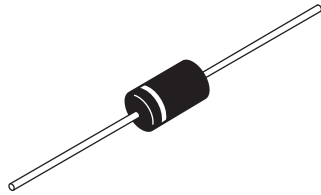


## Schottky Rectifier, 8 A



DO-204AR



### FEATURES

- 175 °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 for commercial level
- Halogen-free according to IEC 61249-2-21 definition (-M3 only)



PRODUCT SUMMARY	
Package	DO-204AR
$I_{F(AV)}$	8 A
$V_R$	30 V, 35 V, 40 V, 45 V
$V_F$ at $I_F$	0.44 V
$I_{RM}$ max.	15 mA at 125 °C
$T_J$ max.	175 °C
Diode variation	Single die
$E_{AS}$	10 mJ

### DESCRIPTION

The VS-80SQ... axial leaded Schottky rectifier series has been optimized for low reverse leakage at high temperature. The proprietary barrier technology allows for reliable operation up to 175 °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	8	A
$V_{RRM}$	Range	30 to 45	V
$I_{FSM}$	$t_p = 5 \mu s$ sine	2400	A
$V_F$	8 Apk, $T_J = 125 \text{ }^\circ\text{C}$	0.44	V
$T_J$	Range	- 55 to 175	$^\circ\text{C}$

VOLTAGE RATINGS						
PARAMETER	SYMBOL	VS-80SQ030 VS-80SQ030-M3	VS-80SQ035 VS-80SQ035-M3	VS-80SQ040 VS-80SQ040-M3	VS-80SQ045 VS-80SQ045-M3	UNITS
Maximum DC reverse voltage	$V_R$	30	35	40	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 $T_C = 119 \text{ }^\circ\text{C}$ , rectangular waveform	8	A
Maximum peak one cycle non-repetitive surge current See fig. 7	$I_{FSM}$	5 $\mu s$ sine or 3 $\mu s$ rect. pulse	2400	
		10 ms sine or 6 ms rect. pulse	380	
Non-repetitive avalanche energy	$E_{AS}$	$T_J = 25 \text{ }^\circ\text{C}$ , $I_{AS} = 1.6 \text{ A}$ , $L = 7.8 \text{ mH}$	10	mJ
Repetitive avalanche current	$I_{AR}$	Current decaying linearly to zero in 1 $\mu s$ Frequency limited by, $T_J$ maximum $V_A = 1.5 \times V_R$ typical	1.6	A



ELECTRICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum forward voltage drop See fig. 1	$V_{FM}^{(1)}$	8 A	$T_J = 25\text{ }^\circ\text{C}$	0.53	V
		16 A		0.60	
		8 A	$T_J = 125\text{ }^\circ\text{C}$	0.44	
		16 A		0.55	
Maximum reverse leakage current See fig. 2	$I_{RM}^{(1)}$	$T_J = 25\text{ }^\circ\text{C}$	$V_R = \text{Rated } V_R$	2	mA
		$T_J = 125\text{ }^\circ\text{C}$		15	
Maximum junction capacitance	$C_T$	$V_R = 5 V_{DC}$ , (test signal range 100 kHz to 1 MHz) $25\text{ }^\circ\text{C}$		900	pF
Typical series inductance	$L_S$	Measured lead to lead 5 mm from package body		10.0	nH
Maximum voltage rate of change	dV/dt	Rated $V_R$		10 000	V/ $\mu\text{s}$

Note

(1) Pulse width < 300  $\mu\text{s}$ , duty cycle < 2 %

THERMAL - MECHANICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum junction and storage temperature range	$T_J, T_{Stg}$			- 55 to 175	$^\circ\text{C}$
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)		80SQ030	
				80SQ035	
				80SQ040	
				80SQ045	

