

SCHOTTKY BARRIER DIODE

FEATURES

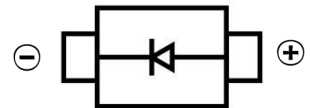
- Small Surface Mount device
- Low forward voltage drop
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability



SMB

APPLICATIONS

- Disk drives
- Switching power supplies, converters, free-wheeling diodes
- Battery charging and reverse battery protection



MECHANICAL DATA

- Case: SMB(DO-214AA)
- Case Material: Molded Plastic. UL flammability
- Classification Rating: 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Weight: 0.088 grams (approximate)

MAXIMUM RATINGS AND CHARACTERISTICS($T_A = 25^\circ\text{C}$ unless otherwise noted)

Parameter		Symbol	Value	Unit
Repetitive peak reverse voltage		V_{RRM}	15	V
DC Reverse Voltage		V_R	15	V
Non-Repetitive Peak Forward Surge Current	$t = 5\mu\text{s sine}$	I_{FSM}	140	A
	$t = 10\text{ms sine}$		40	
Mean rectifying current		I_F	1	A
Repetitive Avalanche Current		I_{AR}	0.2	A
Non- Repetitive Avalanche Energy ($I_{AS} = 0.2\text{A}$, $L = 4.2\text{mH}$)		E_{AS}	5.0	mJ
Thermal Resistance From Junction To Ambient		$R_{\theta JA}$	140	$^\circ\text{C/W}$
Thermal Resistance From Junction To Lead		$R_{\theta JL}$	36	$^\circ\text{C/W}$
Junction and Storage Temperature		T_J, T_{STG}	-55 ~ +150	$^\circ\text{C}$

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Min	Typ	Max	Unit	Conditions
Forward voltage (Note1)	V_F			0.34	V	$I_F = 1\text{A}$, $T_J = 25^\circ\text{C}$
				0.40		$I_F = 2\text{A}$, $T_J = 25^\circ\text{C}$
				0.30		$I_F = 1\text{A}$, $T_J = 75^\circ\text{C}$
				0.38		$I_F = 2\text{A}$, $T_J = 75^\circ\text{C}$
Reverse current (Note1)	I_R			0.5	mA	$V_R = 15\text{V}$, $T_J = 25^\circ\text{C}$
				12		$V_R = 15\text{V}$, $T_J = 100^\circ\text{C}$
Junction capacitance	C_J		390		pF	$V_R = 5\text{V}_{DC}$, $f = 100\text{kHz} \sim 1\text{MHz}$
Typical Series Inductance	L_S		2.0		nH	
Volatge Rate of Charge	dv/dt			6000	V/ μs	

