Schottky Diode

30BQ040

40V / 3A

DATASHEET

OEM – International Rectifier

Source: International Rectifier Databook 1995

PD - 2.439

International Rectifier

30BQ040

SCHOTTKY RECTIFIER 3 Amp

Major Ratings and Characteristics

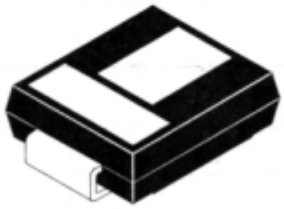
Characteristics		30BQ040	Units
$I_{F(AV)}$	Rectangular waveform	3.0	A
V_{RRM}		40	V
I_{FSM}	@ tp = 5 µs sine	2000	A
V_F	@ 3.0 Apk, T_J = 125°C	0.45	V
T_J		-55 to 150	°C

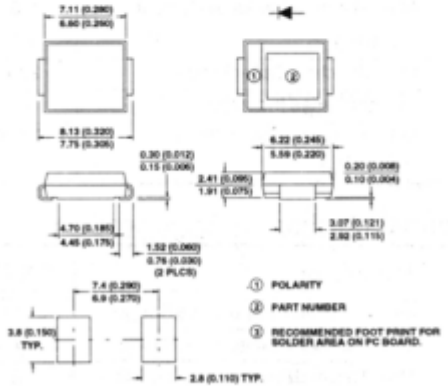
Description/Features

The 30BQ040 surface mount Schottky rectifier has been designed for applications requiring very low forward voltage drop and small foot prints on PC boards. Typical applications are in disk drives, switching power supplies, converters, free-wheeling diodes, battery charging, and reverse battery protection.

- Small foot print, surface mountable
- Very low forward voltage drop
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability

CASE STYLE





Outline SMC
Dimensions in millimeters and inches

For tape and reel information see Appendix Section page 339

30BQ040

Voltage Ratings

	Part number	30BQ040
V_R	Max. DC Reverse Voltage (V)	40
V_{RWM}	Max. Working Peak Reverse Voltage (V)	

Absolute Maximum Ratings

	Parameters	30BQ	Units	Conditions	
$I_{F(AV)}$	Max. Average Forward Current	3.0	A	50% duty cycle @ T_C = 120°C, rectangular wave form	
	* See Fig. 5	4.0		50% duty cycle @ T_C = 112°C, rectangular wave form	
I_{FSM}	Max. Peak One Cycle Non-Repetitive	2000		5µs Sine or 3µs Rect. pulse	Following any rated load condition and with rated V_{RRM} applied
	Surge Current * See Fig. 7	110		10ms Sine or 6ms Rect. pulse	
E_{AS}	Non-Repetitive Avalanche Energy	35	mJ	T_J = 25 °C, I_{AS} = 0.6Amps, L = 6.6mH	
I_{AR}	Repetitive Avalanche Current	0.6	A	Current decaying linearly to zero in 1 µsec Frequency limited by T_J max. V_A = 1.5 x V_R typical	

Electrical Specifications

	Parameters	30BQ	Units	Conditions	
V_{FM}	Max. Forward Voltage Drop	0.51	V	@ 3.0 A	T_J = 25°C
	* See Fig. 1 (1)	0.63	V	@ 6.0 A	
		0.45	V	@ 3.0 A	T_J = 125°C
		0.59	V	@ 6.0A	
I_{RM}	Max. Reverse Leakage Current	0.5	mA	T_J = 25 °C	V_R = rated V_R
	* See Fig. 2 (1)	20	mA	T_J = 125 °C	
C_T	Max. Junction Capacitance	230	pF	V_R = 5V_{DC}, (test signal range 100Khz to 1Mhz) 25°C	
L_S	Typical Series Inductance	3.0	nH	Measured lead to lead 5mm from package body	
dv/dt	Max. Voltage Rate of Change (Rated V_R)	10,000	V/ µs		

Thermal-Mechanical Specifications

	Parameters	30BQ	Units	Conditions
T_J	Max. Junction Temperature Range	-55 to 150	°C	
T_{stg}	Max. Storage Temperature Range	-55 to 150	°C	
R_{thJL}	Max. Thermal Resistance Junction to Lead (2)	12	°C/W	DC operation * See Fig. 4
R_{thJA}	Max. Thermal Resistance Junction to Ambient	46	°C/W	DC operation
wt	Approximate Weight	0.24	g	
	Case Style	SMC		Similar to DO-214AB

(1) Pulse Width < 300µs, Duty Cycle <2%
(2) Mounted 1 inch square PCB, Thermal Probe connected to lead 2mm from Package.

