

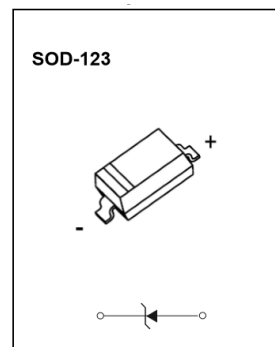
Planar Plastic Zener Diode

Version: A1 2023-10-26

Features

- Planar Die Construction
- 500mW Power Dissipation on Ceramic PCB
- General Purpose, Medium Current
- Ideally Suited for Automated Assembly Processes
- Available in Lead Free Version
- Tolerance approximately: $\pm 6\%$

Exterior



Application Information

- Cellular handsets
- Tablets
- Other portable devices

Package (top view)



Agency Approvals

Icon	Description
RoHS	Compliance with 2011/65/EU
HF	Compliance with IEC61249-2-21:2003
	Mean lead free

Schematic(top view)



Maximum Ratings(Ta=25℃ unless otherwise specified)

Characteristic	Symbol	VALUE	UNIT
Forward Voltage (Note 2) @ I _F =10mA	V _f	0.9	V
Power Dissipation(Note 1)	P _d	500	mW
Thermal resistance junction to ambient air Warmewiderstand Sperschicht -umgebende Luft	R _{thA}	250	℃/W
Storage temperature range	T _{stg}	-65~+150	℃

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Part Number and Electrical Parameter

Part Number	Type Code	Zener Voltage Range				Maximum Zener Impedance			Maximum Reverse Current		Temperature Coefficient of Zener voltage @ I _{ZT} =5mA mV/°C		Test Current I _{ZTC}
		V _Z @I _{ZT}			I _{ZT}	Z _{ZT} @I _{ZT}	Z _{ZK} @I _{ZK}	I _{ZK}	I _R	V _R			
		Nom(V)	Min(V)	Max(V)	(mA)	(Ω)		(mA)	(μA)	(V)	Min	Max	mA
BW-D1G2V0T1G-6	WY	2.0	1.80	2.15	5	150	600	1.0	100	1.0	-3.5	0	5
BW-D1G2V4T1G-6	WX	2.4	2.2	2.6	5	100	600	1.0	50	1.0	-3.5	0	5
BW-D1G2V7T1G-6	W1	2.7	2.5	2.9	5	100	600	1.0	20	1.0	-3.5	0	5
BW-D1G3V0T1G-6	W2	3.0	2.8	3.2	5	95	600	1.0	10	1.0	-3.5	0	5
BW-D1G3V3T1G-6	W3	3.3	3.1	3.5	5	95	600	1.0	5	1.0	-3.5	0	5
BW-D1G3V6T1G-6	W4	3.6	3.4	3.8	5	90	600	1.0	5	1.0	-3.5	0	5
BW-D1G3V9T1G-6	W5	3.9	3.7	4.1	5	90	600	1.0	3	1.0	-3.5	0	5
BW-D1G4V3T1G-6	W6	4.3	4.0	4.6	5	90	600	1.0	3	1.0	-3.5	0	5
BW-D1G4V7T1G-6	W7	4.7	4.4	5.0	5	80	500	1.0	3	2.0	-3.5	0.2	5
BW-D1G5V1T1G-6	W8	5.1	4.8	5.4	5	60	480	1.0	2	2.0	-2.7	1.2	5
BW-D1G5V6T1G-6	W9	5.6	5.2	6.0	5	40	400	1.0	1	2.0	-2.0	2.5	5
BW-D1G6V2T1G-6	WA	6.2	5.8	6.6	5	10	150	1.0	3	4.0	0.4	3.7	5
BW-D1G6V8T1G-6	WB	6.8	6.4	7.2	5	15	80	1.0	2	4.0	1.2	4.5	5
BW-D1G7V5T1G-6	WC	7.5	7.0	7.9	5	15	80	1.0	1	5.0	2.5	5.3	5
BW-D1G8V2T1G-6	WD	8.2	7.7	8.7	5	15	80	1.0	0.7	5.0	3.2	6.2	5
BW-D1G9V1T1G-6	WE	9.1	8.5	9.6	5	15	100	1.0	0.5	6.0	3.8	7.0	5
BW-D1G10VT1G-6	WF	10	9.4	10.6	5	20	150	1.0	0.2	7.0	4.5	8.0	5
BW-D1G11VT1G-6	WG	11	10.4	11.6	5	20	150	1.0	0.1	8.0	5.4	9.0	5
BW-D1G12VT1G-6	WH	12	11.4	12.7	5	25	150	1.0	0.1	8.0	6.0	10.0	5
BW-D1G13VT1G-6	WI	13	12.4	14.1	5	30	170	1.0	0.1	8.0	7.0	11.0	5
BW-D1G15VT1G-6	WJ	15	14.25	15.75	5	30	200	1.0	0.1	10.5	9.2	13.0	5
BW-D1G16VT1G-6	WK	16	15.3	17.1	5	40	200	1.0	0.1	11.2	10.4	14.0	5
BW-D1G18VT1G-6	WL	18	16.8	19.1	5	45	225	1.0	0.1	12.6	12.4	16.0	5
BW-D1G20VT1G-6	WM	20	18.8	21.2	5	55	225	1.0	0.1	14.0	14.4	18.0	5
BW-D1G22VT1G-6	WN	22	20.8	23.3	5	55	250	1.0	0.1	15.4	16.4	20.0	5
BW-D1G24VT1G-6	WO	24	22.8	25.6	5	70	250	1.0	0.1	16.8	18.4	22.0	5
BW-D1G27VT1G-6	WP	27	25.1	28.9	2	80	300	0.5	0.1	18.9	21.4	25.3	2
BW-D1G30VT1G-6	WQ	30	28	32	2	80	300	0.5	0.1	21.0	24.4	29.4	2
BW-D1G33VT1G-6	WR	33	31	35	2	80	325	0.5	0.1	23.1	27.4	33.4	2
BW-D1G36VT1G-6	WS	36	34	38	2	90	350	0.5	0.1	25.2	30.4	37.4	2
BW-D1G39VT1G-6	WT	39	37	41	2	130	350	0.5	0.1	27.3	33.4	41.2	2
BW-D1G43VT1G-6	WU	43	40	46	2	100	700	1.0	0.1	32.0	10.0	12.0	5
BW-D1G47VT1G-6	WV	47	44	50	2	100	750	1.0	0.1	35.0	10.0	12.0	5
BW-D1G51VT1G-6	WW	51	48	54	2	125	750	1.0	0.1	38.0	10.0	12.0	5

