

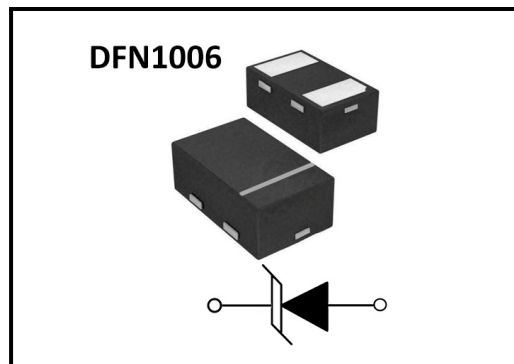
BN52Cxx

Zener Diode

Features

- Low Zener Impedance
- Power Dissipation of 200mW
- High Stability and High Reliability

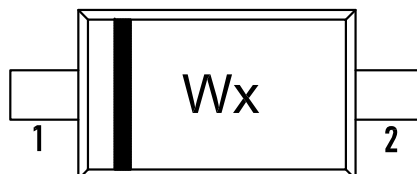
Package



Description

- Case: molded plastic
- Package: DFN1006 Plastic Package
- Polarity: Color band denotes cathode
- Epoxy UL: 94V-0

Marking



Ordering information

Order code	Package	Marking	Base qty	Deliverymode
BN52Cxx	DFN1006	Wx	3K	Tape and reel

Maximum Ratings @T_A=25°C unless otherwise noted

Symbol	Parameter	Value	Unit
P _D	Power Dissipation	200 ⁽¹⁾	mW
V _F	Forward Voltage @I _F =10mA	0.9 ⁽²⁾	V
T _J	Junction temperature	150	°C
T _S	Storage temperature range	-55 to +150	°C

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



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Typical Performance Characteristics($T_A = 25^\circ\text{C}$, unless otherwise noted)

Device	Marking	Zener Voltage Range			Maximum Zener Impedance				Maximum		Typical Temperature coefficient		Test Current
									Reverse	Current			
		$V_Z@I_{ZT}$			I_{ZT}	Z_{ZT}	$Z_{ZK}@I_{ZK}$	I_{ZK}	I_R	V_R	@ $I_{ZTC}=mV/^\circ\text{C}$		I_{ZTC}
		Nom.(V)	Min.(V)	Max.(V)	(mA)	(Ω)	(Ω)	(mA)	(μA)	(V)	(Min)	(Max)	(mA)
BN52C2V4	WX	2.4	2.2	2.6	5	100	600	1.0	50	1.0	-3.5	0	5
BN52C2V7	W1	2.7	2.5	2.9	5	100	600	1.0	20	1.0	-3.5	0	5
BN52C3V0	W2	3.0	2.8	3.2	5	95	600	1.0	10	1.0	-3.5	0	5
BN52C3V3	W3	3.3	3.1	3.5	5	95	600	1.0	5	1.0	-3.5	0	5
BN52C3V6	W4	3.6	3.4	3.8	5	90	600	1.0	5	1.0	-3.5	0	5
BN52C3V9	W5	3.9	3.7	4.1	5	90	600	1.0	3	1.0	-3.5	0	5
BN52C4V3	W6	4.3	4.0	4.6	5	90	600	1.0	3	1.0	-3.5	0	5
BN52C4V7	W7	4.7	4.4	5.0	5	80	500	1.0	3	2.0	-3.5	0.2	5
BN52C5V1	W8	5.1	4.8	5.4	5	60	480	1.0	2	2.0	-2.7	1.2	5
BN52C5V6	W9	5.6	5.2	6.0	5	40	400	1.0	1	2.0	-2.0	2.5	5
BN52C6V2	WA	6.2	5.8	6.6	5	10	150	1.0	3	4.0	0.4	3.7	5
BN52C6V8	WB	6.8	6.4	7.2	5	15	80	1.0	2	4.0	1.2	4.5	5
BN52C7V5	WC	7.5	7.0	7.9	5	15	80	1.0	1	5.0	2.5	5.3	5
BN52C8V2	WD	8.2	7.7	8.7	5	15	80	1.0	0.7	5.0	3.2	6.2	5
BN52C9V1	WE	9.1	8.5	9.6	5	15	100	1.0	0.5	6.0	3.8	7.0	5
BN52C10	WF	10	9.4	10.6	5	20	150	1.0	0.2	7.0	4.5	8.0	5
BN52C11	WG	11	10.4	11.6	5	20	150	1.0	0.1	8.0	5.4	9.0	5
BN52C12	WH	12	11.4	12.7	5	25	150	1.0	0.1	8.0	6.0	10.0	5
BN52C13	WI	13	12.4	14.1	5	30	170	1.0	0.1	8.0	7.0	11.0	5
BN52C15	WJ	15	13.8	15.6	5	30	200	1.0	0.1	10.5	9.2	13.0	5
BN52C16	WK	16	15.3	17.1	5	40	200	1.0	0.1	11.2	10.4	14.0	5
BN52C18	WL	18	16.8	19.1	5	45	225	1.0	0.1	12.6	12.4	16.0	5
BN52C20	WM	20	18.8	21.2	5	55	225	1.0	0.1	14.0	14.4	18.0	5
BN52C22	WN	22	20.8	23.3	5	55	250	1.0	0.1	15.4	16.4	20.0	5
BN52C24	WO	24	22.8	25.6	5	70	250	1.0	0.1	16.8	18.4	22.0	5
BN52C27	WP	27	25.1	28.9	2	80	300	0.5	0.1	18.9	21.4	25.3	2
BN52C30	WQ	30	28.0	32.0	2	80	300	0.5	0.1	21.0	24.4	29.4	2
BN52C33	WR	33	31.0	35.0	2	80	325	0.5	0.1	23.1	27.4	33.4	2
BN52C36	WS	36	34.0	38.0	2	90	350	0.5	0.1	25.2	30.4	37.4	2
BN52C39	WT	39	37.0	41.0	2	130	350	0.5	0.1	27.3	33.4	41.2	2
BN52C43	WU	43	40.0	46.0	2	100	700	1.0	0.1	32.0	10.0	12.0	5
BN52C47	WV	47	44.0	50.0	2	100	750	1.0	0.1	35.0	10.0	12.0	5
BN52C51	WW	51	48.0	54.0	2	100	750	1.0	0.1	38.0	10.0	12.0	5



