



FEATURES

- ✧ Solid-state silicon-avalanche technology
- ✧ Up to four I/O lines of protection
- ✧ Low operating voltage: 3.3V
- ✧ Ultra low capacitance: 0.2pF typical(I/O to I/O)
- ✧ Low operating and clamping voltage
- ✧ Low leakage current
- ✧ RoHS compliant

MAIN APPLICATIONS

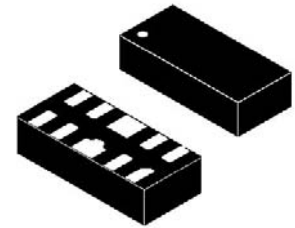
- ✧ HDMI1.3 HDMI1.4 and HDMI2.0
- ✧ USB3.0
- ✧ Portable electronics
- ✧ Computer and peripheral devices
- ✧ Monitor and Flat Panel Displays

PROTECTION SOLUTION TO MEET

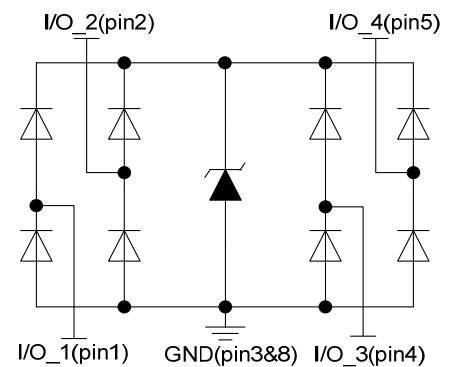
- ✧ IEC61000-4-2 (ESD) $\pm 30\text{kV}$ (air), $\pm 30\text{kV}$ (contact)
- ✧ IEC61000-4-4 (EFT) 40A(5/50ns)
- ✧ IEC61000-4-5 (Lightning) 8A (8/20 μs)

MECHANICAL CHARACTERISTICS

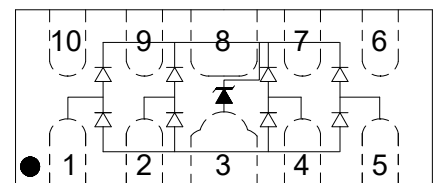
- ✧ DFN2510-10L package
- ✧ Molding compound flammability rating: UL 94V-0
- ✧ Quantity per reel: 5,000pcs
- ✧ Lead finish: lead free
- ✧ Marking code: 3324P



DFN2510-10L



Pin configuration



Top view

ABSOLUTE MAXIMUM RATINGS($T_A=25^{\circ}\text{C}$, RH=45%-75%, unless otherwise noted)

Parameter	Symbol	Value	Unit
Peak pulse power dissipation at 8/20 μs waveform	P_{PP}	76	W
ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact)	V_{ESD}	± 30 ± 30	kV
Lead soldering temperature	T_L	260 (10 sec.)	$^{\circ}\text{C}$
Operating junction temperature range	T_J	-55 to +125	$^{\circ}\text{C}$
Storage temperature range	T_{STG}	-55 to +150	$^{\circ}\text{C}$

ELECTRICAL CHARACTERISTICS ($T_A=25^{\circ}\text{C}$)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Reverse working voltage	V_{RWM}				3.3	V
Reverse breakdown voltage	V_{BR}	$I_T=1\text{mA}$	5.5		9.0	V
Reverse leakage current	I_R	$V_{RWM}=3.3\text{V}$			0.1	μA
Forward voltage	V_F	$I_F=10\text{mA}$	0.5	0.8	1.2	V
Clamping voltage ^①	V_C	$I_{PP}=16\text{A}$, $t_P=100\text{ns}$		8.2		V
Dynamic resistance ^①	R_{DYN}			0.19		Ω
Clamping voltage ^②	V_C	$V_{ESD}=8\text{kV}$		8.5		V
Clamping voltage ^③	V_C	$I_{PP}=1\text{A}$, $t_P=8/20\mu\text{s}$		5.2	6.5	V
		$I_{PP}=6\text{A}$, $t_P=8/20\mu\text{s}$		7.0	8.5	V
		$I_{PP}=8\text{A}$, $t_P=8/20\mu\text{s}$		8.0	9.5	V
Junction capacitance	C_J	$V_{RWM}=0\text{V}$, $f=1\text{MHz}$ Any I/O to GND		0.4	0.55	pF
		$V_{RWM}=0\text{V}$, $f=1\text{MHz}$ Any I/O to Any I/O		0.2	0.3	pF