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BW-D1G56VT1G-6	XW	56	52	60	2	135	700	1.0	0.1	39.0	10.0	12.0	5
BW-D1G62VT1G-6	6E	62	58	66	2	200	1000	1.0	0.2	47.0	10.0	12.0	5
BW-D1G68VT1G-6	6F	68	64	72	2	250	1000	1.0	0.2	52.0	10.0	12.0	5
BW-D1G75VT1G-6	6H	75	70	79	2	300	1000	1.0	0.2	57	10.0	12.0	5

Notes: 1. Device mounted on ceramic PCB: 7.6mm x 9.4mm x 0.87mm with pad areas 25mm²

2. Short duration test pulse used to minimize self-heating effect

3. $f = 1\text{kHz}$.

Part Numbering System

Mark

BW D1 G XXX T1 G 6
(1) (2) (3) (4) (5) (6) (7)



(1) Bencent Zener Diode

(2) Package: SOD-123

(3) Power Dissipation: 500mW

(4) Work Voltage: 2.0V-75V

(5) Package type: Taping, 3K/R

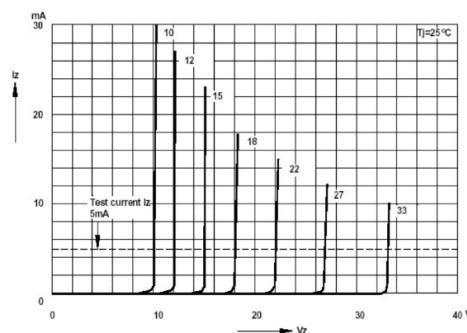
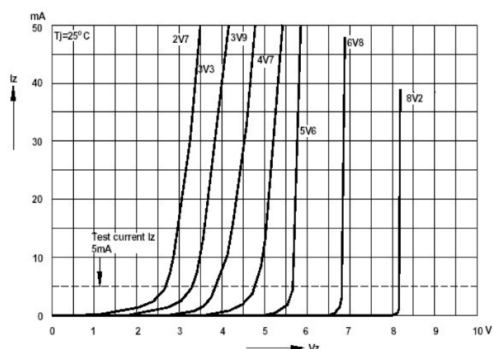
(6) Green

