

ESD Protection Diode: TExD102



DFN1006-2L package

■ Features

1. RoHS compliant and halogen-free
2. Low capacitance
3. Low clamping voltage
4. Low leakage current
5. IEC 61000-4-2 (ESD) 15~30KV (air), 10~30KV (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 (EIA 0402), molded plastic meets UL flammability rating 94V-0
2. 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	D102	DFN1006, 2pins	3R	3.3V	0R3	0.3pF	U	Uni-directional	
		L	Low Capacitance >1pF, ≦10pF			05	5V	0R4	0.4pF	B	Bi-directional	
		U	Ultra-low Capacitance ≦1pF			12	12v	01C	1.2pF			
								02H	2.7pF			
								080	8pF			
								100	10pF			
								120	12pF			
								150	13pF			
								300	30pF			

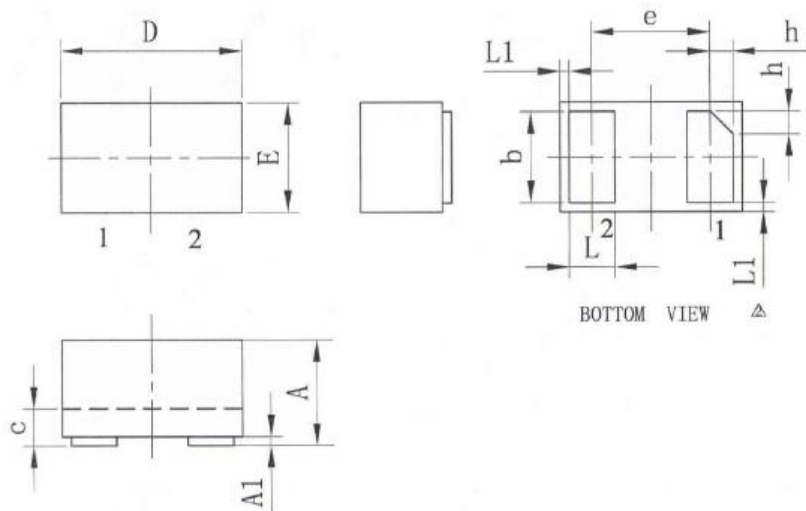
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Structures and Dimensions

Unit: mm



Symbol	DFN1006-2L		
	Min	Nom	Max
A	0.45	0.5	0.55
A1	0	0.02	0.05
b	0.45	0.5	0.55
c	0.12	0.15	0.18
D	0.95	1	1.05
e	0.65BSC		
E	0.55	0.6	0.65
L	0.2	0.25	0.3
L1	0.05REF		
h	0.07	0.12	0.17

Schematic & PIN Configuration



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■ Electrical Characteristics (T_A=25°C unless otherwise noted)

P/N	Reverse Stand-off Voltage	Reverse Leakage Current		Product Polarity	Marking	Peak Pulse Power (8/20μs)	Peak Pulse Current (8/20μs)	ESD (contact)	ESD (air)	Operating Temp.	Storage Temp.
	V _{RWM} (V)	I _R (uA)		Uni/Bi		P _{PK} (W)	I _{PP} (A)	KV	KV	T _J (°C)	T _{stg} (°C)
	Max	Typ	Max								
TEUD1023R0R4B	3.3	0.1	0.5	Bi	3T	60	3.5	20	20	-55 to +125	-55 to +125
TEDD1023R120B	3.3		2	Bi		84	7	±20	±25	-55 to +125	-55 to +150
TEDD1023R150B	3.3	0.1	0.2	Bi	3E	80	10	15	25	-55 to +125	-55 to +125
TEUD102050R3B	5	0.1	0.5	Bi	5T	60	3.5	20	20	-55 to +125	-55 to +125
TEUD102060R3B	6	0.1	0.5	Bi	5T	60	3.5	20	20	-55 to +125	-55 to +125
TEUD102050R4B	5	0.1	0.5	Bi	5F	60	3.5	20	20	-55 to +125	-55 to +125
TELD1020502HB	5	0.1	0.5	Bi	VB	40	3	10	15	-55 to +125	-55 to +125
TELD10205080B	5		1	Bi	PB	65	5	25	25	-55 to +150	-55 to +150
TELD1020501CU	5	0.1	0.5	Uni	UD	70	7	25	25	-55 to +125	-55 to +125
TEDD10205300B	5	0.1	0.5	Bi	M5	200	18	30	30	-55 to +125	-55 to +125
TELD10212100B	12	0.1	0.5	Bi	12B	120	5	30	30	-55 to +125	-55 to +125