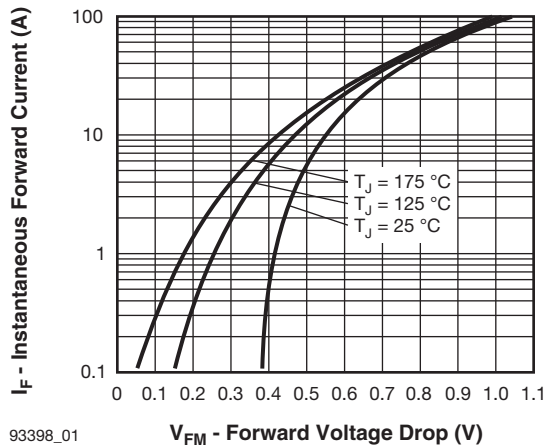


Fig. 1 - Maximum Forward Voltage Drop Characteristics

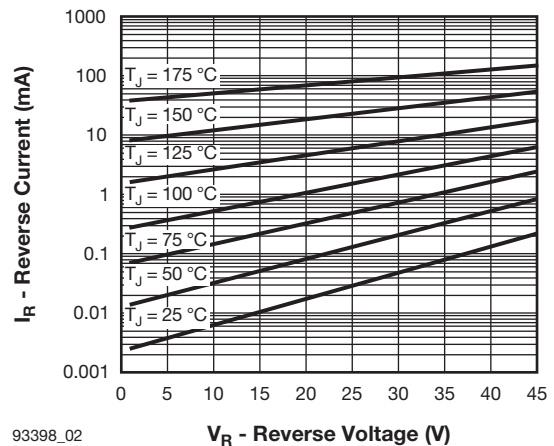


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage

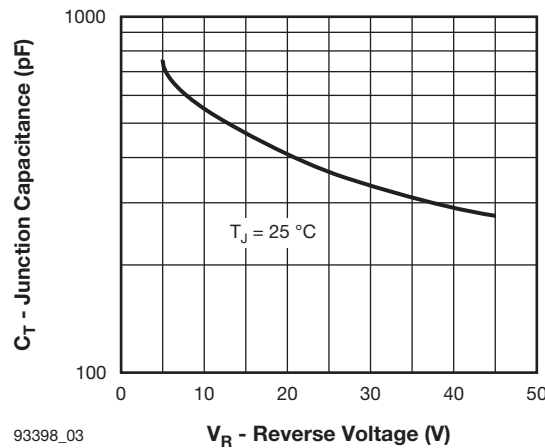


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage

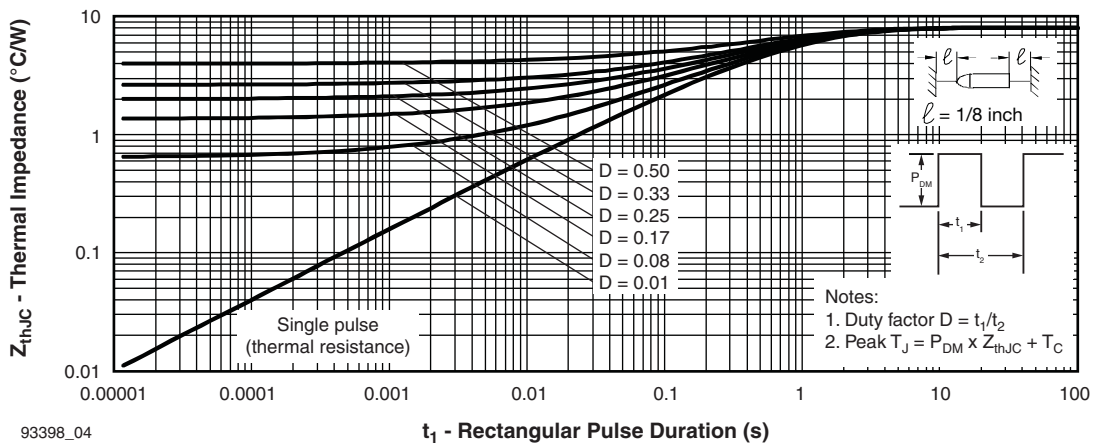
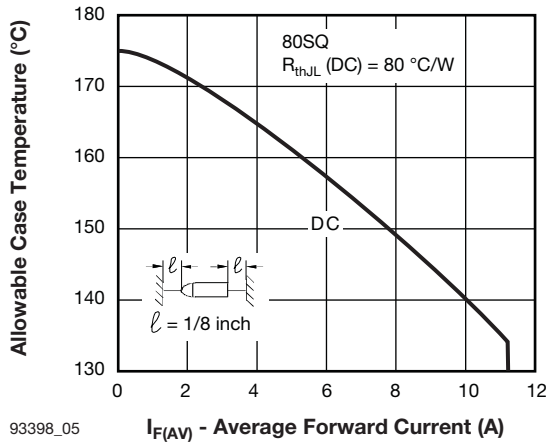
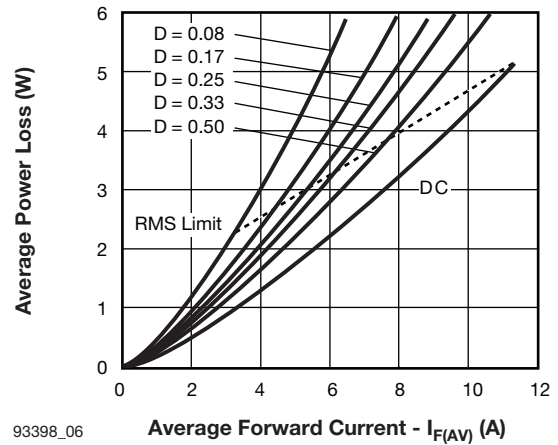


Fig. 4 - Maximum Thermal Impedance  $Z_{thJL}$  Characteristics