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Typical Performance Characteristics($T_J = 25^\circ\text{C}$, unless otherwise noted)

Fig 1:Breakdown characteristics (at $T_J=\text{constant}$ (pulsed))

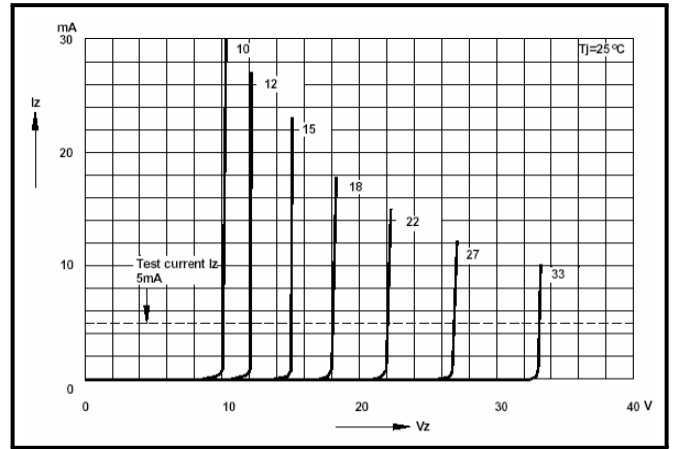
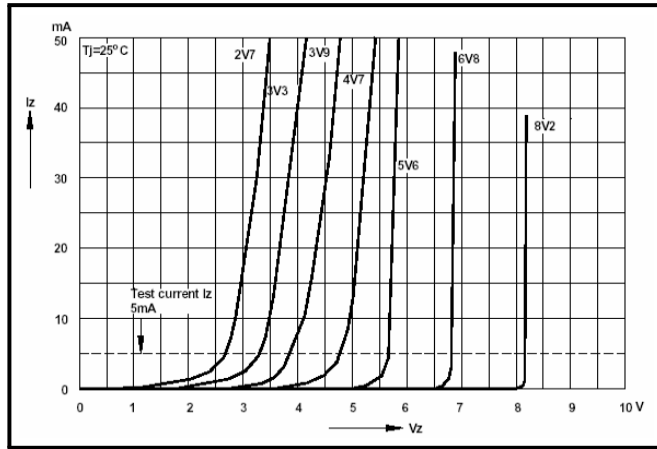