Note:

①Clamping voltage was measured by transmission Line Pulse Test (TLP), TLP conditions: $Z_0=50\Omega$, $t_r=0.6\text{ns}$, $t_P=100\text{ns}$, I_{TLP} and V_{TLP} averaging window from 70ns to 90ns. R_{DYN} is calculated from 4A to 16A.

②Contact discharge mode, according to IEC61000-4-2.

③Clamping voltage was measured by 8/20 μs current waveform, $R_s=2\Omega$, according to IEC61000-4-5.

RATINGS AND V-I CHARACTERISTICS CURVES ($T_A=25^{\circ}\text{C}$, unless otherwise noted)

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

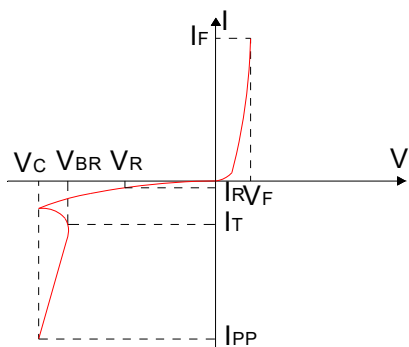


FIG.2: Pulse waveform (8/20 μs)

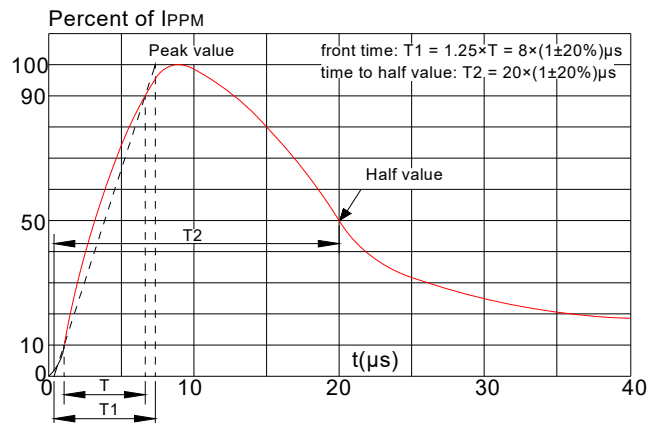


FIG.3: Pulse derating curve

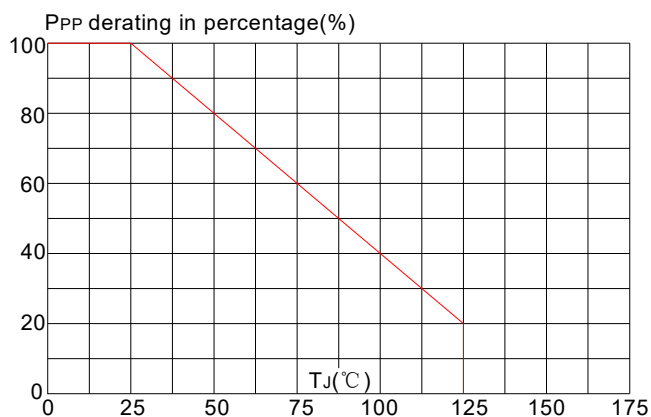
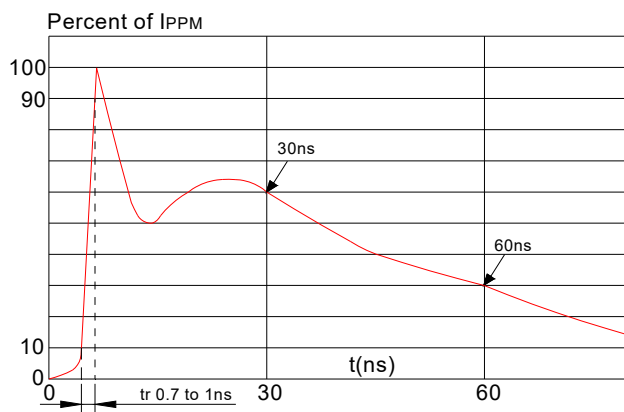
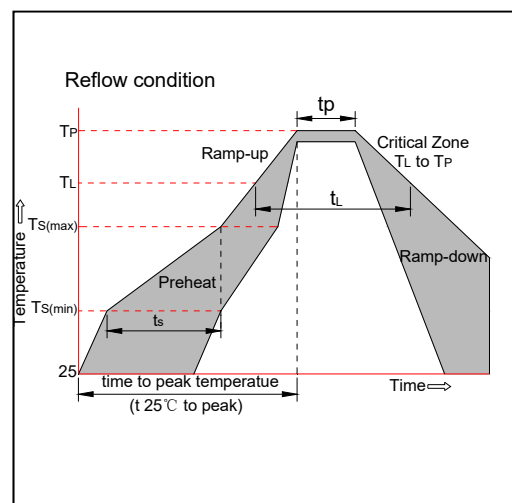


FIG.4: ESD clamping (30kV contact)