(7) Tolerance of accuracy: $\pm 6\%$

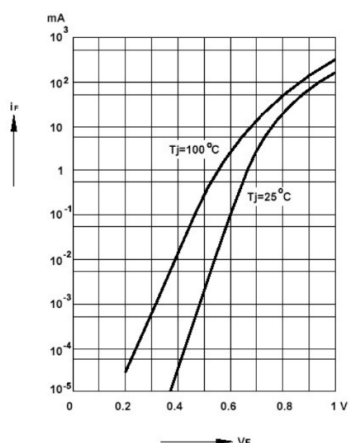
Typical Characteristics

Breakdown characteristics

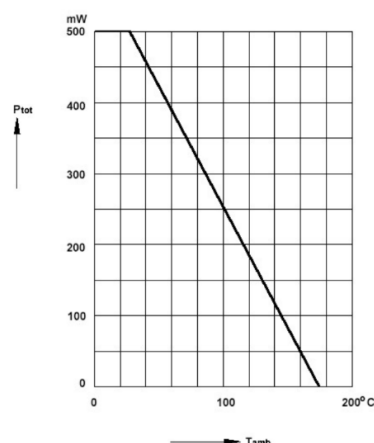
at $T_J = \text{constant}$ (pulsed)



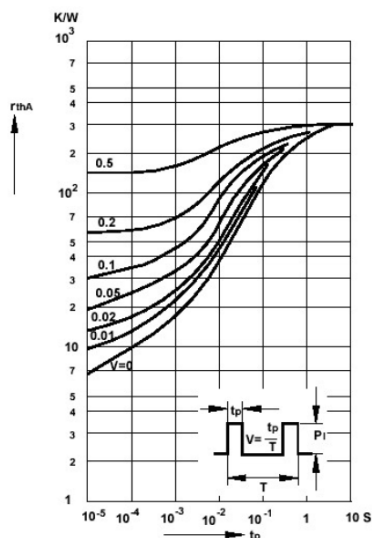
Forward characteristics



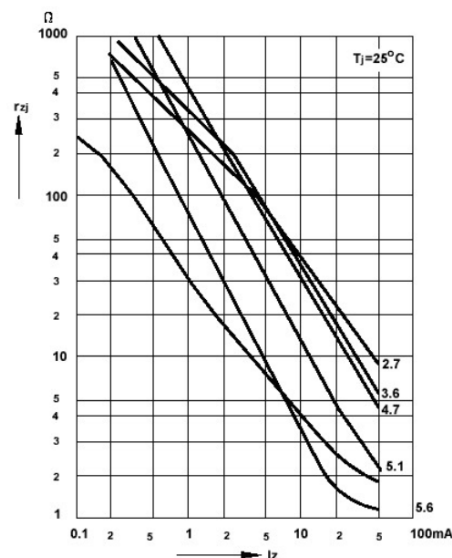
Admissible power dissipation versus ambient temperature



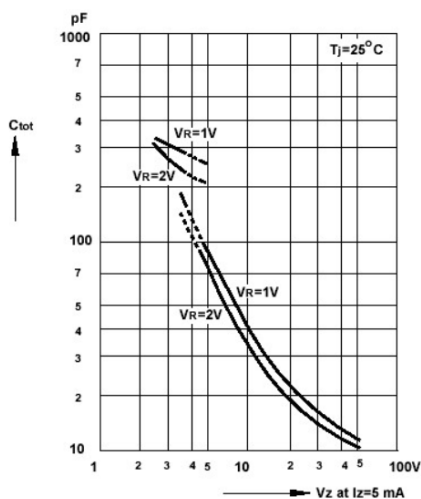
Pulse thermal resistance versus pulse duration



