

## APPLICATIONS

- ▶ USB2.0,USB3.0,Ethernet
- ▶ HDMI1.4,Displayport 1.3,eSATA
- ▶ Unified Display Interface
- ▶ Digital Visual Interface
- ▶ High Speed Serial Interface

## IECCOMPATIBILITY

- ▶ IEC61000-4-2 (ESD)  $\pm 14\text{kV}$  (air),  $\pm 12\text{kV}$  (contact)
- ▶ IEC61000-4-5 (Lightning)  $4.0\text{A}(8/20\mu\text{s})$

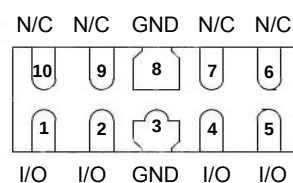
## FEATURES

- ▶ 40.0 Watts Peak Pulse Power per Line ( $t_p=8/20\mu\text{s}$ )
- ▶ Protects Four I/O lines
- ▶ Operating Voltage: 3.3V
- ▶ Ultra Low Capacitance: 0.7pF typical (I/O to GND)
- ▶ Weight: 8.0mg

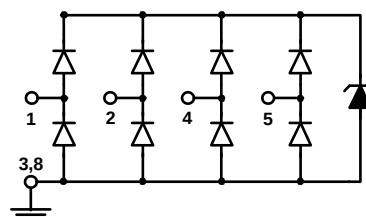
## MECHANICALCHARACTERISTICS

- ▶ DFN2510P10 PACKAGE INFORMATION
- ▶ Quantity Per Reel : 3,000pcs
- ▶ Reel Size : 7 inch
- ▶ Lead Finish : Lead Free
- ▶ Marking : 1175

## DFN-2510



## PIN CONFIGURATION



## Absolute maximum rating@25°C

| Rating                                        | Symbol | Value       | Unit |
|-----------------------------------------------|--------|-------------|------|
| Peak Pulse Power ( $t_P = 8/20\mu\text{s}$ )  | Ppp    | 40          | W    |
| Lead Solder Temperature –Maximum (10 Seconds) | TL     | 260         | °C   |
| Operating Junction Temperature Range          | TJ     | -55 to +125 | °C   |
| Storage Temperature Range                     | Tstg   | -55 to +150 | °C   |

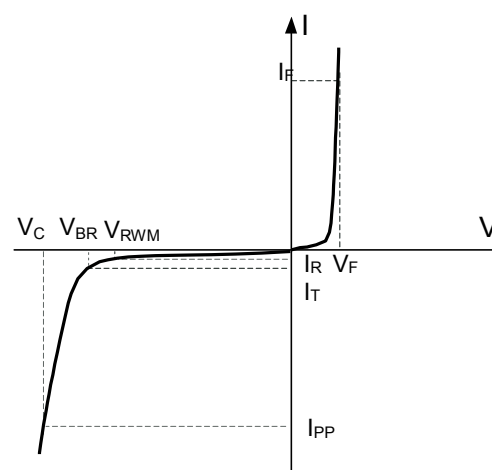
**Electrical characteristics (TA=25 °C, unless otherwise noted)**

| Parameter                      | Symbol                 | Conditions                                 | Min. | TYP. | Max. | Units    |
|--------------------------------|------------------------|--------------------------------------------|------|------|------|----------|
| Reverse stand-off voltage      | $V_{RWM}$              |                                            |      |      | 3.3  | V        |
| Reverse leakage current        | $I_R$<br>I/O to GND    | $V_{RWM}=3.3V$                             |      |      | 0.5  | uA       |
| Reveres breakdown voltage      | $V_{BR}$<br>I/O to GND | $I_T=1mA$                                  | 4.0  |      |      | V        |
| Reveres breakdown voltage      | $V_{BR}$<br>I/O to I/O | $I_T=1mA$                                  |      | 0.9  |      | V        |
| Forward Voltage                | $V_F$<br>GND to I/O    | $I_T=15.0mA$                               |      | 0.7  | 1.2  | V        |
| ESD Clamping Voltage           | $V_{clamp}$            | IEC 6100-4-2                               |      | 12.0 |      | V        |
| ESD Dynamic Turn-on Resistance | $R_{dynamic}$          | IEC 6100-4-2 +-8kV<br>I/O-GND,Contact mode |      | 0.3  |      | $\Omega$ |
| Clamping voltage               | $V_C$<br>I/O to GND    | $I_{PP}=1A(8/20us)$                        |      | 9.0  |      | V        |
|                                |                        | $I_{pp}= 4A(8/20us)$                       |      | 10.0 |      | V        |
| Junction capacitance           | $C_J$<br>I/O to GND    | $V_R=0V$ f=1MHz                            |      | 0.6  | 1.0  | pF       |
| Junction capacitance           | $C_J$<br>I/O to I/O    | $V_R=0V$ f=1MHz                            |      | 0.3  | 0.5  | pF       |

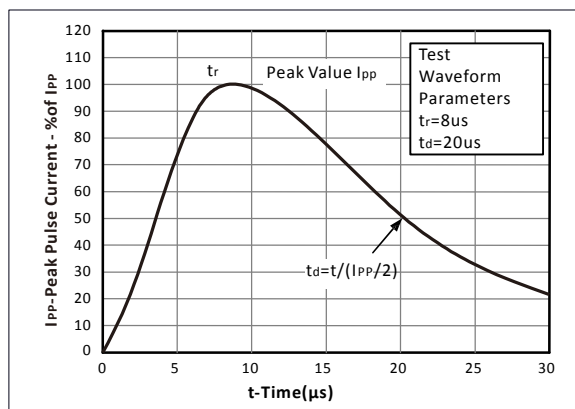
**ELECTRICAL CHARACTERISTICS**

(TA = 25°C unless otherwise noted)

