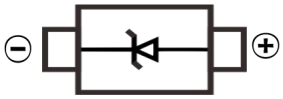
TVS DIODE

FEATURES

- Peak pulse power : 600 W (10/1000μs)
- Breakdown voltage range :From 6.8V to 220 V.
- UNI and BIDIRECTIONAL types
- Low clamping factor
- Fast response time
- UL recognized

SMB



MECHANICAL DATA

- Case: SMB(DO-214AA)
- Case Material: Molded Plastic. UL flammability
- Classification Rating: 94V-0
- Weight: 0.088 grams (approximate)

ORDER CODE

SM 6 T 100 C A

SURFACE MOUNT
600W
BREAKDOWN VOLTAGE
BIDIRECTIONAL
No suffix: Unidirectional

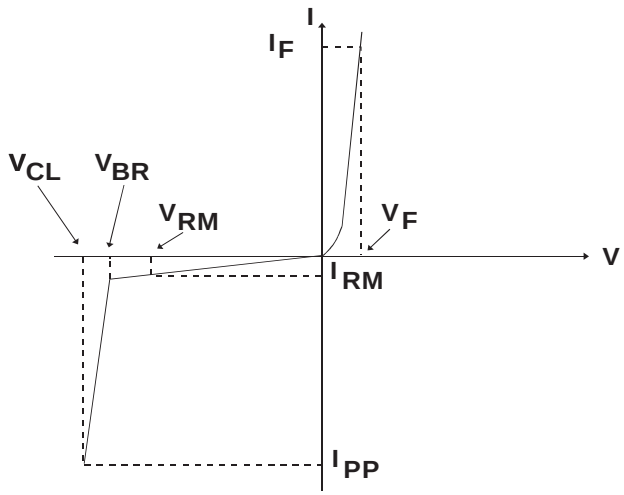
MAXIMUM RATINGS AND CHARACTERISTICS(T_A = 25°C unless otherwise noted)

Parameter		Symbol	Value	Unit
Peak pulse power dissipation (see note 1)	$T_{J(initial)}=T_{amb}$	P_{PP}	600	W
Power dissipation on infinite heatsink	T_{amb}=50°C	P	5	W
Non repetitive surge peak forward current for unidirectional types	$T_{J(initial)}=T_{amb}$ T_P=10ms	I_{FSM}	100	A
Typical thermal resistance, junction to ambient		$R_{\theta JA}$	100.0	°C/W
Typical thermal resistance, junction to lead		$R_{\theta JL}$	20	°C/W
Operating and storage junction temperature range		T_J, T_{STG}	-55 ~+150	°C

Note 1 : For a surge greater than the maximum values, the diode will fail in short-circuit.

ELECTRICAL CHARACTERISTICS (Tamb = 25°C)

Symbol	Parameter
V_{RM}	Stand-off voltage
V_{BR}	Breakdown voltage
V_{CL}	Clamping voltage
I_{RM}	Leakage current @ V_{RM}
I_{PP}	Peak pulse current
αT	Voltage temperature coefficient
V_F	Forward voltage drop



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ELECTRICAL CHARACTERISTICS

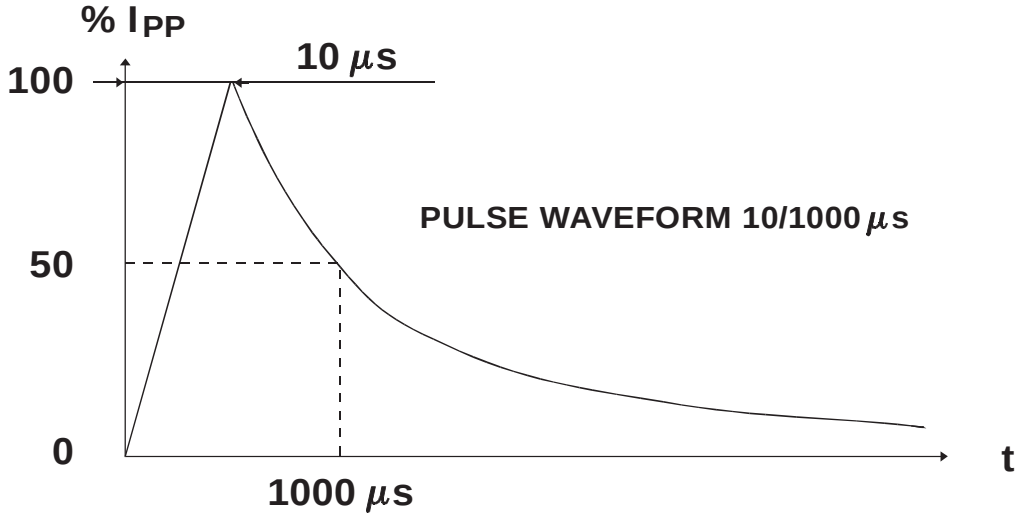
Ratings at 25°C ambient temperature unless otherwise specified.

