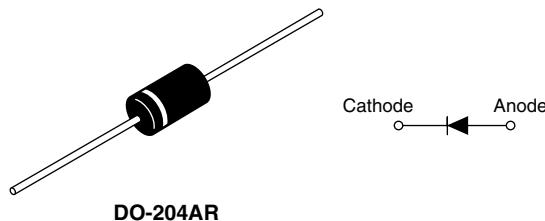


Schottky Rectifier, 9 A



DO-204AR

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
- Lead (Pb)-free plating
- Designed and qualified for industrial level


 RoHS
COMPLIANT

DESCRIPTION

The 90SQ axial leaded 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.

PRODUCT SUMMARY	
$I_{F(AV)}$	9 A
V_R	30/35/40/45 V

MAJOR RATINGS AND CHARACTERISTICS			
SYMBOL	CHARACTERISTICS	VALUES	UNITS
$I_{F(AV)}$	Rectangular waveform	9	A
V_{RRM}	Range	30 to 45	V
I_{FSM}	$t_p = 5 \mu s$ sine	2150	A
V_F	9 Apk, $T_J = 125^\circ C$	0.42	V
T_J	Range	- 55 to 150	°C

VOLTAGE RATINGS						
PARAMETER	SYMBOL	90SQ030	90SQ035	90SQ040	90SQ045	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 $T_C = 69^\circ C$, 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		2150			
		10 ms sine or 6 ms rect. pulse			340			
Non-repetitive avalanche energy	E_{AS}	$T_J = 25^\circ C$, $I_{AS} = 1.8 A$, $L = 7.4 mH$			12	mJ		
Repetitive avalanche current	I_{AR}	Current decaying linearly to zero in 1 μs Frequency limited by, T_J maximum $V_A = 1.5 \times V_R$ typical			1.8	A		

ELECTRICAL SPECIFICATIONS

PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS	
Maximum forward voltage drop See fig. 1	V _{FM} ⁽¹⁾	9 A	T _J = 25 °C	0.48	V	
		18 A		0.57		
		9 A	T _J = 125 °C	0.42		
		18 A		0.52		
Maximum reverse leakage current See fig. 2	I _{RM} ⁽¹⁾	T _J = 25 °C	V _R = Rated V _R	1.75	mA	
		T _J = 125 °C		70		
Maximum junction capacitance	C _T	V _R = 5 V _{DC} , (test signal range 100 kHz to 1 MHz) 25 °C		900	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 and storage temperature range	T _J , T _{Stg}		- 55 to 150	°C
Maximum thermal resistance, junction to lead	R _{thJL}	DC operation; see fig. 4 1/8" lead length	8.0	°C/W
Typical thermal resistance, junction to air	R _{thJA}		44	
Approximate weight		Case style DO-204AR (JEDEC)	1.4	g
			0.049	oz.
Marking device		Case style DO-204AR (JEDEC)	90SQ030	
			90SQ035	
			90SQ040	
			90SQ045	

