

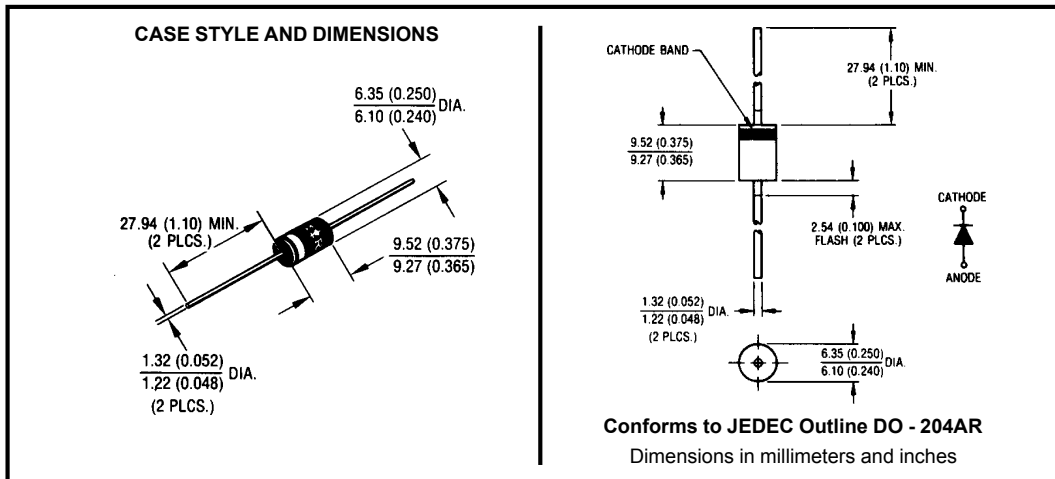
**Major Ratings and Characteristics**

Characteristics	90SQ...	Units
$I_{F(AV)}$ Rectangular waveform	9	A
$V_{RRM}$ range	35 to 45	V
$I_{FSM}$ @tp = 5 $\mu$ s sine	2150	A
$V_F$ @9 Apk, $T_J = 125^\circ\text{C}$	0.42	V
$T_J$ range	-55 to 150	$^\circ\text{C}$

**Description/Features**

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, free-wheeling diodes, and reverse battery protection.

- 150° C  $T_J$  operation
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- Very low forward voltage drop
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability



## Voltage Ratings

Part number	90SQ035	90SQ040	90SQ045
$V_R$ Max. DC Reverse Voltage (V)	35	40	45
$V_{RWM}$ Max. Working Peak Reverse Voltage (V)			

## Absolute Maximum Ratings

Parameters	90SQ	Units	Conditions
$I_{F(AV)}$ Max. Average Forward Current * See Fig. 5	9	A	50% duty cycle @ $T_C = 69^\circ\text{C}$ , rectangular wave form
$I_{FSM}$ Max. Peak One Cycle Non-Repetitive Surge Current * See Fig. 7	2150	A	Following any rated load condition and with rated $V_{RRM}$ applied
	340		
$E_{AS}$ Non-Repetitive Avalanche Energy	12	mJ	$T_J = 25^\circ\text{C}$ , $I_{AS} = 1.8\text{ Amps}$ , $L = 7.4\text{ mH}$
$I_{AR}$ Repetitive Avalanche Current	1.8	A	Current decaying linearly to zero in 1 $\mu\text{sec}$ Frequency limited by $T_J$ max. $V_A = 1.5 \times V_R$ typical

## Electrical Specifications

Parameters	90SQ	Units	Conditions
$V_{FM}$ Max. Forward Voltage Drop (1) * See Fig. 1	0.48	V	@ 9A
	0.57	V	@ 18A
	0.42	V	@ 9A
	0.52	V	@ 18A
$I_{RM}$ Max. Reverse Leakage Current (1) * See Fig. 2	1.75	mA	$T_J = 25^\circ\text{C}$
	70	mA	$T_J = 125^\circ\text{C}$
$C_T$ Max. Junction Capacitance	900	pF	$V_R = 5V_{DC}$ , (test signal range 100Khz to 1Mhz) $25^\circ\text{C}$
$L_S$ Typical Series Inductance	10.0	nH	Measured lead to lead 5mm from body
$dv/dt$ Max. Voltage Rate of Change (Rated $V_R$ )	10000	V/ $\mu\text{s}$	

