

ESD Protection Diode

DFN1006 package low capacitance type



■ Features

1. RoHS compliant and halogen-free
2. Working voltage: 5V
3. Low capacitance: 10pF
4. Low clamping voltage
5. Low leakage current
6. IEC 61000-4-2 (ESD) $\pm 30\text{KV}$ (air), $\pm 30\text{KV}$ (contact)



■ Recommended Applications

1. Cell Phone Handsets and Accessories
2. Notebooks, Desktops and Servers
3. PCI express, SATA, USB 2.0, DVI, Display port
4. Portable Instrumentation

■ Mechanical Data

1. Case: DFN1006(0402), molded plastic meets UL flammability rating 94V-0
2. Terminal: Au plated, solderable per MIL-STD-750, method 2026
3. Meets MSL level 1, per J-STD-020

■ Part Number Code

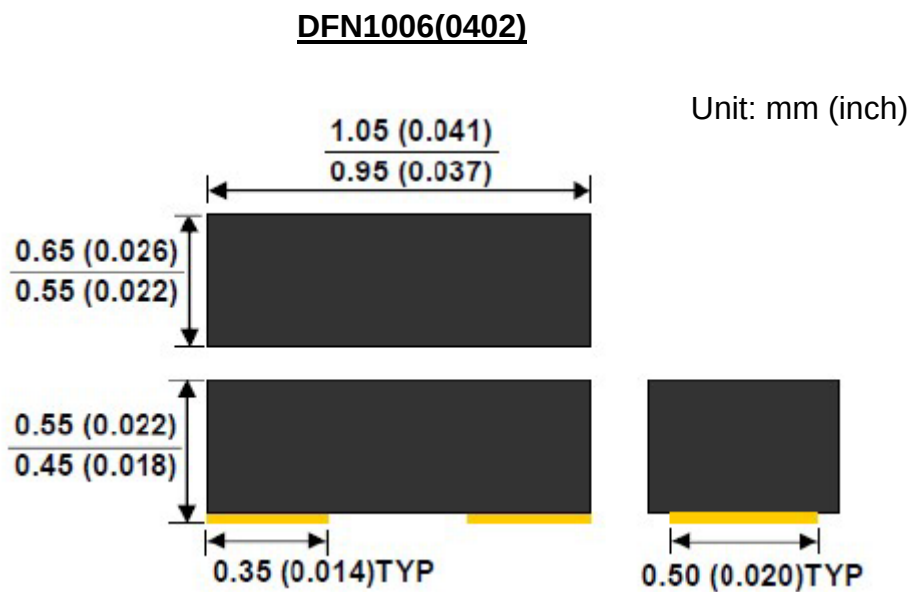
T	E	L	D	1	0	2	0	5	1	0	0	B
1	2	3	4	5	6	7	8	9	10	11	12	13
↓		↓		↓			↓		↓		↓	
Product Series		Type code		Package		Reverse Stand off Voltage(V _{RWM})		Junction Capacitance(C _j)		Type Code		
TE	THINKING ESD Transient Voltage Suppression Diodes	D	Standard Capacitance >10pF	SD32	SOD-323, 2pins	05		5V	0R5	0.5pF	U	Uni-directional
		L	Low Capacitance >1pF, ≤10pF	ST23	SOT-23, 3pins				030	3.0pF	B	Bi-directional,
		U	Ultra-low Capacitance ≤1pF	D102	DFN1006, 2pins				03D	3.3pF		
									100	10pF		

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Structures and Dimensions



Schematic & PIN Configuration



Maximum Rating (Rating at 25°C ambient temperature unless otherwise noted)

Parameter	Symbol	Value	Unit
Peak pulse power (tp= 8/20μs waveform)	P _{PPM}	138	W
Peak Pulse Current (tp= 8/20μs waveform)	I _{PP}	7.9	A
ESD per IEC61000-4-2 (Air) ESD per IEC61000-4-2 (Contact)	V _{ESD}	±30 ±30	KV
Operating junction temperature	T _J	-55~+125	°C
Storage temperature range	T _{STG}	-55~+150	°C

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■ Electrical Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Reverse Stand-off Voltage	V_{RWM}	-			5	V
Breakdown Voltage	V_{BR}	$I_R = 1\text{mA}$	6.0		8.5	V
Reverse Leakage Current	I_R	$V_{RWM}=5\text{V}$			0.05	μA
Clamping Voltage	V_C	$I_{pp} = 1\text{A}$, $t_p = 8/20\mu\text{s}$ $I_{pp} = 7.9\text{A}$, $t_p = 8/20\mu\text{s}$			9 17.5	V
Junction Capacitance	C_j	Between I/O Pin and GND $V_R = 0\text{V}$, $f = 1\text{MHz}$		10	20	pF