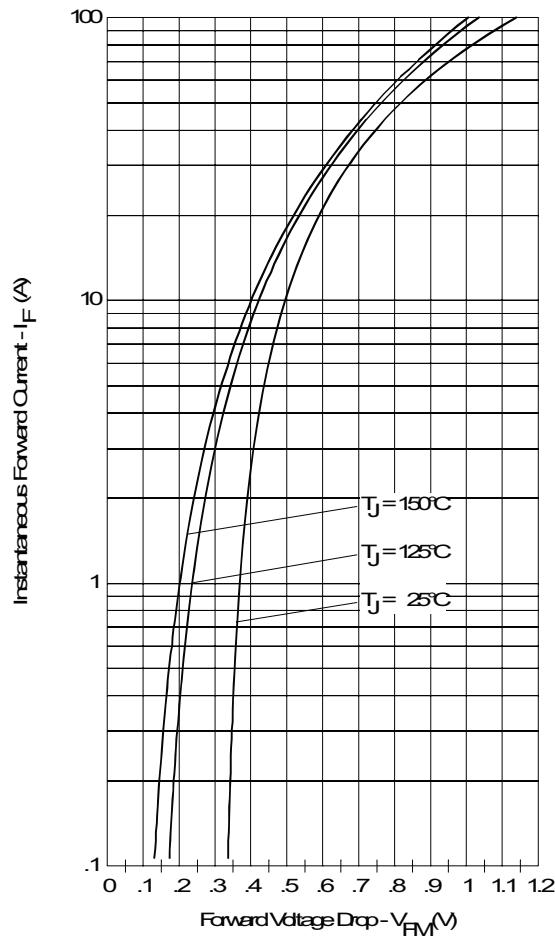


Fig. 1 - Maximum Forward Voltage Drop Characteristics

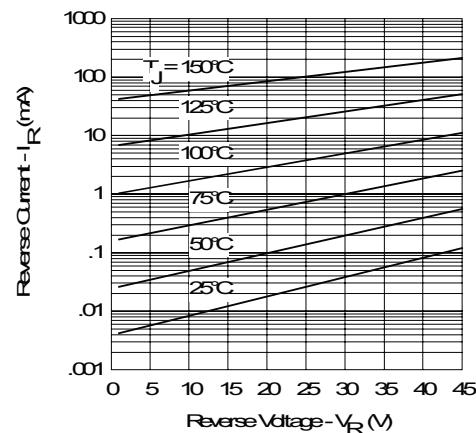


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage

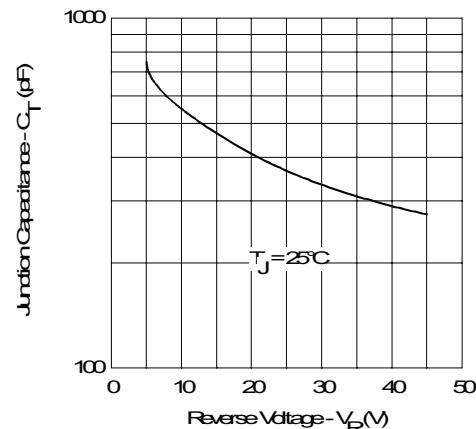


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage

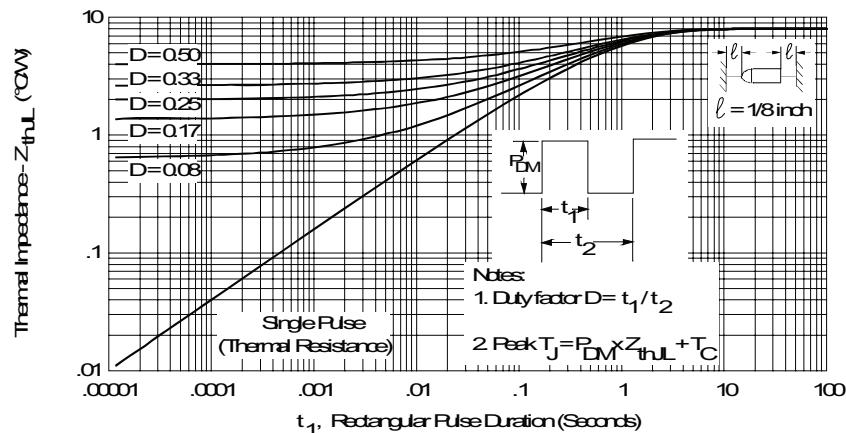


Fig. 4 - Maximum Thermal Impedance Z_{thUL} Characteristics

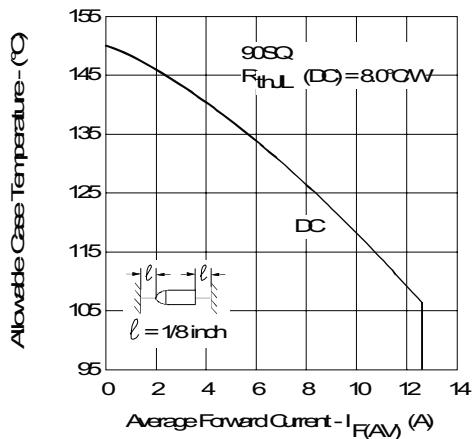


Fig. 5 - Maximum Allowable Case Temperature vs.
Average Forward Current

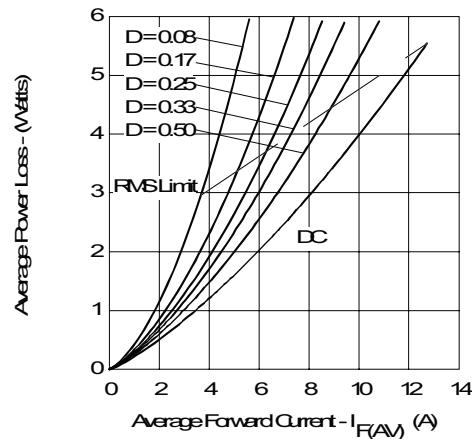


Fig. 6 - Forward Power Loss Characteristics

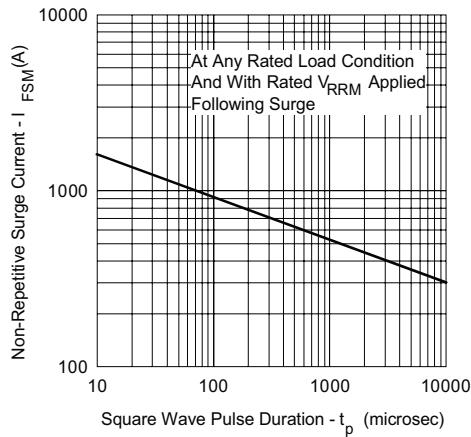


Fig. 7 - Maximum Non-Repetitive Surge Current

