

Schottky Rectifier, 9 A



DO-204AR



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
- Compliant to RoHS Directive 2002/95/EC
- Designed and qualified for commercial level
- Halogen-free according to IEC 61249-2-21 definition (-M3 only)



PRODUCT SUMMARY	
Package	DO-204AR
$I_{F(AV)}$	9 A
V_R	15 V
V_F at I_F	0.25 V
I_{RM} max.	348 mA at 100 °C
T_J max.	100 °C
Diode variation	Single die
E_{AS}	4.5 mJ

DESCRIPTION

The VS-95SQ015... axial leaded 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 100 °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	9	A
V_{RRM}		15	V
I_{FSM}	$t_p = 5 \mu s$ sine	2900	A
V_F	9 Apk, $T_J = 75$ °C	0.25	V
T_J	Range	- 55 to 100	°C

VOLTAGE RATINGS				
PARAMETER	SYMBOL	VS-95SQ015	VS-95SQ015-M3	UNITS
Maximum DC reverse voltage	V_R	15	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 $T_C = 55$ °C, rectangular waveform		9	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	2900	
		10 ms sine or 6 ms rect. pulse		400	
Non-repetitive avalanche energy	E_{AS}	$T_J = 25$ °C, $I_{AS} = 1$ A, $L = 9$ mH		4.5	mJ
Repetitive avalanche current	I_{AR}	Current decaying linearly to zero in 1 μs Frequency limited by, T_J maximum $V_A = 3 \times V_R$ typical		1	A

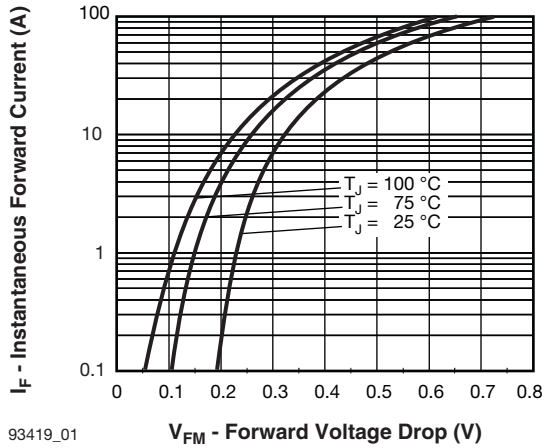


ELECTRICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum forward voltage drop See fig. 1	$V_{FM}^{(1)}$	9 A	$T_J = 25\text{ }^\circ\text{C}$	0.31	V
		18 A		0.37	
		9 A	$T_J = 75\text{ }^\circ\text{C}$	0.25	
		18 A		0.31	
Maximum reverse leakage current See fig. 2	$I_{RM}^{(1)}$	$T_J = 100\text{ }^\circ\text{C}$	$V_R = 12\text{ V}$	310	mA
			$V_R = 5\text{ V}$	190	
		$T_J = 25\text{ }^\circ\text{C}$	$V_R = \text{Rated } V_R$	7	
				$T_J = 100\text{ }^\circ\text{C}$	
Maximum junction capacitance	C_T	$V_R = 5\text{ V}_{DC}$, (test signal range 100 kHz to 1 MHz) $25\text{ }^\circ\text{C}$		1300	pF
Typical series inductance	L_S	Measured lead to lead 5 mm from body		10.0	nH
Maximum voltage rate of change	dV/dt	Rated V_R		10 000	V/ μs

