

## FEATURES

- | 40W Peak Pulse Power per Line (tp=8/20µs)
- | Protects four I/O lines
- | Operating voltage: 3.3 V
- | Low capacitance : 0.65pF (Typical any I/O pin to Ground)
- | Fast turn-on and low clamping voltage
- | Solid-state silicon-avalanche and active circuit triggering technology

## APPLICATIONS

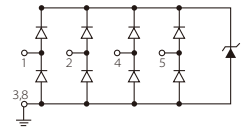
- | High Definition Multi-Media Interface (HDMI) 1.3 & 1.4 & 2.0version
- | Display Port interface
- | SATA and eSATA interface
- | USB 3.0
- | Digital Visual Interface (DVI)
- | USB 2.0 up to 480Mb/s
- | IEEE 1394 up to 3.2 Gb/s
- | Ethernet port : 10/100/1000 Mb/s
- | Desktop and Notebooks PCs
- | Consumer Electronics
- | Set Top Box



DFN2510P10

**3324P**

Marking



Schematic Symbol

## IEC COMPATIBILITY

- | IEC61000-4-2 (ESD) ±15kV (air), ±12kV (contact)
- | IEC61000-4-4 (EFT) 40A (5/50ns)

## APPROVALS

<b>RoHS</b>	Compliance with 2011/65/EU
<b>HF</b>	Compliance with IEC61249-2-21:2003

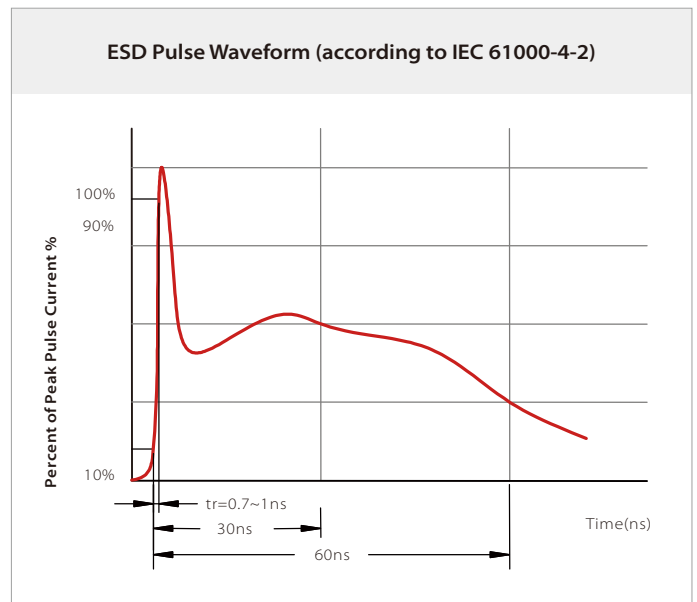
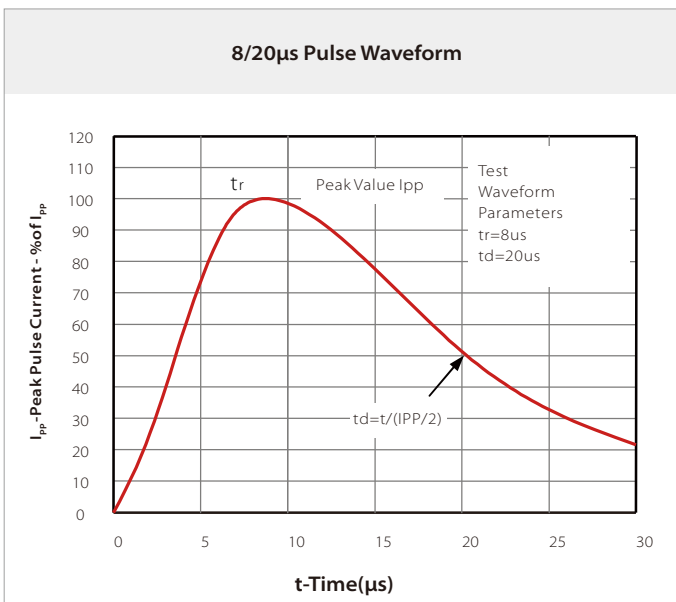
## THERMAL CONSIDERATIONS

Symbol	Parameter	Value	Unit
$P_{PP}$	Peak Pulse Power (tp=8/20µs waveform)	40	Watts
$T_J$	Operating Temperature Range	-55 to +125	°C
$T_{STG}$	Storage Temperature Range	-55 to +150	°C

