

## Features

80 Watts Peak Pulse Power per Line ( $t_p=8/20\mu s$ )  
Protects two or four I/O lines  
Low capacitance: 0.35 pF typical (I/O to I/O)  
Low operating voltage: 5V  
RoHS Compliant  
IEC61000-4-2 (ESD)  $\pm 25kV$  (air),  $\pm 20kV$  (contact)  
IEC61000-4-4 (EFT) 40A (5/50ns)  
IEC61000-4-5 (Lightning) 4A (8/20 $\mu s$ )

## Mechanical Data

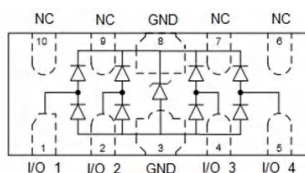
Package: DFN2510-10 (2.5×1.0×0.5mm)  
Ultra low leakage: nA level  
Case Material: "Green" Molding Compound.  
UL Flammability Classification Rating 94V-0  
Moisture Sensitivity: Level 3 per J-STD-020  
Terminal Connections: See Diagram Below

## Applications

High Definition Multimedia Interface (HDMI)  
Digital Visual Interface (DVI)  
Unified Display Interface (UDI)  
MDDI Ports  
PCI Express  
Serial ATA

0524P

Schematic & PIN Configuration



DFN2510



## Absolute Maximum Rating

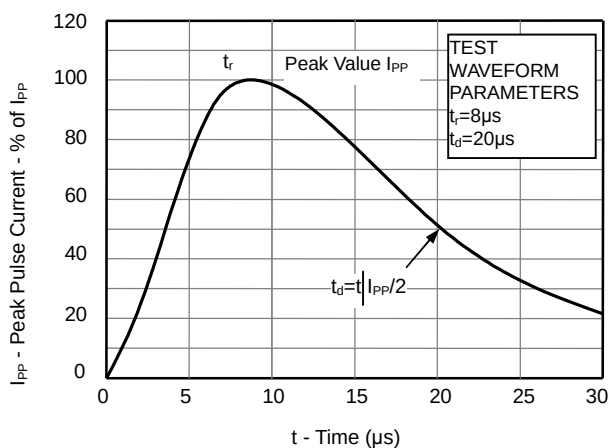
| Parameter                          | Symbol           | Value       | Unit |
|------------------------------------|------------------|-------------|------|
| Peak Pulse Power (8/20 $\mu s$ )   | Ppk              | 80          | W    |
| Peak Pulse Current (8/20 $\mu s$ ) | I <sub>PP</sub>  | 4           | A    |
| ESD per IEC 61000-4-2 (Air)        | VESD             | $\pm 25$    | kV   |
| ESD per IEC 61000-4-2 (Contact)    |                  | $\pm 20$    |      |
| Operating Temperature Range        | T <sub>J</sub>   | -55 to +125 | °C   |
| Storage Temperature Range          | T <sub>stg</sub> | -55 to +150 | °C   |

## Electrical Characteristics (TA=25°C unless otherwise specified)

| Parameter               | Symbol | Min | Typ  | Max | Unit | Test Condition                                               |
|-------------------------|--------|-----|------|-----|------|--------------------------------------------------------------|
| Reverse Working Voltage | VRWM   |     |      | 5   | V    | Any I/O pin to ground                                        |
| Breakdown Voltage       | VBR    | 6   |      | 9   | V    | IT = 1mA, any I/O pin to ground                              |
| Reverse Leakage Current | IR     |     |      | 0.2 | μA   | VRWM = 5V, any I/O pin to ground                             |
| Clamping Voltage        | VC     |     |      | 9   | V    | I <sub>PP</sub> = 1A (8 x 20μs pulse), any I/O pin to ground |
| Clamping Voltage        | VC     |     |      | 20  | V    | I <sub>PP</sub> = 4A (8 x 20μs pulse), any I/O pin to ground |
| Junction Capacitance    | CJ     |     | 0.35 |     | pF   | VR = 0V, f = 1MHz, between I/O pins                          |
| Junction Capacitance    | CJ     |     | 0.6  | 0.8 | pF   | VR = 0V, f = 1MHz, any I/O pin to ground                     |

## RATING AND CHARACTERISTIC CURVES

Fig1. 8/20μs Pulse Waveform



ig2. ESD Pulse Waveform (according to IEC 61000-4-2)

