

SCHOTTKY RECTIFIER

1 Amp

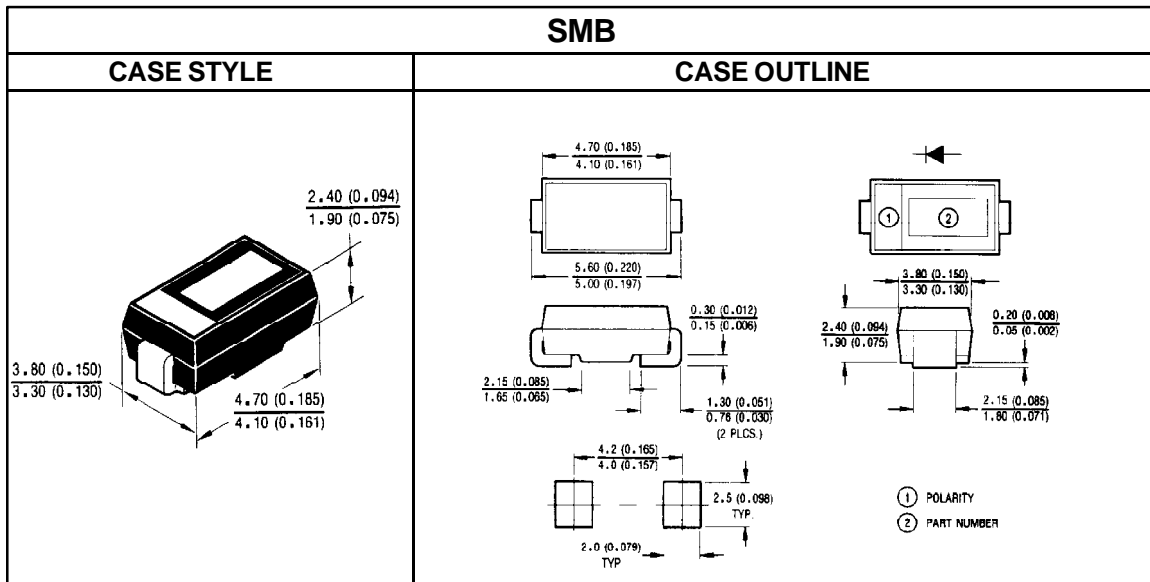
Major Ratings and Characteristics

Characteristics	10BQ040	Units
$I_{F(AV)}$ Rectangular waveform	1.0	A
V_{RRM}	40	V
I_{FSM} @ $t_p = 5\mu s$ sine	430	A
V_F @ 1.0Apk, $T_J = 125^\circ C$	0.49	V
T_J	-55 to 150	$^\circ C$

Description / Features

The 10BQ040 surface-mount Schottky rectifier has been designed for applications requiring very low forward 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 footprint, surface mountable
- Very low forward voltage drop
- High frequency operation
- Guard ring for enhanced ruggedness and long-term reliability



10BQ040



Voltage Ratings

Part number	10BQ040
V_R Max. DC Reverse Voltage (V)	40
V_{RWM} Max. Working Peak Reverse Voltage (V)	

Absolute Maximum Ratings

Parameters		10BQ	Units	Conditions
$I_{F(AV)}$	Max. Average Forward Current See Fig. 5	1.0	A	50% duty cycle @ $T_C = 112^\circ\text{C}$, rectangular waveform
I_{FSM}	Max. Peak One Cycle Non - Repetitive Surge Current — see Fig. 7	430	A	5 μs Sine or 3 μs Rect. pulse 10ms Sine or 6ms Rect. pulse Following any rated load condition and with rated V_{RWM} applied.
		45		
E_{AS}	Non - Repetitive Avalanche Energy	18	mJ	$T_J = 25^\circ\text{C}$, $I_{AS} = 0.2\text{A}$, $L = 13\text{mH}$
I_{AR}	Repetitive Avalanche Current	0.2	A	Current decaying linearly to zero in 1 μsec Frequency limited by T_J max. $V_A = 1.5 \times V_R$ typical

Electrical Specifications

Parameters		10BQ	Units	Conditions
V_{FM}	Max. Forward Voltage Drop See Fig. 1 ①	0.53	V	@ 1.0A
		0.70	V	@ 2.0A
		0.49	V	@ 1.0A
		0.64	V	@ 2.0A
I_{RM}	Max. Reverse Leakage Current ① See Fig. 2	0.10	mA	$T_J = 25^\circ\text{C}$
		4.0	mA	$T_J = 125^\circ\text{C}$
C_T	Max. Junction Capacitance	80	pF	$V_R = 5V_{DC}$, (test signal range 100KHz to 1MHz) 25°C
L_S	Typical Series Inductance	2.0	nH	Measured lead to lead 5mm from package body
dv/dt	Max. Voltage Rate of Change (Rated V_R)	5,300	V/ μs	