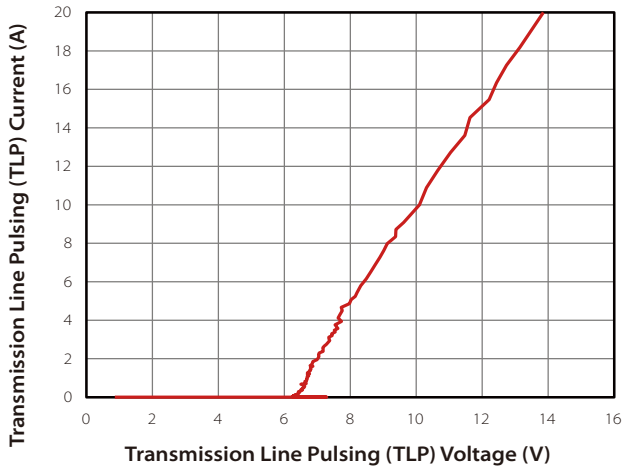
## ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Condition	Min.	Typ.	Max.	Unit
$V_{RWM}$	Reverse Stand-off Voltage				3.3	V
$V_{BR}$	Reverse Breakdown Voltage	$I_T=1\text{ mA}$	4.2			V
$I_R$	Reverse Leakage Current	$V_{RWM}=3.3\text{ V}$			1	$\mu\text{A}$
$V_F$	Diode Forward Voltage	$I_F=15\text{ mA}$			1.2	V
$V_C$	Clamping Voltage ( $T_p=8/20\mu\text{s}$ )	$I_{pp}=1\text{ A}$ , $t_p=8/20\mu\text{s}$ Any I/O to Ground			8	V
$V_C$	Clamping Voltage ( $T_p=8/20\mu\text{s}$ )	$I_{pp}=4\text{ A}$ , $t_p=8/20\mu\text{s}$ Any I/O to Ground			10	V
$V_C$	Clamping Voltage ( $T_p=8/20\mu\text{s}$ )	$I_{pp}=8\text{ A}$ , $t_p=\text{TLP}$ Any I/O to Ground		9.1		V
$V_C$	Clamping Voltage ( $T_p=8/20\mu\text{s}$ )	$I_{pp}=16\text{ A}$ , $t_p=\text{TLP}$ Any I/O to Ground		12.4		V
$V_C$	Clamping Voltage ( $T_p=8/20\mu\text{s}$ )	$I_{pp}=8\text{ A}$ , $t_p=\text{TLP}$ Ground to Any I/O		3.5		V
$V_C$	Clamping Voltage ( $T_p=8/20\mu\text{s}$ )	$I_{pp}=16\text{ A}$ , $t_p=\text{TLP}$ Ground to Any I/O		5.9		V
$I_{pp}$	Peak Pulse Current ( $T_p=8/20\mu\text{s}$ )	$t_p=8/20\mu\text{s}$			4	A
$C_j$	Off State Junction Capacitance	$V_R=0\text{ V}$ , $f=1\text{ MHz}$ Any I/O to Ground		0.65		pF
$C_j$	Off State Junction Capacitance	$V_R=0\text{ V}$ , $f=1\text{ MHz}$ between I/O pins		0.32		pF

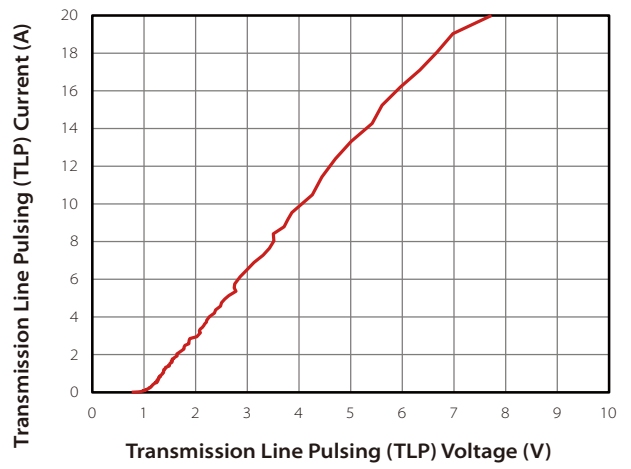
## CHARACTERISTIC CURVES



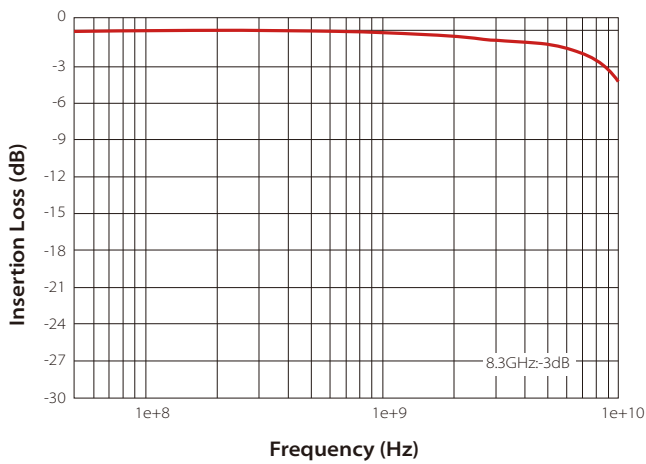
Any I/O to Ground TLP Curve



Ground to Any I/O TLP Curve

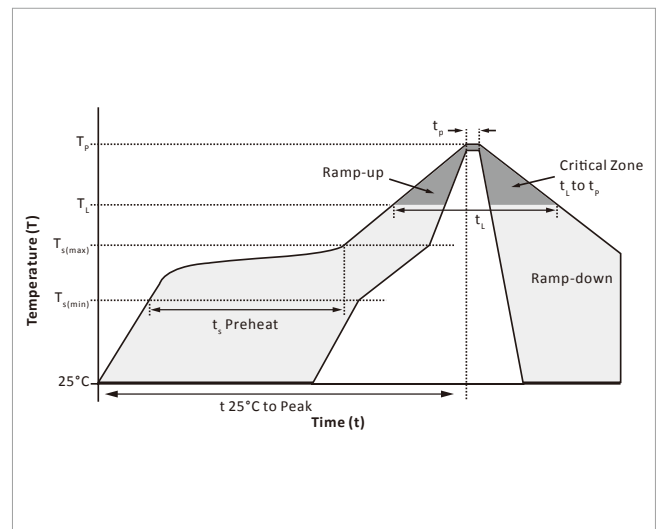


Insertion Loss S21 (IO-to-GND)