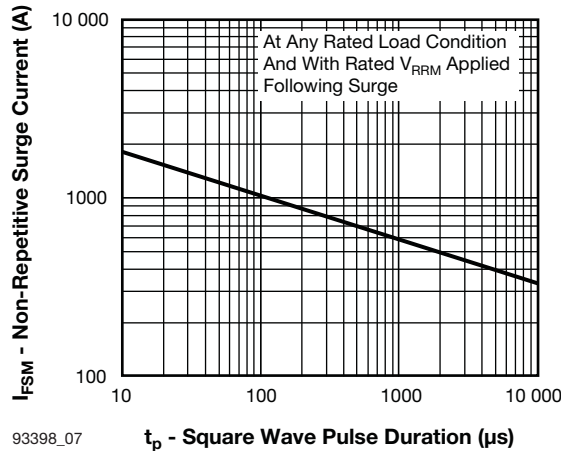
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Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current



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Fig. 6 - Forward Power Loss Characteristics



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Fig. 7 - Maximum Non-Repetitive Surge Current

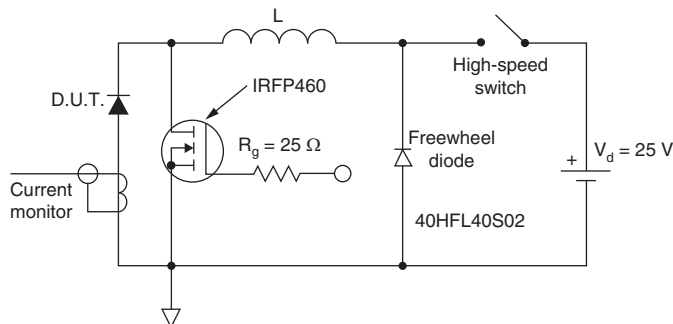
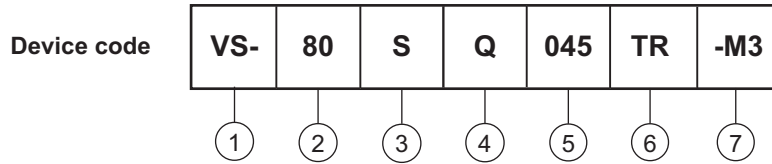