■ Rate and Characteristic Curve ($T_A=25^\circ\text{C}$ unless otherwise noted)

Figure 1 Power derating Curve

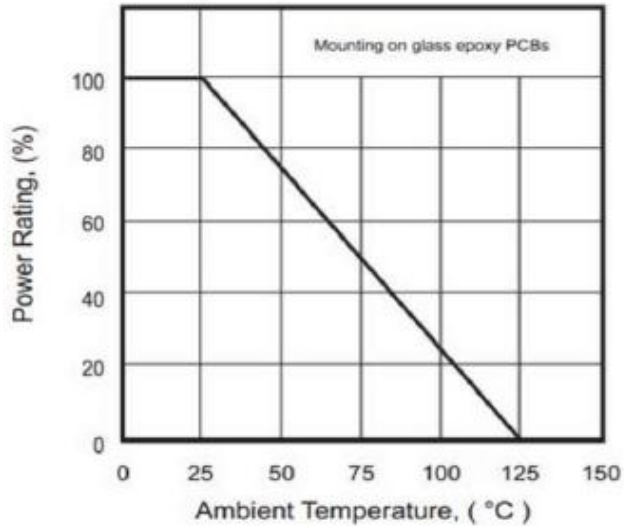


Figure 2

8/20 μ s peak pulse current waveform

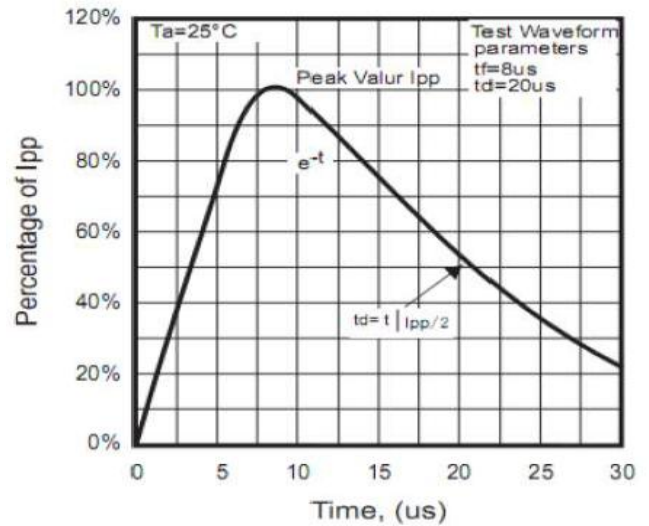