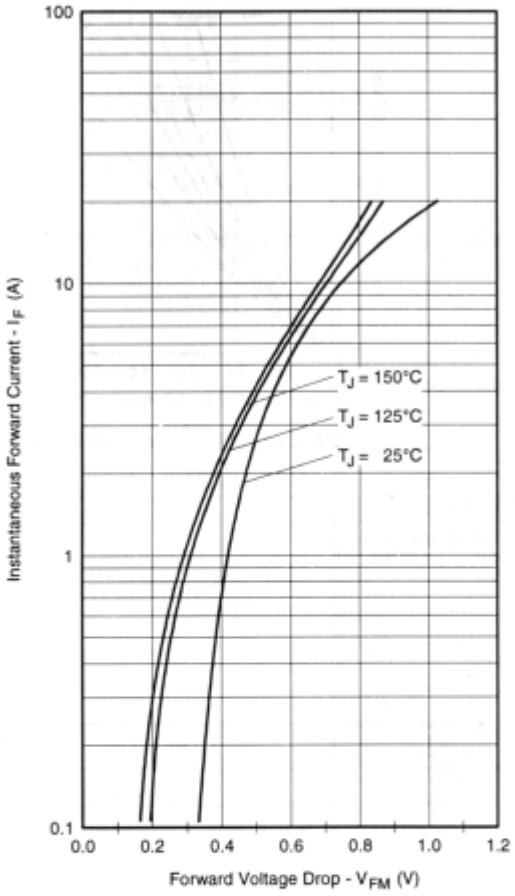


Fig. 1 - Max. Forward Voltage Drop Characteristics

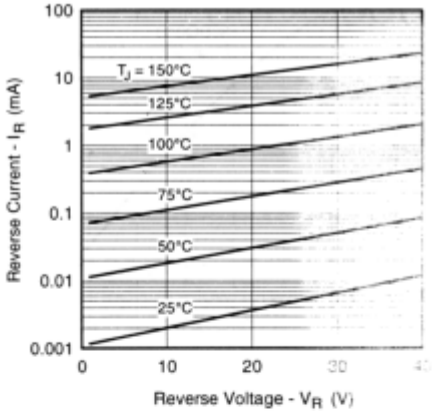


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage

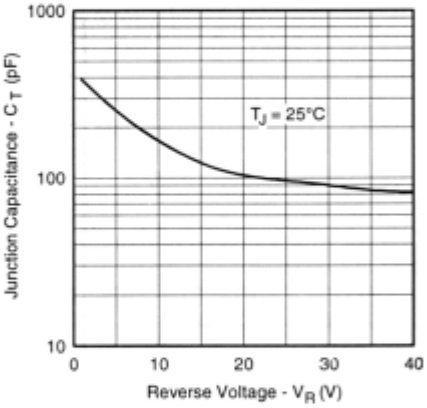


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

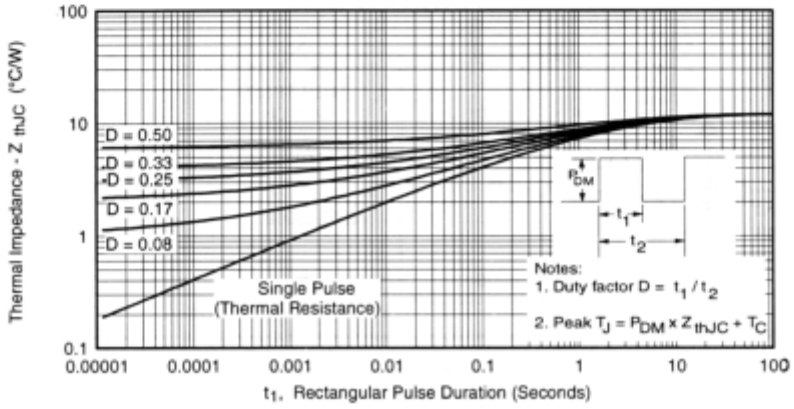


Fig. 4 - Max. Thermal Impedance Z_{thJL} Characteristics

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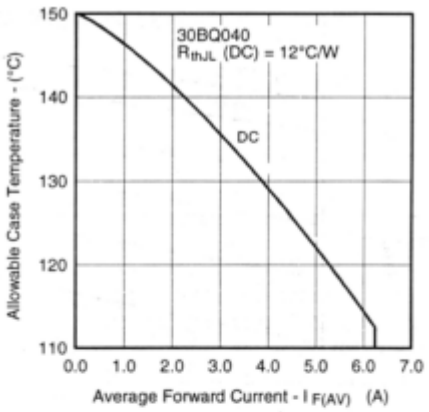

Fig. 5 - Max. Allowable Case Temperature Vs. Average Forward Current

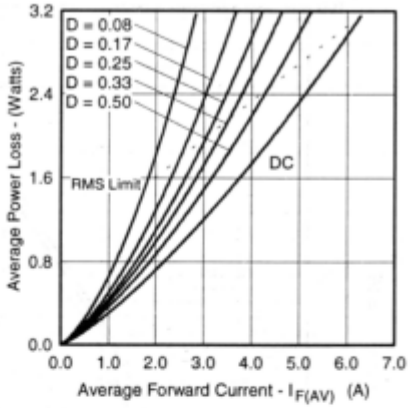

Fig. 6 - Forward Power Loss Characteristics

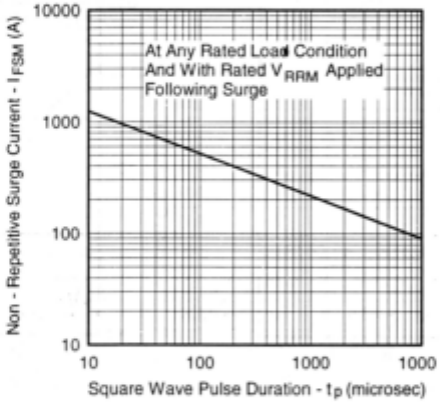

Fig. 7 - Max. Non-Repetitive Surge Current

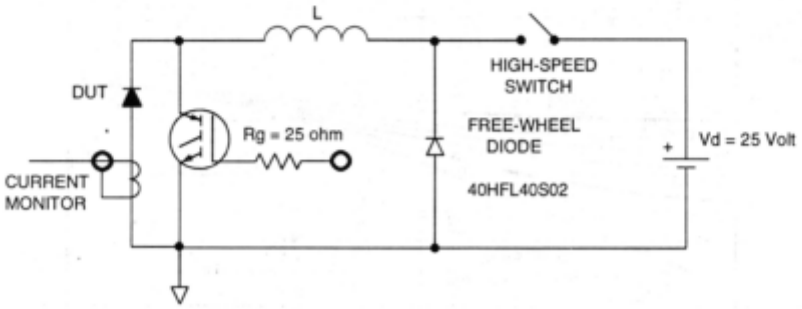

Fig. 8 - Unclamped Inductive Test Circuit