Notes: 1. Pulse with $<300 \mu\text{s}$, Duty Cycle $<2\%$

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Typical Characteristics

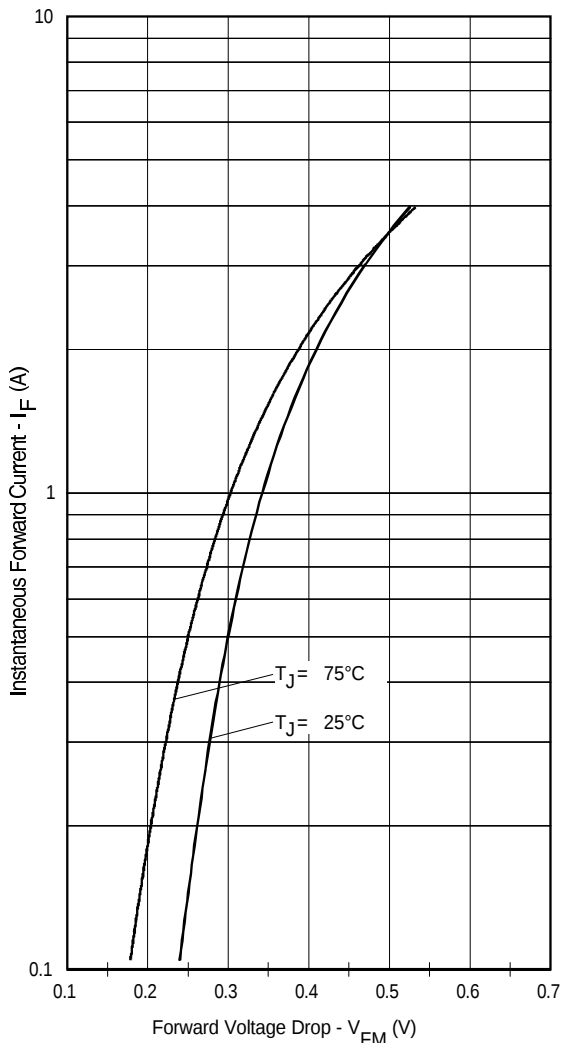


Fig. 1 Max. Forward Voltage Drop Characteristics

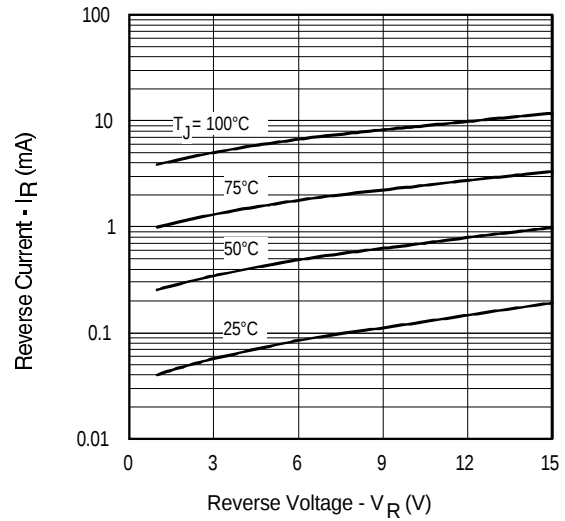


Fig. 2 Typical Values of Reverse Current Vs. Reverse Voltage