Types		Device marking code		Max Leakage Current I_{RM} @V_{RM}		V_{BR} @ I_R Note2				V_{CL}@I_{PP} 10/1000μs		V_{CL}@I_{PP} 10/1000μs		αT Max Note3	C Typ Note4
Uni directional	Bi directional					Min	Nom	Max	I_R	Max	I_{PP}	Max	I_{PP}		
		UNI	BI	μA	V	A	V	V	mA	V	A	V	A	10^{-4}/°C	pF
SM6T6V8A	SM6T6V8CA	DE	LE	1000	5.8	6.45	6.8	7.14	10	10.5	57	13.4	298	5.7	4000
SM6T7V5A	SM6T7V5CA	DG	LG	500	6.4	7.13	7.5	7.88	10	11.3	53	14.5	276	6.1	3700
SM6T10A	SM6T10CA	DP	LP	10	8.55	9.5	10	10.5	1	14.5	41	18.6	215	7.3	2800
SM6T12A	SM6T12CA	DT	LT	5	10.2	11.4	12	12.6	1	16.7	36	21.7	184	7.8	2300
SM6T15A	SM6T15CA	DX	LX	1	12.8	14.3	15	15.8	1	21.2	28	27.2	147	8.4	1900
SM6T18A	SM6T18CA	EE	ME	1	15.3	17.1	18	18.9	1	25.2	24	32.5	123	8.8	1600
SM6T22A	SM6T22CA	EK	MK	1	18.8	20.9	22	23.1	1	30.6	20	39.3	102	9.2	1350
SM6T24A	SM6T24CA	EM	MM	1	20.5	22.8	24	25.2	1	33.2	18	42.8	93	9.4	1250
SM6T27A	SM6T27CA	EP	MP	1	23.1	25.7	27	28.4	1	37.5	16	48.3	83	9.6	1150
SM6T30A	SM6T30CA	ER	MR	1	25.6	28.5	30	31.5	1	41.5	14.5	53.5	75	9.7	1075
SM6T33A	SM6T33CA	ET	MT	1	28.2	31.4	33	34.7	1	45.7	13.1	59.0	68	9.8	1000
SM6T36A	SM6T36CA	EV	MV	1	30.8	34.2	36	37.8	1	49.9	12	64.3	62	9.9	950
SM6T39A	SM6T39CA	EX	MX	1	33.3	37.1	39	41.0	1	53.9	11.1	69.7	57	10.0	900
SM6T68A	SM6T68CA	FQ	NQ	1	58.1	64.6	68	71.4	1	92	6.5	121	33	10.4	625
SM6T75A	SM6T75CA	FS	NS	1	64.1	71.3	75	78.8	1	103	5.8	134	30	10.5	575
SM6T100A	SM6T100CA	FY	NY	1	85.5	95.0	100	105	1	137	4.4	178	22.5	10.6	500
SM6T150A	SM6T150CA	GL	OL	1	128	143	150	158	1	207	2.9	265	15	10.8	400
SM6T200A	SM6T200CA	GU	OU	1	171	190	200	210	1	274	2.2	353	11.3	10.8	350
SM6T220A	SM6T220CA	GW	OW	1	188	209	220	231	1	328	2	388	10.3	10.8	300

Note 2 : Pulse test : tp < 50 ms.