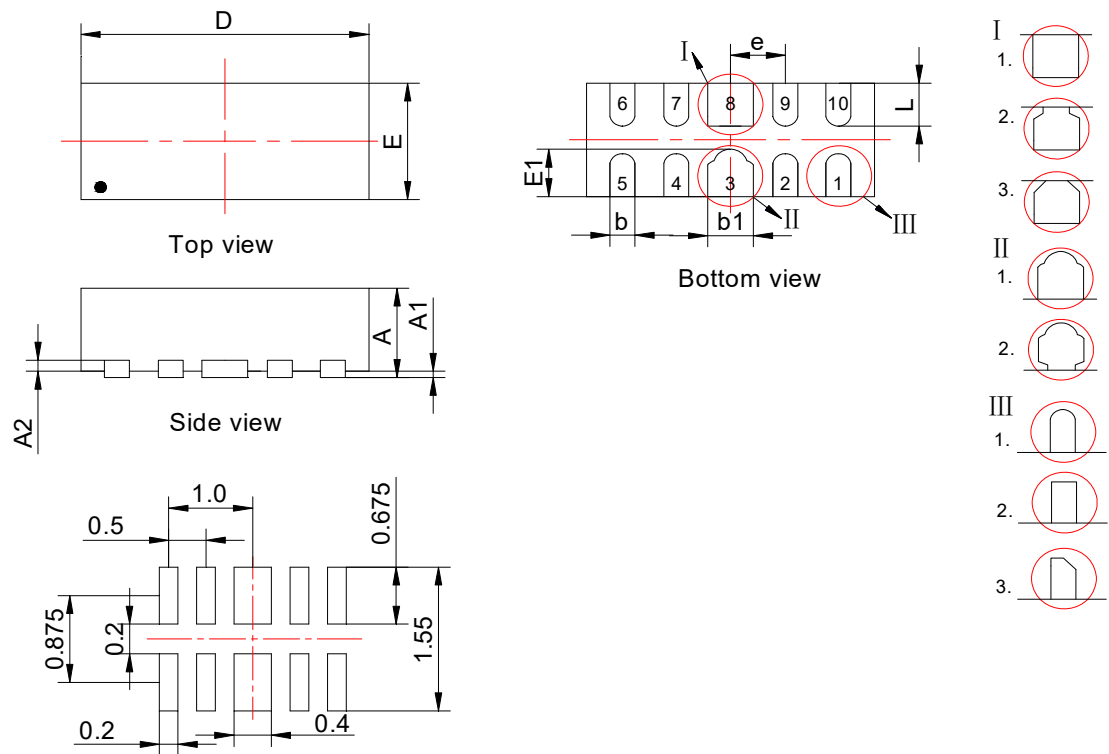


SOLDERING PARAMETERS

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

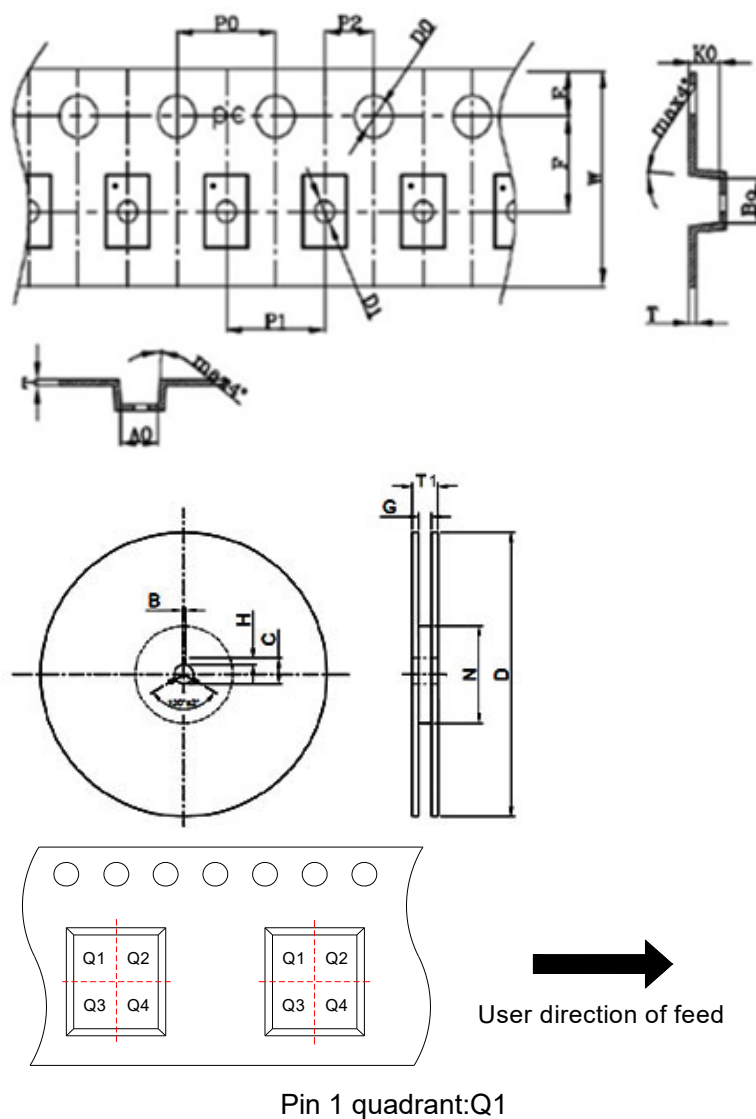


PACKAGE MECHANICAL DATA



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

TAPE AND REEL INFORMATION-DFN2510-10L



Symbol	Dimensions	
	Millimeters	Inches
	Typ.	Typ.
A0	1.20	0.047
B0	2.75	0.108
K0	0.70	0.028
P0	4.00	0.157
P1	4.00	0.157
P2	2.00	0.079
T	0.20	0.008
E	1.75	0.069
F	3.50	0.138
D0	1.55	0.061
D1	0.60	0.024
W	8.0	0.315
B	2.0	0.079
H	4.0	0.157
C	13.0	0.512
G	8.4	0.331
T1	14.9(max)	0.587(max)
N	60.0	2.362
D	178.0	7.000

ORDERING INFORMATION

Part Number	Package	Quantity Per Reel (PCS)	Reel Size
JEU3324P-UPA	DFN2510-10L	5,000	7 Inch

MARKING CODE

Part Number	Marking Code
JEU3324P-UPA	

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