(1) Pulse Width < 300 $\mu\text{s}$ , Duty Cycle < 2%

## Thermal-Mechanical Specifications

Parameters	90SQ	Units	Conditions
$T_J$ Max. Junction Temperature Range	-55 to 150	$^\circ\text{C}$	
$T_{stg}$ Max. Storage Temperature Range	-55 to 150	$^\circ\text{C}$	
$R_{thJL}$ Max. Thermal Resistance Junction to Lead	8.0	$^\circ\text{C}/\text{W}$	DC operation * See Fig. 4 1/8 inch lead length
$R_{thJA}$ Typical Thermal Resistance, Junction to Air		44	$^\circ\text{C}/\text{W}$
wt Approximate Weight	1.4(0.049)	g(oz.)	
Case Style	DO-204AR	JEDEC	

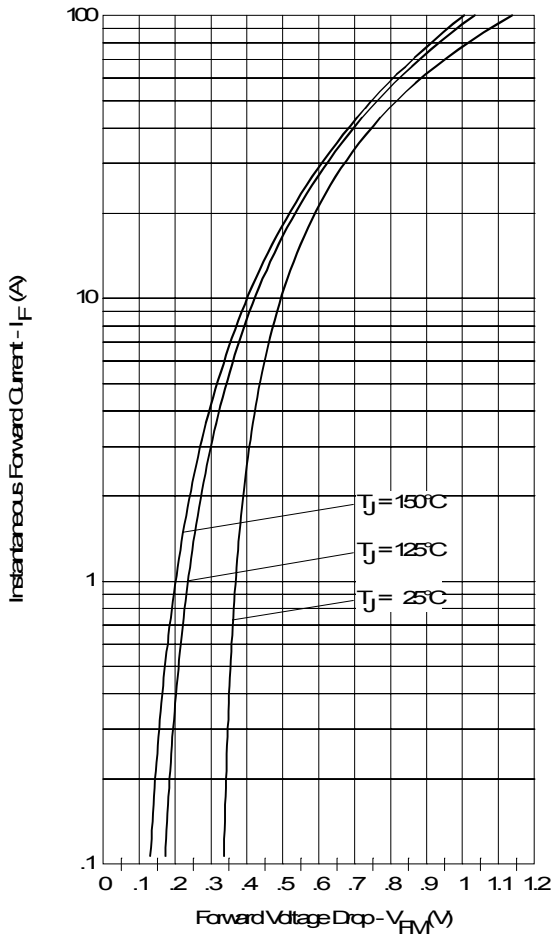


Fig. 1 - Maximum Forward Voltage Drop Characteristics

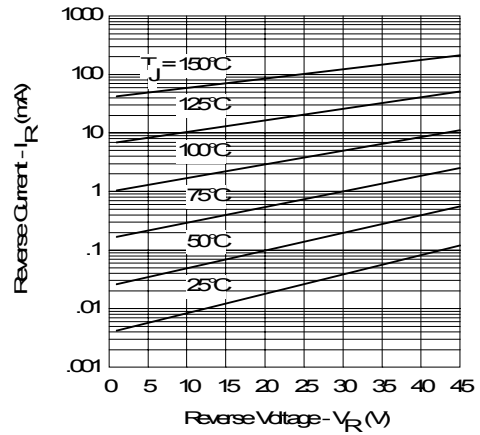


Fig. 2 - Typical Values of Reverse Current Vs. Reverse Voltage

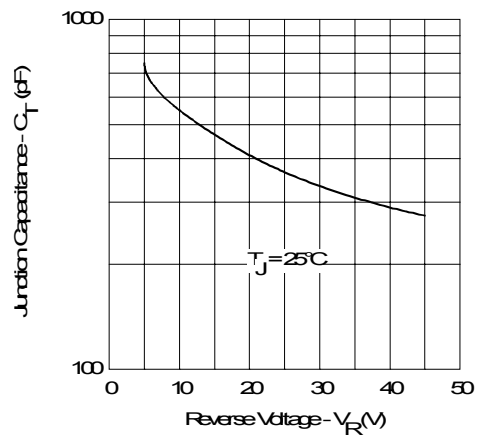


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

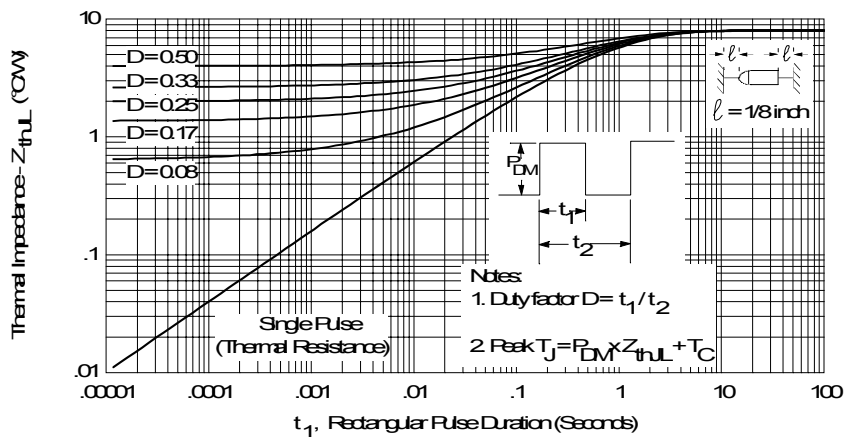


Fig. 4 - Maximum Thermal Impedance  $Z_{thL}$  Characteristics

