISTICS	VALUES	UNITS
$I_{F(AV)}$	Rectangular waveform	19	A
$V_{RRM}$		15	V
$I_{FSM}$	$t_p = 5 \mu s$ sine	700	A
$V_F$	19 A <sub>pk</sub> , $T_J = 75$ °C	0.32	V
$T_J$	Range	-55 to +125	°C

## VOLTAGE RATINGS

PARAMETER	SYMBOL	VS-19TQ015-M3	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 $\mu s$ sine or 3 $\mu s$ rect. pulse	700	
		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 $\mu s$ Frequency limited by $T_J$ maximum $V_A = 3 \times V_R$ typical	1.50	A

**ELECTRICAL SPECIFICATIONS**

PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum forward voltage drop See fig. 1	$V_{FM}^{(1)}$	19 A	$T_J = 25\text{ }^{\circ}\text{C}$	0.36	V
		38 A		0.46	
		19 A	$T_J = 75\text{ }^{\circ}\text{C}$	0.32	
		38 A		0.43	
Maximum reverse leakage current See fig. 2	$I_{RM}^{(1)}$	$T_J = 100\text{ }^{\circ}\text{C}$ , $V_R = 12\text{ V}$		465	mA
		$T_J = 100\text{ }^{\circ}\text{C}$ , $V_R = 5\text{ V}$		285	
		$T_J = 25\text{ }^{\circ}\text{C}$	$V_R = \text{Rated } V_R$	10.5	
		$T_J = 100\text{ }^{\circ}\text{C}$		522	
Maximum junction capacitance	$C_T$	$V_R = 5\text{ V}_{DC}$ (test signal range 100 kHz to 1 MHz) $25\text{ }^{\circ}\text{C}$		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/ $\mu$ s

**Note**(1) Pulse width < 300  $\mu$ s, duty cycle < 2 %**THERMAL - MECHANICAL SPECIFICATIONS**

PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum junction temperature range	T <sub>J</sub>		-55 to 125	°C
Maximum storage temperature range	T <sub>Stg</sub>		-55 to 150	
Maximum thermal resistance, junction to case	R <sub>thJC</sub>	DC operation See fig. 4	1.50	°C/W
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 2L TO-220AC	19TQ015	

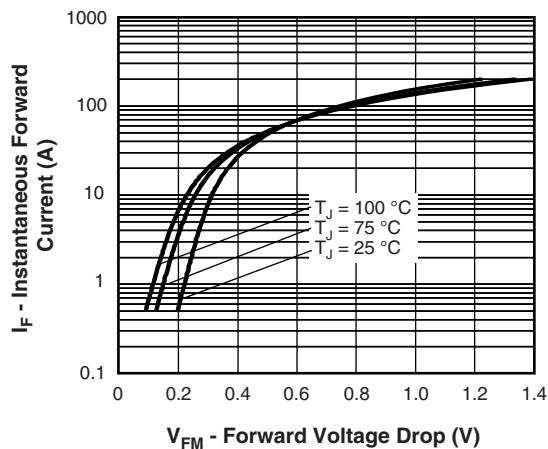


Fig. 1 - Maximum Forward Voltage Drop Characteristics

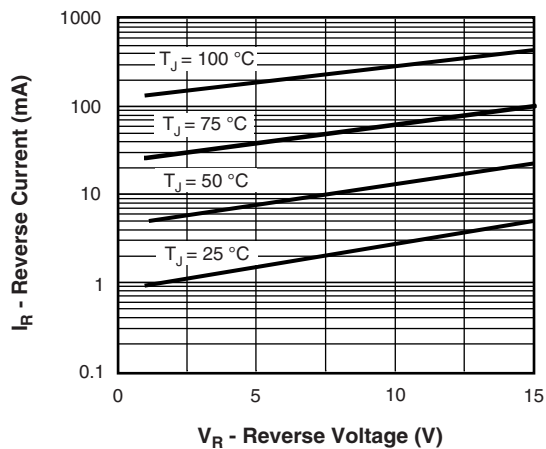


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage

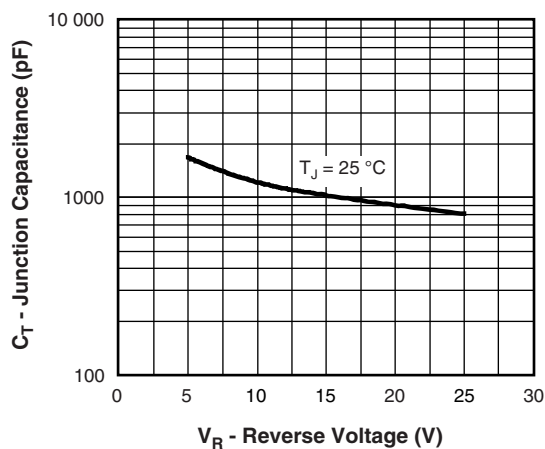
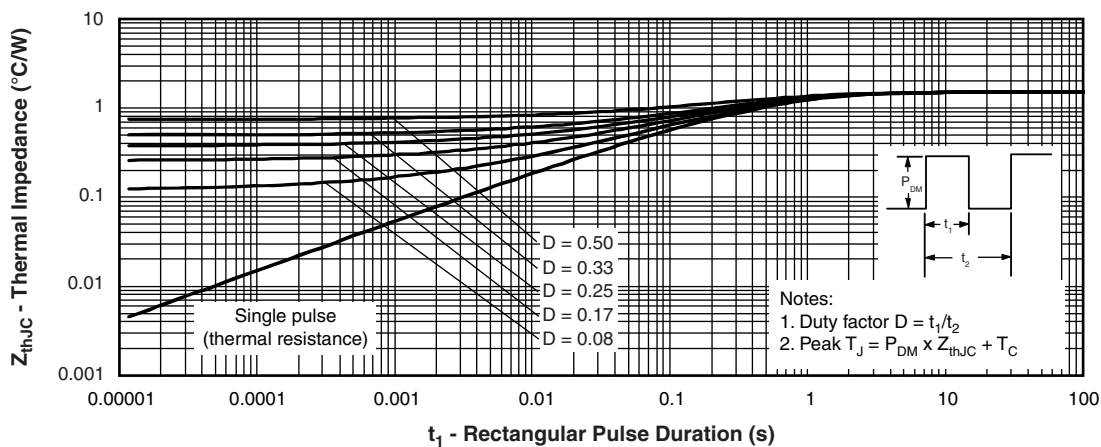