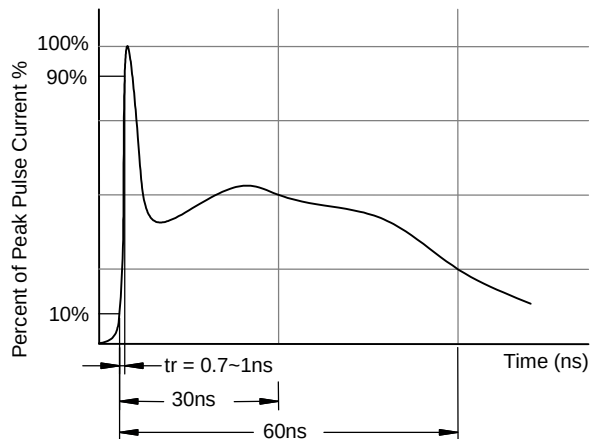
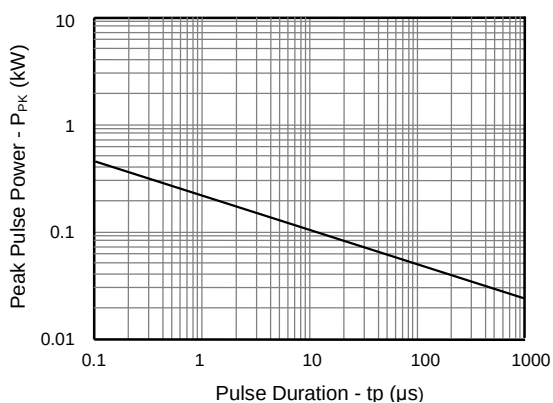
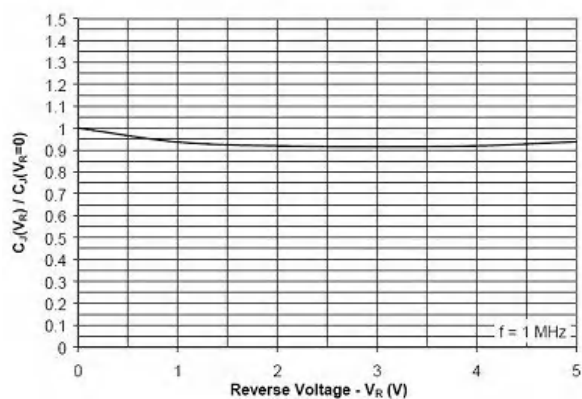


Fig3. Non - Repetitive Peak Pulse Power vs. Pulse Time

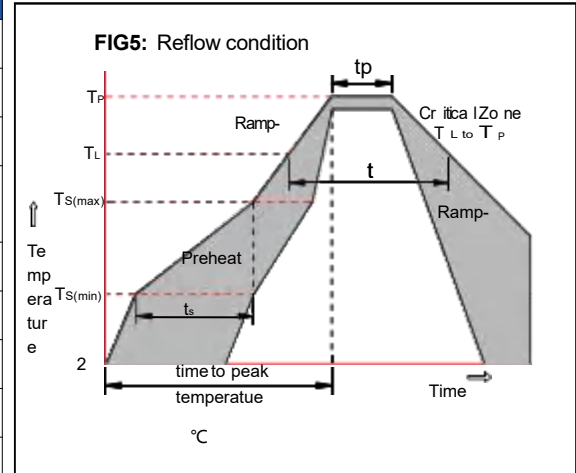


Normalized Capacitance vs. Reverse Voltage



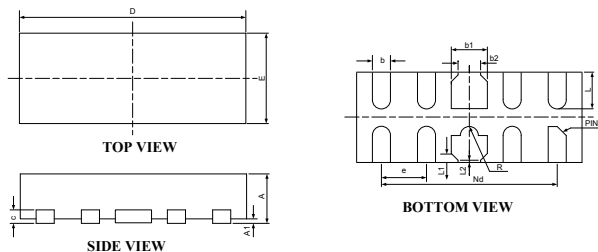
## Soldering parameters

| Reflow Condition                                        |                                   | Pb-Free assembly<br>(see as below) |
|---------------------------------------------------------|-----------------------------------|------------------------------------|
| Pre Heat                                                | -Temperature Min ( $T_{s(min)}$ ) | +150°C                             |
|                                                         | -Temperature Max( $T_{s(max)}$ )  | +200°C                             |
|                                                         | -Time (Min to Max) (ts)           | 60-180 secs.                       |
| Average ramp up rate (Liquid us Temp ( $T_L$ ) to peak) |                                   | 3°C/sec. Max                       |
| $T_{s(max)}$ to $T_L$ - Ramp-up Rate                    |                                   | 3°C/sec. Max                       |
| Reflow                                                  | -Temperature( $T_L$ )(Liquid us)  | +217°C                             |
|                                                         | -Temperature( $t_L$ )             | 60-150 secs.                       |
| Peak Temp ( $T_P$ )                                     |                                   | +260(+0/-5)°C                      |
| Time within 5°C of actual Peak Temp ( $t_P$ )           |                                   | 30 secs. Max                       |
| Ramp-down Rate                                          |                                   | 6°C/sec. Max                       |
| Time 25°C to Peak Temp ( $T_P$ )                        |                                   | 8 min. Max                         |
| Do not exceed                                           |                                   | +260°C                             |