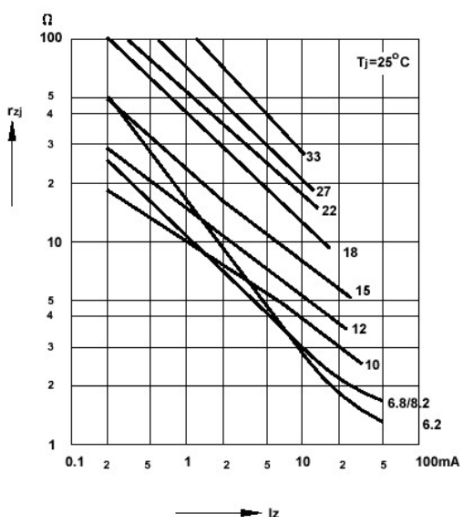
Dynamic resistance versus Zener current



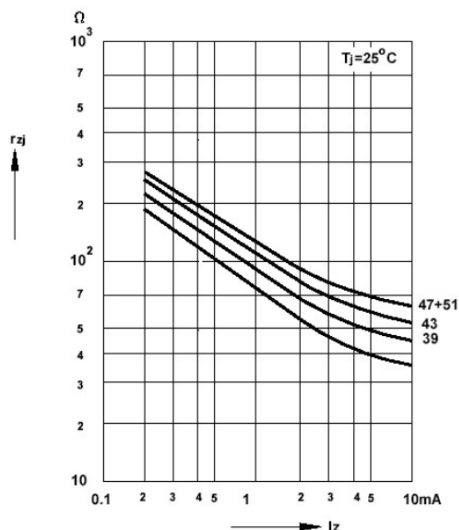
Capacitance versus Zener voltage



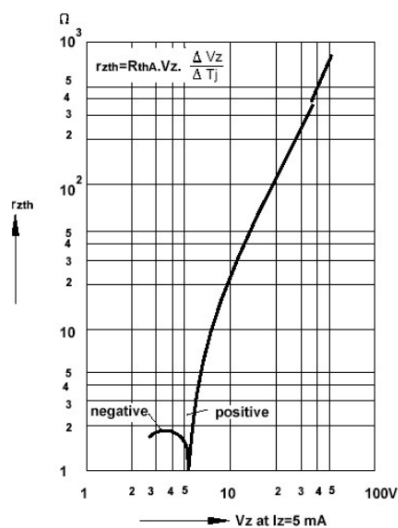
Dynamic resistance versus Zener current

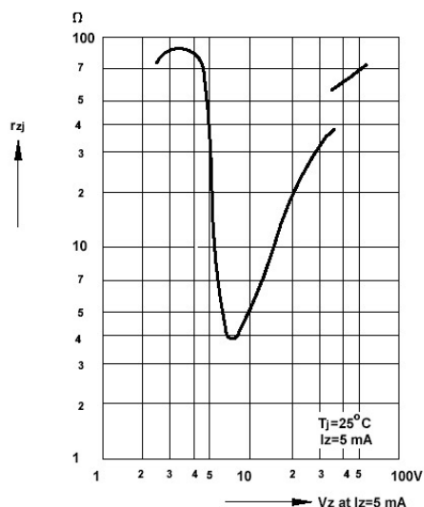
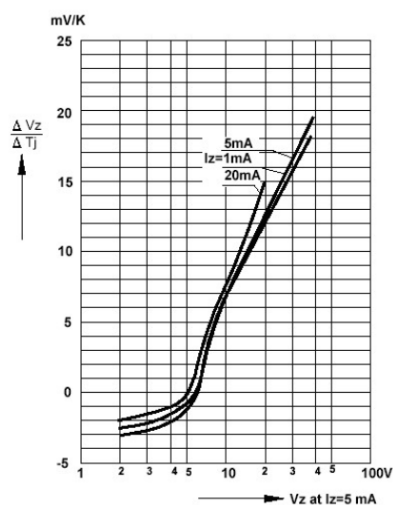
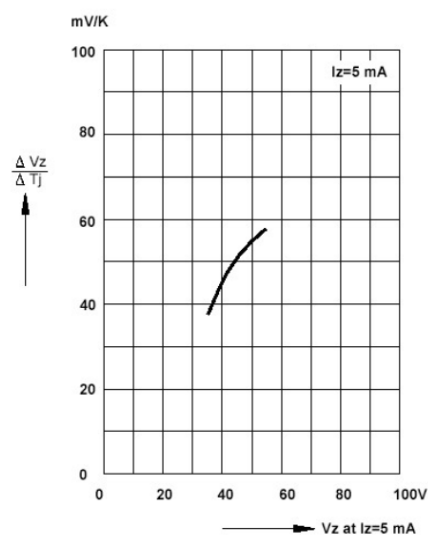
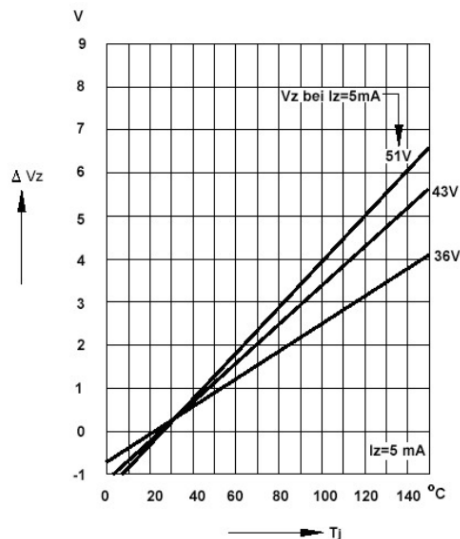
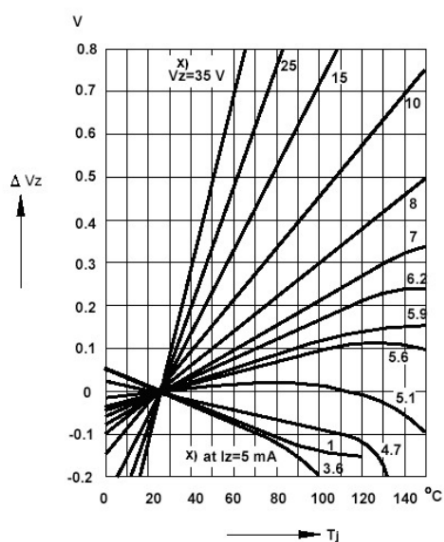
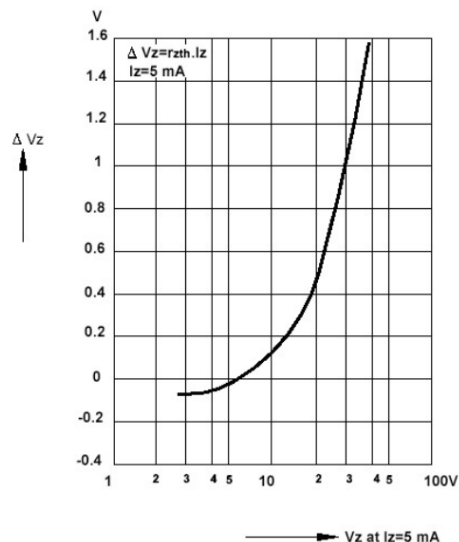


