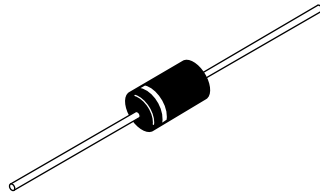
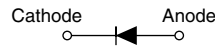


## Schottky Rectifier, 8 A


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


**RoHS**  
COMPLIANT

### PRODUCT SUMMARY

$I_{F(AV)}$	8 A
$V_R$	30/35/40/45 V

### DESCRIPTION

The 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	80SQ030	80SQ035	80SQ040	80SQ045	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	$I_{FSM}$	<table border="1"> <tr> <td>5 <math>\mu s</math> sine or 3 <math>\mu s</math> rect. pulse</td> <td rowspan="2">Following any rated load condition and with rated <math>V_{RRM}</math> applied</td> </tr> <tr> <td>10 ms sine or 6 ms rect. pulse</td> </tr> </table>	5 $\mu s$ sine or 3 $\mu s$ rect. pulse		Following any rated load condition and with rated $V_{RRM}$ applied	10 ms sine or 6 ms rect. pulse
5 $\mu s$ sine or 3 $\mu s$ rect. pulse	Following any rated load condition and with rated $V_{RRM}$ applied					
10 ms sine or 6 ms rect. pulse						
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/ $\mu$ s

**Note**(1) Pulse width < 300  $\mu$ 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	$^\circ\text{C}/\text{W}$
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	