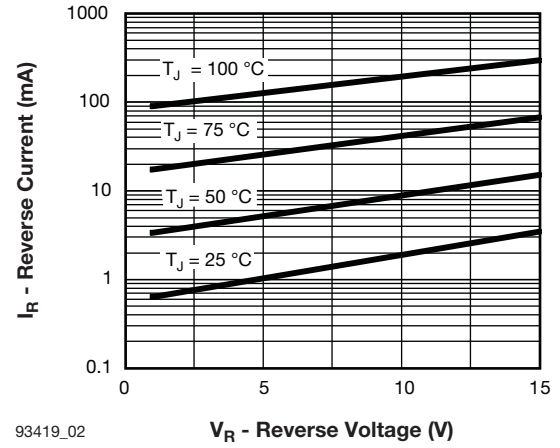
Note

(1) Pulse width < 300 μs , duty cycle < 2 %

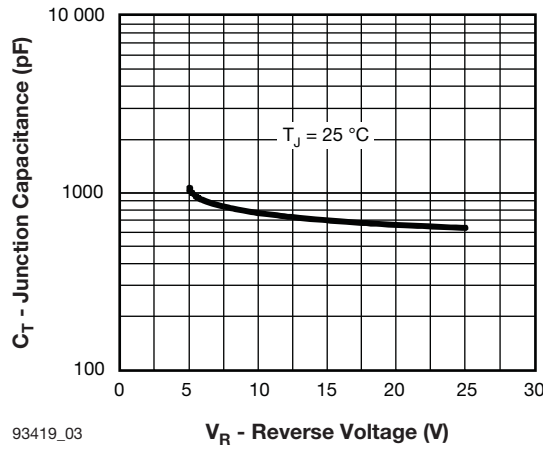
THERMAL - MECHANICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum junction temperature range	T_J			- 55 to 125	$^\circ\text{C}$
Maximum storage temperature range	T_{Stg}			- 55 to 150	
Maximum thermal resistance, junction to lead	R_{thJL}	DC operation; see fig. 4 1/8" lead length		8.0	$^\circ\text{C/W}$
Typical thermal resistance, junction to air	R_{thJA}			44	
Approximate weight				1.4	g
				0.049	oz.
Marking device		Case style DO-204AR (JEDEC)		95SQ015	



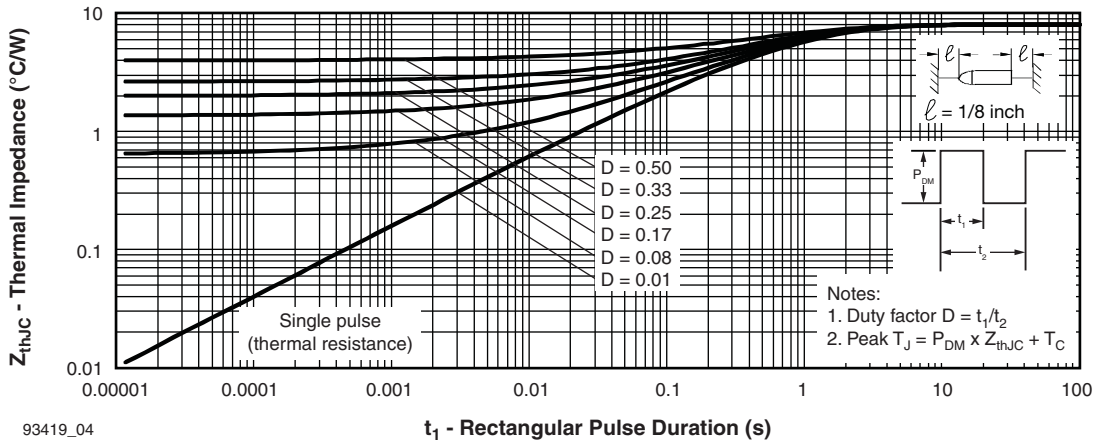
93419_01 **V_{FM} - Forward Voltage Drop (V)**
 Fig. 1 - Maximum Forward Voltage Drop Characteristics



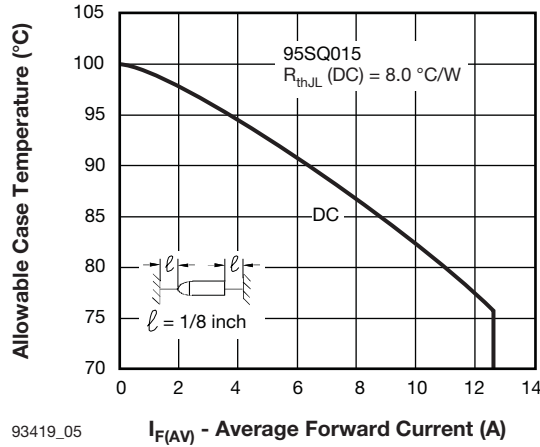
93419_02 **V_R - Reverse Voltage (V)**
 Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage



93419_03 **V_R - Reverse Voltage (V)**
 Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage

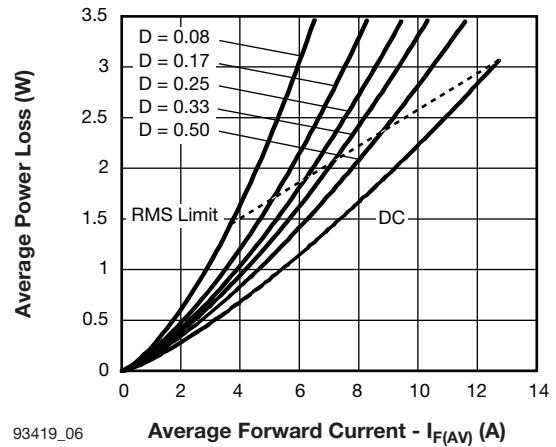


93419_04 **t₁ - Rectangular Pulse Duration (s)**
 Fig. 4 - Maximum Thermal Impedance Z_{thJL} Characteristics



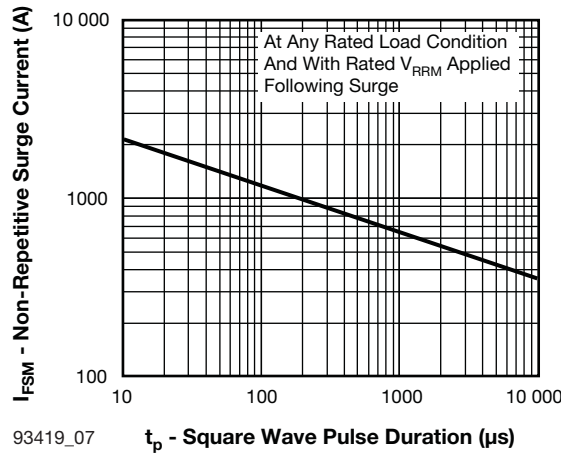
93419_05

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



93419_06

Fig. 6 - Forward Power Loss Characteristics



93419_07

Fig. 7 - Maximum Non-Repetitive Surge Current

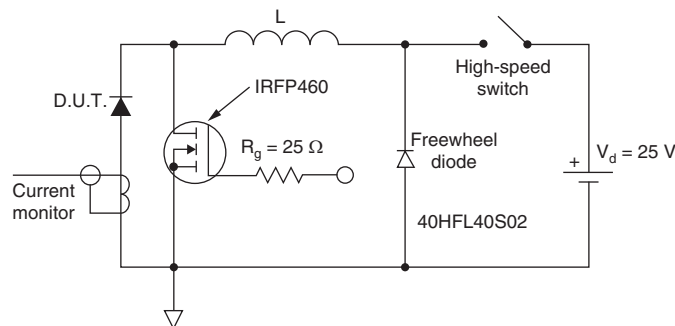
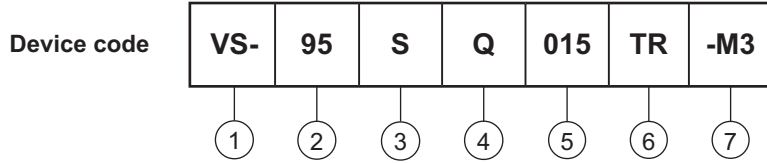


Fig. 8 - Unclamped Inductive Test Circuit



ORDERING INFORMATION TABLE



- ① - Vishay Semiconductors product
- ② - 95 = Current Rating, 9A
- ③ - S = DO-204AR
- ④ - Q = Schottky Q.. series
- ⑤ - Voltage rating (015 = 15 V)
- ⑥ - • TR = Tape and reel package
• None = Bulk package
- ⑦ - Environmental digit
 - None = Lead (Pb)-free and RoHS compliant
 - -M3 = Halogen-free, RoHS compliant, and terminations lead (Pb)-free

ORDERING INFORMATION (Example)			
PREFERRED P/N	QUANTITY PER T/R	MINIMUM ORDER QUANTITY	PACKAGING DESCRIPTION
VS-95SQ015	300	300	Bulk
VS-95SQ015TR	1500	1500	Tape and reel
VS-95SQ015-M3	300	300	Bulk
VS-95SQ015TR-M3	1500	1500	Tape and reel

LINKS TO RELATED DOCUMENTS	
Dimensions	www.vishay.com/doc?95243
Part marking information	www.vishay.com/doc?95325
Packaging information	www.vishay.com/doc?95338



Axial DO-204AR

DIMENSIONS in millimeters (inches)





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