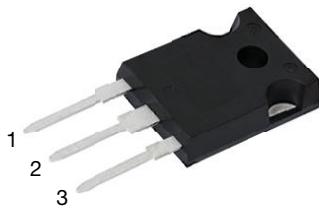
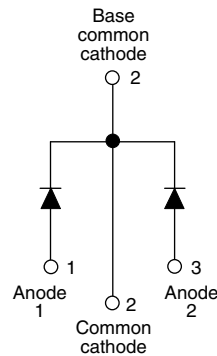


High Performance Schottky Rectifier, 2 x 20 A


TO-247AC 3L


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 according to JEDEC®-JESD 47
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912


RoHS
 COMPLIANT
 HALOGEN
FREE

PRIMARY CHARACTERISTICS

$I_{F(AV)}$	2 x 20 A
V_R	15 V
V_F at I_F	See Electrical table
I_{RM} max.	600 mA at 100 °C
T_J max.	125 °C
E_{AS}	10 mJ
Package	TO-247AC 3L
Circuit configuration	Common cathode

DESCRIPTION

The VS-40L15CW... center tap Schottky rectifier module 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.

MAJOR RATINGS AND CHARACTERISTICS

SYMBOL	CHARACTERISTICS	VALUES	UNITS
$I_{F(AV)}$	Rectangular waveform	40	A
V_{RRM}		15	V
I_{FSM}	$t_p = 5 \mu s$ sine	700	A
V_F	$19 A_{pk}$, $T_J = 125$ °C (per leg, typical)	0.25	V
T_J		-55 to +125	°C

VOLTAGE RATINGS

PARAMETER	SYMBOL	TEST CONDITIONS	VS-40L15CW-N3	UNITS
Maximum DC reverse voltage	V_R	$T_J = 100$ °C	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 $T_C = 86$ °C, rectangular waveform	20	A
			40	
Maximum peak one cycle non-repetitive surge current per leg See fig. 7	I_{FSM}	5 μs sine or 3 μs rect. pulse	700	A
		10 ms sine or 6 ms rect. pulse	330	
Non-repetitive avalanche energy per leg	E_{AS}	$T_J = 25$ °C, $I_{AS} = 2$ A, $L = 5$ 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	2	A



ELECTRICAL SPECIFICATIONS						
PARAMETER	SYMBOL	TEST CONDITIONS		TYP.	MAX.	UNITS
Maximum forward voltage drop per leg See fig. 1	$V_{FM}^{(1)}$	19 A	$T_J = 25\text{ }^\circ\text{C}$	-	0.41	V
		40 A		-	0.52	
		19 A	$T_J = 125\text{ }^\circ\text{C}$	0.25	0.33	
		40 A		0.37	0.50	
Reverse leakage current per leg See fig. 2	$I_{RM}^{(1)}$	$T_J = 25\text{ }^\circ\text{C}$	$V_R = \text{Rated } V_R$	-	10	mA
		$T_J = 100\text{ }^\circ\text{C}$		-	600	
Threshold voltage	$V_{F(TO)}$	$T_J = T_J \text{ maximum}$		0.182		V
Forward slope resistance	r_t	$T_J = T_J \text{ maximum}$		7.6		m Ω
Maximum junction capacitance per leg	C_T	$V_R = 5 V_{DC}$ (test signal range 100 kHz to 1 MHz) 25 $^\circ\text{C}$		-	2000	pF
Typical series inductance per leg	L_S	Measured lead to lead 5 mm from package body		8	-	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	$^\circ\text{C}$
Maximum storage temperature range	T_{Stg}		-55 to 150	
Maximum thermal resistance, junction to case per leg	R_{thJC}	DC operation See fig. 4	1.4	$^\circ\text{C/W}$
Maximum thermal resistance, junction to case per package		DC operation	0.7	
Typical thermal resistance, case to heatsink	R_{thCS}	Mounting surface, smooth and greased	0.24	
Approximate weight			6	g
			0.21	oz.
Mounting torque	minimum	Non-lubricated threads	6 (5)	kgf · cm (lbf · in)
	maximum		12 (10)	
Marking device		Case style TO-247AC 3L	40L15CW	