Fig 2:Forward characteristics

Fig 3:Admissible power dissipation versus ambient

temperature

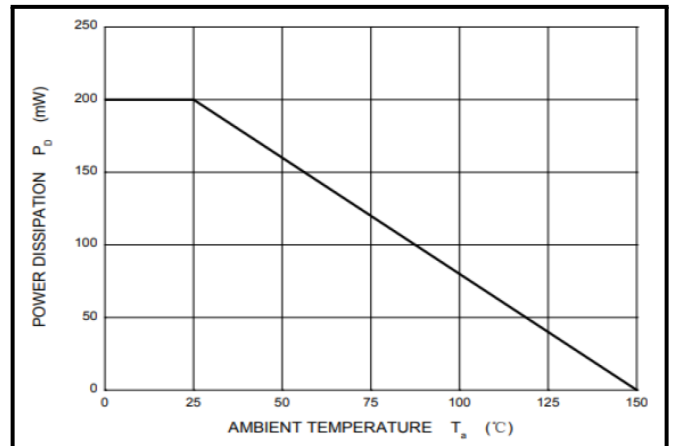
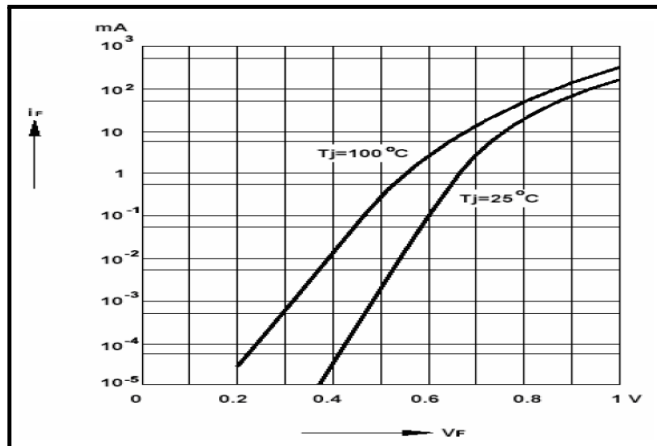
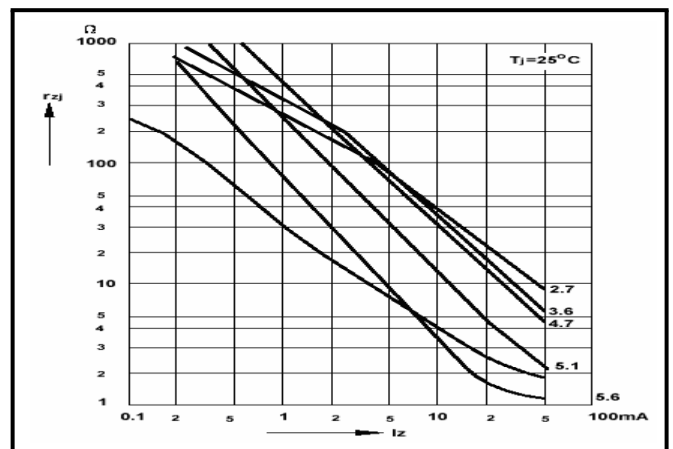
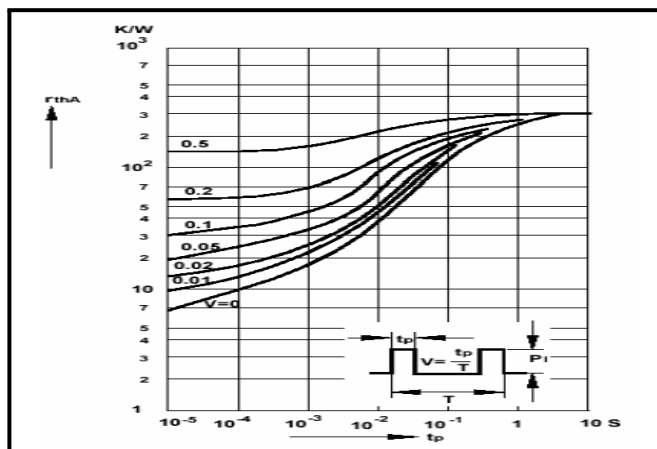