Note 3 : $\Delta V_{BR} = \alpha T * (T_{amb} - 25) * V_{BR}(25°C)$.

Note 4 : V_R = 0 V, F = 1 MHz. For bidirectional types,capacitance value is divided by 2.



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Typical Characteristics

Fig. 1: Peak pulse power dissipation versus initial junction temperature (printed circuit board).

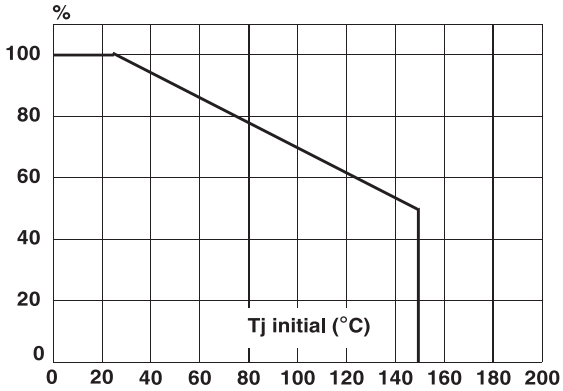


Fig. 2 : Peak pulse power versus exponential pulse duration.

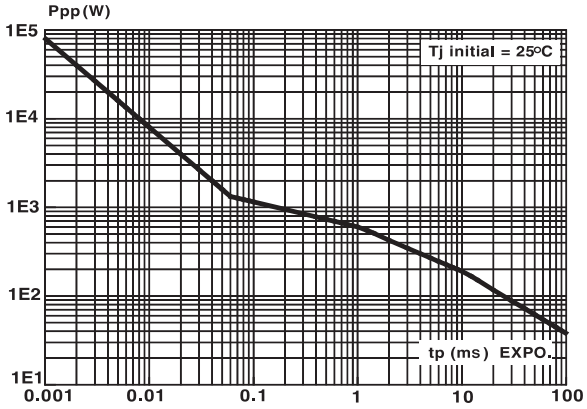
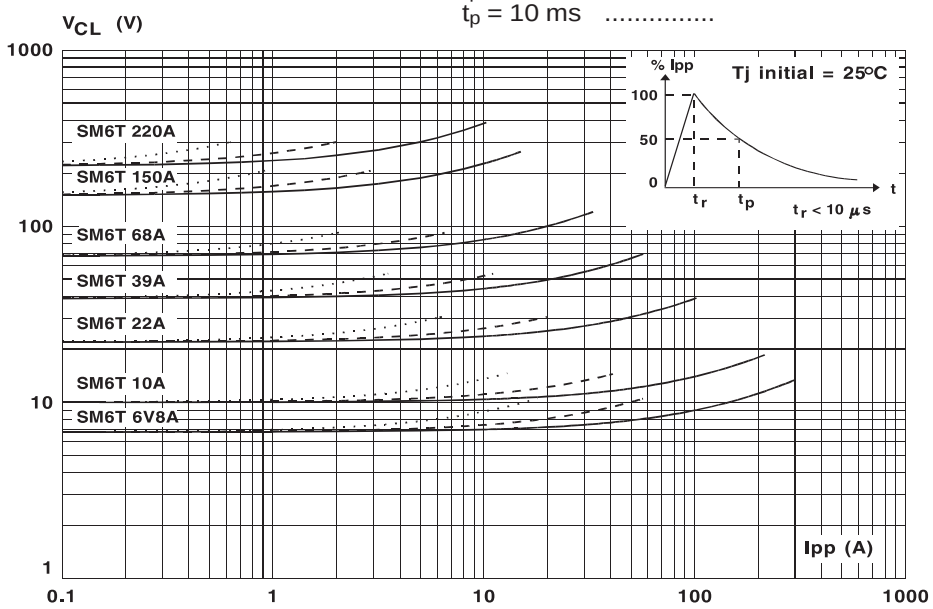


Fig. 3 : Clamping voltage versus peak pulse current.
Exponential waveform t_p = 20 µs ————
t_p = 1 ms ————————-
t_p = 10 ms .....



