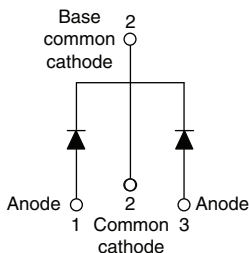




Schottky Rectifier, 2 x 7.5 A



TO-220AB



FEATURES

- 150 °C T_J operation
- 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
- Compliant to RoHS Directive 2002/95/EC
- Designed and qualified according to JEDEC-JESD47
- Halogen-free according to IEC 61249-2-21 definition (-N3 only)



PRODUCT SUMMARY

Package	TO-220AB
$I_{F(AV)}$	2 x 7.5 A
V_R	35 V, 40 V, 45 V
V_F at I_F	0.51 V
I_{RM} max.	32 mA at 125 °C
T_J max.	150 °C
Diode variation	Common cathode
E_{AS}	10 mJ

DESCRIPTION

The VS-15CTQ... center tap Schottky rectifier series has been optimized for very low forward voltage drop, with moderate leakage. The proprietary barrier technology allows for reliable operation up to 150 °C junction temperature. Typical applications are in switching power supplies, converters, freewheeling diodes, and reverse battery protection.

MAJOR RATINGS AND CHARACTERISTICS

SYMBOL	CHARACTERISTICS	VALUES	UNITS
$I_{F(AV)}$	Rectangular waveform	15	A
V_{RRM}	Range	35 to 45	V
I_{FSM}	$t_p = 5 \mu s$ sine	810	A
V_F	7.5 A _{pk} , $T_J = 125$ °C (per leg)	0.51	V
T_J	Range	- 55 to 150	°C

VOLTAGE RATINGS

PARAMETER	SYMBOL	VS-15CTQ035PbF	VS-15CTQ035-N3	VS-15CTQ040PbF	VS-15CTQ040-N3	VS-15CTQ045PbF	VS-15CTQ045-N3	UNITS
Maximum DC reverse voltage	V_R	35	35	40	40	45	45	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 $T_C = 123$ °C, rectangular waveform	15	A
Maximum peak one cycle non-repetitive surge current per leg See fig. 7	I_{FSM}	5 μs sine or 3 μs rect. pulse	810	A
		10 ms sine or 6 ms rect. pulse	145	
Non-repetitive avalanche energy per leg	E_{AS}	$T_J = 25$ °C, $I_{AS} = 1.20$ A, $L = 11.10$ mH	10	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	1.5	A



ELECTRICAL SPECIFICATIONS						
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS	
Maximum forward voltage drop per leg See fig. 1	V _{FM} ⁽¹⁾	7.5 A	T _J = 25 °C	0.55	V	
		15 A		0.70		
		7.5 A	T _J = 125 °C	0.51		
		15 A		0.65		
Maximum reverse leakage current per leg See fig. 2	I _{RM} ⁽¹⁾	T _J = 25 °C	V _R = Rated V _R	0.8	mA	
		T _J = 125 °C		32		
Maximum junction capacitance per leg	C _T	V _R = 5 V _{DC} (test signal range 100 kHz to 1 MHz) 25 °C		400	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 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 See fig. 4	3.50	°C/W
Maximum thermal resistance, junction to case per package		DC operation	1.75	
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 maximum		6 (5)	kgf · cm (lbf · in)
			12 (10)	
Marking device		Case style TO-220AB	15CTQ035	
			15CTQ040	
			15CTQ045	

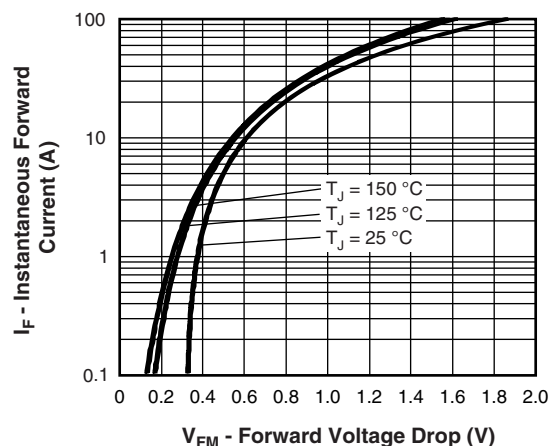


Fig. 1 - Maximum Forward Voltage Drop Characteristics (Per Leg)