■ Electrical Characteristics (T_A=25°C unless otherwise noted)

TEUD1023R0R4B						
Parameter	Symbol	Min	Typ.	Max	Unit	Test Condition
Reverse Working Voltage	V _{RWM}			3.3	V	
Breakdown Voltage	V _{BR}	5.0	7.5		V	IT = 1mA
Reverse Leakage Current	I _R		0.1	0.5	uA	VR = VRWM
Clamping Voltage	V _C		8		V	IPP = 1A (8/20μs pulse)
			15	19	V	IPP = 3.5A (8/20μs pulse)
Junction Capacitance	C _J		0.4	0.5	pF	VR = 0V, f = 1MHz

TEDD1023R120B						
Parameter	Symbol	Min	Typ.	Max	Unit	Test Condition
Reverse Working Voltage	V _{RWM}			3.3	V	
Breakdown Voltage	V _{BR}	4			V	IT = 1mA
Reverse Leakage Current	I _R			1	uA	VR = VRWM
Clamping Voltage	V _C			8	V	IPP = 1A (8/20μs pulse)
				12	V	IPP = 7A (8/20μs pulse)
Junction Capacitance	C _J			12	pF	VR = 0V, f = 1MHz

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TEDD1023R150B						
Parameter	Symbol	Min	Typ.	Max	Unit	Test Condition
Reverse Working Voltage	V_{RWM}			3.3	V	
Breakdown Voltage	V_{BR}	3.8			V	$I_T = 1\text{mA}$
Reverse Leakage Current	I_R		0.1	0.2	μA	$V_R = V_{RWM}$
Clamping Voltage	V_C			6	V	$I_{PP} = 5\text{A}$ (8/20 μs pulse)
Clamping Voltage	V_C			8	V	$I_{PP} = 10\text{A}$ (8/20 μs pulse)
Junction Capacitance	C_J		12	15	pF	$V_R = 0\text{V}$, $f = 1\text{MHz}$

TEUD102050R3B/TEUD102060R3B						
Parameter	Symbol	Min	Typ.	Max	Unit	Test Condition
Reverse Working Voltage	V_{RWM}			5	V	
Breakdown Voltage	V_{BR}	6	8		V	$I_T = 1\text{mA}$
Reverse Leakage Current	I_R		0.1	0.5	μA	$V_R = V_{RWM}$
Clamping Voltage	V_C			15	V	$I_{PP} = 3.5\text{A}$ (8/20 μs pulse)
Junction Capacitance	C_J		0.5	0.9	pF	$V_R = 0\text{V}$, $f = 1\text{MHz}$

TEUD102050R4B						
Parameter	Symbol	Min	Typ.	Max	Unit	Test Condition
Reverse Working Voltage	V_{RWM}			5	V	
Breakdown Voltage	V_{BR}	6	8		V	$I_T = 1\text{mA}$
Reverse Leakage Current	I_R		0.1	0.5	μA	$V_R = V_{RWM}$
Clamping Voltage	V_C			16	V	$I_{PP} = 3.5\text{A}$ (8/20 μs pulse)
Junction Capacitance	C_J		0.4	0.5	pF	$V_R = 0\text{V}$, $f = 1\text{MHz}$

TELD1020502HB						
Parameter	Symbol	Min	Typ.	Max	Unit	Test Condition
Reverse Working Voltage	V_{RWM}			5	V	
Breakdown Voltage	V_{BR}	5.5	6.5		V	$I_T = 1\text{mA}$
Reverse Leakage Current	I_R		0.1	0.5	μA	$V_R = V_{RWM}$
Clamping Voltage	V_C			12	V	$I_{PP} = 3\text{A}$ (8/20 μs pulse)
Junction Capacitance	C_J		2.7	3.5	pF	$V_R = 0\text{V}$, $f = 1\text{MHz}$

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TELD10205080B						
Parameter	Symbol	Min	Typ.	Max	Unit	Test Condition
Reverse Working Voltage	V_{RWM}			5	V	
Breakdown Voltage	V_{BR}	6			V	$I_T = 1\text{mA}$
Reverse Leakage Current	I_R			1	μA	$V_R = V_{RWM}$
Clamping Voltage	V_C			13	V	$I_{PP} = 6\text{A}$ (8/20 μs pulse)
Junction Capacitance	C_J		8	10	pF	$V_R = 0\text{V}$, $f = 1\text{MHz}$