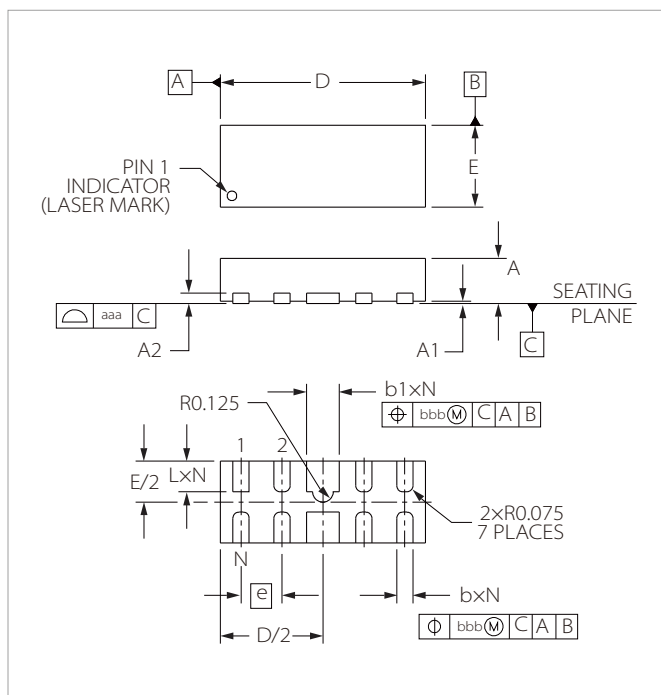


## SOLDERING PARAMETERS

Reflow Condition		Lead-free assembly
Pre Heat	Temperature Max ( $T_{s(min)}$ )	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/second max
Reflow	$T_{s(max)}$ to $T_L$ - Ramp-up Rate	3°C/second max
	Temperature ( $T_L$ ) (Liquidus)	217°C
	Time (min to max) ( $t_L$ )	60 – 150 seconds
Peak Temperature ( $T_p$ )		260°C
Time within 5°C of actual peak Temperature ( $t_p$ )		20 – 40 seconds
Ramp-down Rate		6°C/second max
Time 25°C to peak Temperature ( $T_p$ )		8 minutes max.
Do not exceed		260°C

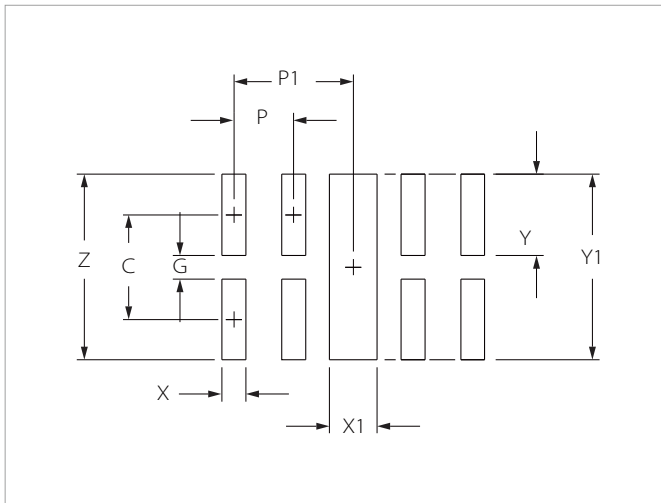


## DFN2510P10 PACKAGE INFORMATION



Ref.	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	0.40	0.65	0.016	0.026
A1	0	0.05	0	0.002
A2	(0.13)		(0.005)	
b	0.15	0.25	0.006	0.010
b1	0.35	0.45	0.014	0.018
D	2.40	2.60	0.094	0.102
E	0.90	1.10	0.035	0.043
e	0.50BSC		0.020BSC	
L	0.30	0.45	0.012	0.018
N	8		8	
aaa	0.08		0.003	
bbb	0.10		0.004	

## RECOMMENDED PAD LAYOUT DIMENSIONS



Ref.	Millimeters	Inches
C	0.87	0.034
G	0.20	0.008
P	0.50	0.020
P1	1.00	0.039
X	0.20	0.008
X1	0.40	0.016
Y	0.68	0.027
Y1	1.55	0.061
Z	1.55	0.061

## ORDERING INFORMATION

Part Number	Component Package	QTY/Reel	Reel Size
SEULC3324P10-SP	DFN2510P10	3000PCS	7"

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