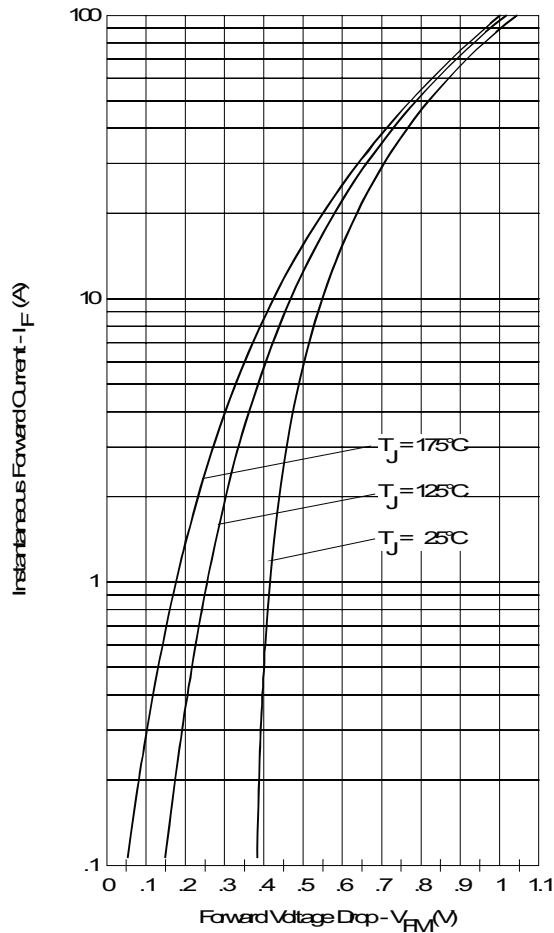


Fig. 1 - Maximum Forward Voltage Drop Characteristics

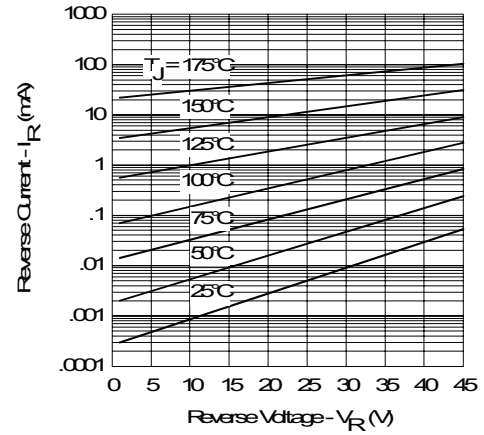


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage

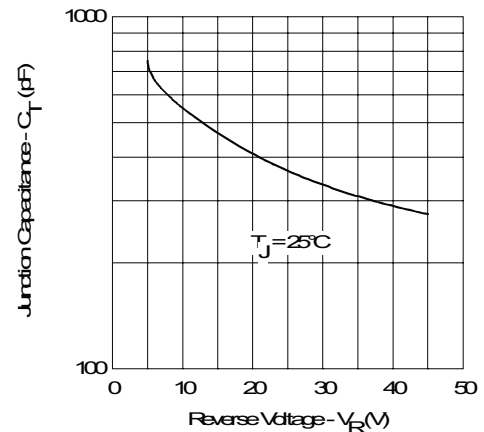


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage

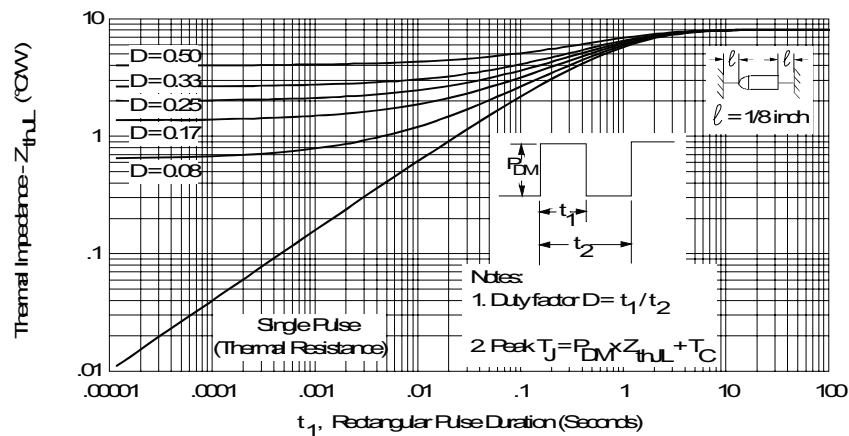


Fig. 4 - Maximum Thermal Impedance  $Z_{thJL}$  Characteristics

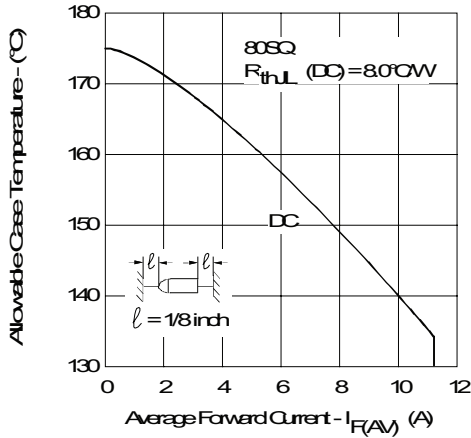


Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current

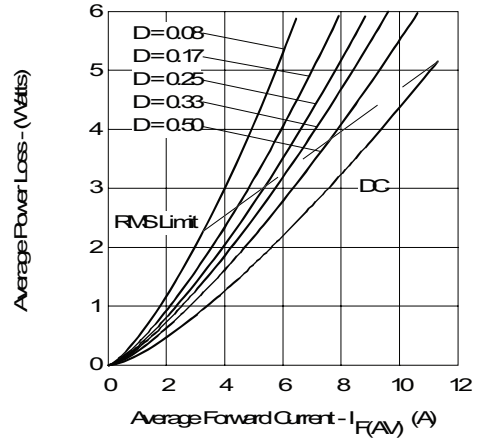


Fig. 6 - Forward Power Loss Characteristics

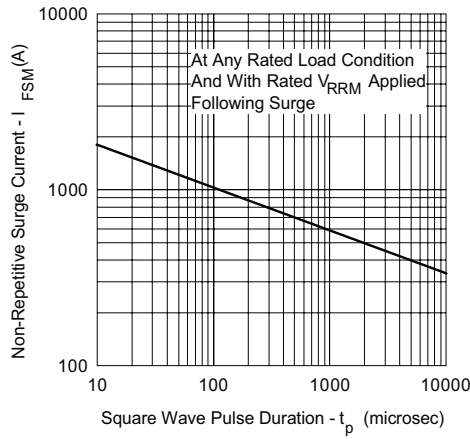


Fig. 7 - Maximum Non-Repetitive Surge Current

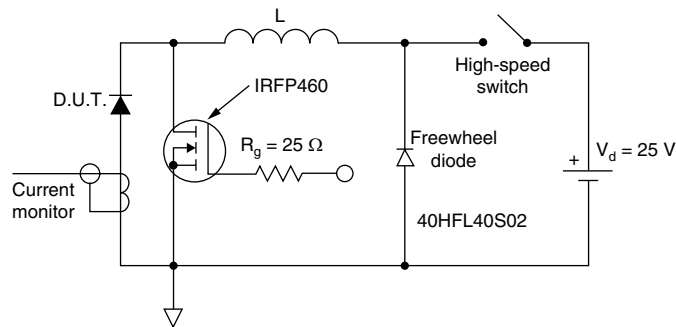
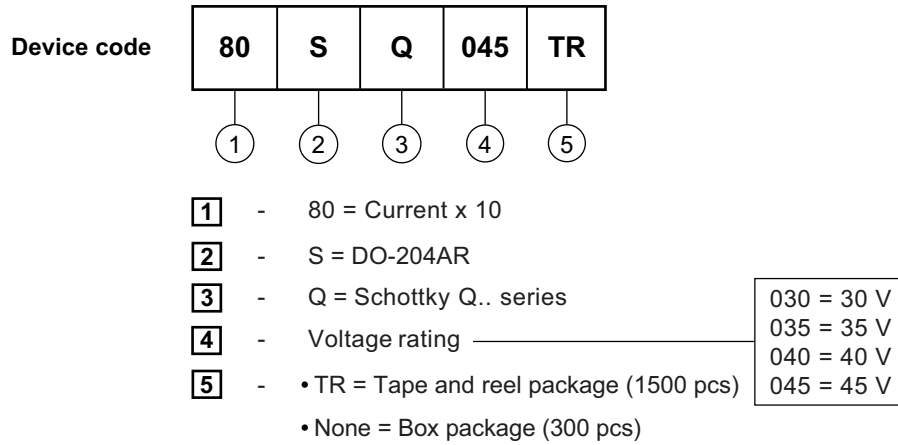


Fig. 8 - Unclamped Inductive Test Circuit



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