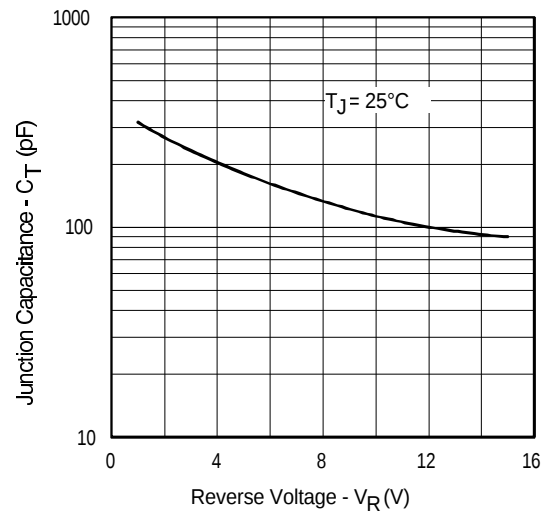


Fig. 3 Typical Junction Capacitance Vs. Reverse Voltage

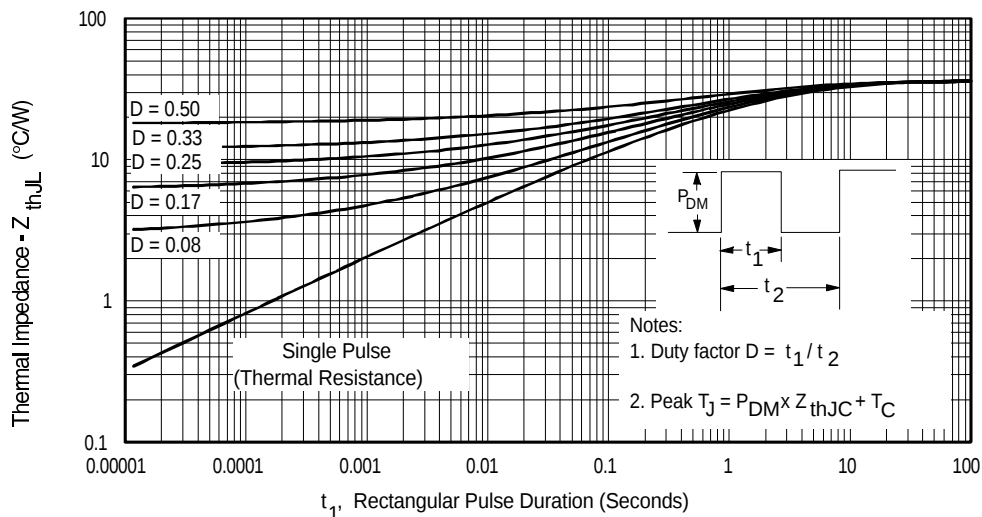


Fig. 4 Max. Thermal Impedance Z_{thJL} Characteristics

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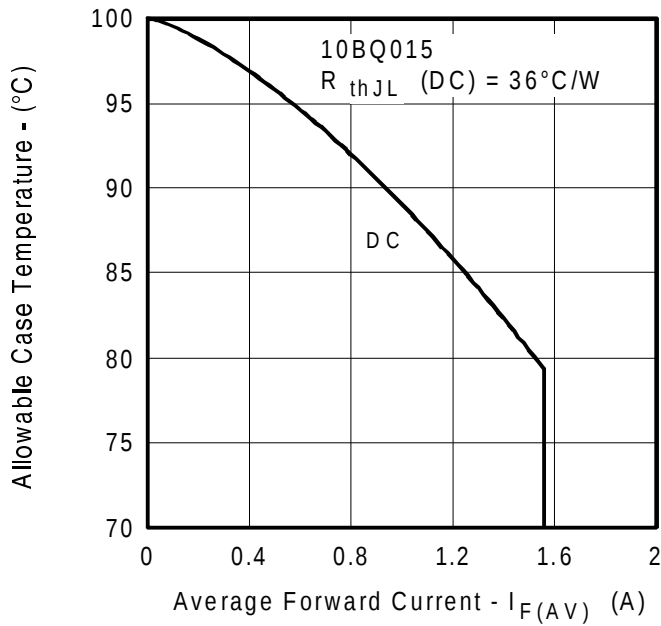