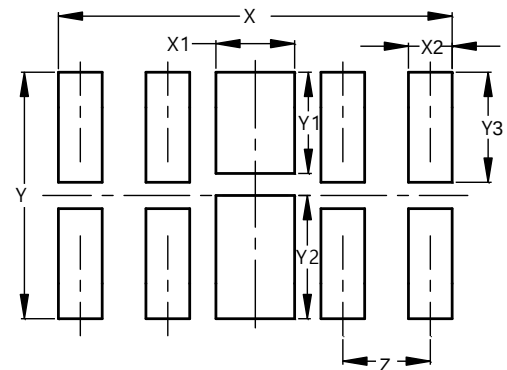


## Package Dimensions & Suggested Pad Layout

DFN2510-10L



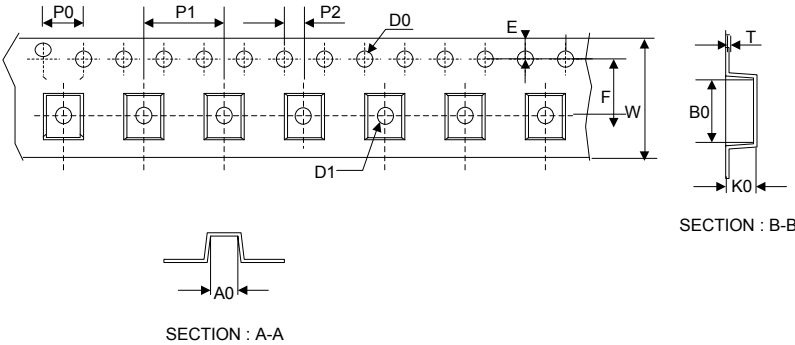
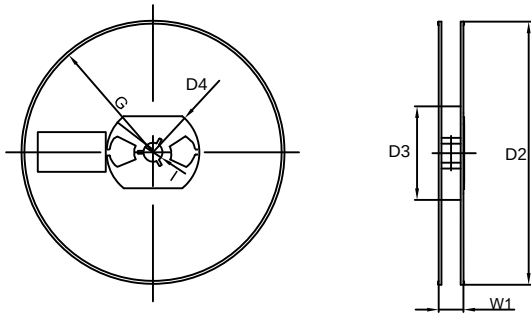
| SYM | DIMENSIONS  |      |      |          |       |       |
|-----|-------------|------|------|----------|-------|-------|
|     | MILLIMETERS |      |      | INCHES   |       |       |
|     | MIN         | NOM  | MAX  | MIN      | NOM   | MAX   |
| A   | 0.45        | 0.50 | 0.55 | 0.018    | 0.020 | 0.022 |
| A1  | 0.00        | 0.02 | 0.05 | 0.000    | 0.001 | 0.002 |
| 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 |
| b2  | 0.20        | 0.25 | 0.30 | 0.008    | 0.010 | 0.012 |
| c   | 0.10        | 0.15 | 0.20 | 0.004    | 0.006 | 0.008 |
| D   | 2.45        | 2.50 | 2.55 | 0.098    | 0.100 | 0.102 |
| e   | 0.50BSC     |      |      | 0.020BSC |       |       |
| Nd  | 2.00BSC     |      |      | 0.080BSC |       |       |
| E   | 0.95        | 1.00 | 1.05 | 0.038    | 0.040 | 0.042 |
| L   | 0.35        | 0.40 | 0.45 | 0.014    | 0.016 | 0.018 |
| L1  | 0.075REF    |      |      | 0.003REF |       |       |
| L2  | 0.050REF    |      |      | 0.002REF |       |       |
| h   | 0.08        | 0.12 | 0.15 | 0.003    | 0.005 | 0.006 |
| R   | 0.05        | 0.10 | 0.15 | 0.002    | 0.004 | 0.006 |



| Dimensions | Value<br>(in mm) |
|------------|------------------|
| Z          | 0.500            |
| X          | 2.250            |
| X1         | 0.450            |
| X2         | 0.250            |
| Y          | 1.400            |
| Y1         | 0.570            |
| Y2         | 0.700            |
| Y3         | 0.600            |

Dimensions in inches and (millimeters)

## Tape & reel specification

| Tape                                                                                |  | Symbol            | Dimension (mm) |
|-------------------------------------------------------------------------------------|--|-------------------|----------------|
|    |  | P0                | 4.00±0.20      |
|                                                                                     |  | P1                | 4.00±0.20      |
|                                                                                     |  | P2                | 1.55±0.20      |
|                                                                                     |  | D0                | 1.55±0.20      |
|                                                                                     |  | D1                | 0.65±0.20      |
|                                                                                     |  | E                 | 1.55±0.25      |
|                                                                                     |  | F                 | 3.60±0.20      |
|                                                                                     |  | W                 | 8.00±0.20      |
|                                                                                     |  | A0                | 1.65±0.20      |
|                                                                                     |  | B0                | 3.00±0.20      |
|                                                                                     |  | K0                | 1.10±0.20      |
|                                                                                     |  | T                 | 0.20±0.20      |
|                                                                                     |  | D2                | 177.0±5.0      |
|                                                                                     |  | D3                | 55Min.         |
| 7" Reel                                                                             |  | D4                | R24.6±2.0      |
|  |  | G                 | R82.0±2.0      |
|                                                                                     |  | I                 | 13.0±2.0       |
|                                                                                     |  | W1                | 10.20±3.0      |
|                                                                                     |  | Quantity: 3000PCS |                |