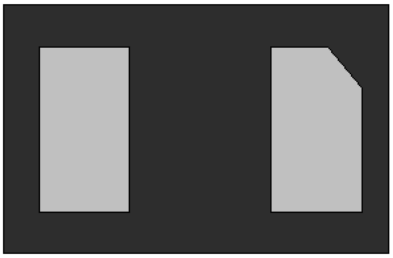
TESD24DF

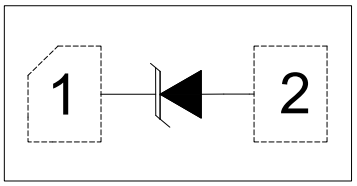
Uni-directional TVS Diode for ESD Protection

FEATURES

- ✧ Protects one line I/O or power line
- ✧ Low clamping voltage
- ✧ Low leakage current
- ✧ Ultra low capacitance: 25pF(max)
- ✧ RoHS compliant



DFN1006-2L(Bottom view)



Pin Configuration(Top view)

MAIN APPLICATIONS

- ✧ USB 2.0 power and data line protection
- ✧ High speed data line
- ✧ Lan equipment
- ✧ Digital visual interface (DVI)
- ✧ Video

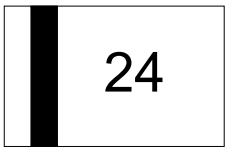
PROTECTION SOLUTION TO MEET

- ✧ IEC61000-4-2 (ESD) ±22kV (air), ±22kV (contact)
- ✧ IEC61000-4-4 (EFT) 40A (5/50ns)
- ✧ IEC61000-4-5 (Lightning) 4A (8/20μs)

MECHANICAL CHARACTERISTICS

- ✧ DFN1006-2L package
- ✧ Molding compound flammability rating : UL 94V-0
- ✧ Quantity per reel : 10,000pcs
- ✧ Lead finish : lead free

MARKING CODE



ORDERING INFORMATION

Part Number	Package	Reel Size	Quantity Per Reel
TESD24DF	DFN1006-2L	7 Inch	10,000 pcs

ABSOLUTE MAXIMUM RATINGS (T_A=25ºC, RH=45%-75%, unless otherwise noted)

Parameter	Symbol	Value	Unit
Peak pulse power dissipation on 8/20μs waveform	P_{PP}	100	W
ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact)	V_{ESD}	+/- 22 +/- 22	kV
Lead soldering temperature	T_L	260 (10 sec.)	℃
Operating junction temperature range	T_J	-55 to +125	℃
Storage temperature range	T_{STG}	-55 to +150	℃

ELECTRICAL CHARACTERISTICS (T_A=25℃)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Reverse working voltage	V_{RWM}				24.0	V
Reverse breakdown voltage	V_{BR}	I_T=1mA Pin2 to 1	26.5	28	31.5	V
Reverse leakage current	I_R	V_{RWM}=24V		0.01	0.1	μA
Forward voltage	V_F	I_F=15mA			1.1	V
Peak pulse current	I_{PP}	t_P=8/20μs			4	A
Clamping voltage	V_C	I_{PP}=1A, t_P=8/20μs		35	42	V
		I_{PP}=4A, t_P=8/20μs		47	55	
Junction capacitance	C_J	V_{RWM}=0V, f=1MHz		17	25	pF

RATINGS AND V-I CHARACTERISTICS CURVES (T_A=25ºC, unless otherwise noted)

FIG.1:V- I curve characteristics (Uni-directional)

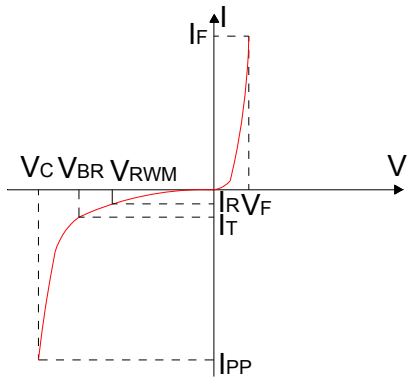


FIG.2: Pulse waveform (8/20μs)