Fig. 8 - Unclamped Inductive Test Circuit



## ORDERING INFORMATION TABLE



- 1** - Vishay Semiconductors product
- 2** - 80 = Current x 10
- 3** - S = DO-204AR
- 4** - Q = Schottky Q.. series
- 5** - Voltage rating
 

030 = 30 V
035 = 35 V
040 = 40 V
045 = 45 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

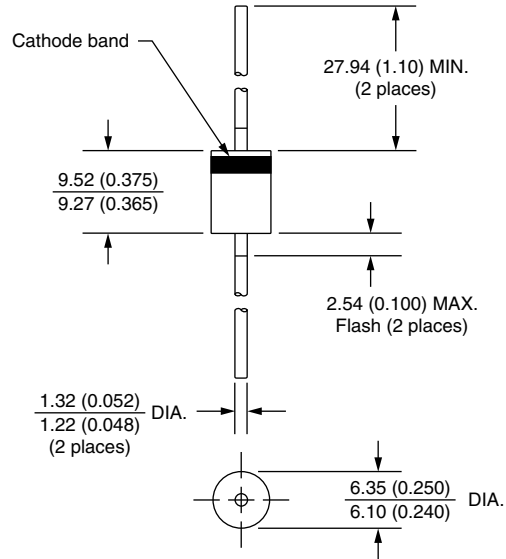
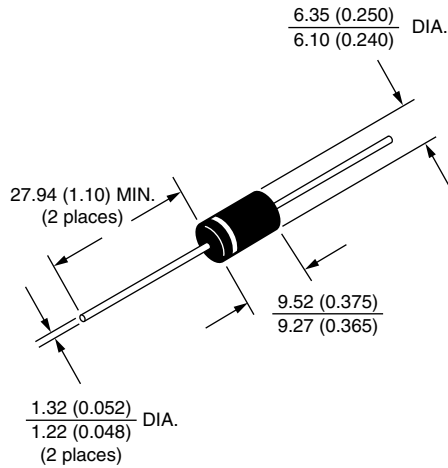
ORDERING INFORMATION (Example)			
PREFERRED P/N	QUANTITY PER T/R	MINIMUM ORDER QUANTITY	PACKAGING DESCRIPTION
VS-80SQ030	300	300	Bulk
VS-80SQ030TR	1500	1500	Tape and reel
VS-80SQ030-M3	300	300	Bulk
VS-80SQ030TR-M3	1500	1500	Tape and reel
VS-80SQ035	300	300	Bulk
VS-80SQ035TR	1500	1500	Tape and reel
VS-80SQ035-M3	300	300	Bulk
VS-80SQ035TR-M3	1500	1500	Tape and reel
VS-80SQ040	300	300	Bulk
VS-80SQ040TR	1500	1500	Tape and reel
VS-80SQ040-M3	300	300	Bulk
VS-80SQ040TR-M3	1500	1500	Tape and reel
VS-80SQ045	300	300	Bulk
VS-80SQ045TR	1500	1500	Tape and reel
VS-80SQ045-M3	300	300	Bulk
VS-80SQ045TR-M3	1500	1500	Tape and reel

LINKS TO RELATED DOCUMENTS	
Dimensions	<a href="http://www.vishay.com/doc?95243">www.vishay.com/doc?95243</a>
Part marking information	<a href="http://www.vishay.com/doc?95325">www.vishay.com/doc?95325</a>
Packaging information	<a href="http://www.vishay.com/doc?95338">www.vishay.com/doc?95338</a>



## Axial DO-204AR

**DIMENSIONS** in millimeters (inches)





## Disclaimer

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**Please note that some Vishay documentation may still make reference to RoHS Directive 2002/95/EC. We confirm that all the products identified as being compliant to Directive 2002/95/EC conform to Directive 2011/65/EU.**