Dynamic resistance versus Zener current



Thermal differential resistance versus Zener voltage

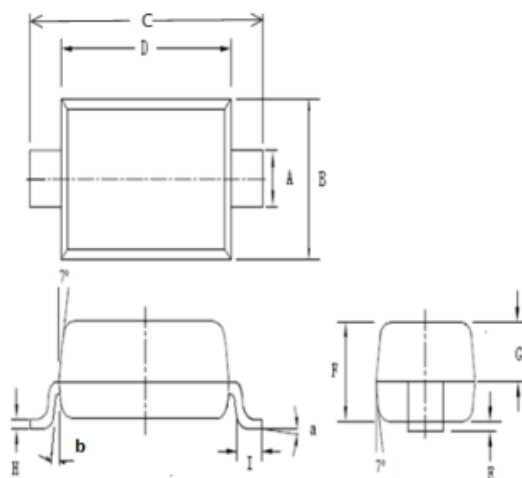


Dynamic resistance versus Zener voltage

Temperature dependence of Zener voltage versus Zener voltage

Temperature dependence of Zener voltage versus Zener voltage

Change of Zener voltage versus junction temperature

Change of Zener voltage versus junction temperature

Change of Zener voltage from turn-on up to the point of thermal equilibrium versus Zener voltage


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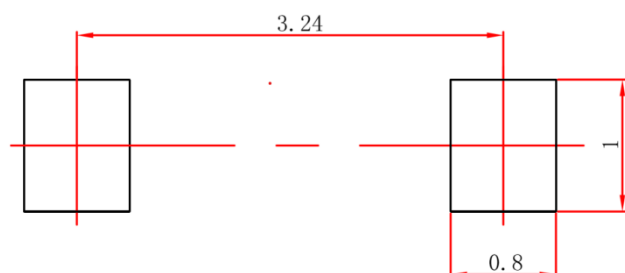
Product Dimensions



SOD123

REF	mm	inch
A	0.45~0.65	0.018~0.026
B	1.40~1.70	0.055~0.067
C	3.55~3.85	0.140~0.152
D	2.55~2.85	0.100~0.112
E	0.00~0.10	0.000~0.004
F	1.20max	0.047max
G	0.60~0.70	0.024~0.028
H	0.075~0.125	0.003~0.005
I	0.25~0.45	0.010~0.018
a	0°~6°	
b	0.4°~0.8°	

