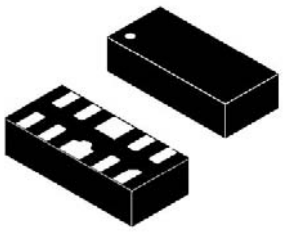
TESD0324P

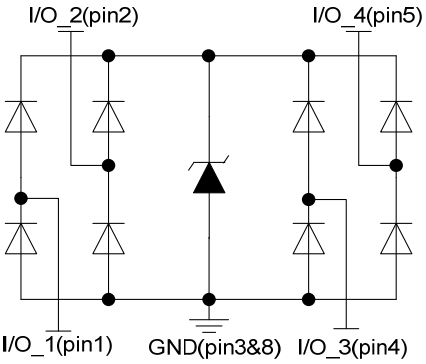
TVS Diode array for ESD Protection

FEATURES

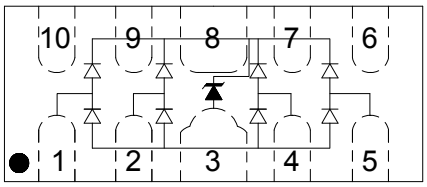
- ✧ Ultra low capacitance: 0.33pF(typical) for each channel
- ✧ Up to four I/O lines of protection
- ✧ Low operating voltage: 3.3V
- ✧ Low leakage current: 0.1μA @ V_{RWM} (typical)
- ✧ Low clamping voltage
- ✧ Protects four data lines
- ✧ Low operating and clamping voltage
- ✧ RoHS compliant



DFN2510-10L



Pin configuration



Top view

MAIN APPLICATIONS

- ✧ Serial ATA
- ✧ PCI express
- ✧ Desktops, servers and notebooks
- ✧ MDDI ports
- ✧ USB2.0, 3.0 and 3.1
- ✧ Display ports
- ✧ HDMI 1.3, 1.4 and 2.0
- ✧ Digital visual interfaces (DVI)

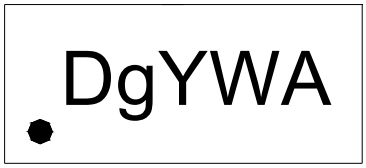
PROTECTION SOLUTION TO MEET

- ✧ IEC61000-4-2 (ESD) ±15kV (air), ±8kV (contact)
- ✧ IEC61000-4-4 (EFT) 40A (5/50ns)
- ✧ IEC61000-4-5 (Lightning) 3A (8/20μs)

MECHANICAL CHARACTERISTICS

- ✧ DFN2510-10L package
- ✧ Molding compound flammability rating: UL 94V-0
- ✧ Quantity per reel: 3,000pcs
- ✧ Lead finish: lead free

MARKING CODE



ORDERING INFORMATION

PART No.	PACKAGE TYPE	QUANTITY(PCS) REEL	DESCIPTION
TESDU0324P	DFN2510-10L	3,000	7 inch reel pack

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

Parameter	Symbol	Value	Unit
Peak pulse power dissipation on 8/20μs waveform	P_{PP}	50	W
ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact)	V_{ESD}	+/- 15 +/- 8	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}	I/O to GND			3.3	V
Reverse leakage current	I_R	I/O to GND @ V_{RWM}=3.3V		0.1	1.0	μA
Reverse triggering voltage	V_{t1}	I/O to GND @ I_{t1}=1μA	3.8			V
Reverse holding voltage	V_h	I/O to GND @ I_{h1}=50mA	3.5	5.5		V
Clamping voltage	V_C	I_{PP}=1A, t_P=8/20μs		8	9	V
		I_{PP}=4.5A, t_P=8/20μs		9.5	11	
Junction capacitance	C_J	V_{RWM}=0V, f=1MHz I/O pin to GND		0.6	0.7	pF
		V_{RWM}=0V, f=1MHz Between I/O pins		0.3	0.35	pF

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

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

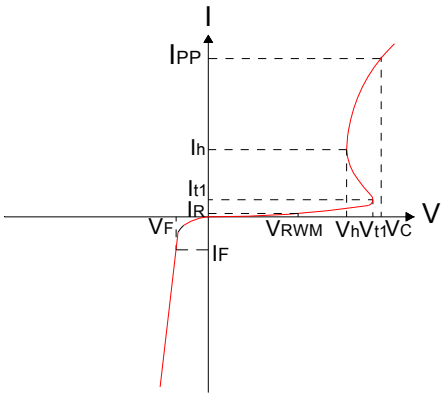


FIG.2: Pulse waveform (8/20μs)