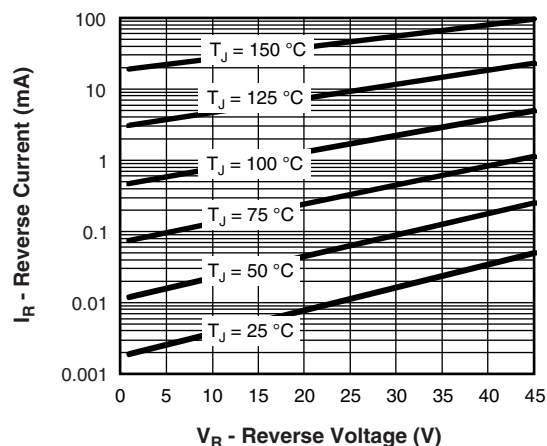


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage (Per Leg)

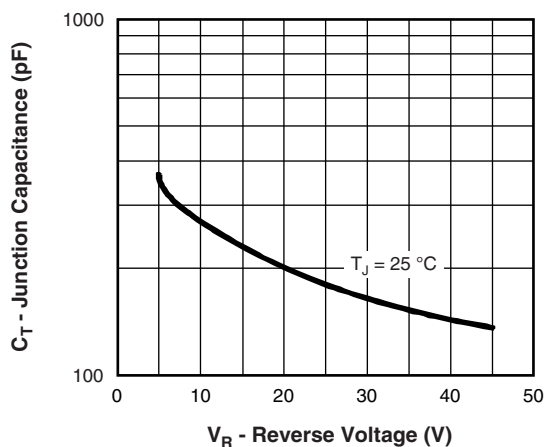


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage (Per Leg)

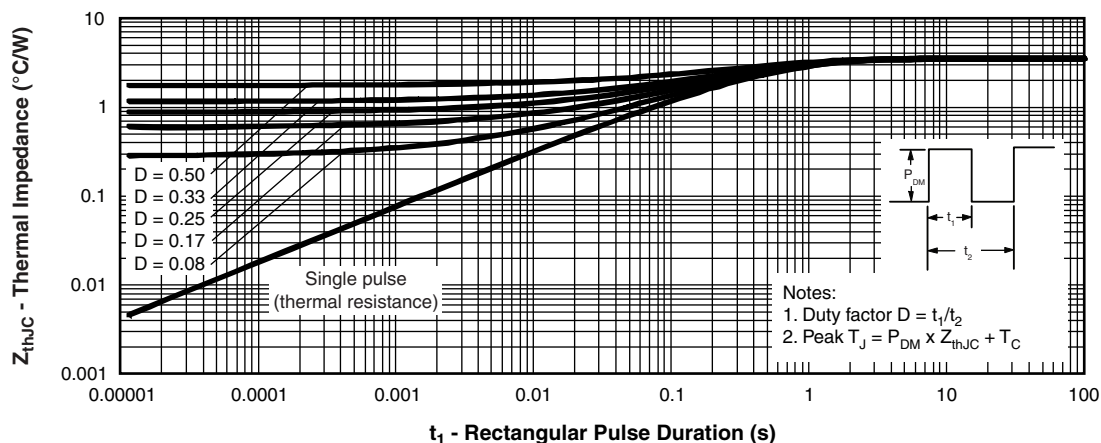


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics (Per Leg)

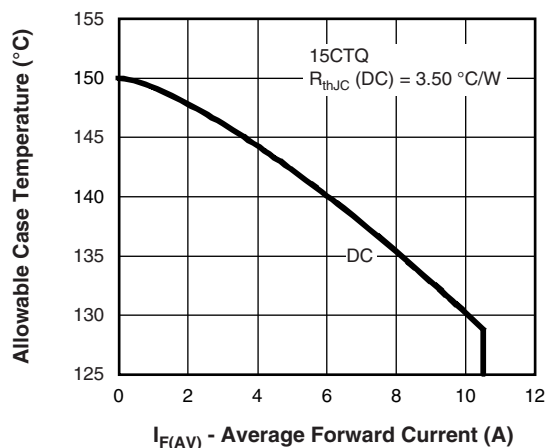


Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current (Per Leg)