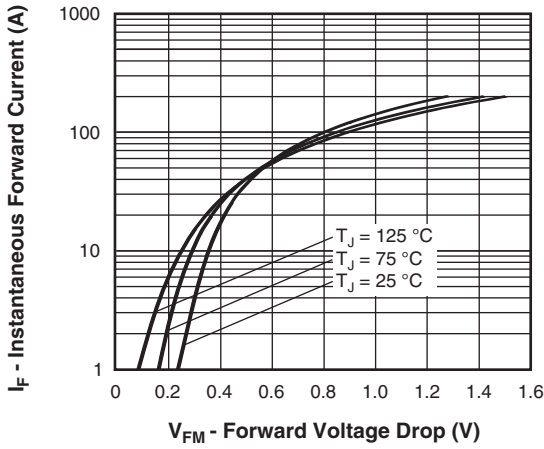


Fig. 1 - Maximum Forward Voltage Drop Characteristics

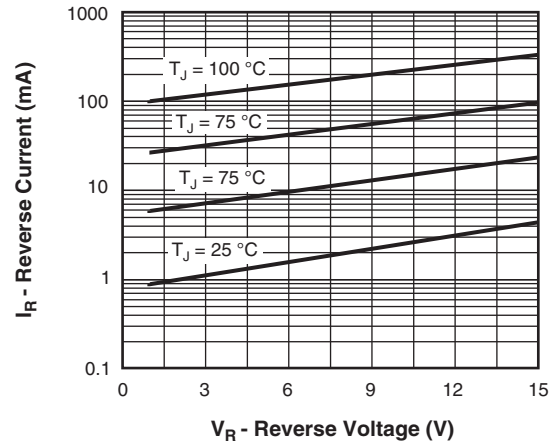


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage

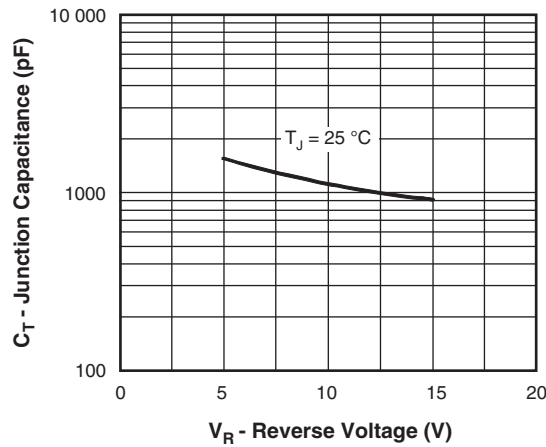


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage

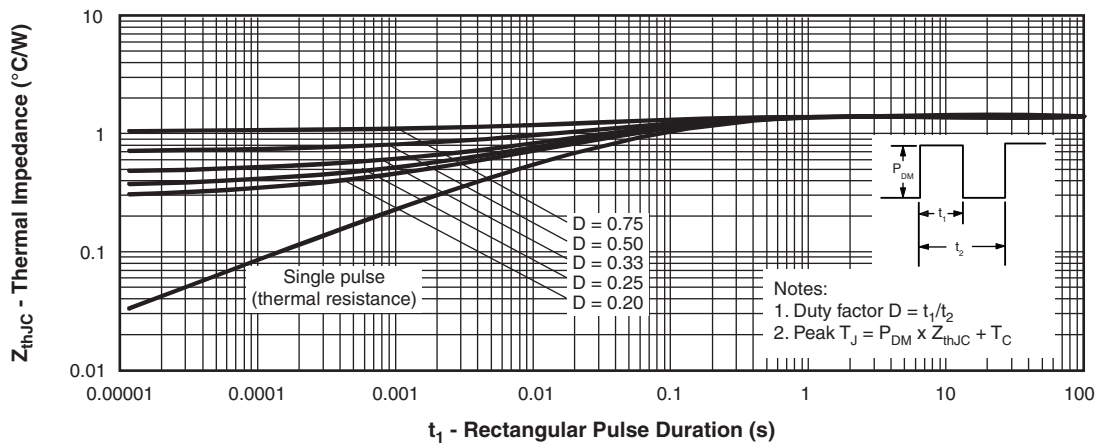


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics

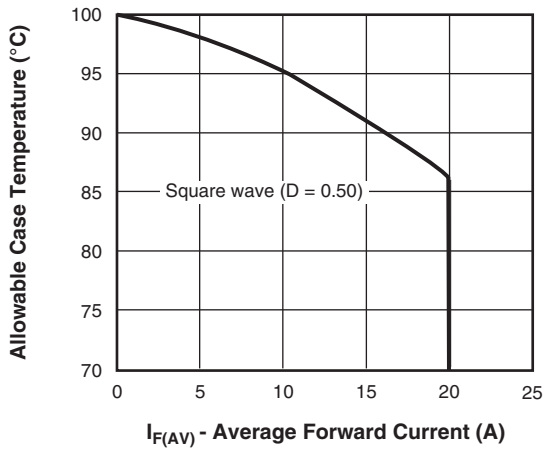


Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current

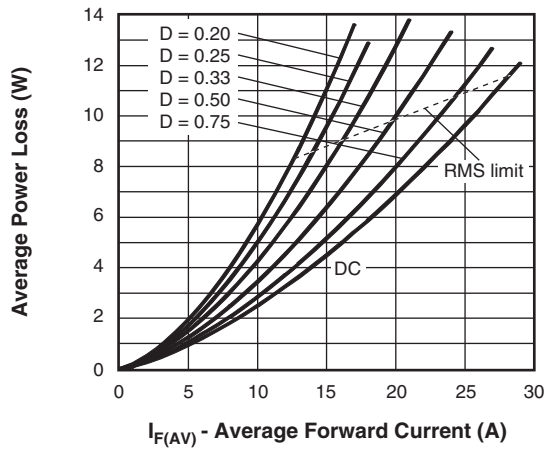


Fig. 6 - Forward Power Loss Characteristics

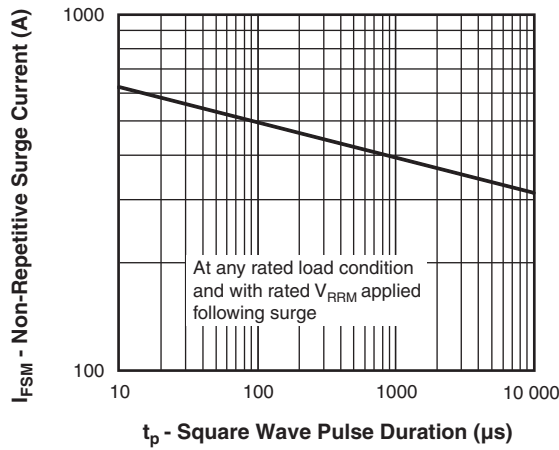


Fig. 7 - Maximum Non-Repetitive Surge Current