Thermal-Mechanical Specifications

Parameters		10BQ	Units	Conditions
T_J	Max. Junction Temperature Range	-55 to 100	$^\circ\text{C}$	
T_{STG}	Max. Storage Temperature Range	-55 to 100	$^\circ\text{C}$	
R_{thJA}	Max. Thermal Resistance, Junction to Ambient	140	$^\circ\text{C/W}$	DC operation — See Fig. 4
R_{thJL}	Max. Thermal Resistance, Junction to Lead ②	36	$^\circ\text{C/W}$	DC operation
wt	Approximate Weight	0.10	g	
Case Style		SMB		Similar to DO-214AA

① Pulse Width < 300 μs , Duty Cycle < 2%

② Mounted 1 inch square PCB, thermal probe connected to lead 2mm from package

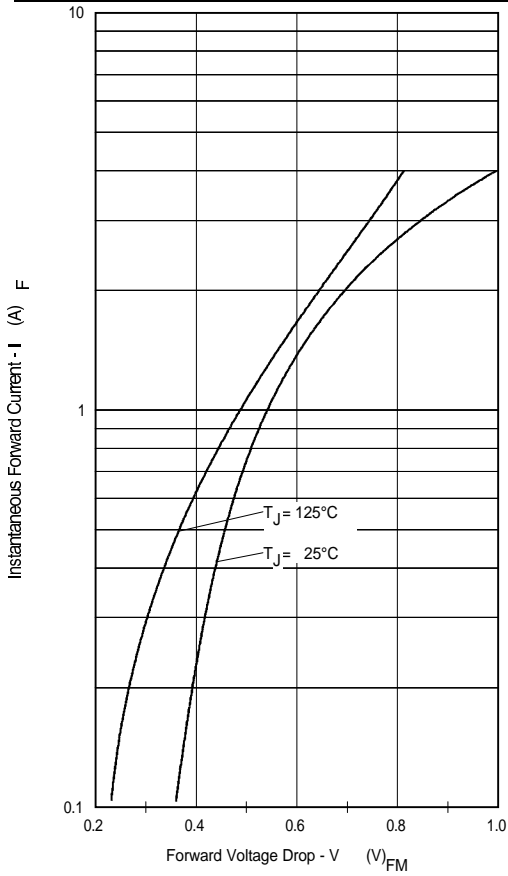


Fig. 1 Max. Forward Voltage Drop Characteristics

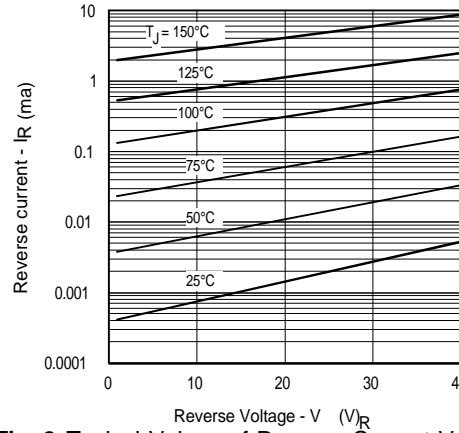