Note : The curves of the figure 3 are specified for a junction temperature of 25°C before surge.
The given results may be extrapolated for other junction temperatures by using the following formula :
$\Delta V_{BR} = \alpha T * [T_{amb} - 25] * V_{BR}(25°C)$
For intermediate voltages, extrapolate the given results.

Fig. 4a : Capacitance versus reverse applied voltage for unidirectional types (typical values).

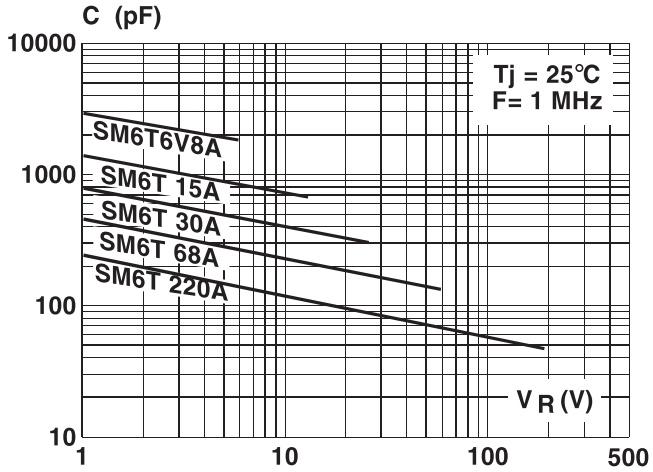


Fig. 4b : Capacitance versus reverse applied voltage for bidirectional types (typical values).

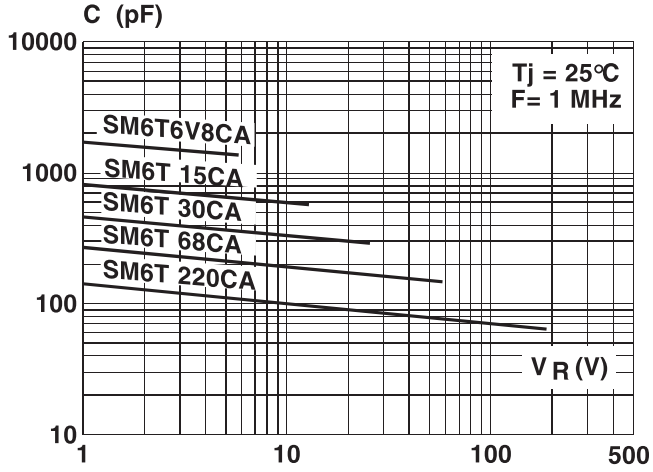


Fig. 5 : Peak forward voltage drop versus peak forward current (typical values for unidirectional types).

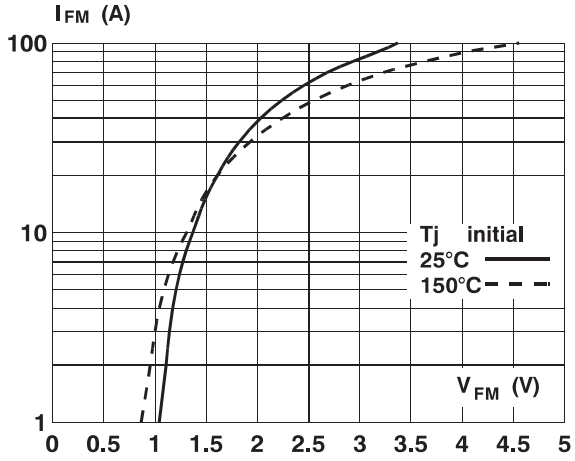


Fig. 6 : Transient thermal impedance junction-ambient versus pulse duration.
Mounting on FR4 PC Board with Recommended pad layout.