Fig 4:Pulse thermal resistance versus pulse duration

Fig 5:Dynamic resistance versus Zener current



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Zener Diode

Fig 6: Capacitance versus Zener voltage

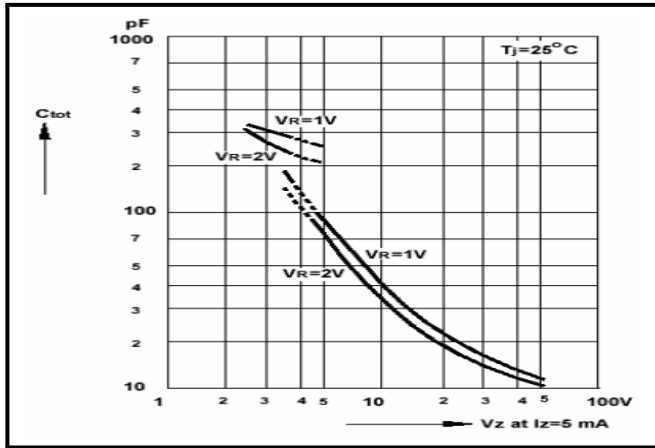


Fig 7: Dynamic resistance versus Zener current

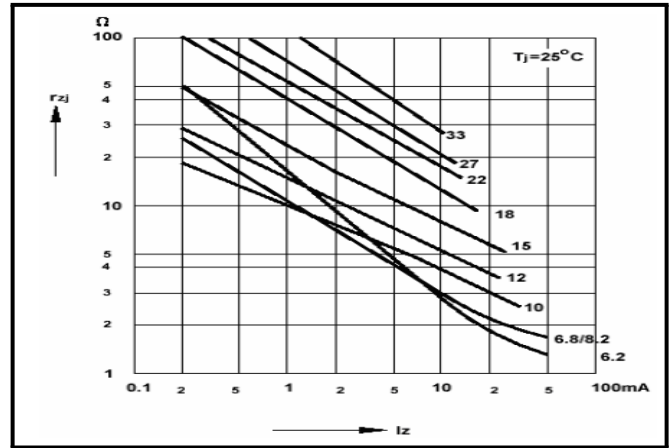


Fig 8: Dynamic resistance versus Zener current

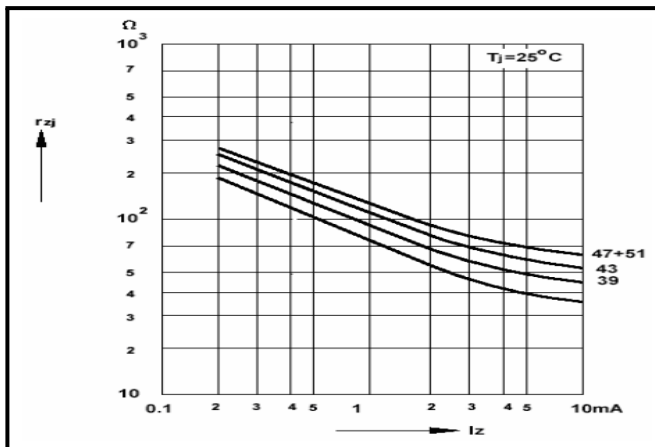


Fig 9: Thermal differential resistance versus Zener voltage

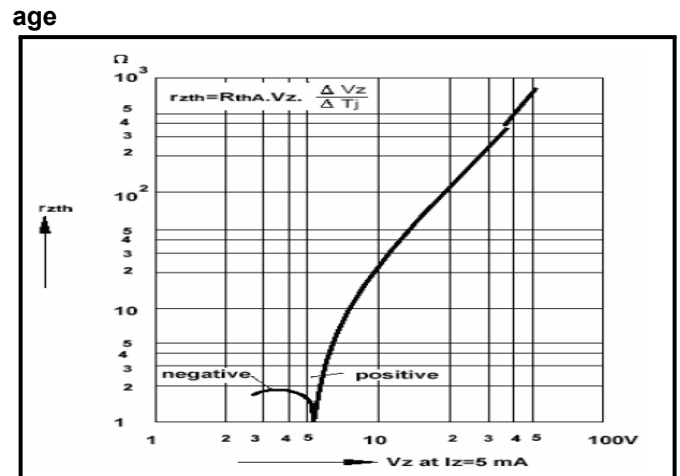


Fig 10: Dynamic resistance versus Zener voltage

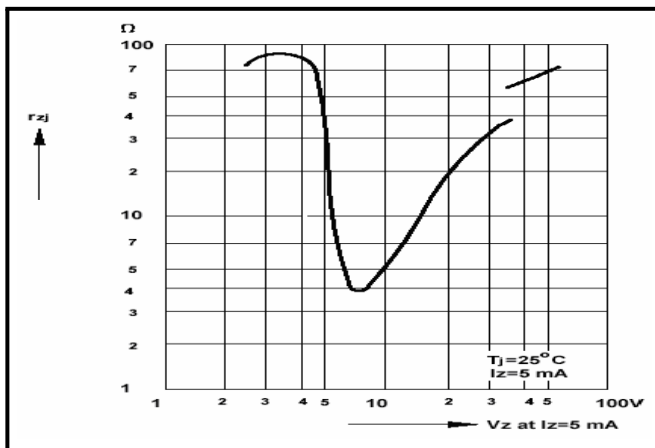
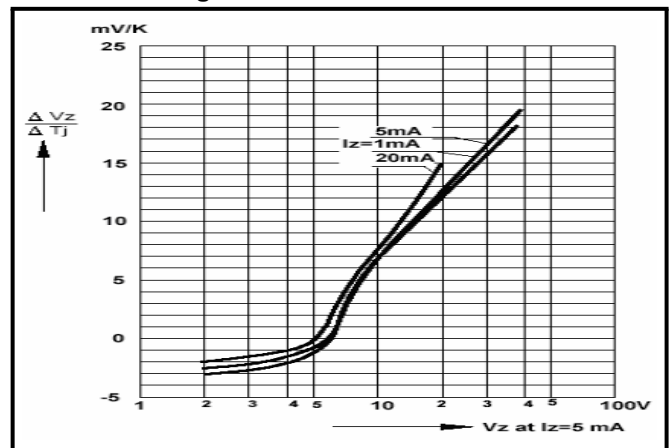


Fig 11: Temperature dependence of Zener voltage versus Zener voltage



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Fig 12: Temperature dependence of Zener voltage versus Zener voltage