Fig. 2 Typical Values of Reverse Current Vs. Reverse Voltage

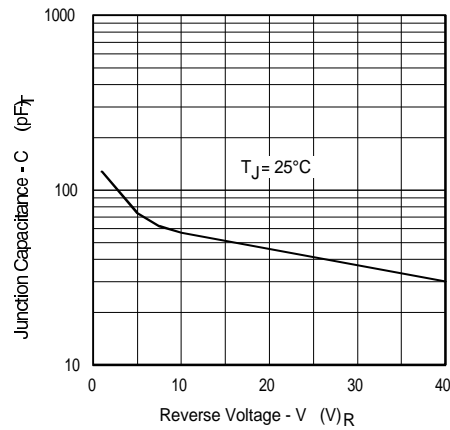


Fig. 3 Typical Junction Capacitance Vs. Reverse Voltage

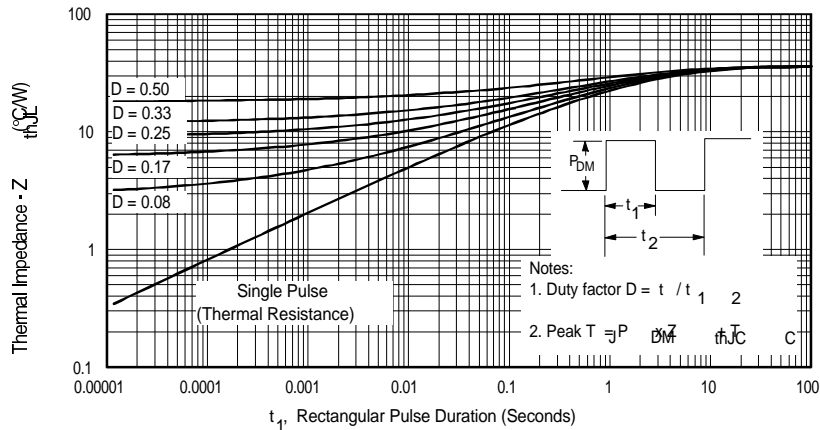


Fig. 4 Max. Thermal Impedance Z_{thJL} Characteristics

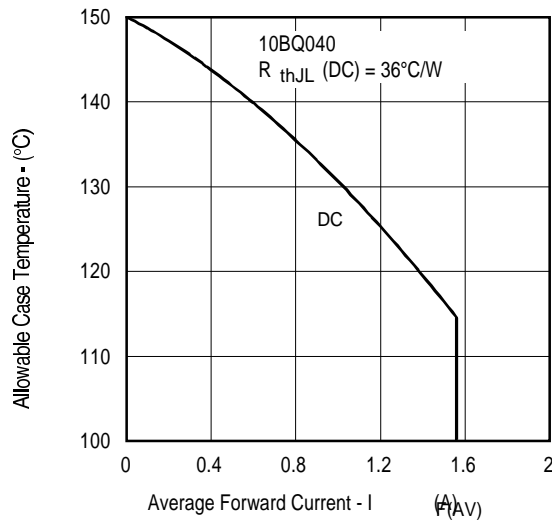


Fig. 5 Max. Allowable Case Temperature Vs. Average Forward Current

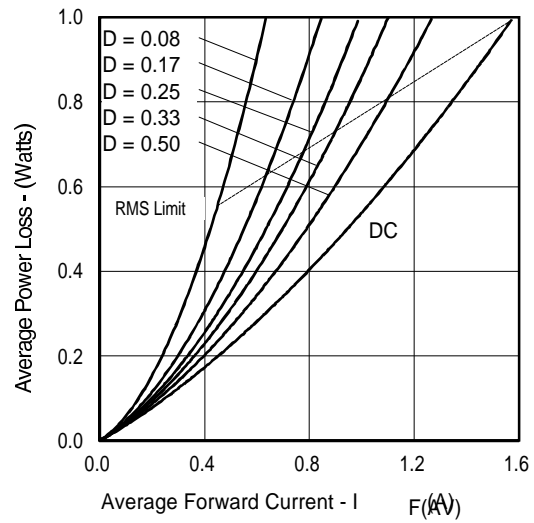


Fig. 6 Forward Power Loss Characteristics

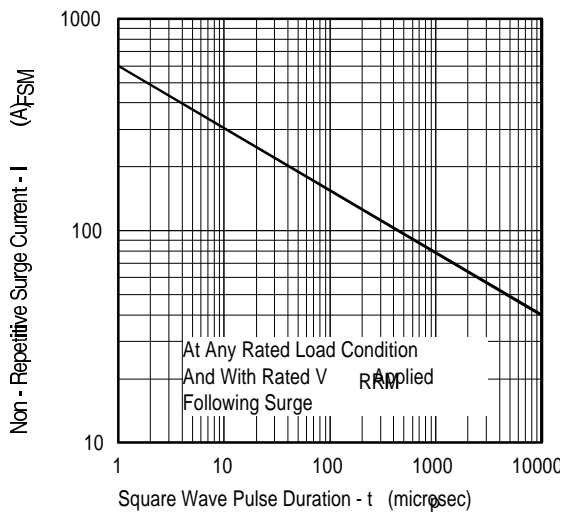


Fig. 7 Max. Non-Repetitive Surge Current

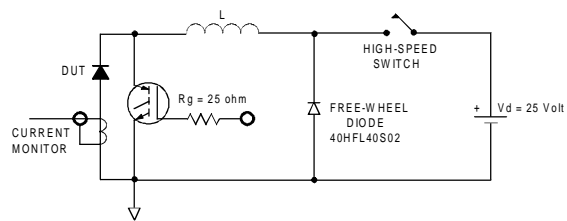


Fig. 8 Unclamped Inductive Test Circuit

Refer to the Appendix Section for the following:
Appendix D: Tape and Reel Information — See page 338.