Fig. 5 Max. Allowable Case Temperature Vs. Average Forward Current

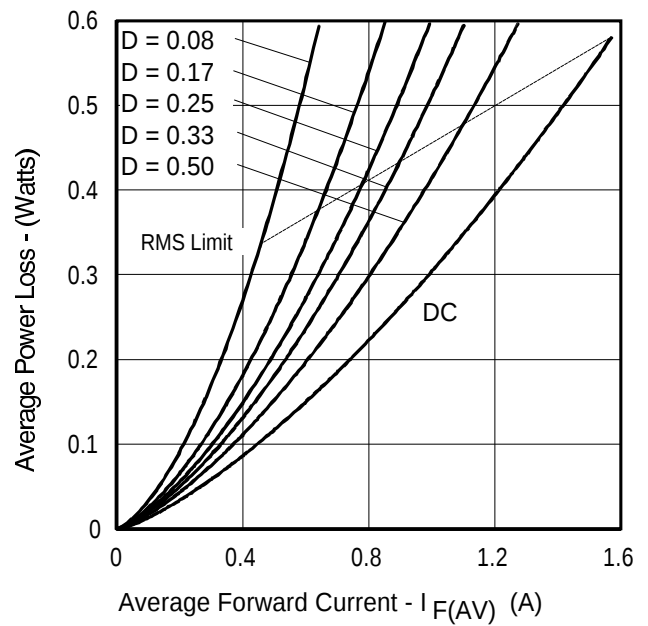


Fig. 6 Forward Power Loss Characteristics

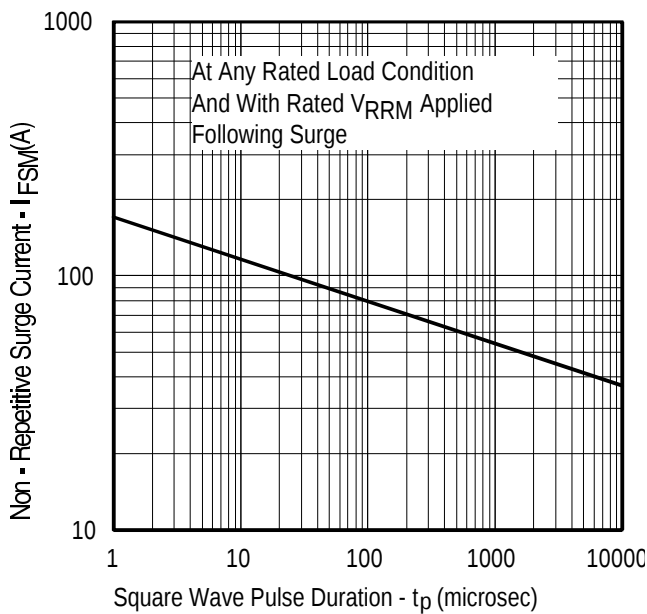


Fig. 7 Max. Non-Repetitive Surge Current

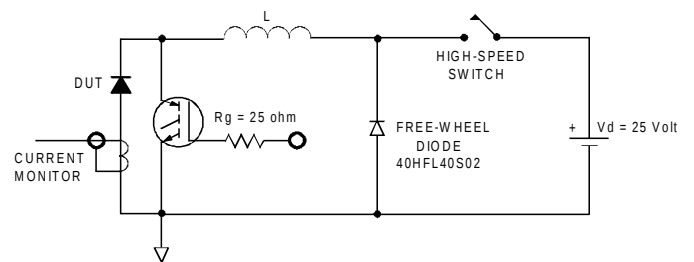
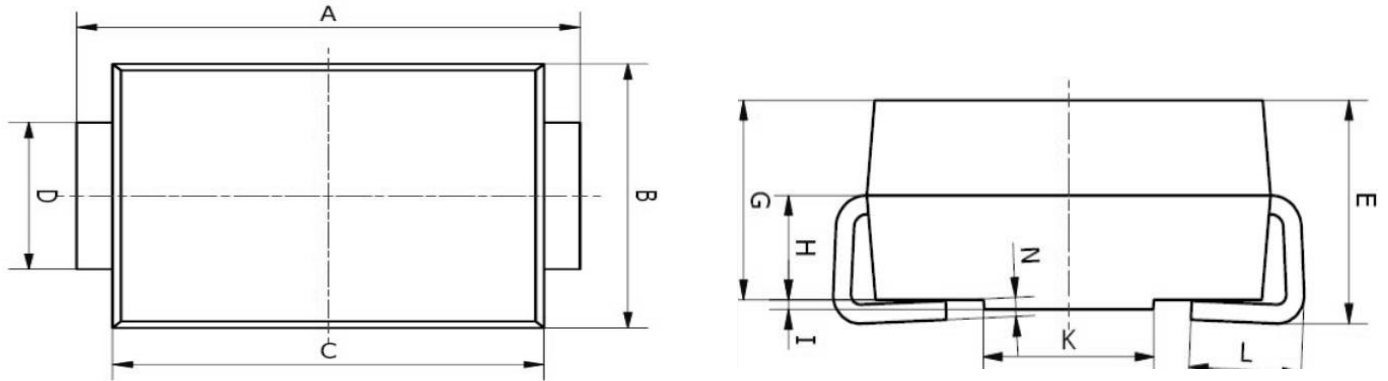


Fig. 8 Unclamped Inductive Test Circuit

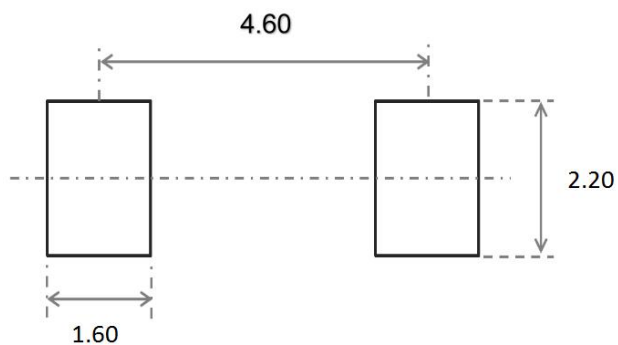
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SMB Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	5.00	5.45	0.197	0.215
B	3.20	4.00	0.126	0.157
C	4.30	4.70	0.169	0.185
D	1.80	2.20	0.071	0.087
E	2.20	2.50	0.087	0.098
G	1.90	2.30	0.075	0.090
H	0.95	1.25	0.037	0.049
I	0.05	0.15	0.002	0.006
K	1.70	2.10	0.067	0.083
L	0.90	1.60	0.035	0.063
N	0.10	0.30	0.004	0.012