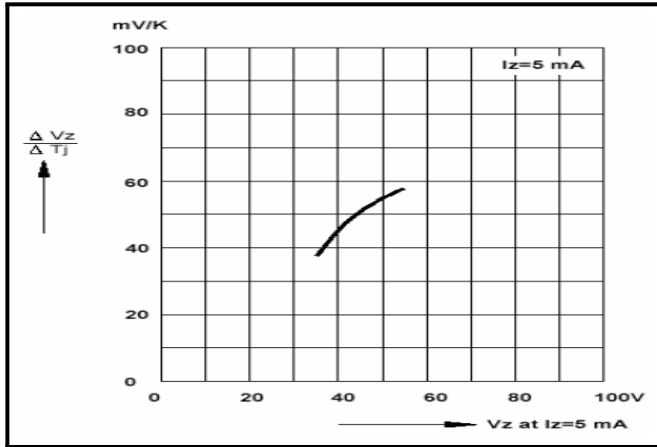


Fig 13: Change of Zener voltage versus junction temperature

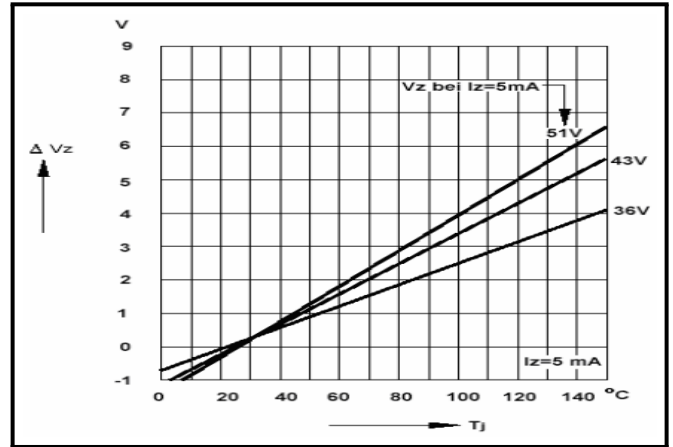