SOD-123 Suggested Pad Layout

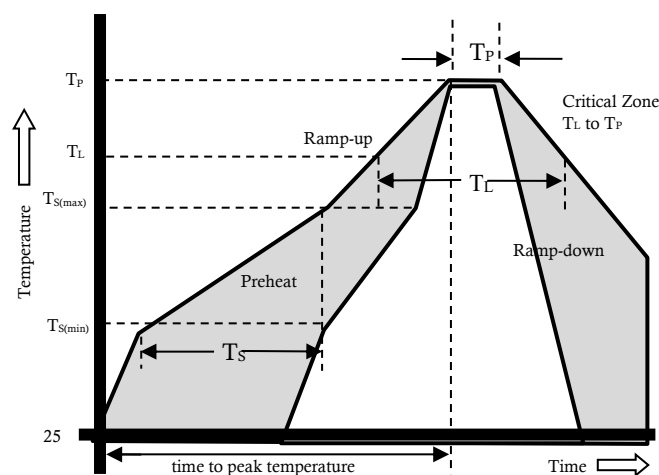


Notes:

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

Reflow Profile

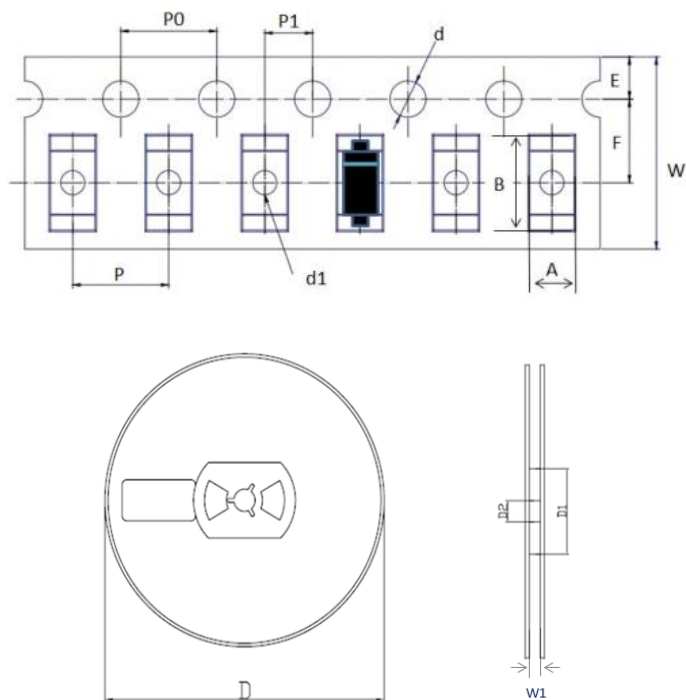
Reflow Condition		Pb-Free assembly
Pre Heat	Temperature Min	150°C
	Temperature Max	200°C
	Time (min to max)	60 – 180 secs
Average ramp up rate (Liquid T _{amp} (T _L) to peak)		3°C/s max
T _S (max) to T _L - Ramp-up Rate		3°C/s max
Reflow	- Temperature (T _L) (Liquid)	217°C
	- Temperature (T _L)	60 – 150 secs
Peak Temperature (T _P)		260±0/-5 °C
Time within 5°C of actual peak Temperature (T _P)		30secs
Ramp-down Rate		6°C/s max
Time 25°C to peak Temperature (T _P)		8 mins max.
Do not exceed		260°C



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Package Reel Information



REF	mm	inch
A	1.90+/-0.20	0.075+/-0.008
B	4.10+/-0.20	0.161+/-0.008
d	1.50+0.1/-0	0.059+0.004/-0
d1	1.10+/-0.10	0.043+/-0.004
D	178.00+/-2.00	7.008+/-0.079
D1	55.00+/-3.00	2.165+/-0.118
D2	13.00+/-0.50	0.512+/-0.020
E	1.75+/-0.10	0.069+/-0.004
F	3.50+/-0.20	0.138+/-0.008
P	4.00+/-0.20	0.157+/-0.008
P0	4.00+/-0.20	0.157+/-0.008
P1	2.00+/-0.20	0.079+/-0.008
W	8.00+/-0.20	0.315+/-0.008
W1	9.50+/-1.00	0.374+/-0.039

OUTLINE	REEL (PCS)	PER CARTON (PCS)	REEL DIAMETERS (mm)	CARTON SIZE(mm)		
				L	W	H
TAPING	3,000	90,000	178	380	220	205