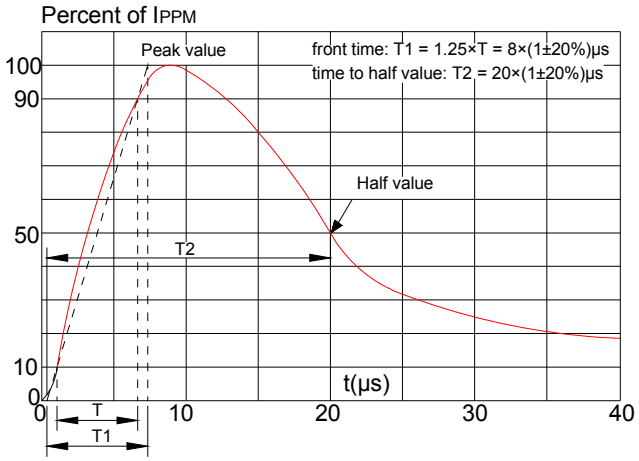


FIG.3: Pulse derating curve

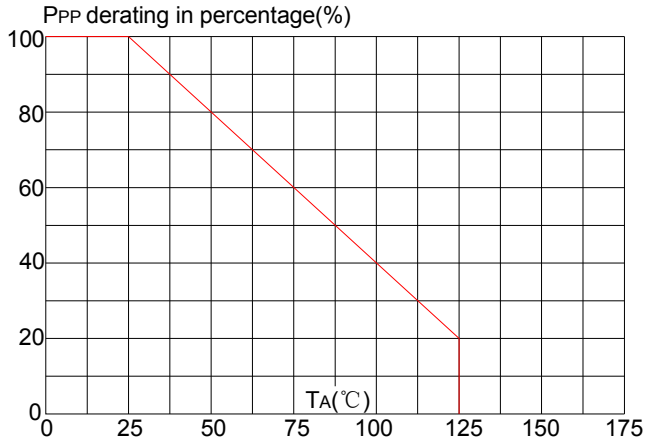
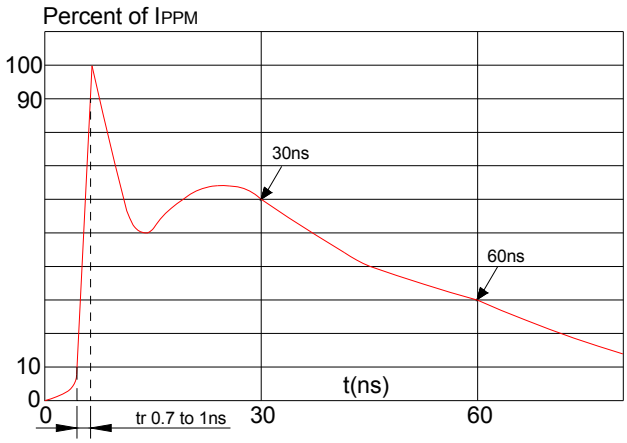
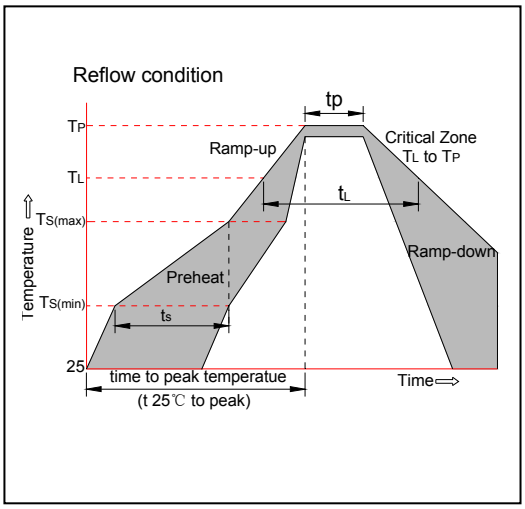


FIG.4: ESD clamping (22kV contact)

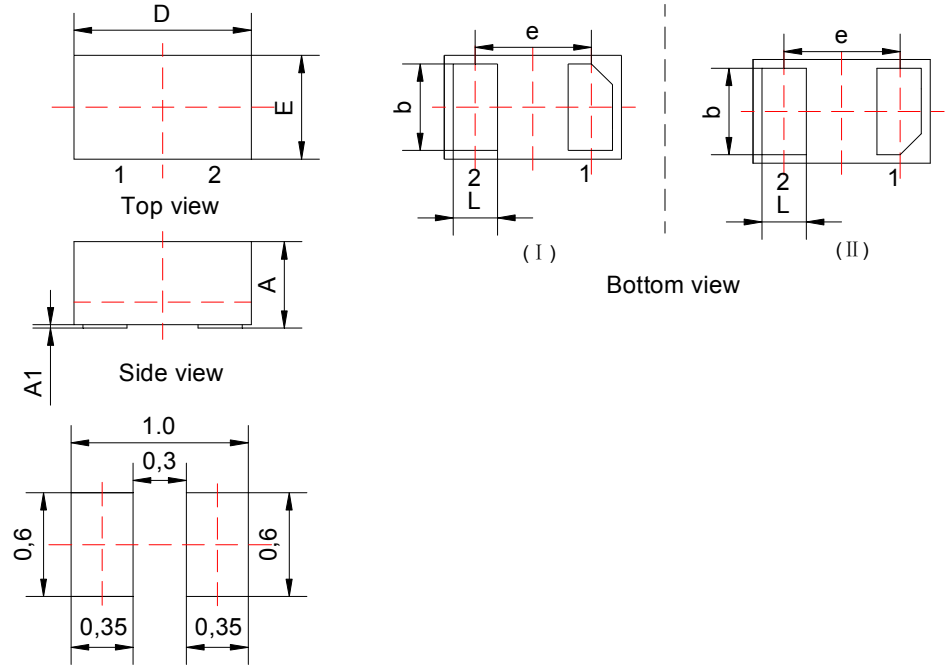


SOLDERING PARAMETERS

Reflow Condition		Pb-Free assembly (see figure at right)
Pre Heat	-Temperature Min ($T_{s(min)}$)	+150℃
	-Temperature Max($T_{s(max)}$)	+200℃
	-Time (Min to Max) (ts)	60-180 secs.
Average ramp up rate (Liquidus Temp (T_L)to peak)		3℃/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3℃/sec. Max
Reflow	-Temperature(T_L)(Liquidus)	+217℃
	-Temperature(t_L)	60-150 secs.
Peak Temp (T_p)		+260(+0/-5)℃
Time within 5℃of actual Peak Temp (t_p)		20-40secs.
Ramp-down Rate		6℃/sec. Max
Time 25℃ to Peak Temp (T_P)		8 min. Max
Do not exceed		+260℃



PACKAGE MECHANICAL DATA



Recommended soldering footprint(mm)

Symbol	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	0.40	0.50	0.55	0.016	0.020	0.022
A1	0.00	0.02	0.05	0.000	0.001	0.002
b	0.45	0.50	0.55	0.018	0.020	0.022
D	0.95	1.00	1.05	0.037	0.039	0.041
e	0.65BSC			0.026BSC		
E	0.55	0.60	0.65	0.022	0.024	0.026
L	0.20	0.25	0.30	0.008	0.010	0.012