Fig 14: Change of Zener voltage versus junction temperature

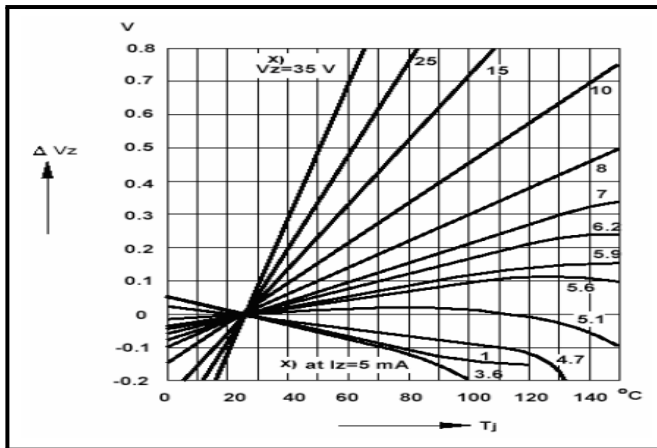
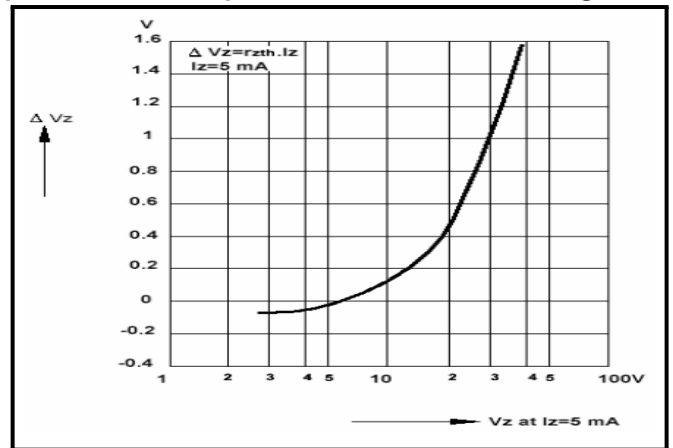
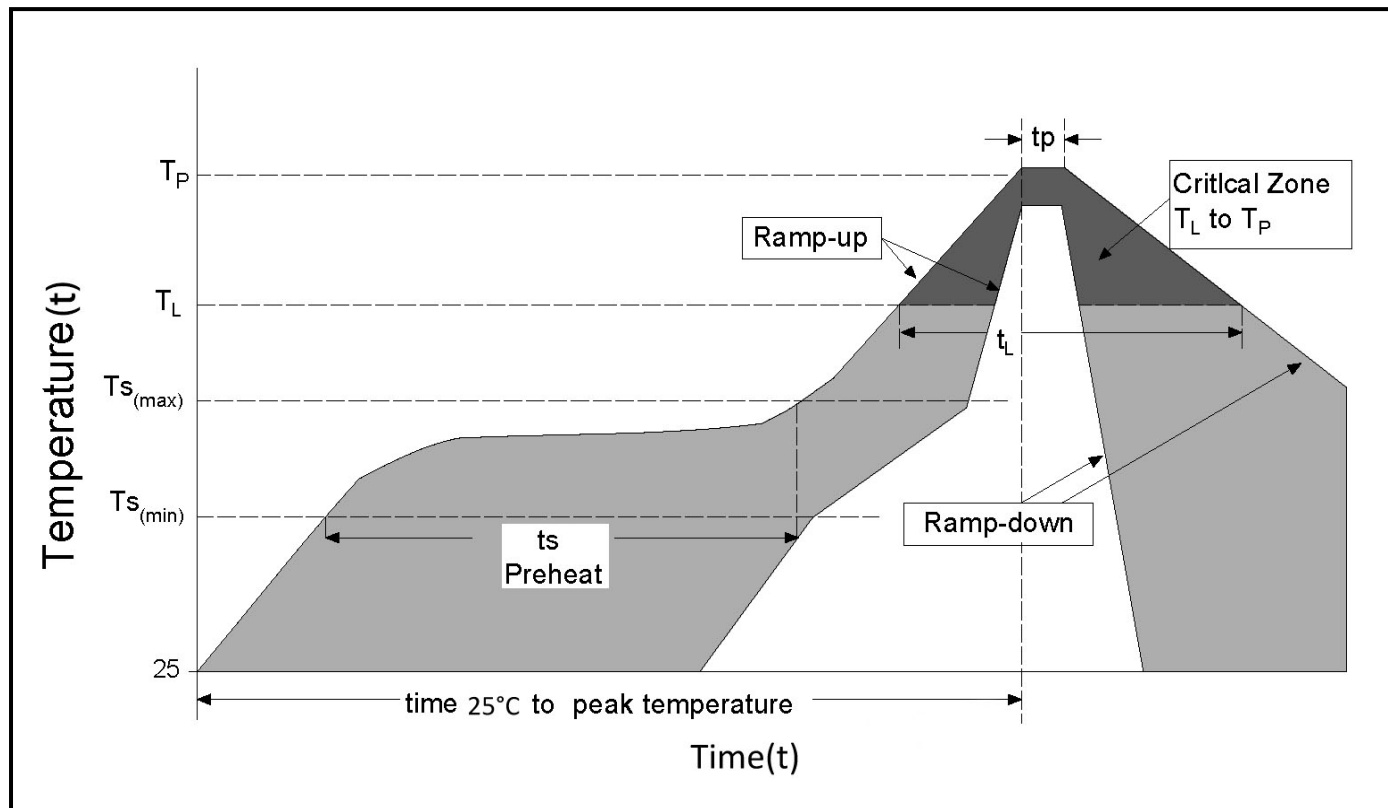