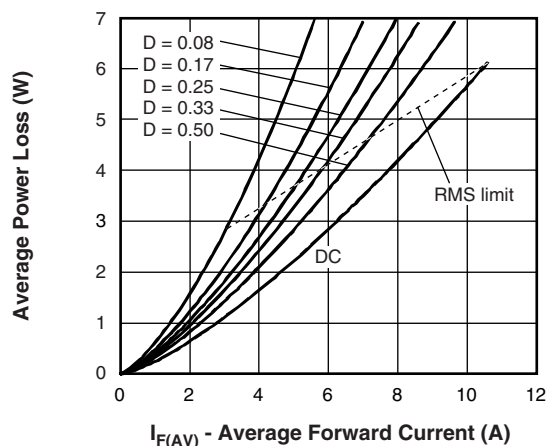


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

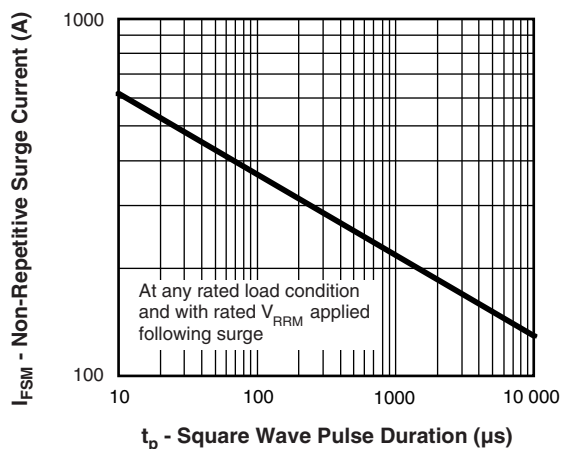


Fig. 7 - Maximum Non-Repetitive Surge Current (Per Leg)

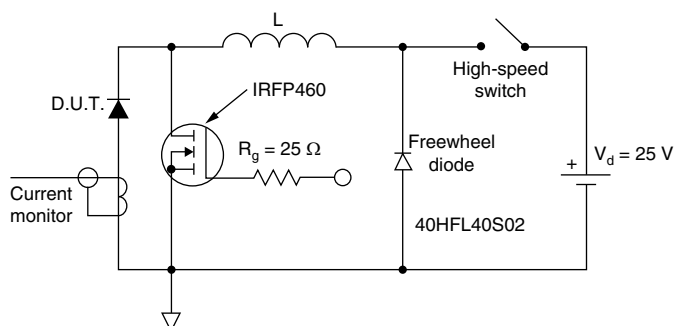


Fig. 8 - Unclamped Inductive Test Circuit

**ORDERING INFORMATION TABLE**

Device code	VS-	15	C	T	Q	045	PbF
	1	2	3	4	5	6	7

- | | | |
|----------|---|--|
| 1 | - | Vishay Semiconductors product |
| 2 | - | Current rating (10 = 10 A) |
| 3 | - | Circuit configuration
C = Common cathode |
| 4 | - | Package
T = TO-220 |
| 5 | - | Schottky "Q" series |
| 6 | - | Voltage rating (150 = 150 V) |
| 7 | - | Environmental digit <ul style="list-style-type: none">• PbF = Lead (Pb)-free and RoHS compliant• -N3 = Halogen-free, RoHS compliant, and totally lead (Pb)-free |

ORDERING INFORMATION (Example)			
PREFERRED P/N	QUANTITY PER T/R	MINIMUM ORDER QUANTITY	PACKAGING DESCRIPTION
VS-15CTQ035PbF	50	1000	Antistatic plastic tube
VS-15CTQ035-N3	50	1000	Antistatic plastic tube
VS-15CTQ040PbF	50	1000	Antistatic plastic tube
VS-15CTQ040-N3	50	1000	Antistatic plastic tube
VS-15CTQ045PbF	50	1000	Antistatic plastic tube
VS-15CTQ045-N3	50	1000	Antistatic plastic tube

LINKS TO RELATED DOCUMENTS		
Dimensions		www.vishay.com/doc?95222
Part marking information	TO-220AB PbF	www.vishay.com/doc?95225
	TO-220AB -N3	www.vishay.com/doc?95028



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