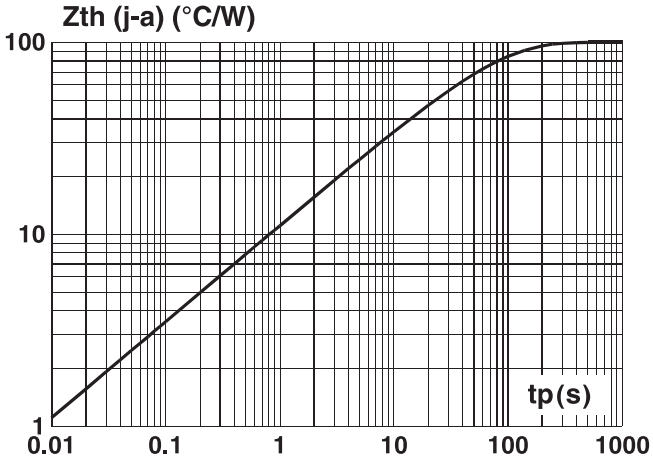
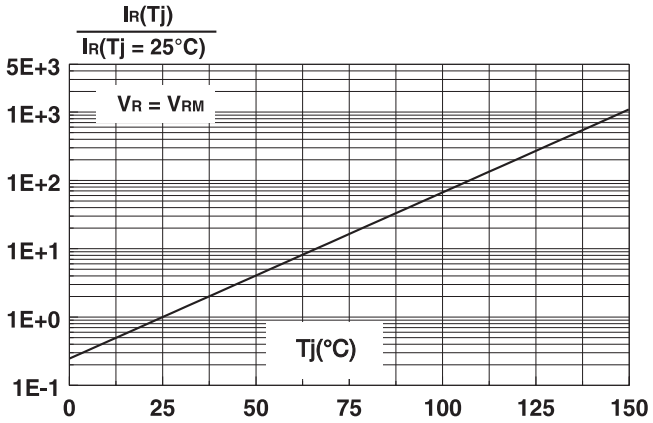
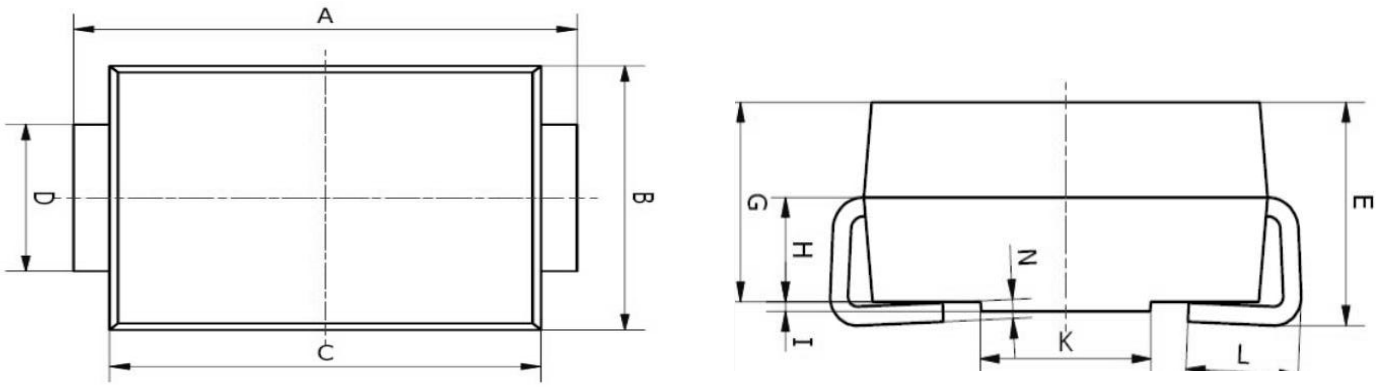


Fig. 7 : Relative variation of leakage current versus junction temperature.