Figure 3 V_C vs I_{pp}

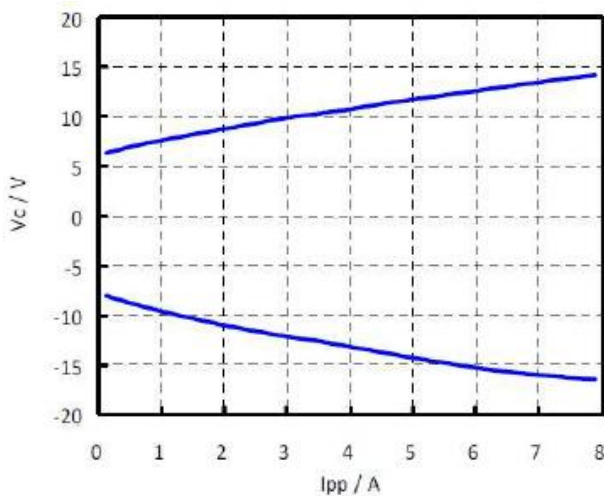


Figure 4 Capacitance vs. Reverse voltage

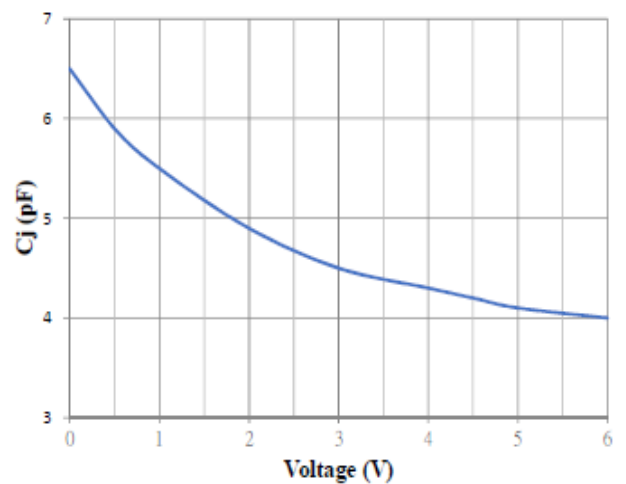
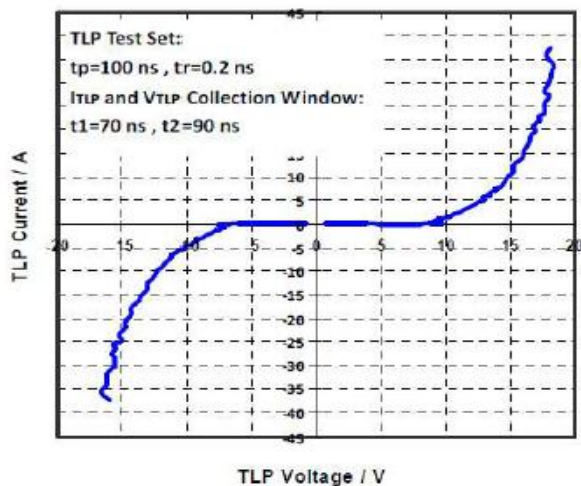
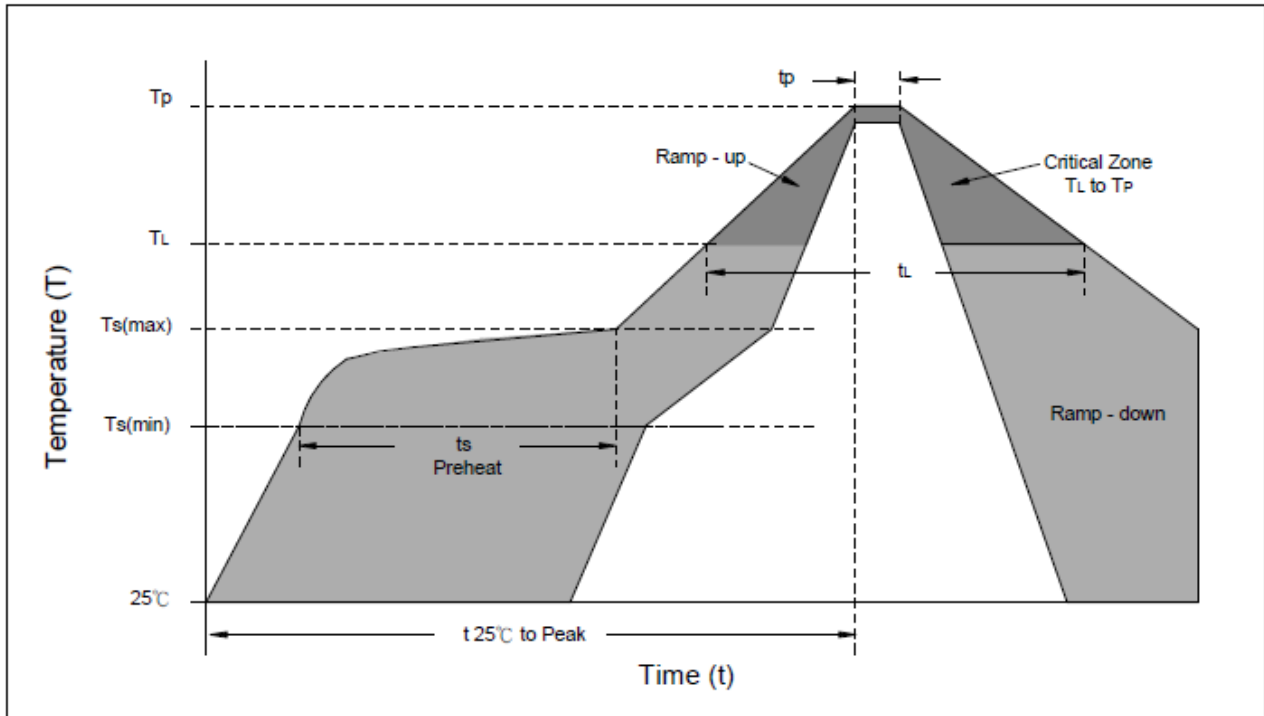