Fig 15: Change of Zener voltage from turn-on up to the point of thermal equilibrium versus Zener voltage



Soldering Parameters



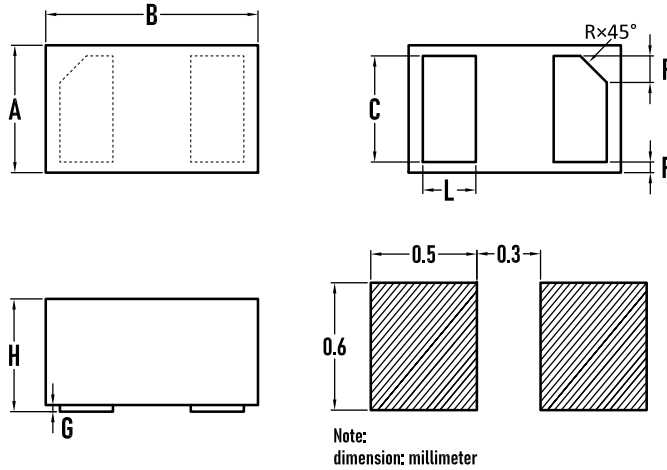
Reflow Condition		Lead-free assembly
Pre Heat	- Temperature Min ($T_{S(min)}$)	150°C
	- Temperature Max ($T_{S(max)}$)	200°C
	- Time (min to max) (t_s)	60 - 180 secs
Average ramp up rate (Liquidus Temp (T_L) to peak)		3°C/second max
$T_{S(max)}$ to T_L - Ramp-up Rate		3°C/second max
Reflow	- Temperature (T_L) (Liquidus)	217°C
	- Time (t_L)	60 -150 secs
Peak Temperature (T_P)		260 ^{+0/-5} °C
Time within 5°C of actual peak Temperature (t_p)		20 -40 secs
Ramp-down Rate		6°C/second max
Time 25°C to peak Temperature (t)		8 minutes Max.
Do not exceed		260°C