SMB Suggested Pad Layout



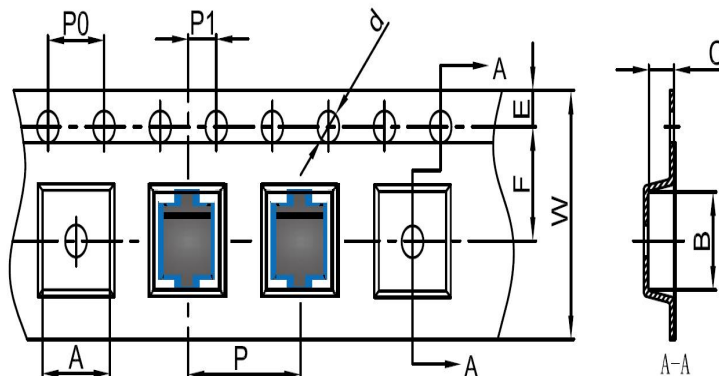
Note:

1. Controlling dimension: in millimeters
2. General tolerance: $\pm 0.05\text{mm}$
3. The pad layout is for reference purposes only

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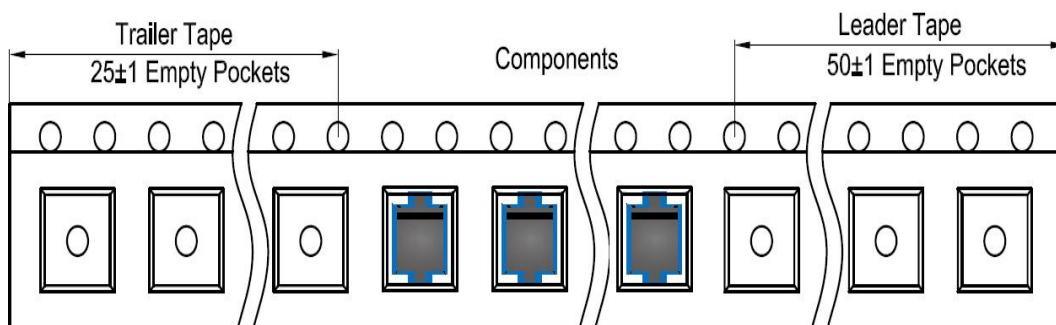
SMB Tape and Reel

SMB Embossed Carrier Tape

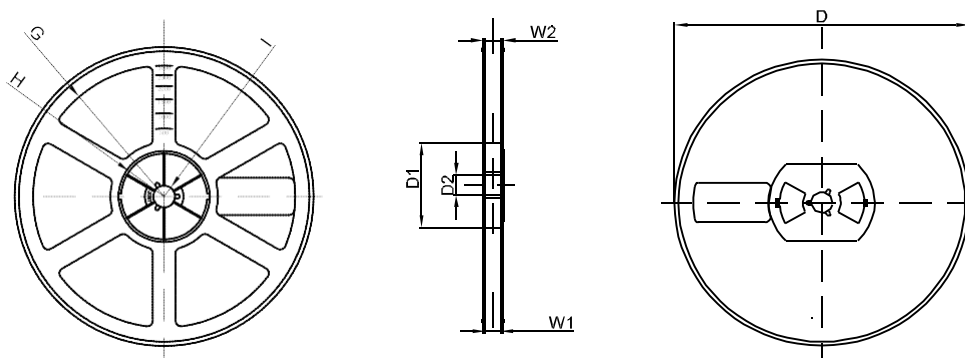


DIMENSIONS ARE IN MILLIMETER										
TYPE	A	B	C	d	E	F	P0	P	P1	W
SMB	4.10	5.50	2.58	Ø1.50	1.75	5.50	4.00	8.00	2.00	12.00
TOLERANCE	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1

SMB Tape Leader and Trailer



SMB Reel



DIMENSIONS ARE IN MILLIMETER								
REEL OPTION	D	D1	D2	G	H	I	W1	W2
13" DIA	Ø330	75.0	13.00	R165	R37.50	R6.50	12.40	17.60
TOLERANCE	±2	±1	±1	±1	±1	±1	±1	±1