Figure 5 TLP V-I Curve

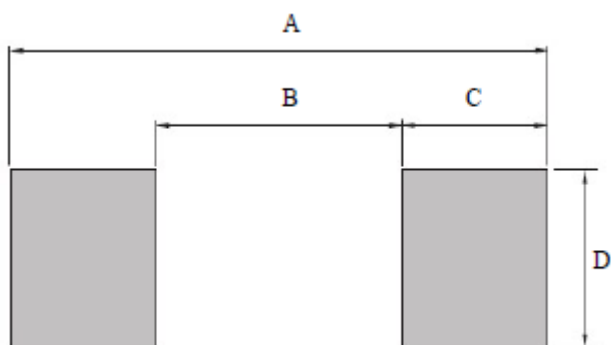


■ Soldering Recommendation



Reflow Condition	Lead-free assembly
Preheat -Temperature Min(Ts min) -Temperature Min(Ts max) -Time (min to max) (ts)	150°C 200°C 60 – 180 seconds
Average ramp up rate -Temperature Liquidus (TL) to peak	3°C/second max
Ts(max) to TL -Ramp-up Rate	3°C/second max.
Reflow -Temperature Liquidus (TL) -Time (tL)	217°C 60 – 150 seconds
Peak Temperature (TP)	260°C
Time within 5°C of actual peak Temperature(tp)	20 – 40 seconds
Ramp-down Rate	6°C/second max.
Time 25°C to peak Temperature(TP)	8 minutes max.
Do not exceed	260°C

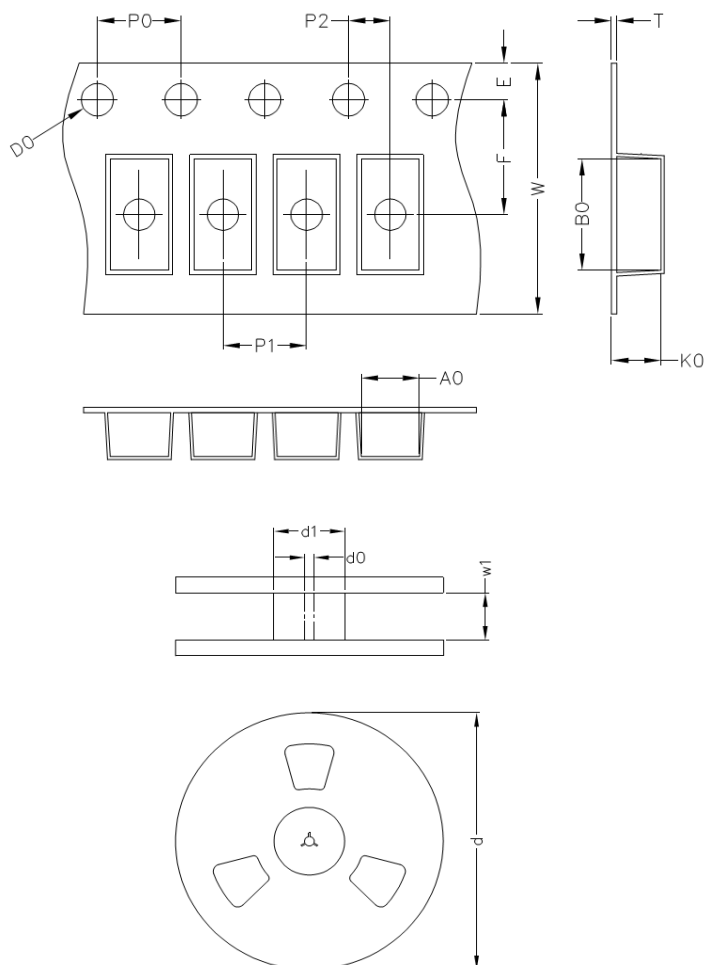
■ Recommended Soldering Pad Dimensions



Unit: mm

Package Type	A	B	C	D
DFN1006	1.3	0.3	0.5	0.7

■ Packaging



Symbol	DFN1006 (Unit: mm)
A0	0.67 ± 0.10
B0	1.12 ± 0.10
K0	0.60 ± 0.10
D0	1.50 ± 0.10
E	1.75 ± 0.10
F	3.50 ± 0.10
P0	4.00 ± 0.10
P1	4.00 ± 0.10
P2	2.00 ± 0.10
T	0.22 ± 0.05
W	8.00 ± 0.20
d (7'')	178.00 ± 2.00
d1	MIN. 54.00
d0	13.00 ± 0.20
w1	MAX. 13.50

■ Quantity

Package Type	Marking Code	Reel Size (inch)	Reel (Kpcs)
DFN1006	E5	7"	5

■ Warehouse Storage Conditions of product

- Storage condition:
 - 1.Storage Temperature: -10℃~+40℃
 - 2.Relative Humidity: $\leq 75\%RH$
 - 3.Keep away from corrosive atmosphere and sunlight.
- Period of Storage: 1 year.