TELD1020501CU						
Parameter	Symbol	Min	Typ.	Max	Unit	Test Condition
Reverse Working Voltage	V_{RWM}			5	V	
Breakdown Voltage	V_{BR}	6	7.2		V	$I_T = 1\text{mA}$
Reverse Leakage Current	I_R		0.1	0.5	μA	$V_R = V_{RWM}$
Clamping Voltage	V_C		10		V	$I_{PP} = 7\text{A}$ (8/20 μs pulse)
Junction Capacitance	C_J		1.2	1.5	pF	$V_R = 0\text{V}$, $f = 1\text{MHz}$

TEDD10205300B						
Parameter	Symbol	Min	Typ.	Max	Unit	Test Condition
Reverse Working Voltage	V_{RWM}			5	V	
Breakdown Voltage	V_{BR}	6			V	$I_T = 1\text{mA}$
Reverse Leakage Current	I_R		0.1	0.5	μA	$V_R = V_{RWM}$
Clamping Voltage	V_C			11.5	V	$I_{PP} = 18\text{A}$ (8/20 μs pulse)
Junction Capacitance	C_J		30		pF	$V_R = 0\text{V}$, $f = 1\text{MHz}$

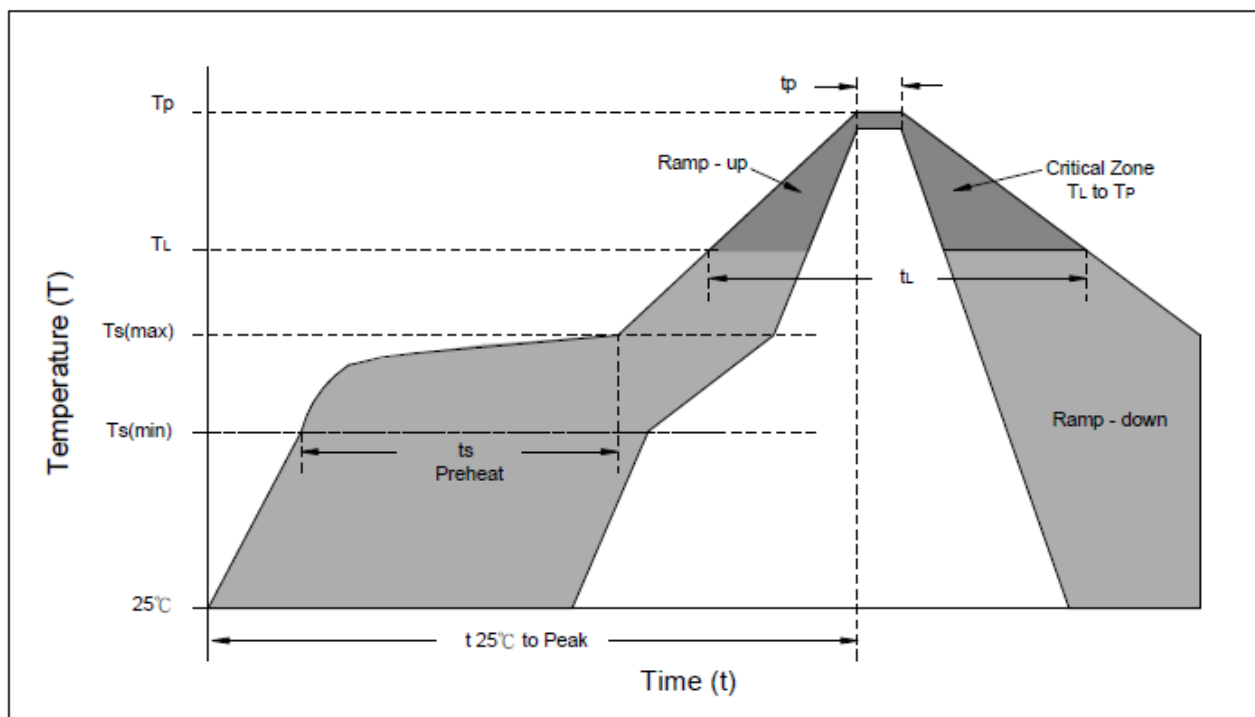
TELD10212100B						
Parameter	Symbol	Min	Typ.	Max	Unit	Test Condition
Reverse Working Voltage	V_{RWM}			12	V	
Breakdown Voltage	V_{BR}	13.3			V	$I_T = 1\text{mA}$
Reverse Leakage Current	I_R		0.1	0.5	μA	$V_R = V_{RWM}$
Clamping Voltage	V_C			24	V	$I_{PP} = 5\text{A}$ (8/20 μs pulse)
Junction Capacitance	C_J		10		pF	$V_R = 0\text{V}$, $f = 1\text{MHz}$