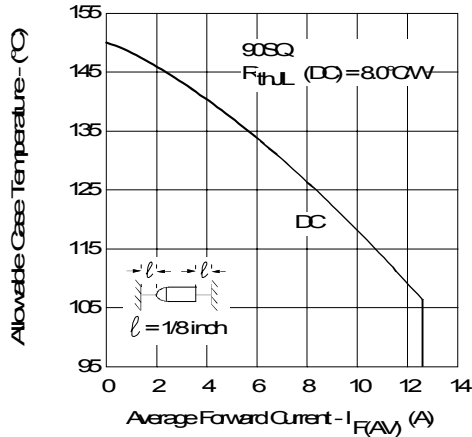


Fig. 5 - Maximum Allowable Case Temperature Vs. Average Forward Current

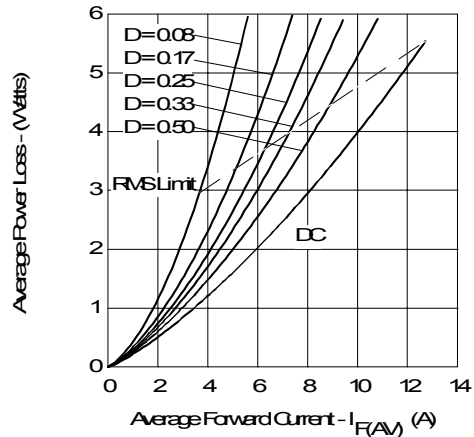


Fig. 6 - Forward Power Loss Characteristics

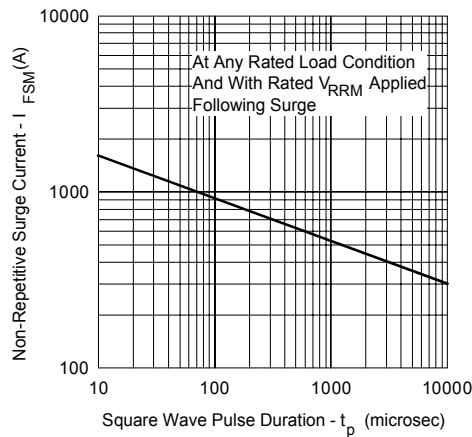


Fig. 7 - Maximum Non-Repetitive Surge Current

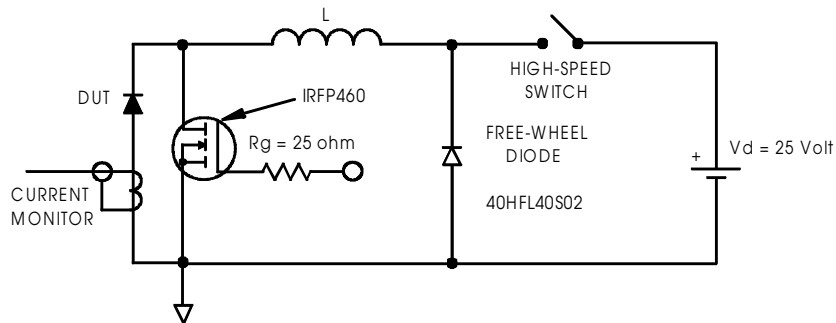


Fig. 8 - Unclamped Inductive Test Circuit

Ordering Information Table

**Device Code**

<b>90</b>	<b>S</b>	<b>Q</b>	<b>045</b>
①	②	③	④

<b>1</b>	- Essential Part Number (current x10)	
<b>2</b>	- S = DO-204AR	
<b>3</b>	- Q = Schottky Q Series	
<b>4</b>	- Voltage Rating	035 = 35V 040 = 40V 045 = 45V

Data and specifications subject to change without notice.  
 This product has been designed and qualified for Industrial Level.  
 Qualification Standards can be found on IR's Web site.

This datasheet has been download from:

[www.datasheetcatalog.com](http://www.datasheetcatalog.com)

Datasheets for electronics components.