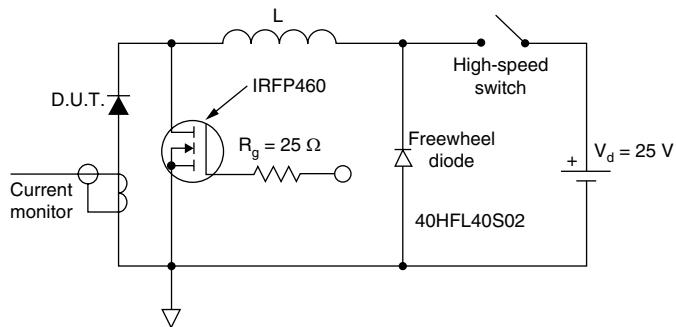


Fig. 8 - Unclamped Inductive Test Circuit

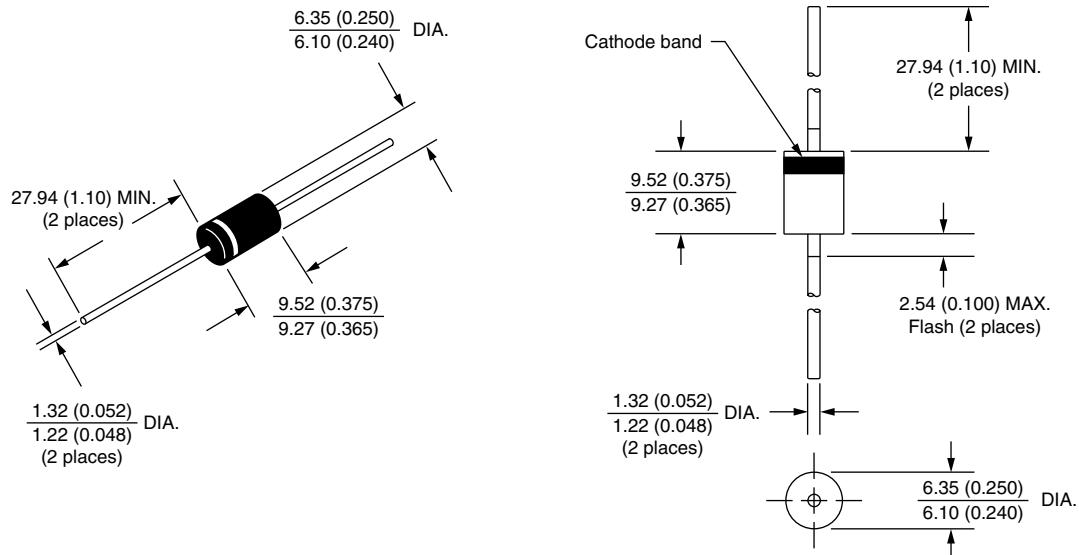
ORDERING INFORMATION TABLE

Device code	90	S	Q	045	TR	
	(1)	(2)	(3)	(4)	(5)	
[1]	-	90 = Current x 10				
[2]	-	S = DO-204AR				
[3]	-	Q = Schottky Q.. series				030 = 30 V
[4]	-	Voltage rating				035 = 35 V
[5]	-	• TR = Tape and reel package (1500 pcs)				040 = 40 V
		• None = Box package (300 pcs)				045 = 45 V

LINKS TO RELATED DOCUMENTS	
Dimensions	http://www.vishay.com/doc?95243
Part marking information	http://www.vishay.com/doc?95325
Packaging information	http://www.vishay.com/doc?95332

Axial DO-204AR

DIMENSIONS in millimeters (inches)



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