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■ Soldering Recommendation



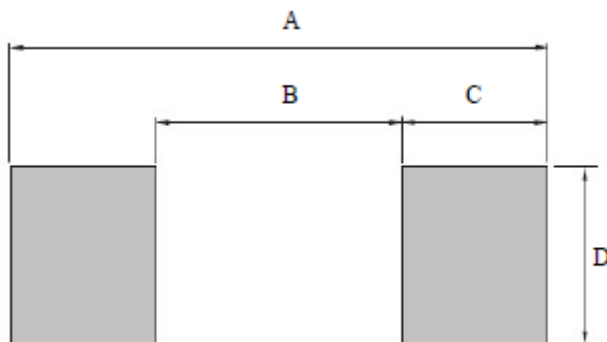
Reflow Condition	Lead-free assembly
Preheat -Temperature Min(Ts min) -Temperature Min(Ts max) -Time (min to max) (ts)	150°C 200°C 60 – 180 seconds
Average ramp up rate -Temperature Liquidus (TL) to peak	3°C/second max
Ts(max) to TL -Ramp-up Rate	3°C/second max.
Reflow -Temperature Liquidus (TL) -Time (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

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■ Recommended Soldering Pad Dimensions

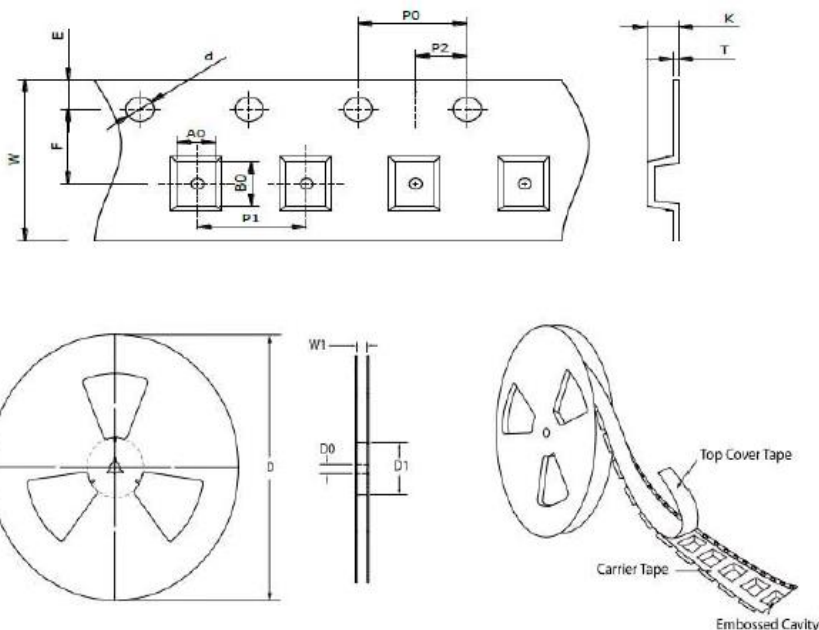


Unit: mm

Package Type	A	B	C	D
DFN1006(EIA0402)	1.3	0.3	0.5	0.7

■ Packaging

Unit: mm



Symbol	DFN1006-2L
A0	0.67 ± 0.10
B0	1.12 ± 0.10
K	0.60 ± 0.10
d	1.50 ± 0.10
D	178.00 ± 2.00
D0	13.00 ± 0.20
D1	MIN. 54.00
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
W1	MAX. 13.50

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■ Quantity

MPQ: 10,000pcs

Package Type	Reel Size (inch)	Reel (Kpcs)
DFN1006	7"	10

■ Warehouse Storage Conditions of product

● Storage condition:

1. Storage Temperature: $-10^{\circ}\text{C} \sim +40^{\circ}\text{C}$
2. Relative Humidity: $\leq 75\% \text{RH}$
3. Keep away from corrosive atmosphere and sunlight.

● Period of Storage: 1 year.