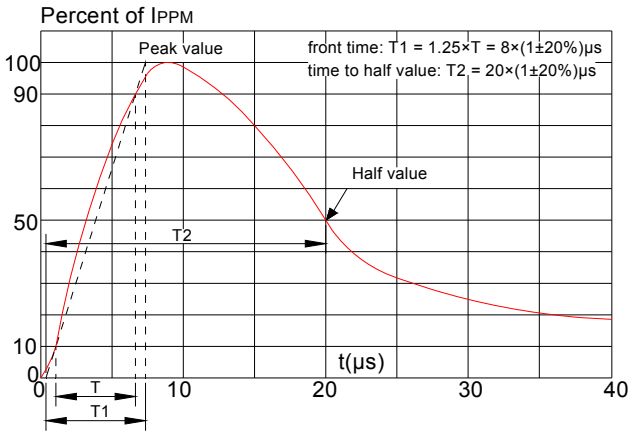


FIG.3: Pulse derating curve

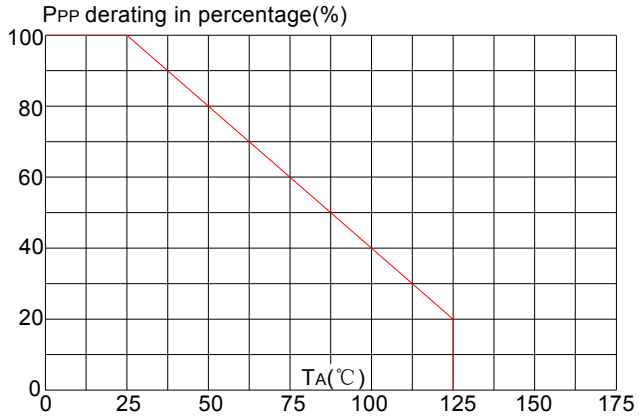
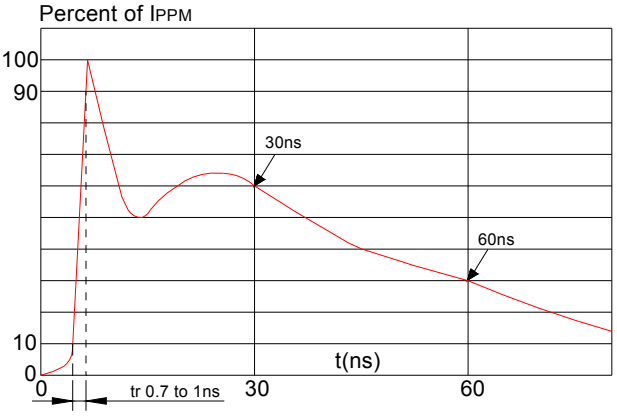
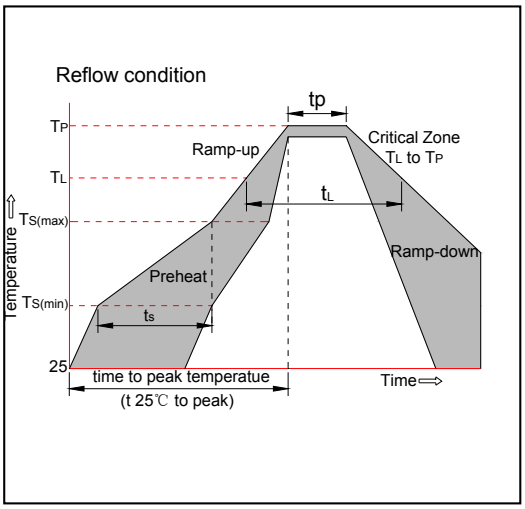


FIG.4: ESD clamping (8KV contact)

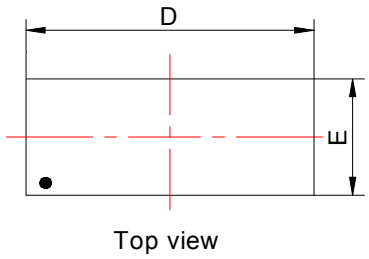


SOLDERING PARAMETERS

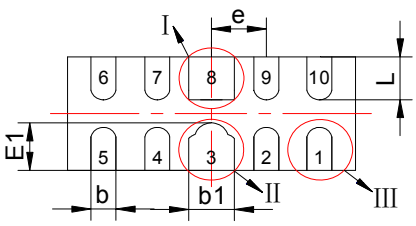
Reflow Condition		Pb-Free assembly (see figure at right)
Pre Heat	-Temperature Min ($T_{s(min)}$)	+150℃
	-Temperature Max($T_{s(max)}$)	+200℃
	-Time (Min to Max) (ts)	60-180 secs.
Average ramp up rate (Liquidus Temp (T_L)to peak)		3℃/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3℃/sec. Max
Reflow	-Temperature(T_L)(Liquidus)	+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℃



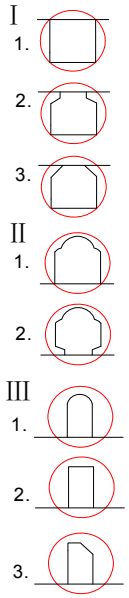
PACKAGE MECHANICAL DATA

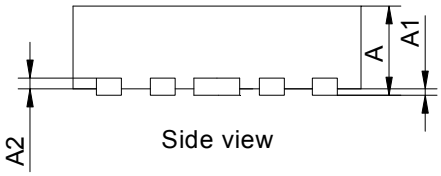


Top view

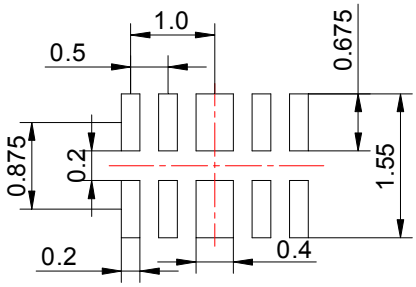


Bottom view





Side view



Recommended soldering footprint

Symbol	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	0.46	0.53	0.60	0.018	0.021	0.024
A1	0.00	0.02	0.05	0.000	0.001	0.002
A2	0.15Ref.			0.006Ref.		
b	0.15	0.20	0.25	0.006	0.008	0.010
b1	0.35	0.40	0.45	0.014	0.016	0.018
D	2.40	2.50	2.60	0.094	0.098	0.102
E	0.90	1.00	1.10	0.035	0.039	0.043
E1	0.30	0.40	0.56	0.012	0.016	0.022
e	0.50BSC			0.020BSC		
L	0.30	0.40	0.45	0.012	0.016	0.018