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage


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

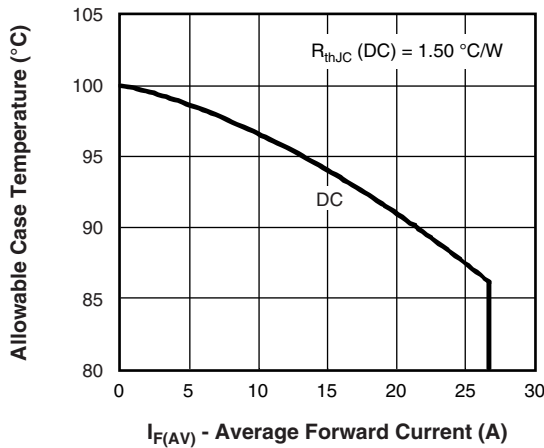


Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current

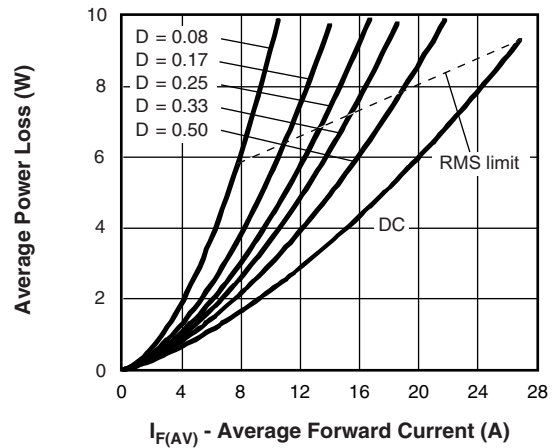


Fig. 6 - Forward Power Loss Characteristics

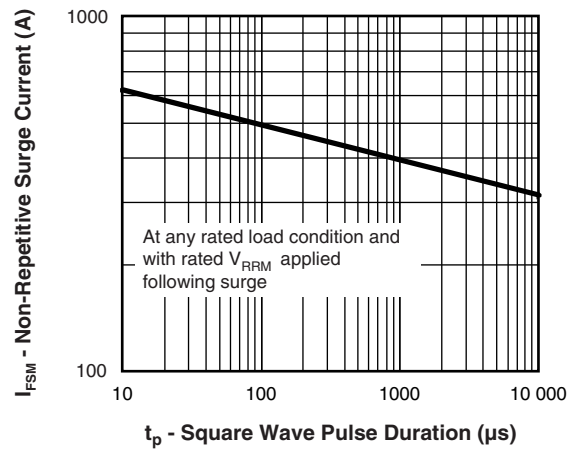


Fig. 7 - Maximum Non-Repetitive Surge Current

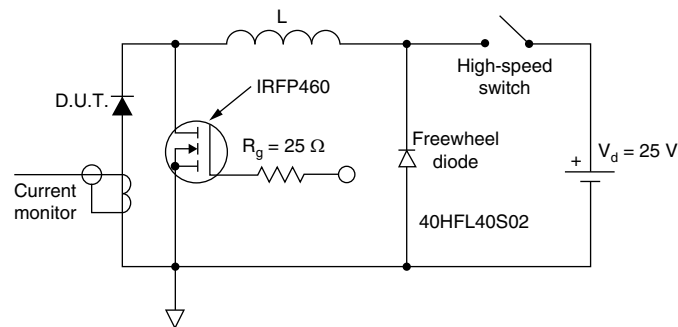


Fig. 8 - Unclamped Inductive Test Circuit



## ORDERING INFORMATION TABLE

Device code	VS-	19	T	Q	015	-M3
	1	2	3	4	5	6

- 1** - Vishay Semiconductors product
- 2** - Current rating (19 = 19 A)
- 3** - Package:  
T = TO-220
- 4** - Schottky "Q" series
- 5** - Voltage rating (015 = 15 V)
- 6** - Environmental digit  
-M3 = halogen-free, RoHS-compliant, and totally lead (Pb)-free

ORDERING INFORMATION (Example)		
PREFERRED P/N	BASE QUANTITY	PACKAGING DESCRIPTION
VS-19TQ015-M3	50	Antistatic plastic tubes

LINKS TO RELATED DOCUMENTS	
Dimensions	<a href="http://www.vishay.com/doc?96156">www.vishay.com/doc?96156</a>
Part marking information	<a href="http://www.vishay.com/doc?95391">www.vishay.com/doc?95391</a>
SPICE model	<a href="http://www.vishay.com/doc?96005">www.vishay.com/doc?96005</a>





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