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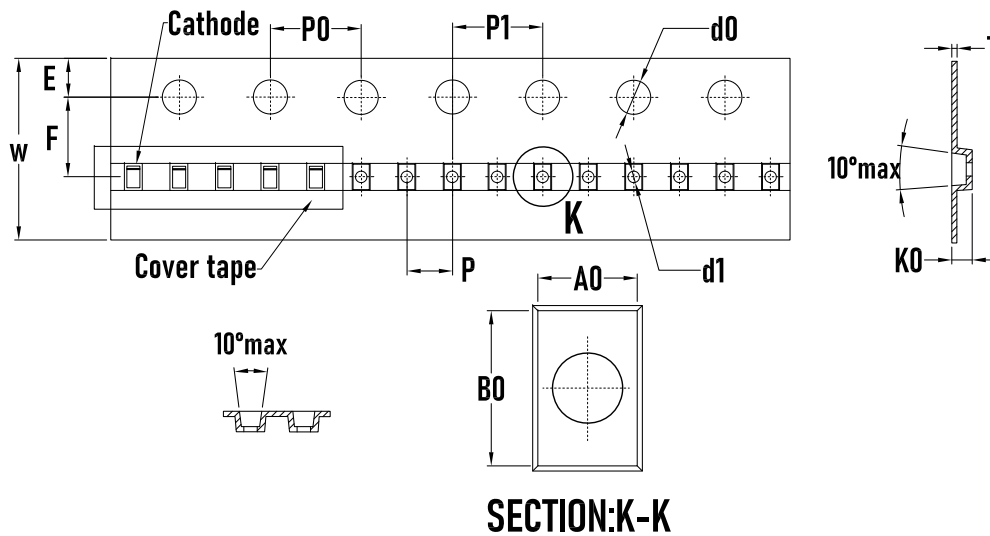
ESD Protection Diode

Outline Drawing – DFN1006



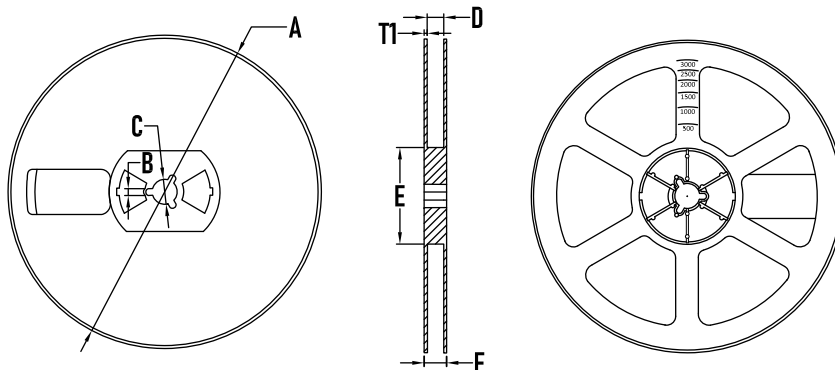
SYMBOL	MILLIMETER		
	MIN.	Typ.	MAX.
A	0.55	0.60	0.65
B	0.95	1.00	1.05
C	0.45	0.50	0.55
L	0.20	0.25	0.30
F	0.05REF		
G	0.00	0.02	0.05
H	0.45	0.50	0.55
R	0.07	0.12	0.17

Packaging Tape - DFN1006



SYMBOL	MILLIMETER
A0	0.71±0.05
B0	1.11±0.05
d0	1.5 ^{+0.1} ₋₀
d1	0.50±0.05
E	1.75±0.10
F	3.50±0.05
K0	0.56±0.05
P	2.00±0.05
P0	4.00±0.10
P1	2.00±0.05
W	8.00 ^{+0.03} _{-0.01}
T	0.2±0.015

Packaging Reel



SYMBOL	MILLIMETER
A	178±1
B	3.5±0.2
C	14.3±0.2
D	9.8 ⁺² ₋₁
E	54.5±0.5
F	12.4±0.2
T1	1.0±0.2
Quantity	10000PCS

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