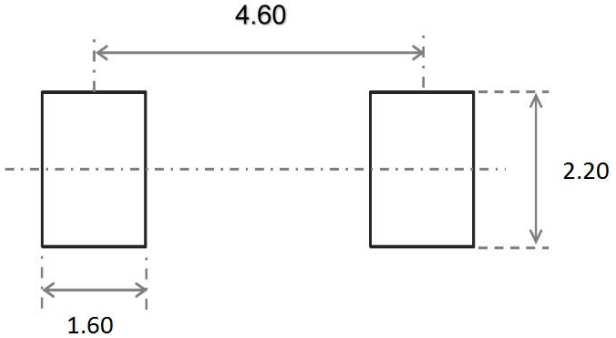


SMB Package Outline Dimensions



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: ±0.05mm

3.The pad layout is for reference purposes only

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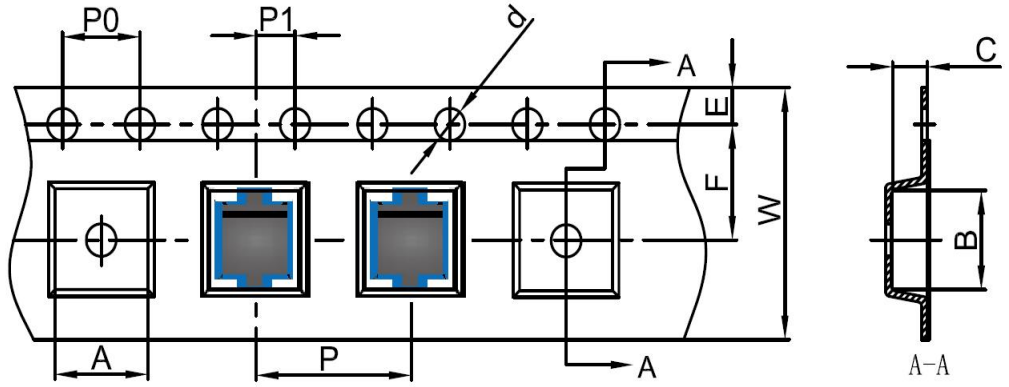
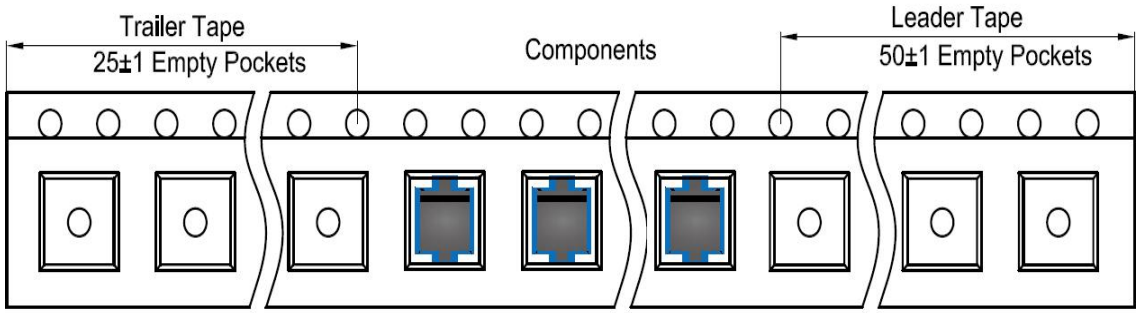
SMB Tape and Reel

SMB Embossed Carrier Tape

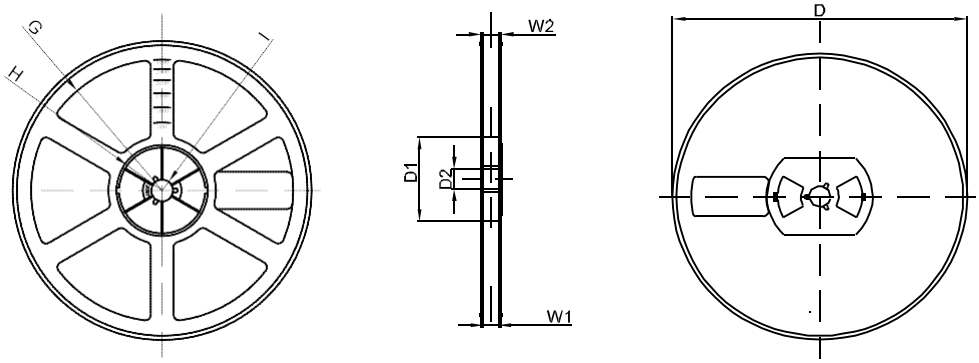


	DIMENSIONS ARE IN MILLIMETER									
TYPE	A	B	C	d	E	F	P0	P	P1	W
SMB	4.10	5.50	2.58	Ø1.50	1.75	5.50	4.00	8.00	2.00	12.00
TOLERANCE	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1

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