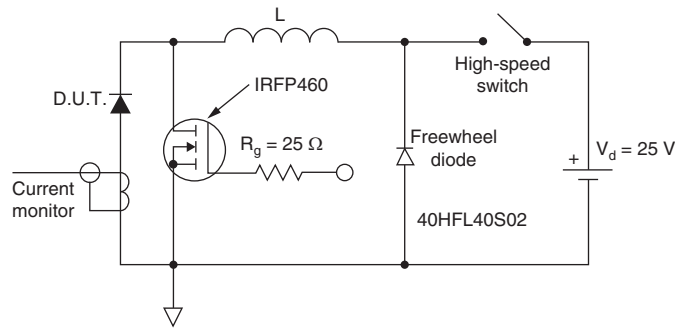
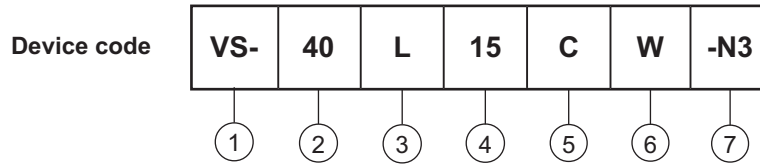


Fig. 8 - Unclamped Inductive Test Circuit



ORDERING INFORMATION TABLE



- 1** - Vishay Semiconductors product
- 2** - Current rating (40 = 40 A)
- 3** - Schottky "L" series
- 4** - Voltage code (15 = 15 V)
- 5** - Circuit configuration:
C = common cathode
- 6** - Package:
W = TO-247
- 7** - Environmental digit
-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-40L15CW-N3	25	500	Antistatic plastic tube

LINKS TO RELATED DOCUMENTS	
Dimensions	www.vishay.com/doc?96138
Part marking information	www.vishay.com/doc?95007



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