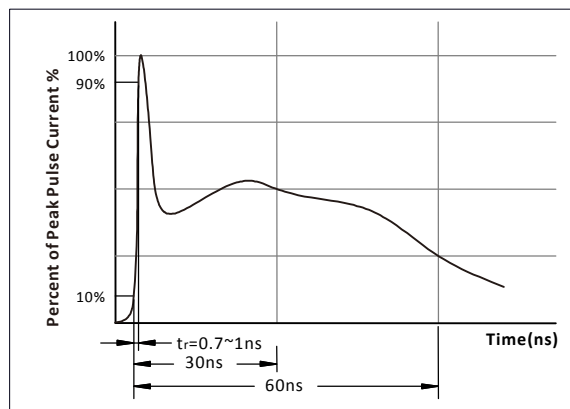
| Symbol    | Parameter                           |
|-----------|-------------------------------------|
| $V_{RWM}$ | Peak Reverse Working Voltage        |
| $I_R$     | Reverse Leakage Current @ $V_{RWM}$ |
| $V_{BR}$  | Breakdown Voltage @ $I_T$           |
| $I_T$     | Test Current                        |
| $I_{PP}$  | Maximum Reverse Peak Pulse Current  |
| $V_C$     | Clamping Voltage @ $I_{PP}$         |
| $P_{PP}$  | Peak Pulse Power                    |
| $C_J$     | Junction Capacitance                |
| $I_F$     | Forward Current                     |
| $V_F$     | Forward Voltage @ $I_F$             |


**Uni -Directional TVS**

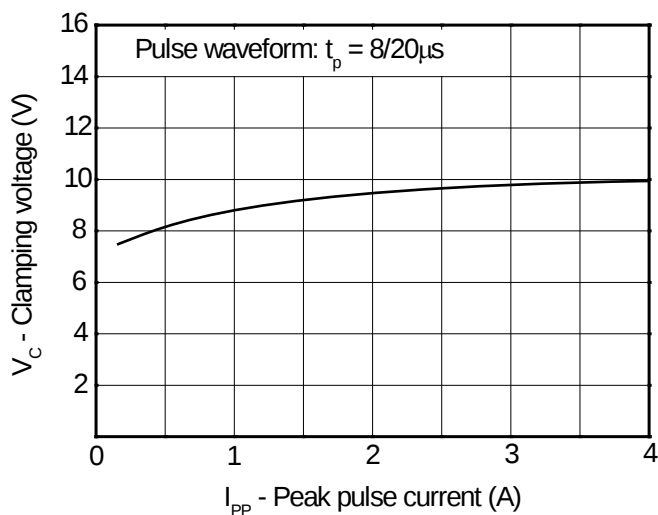
Typical characteristics ( $T_A=25^\circ\text{C}$ , unless otherwise noted)



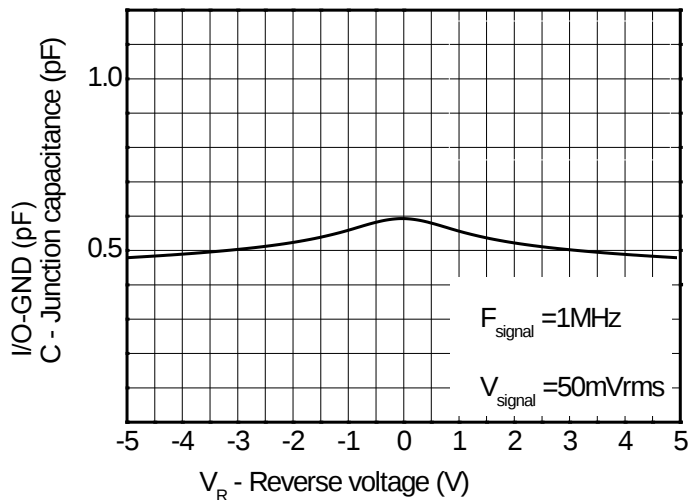
8/20 $\mu\text{s}$  Pulse Waveform



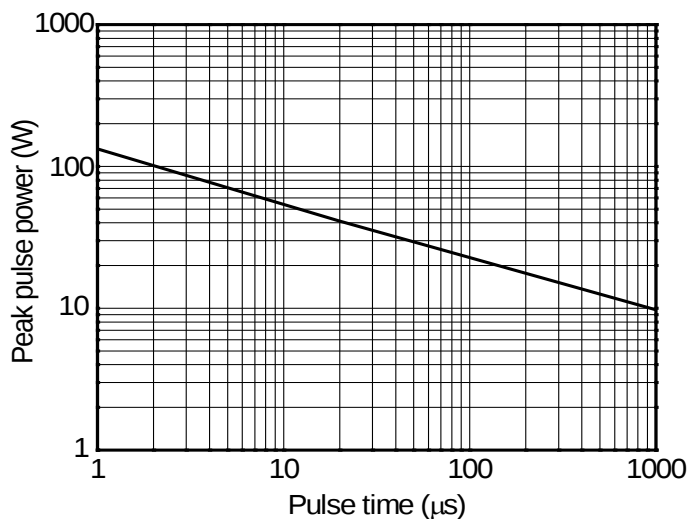
ESD Pulse Waveform (according to IEC 61000 4 2)



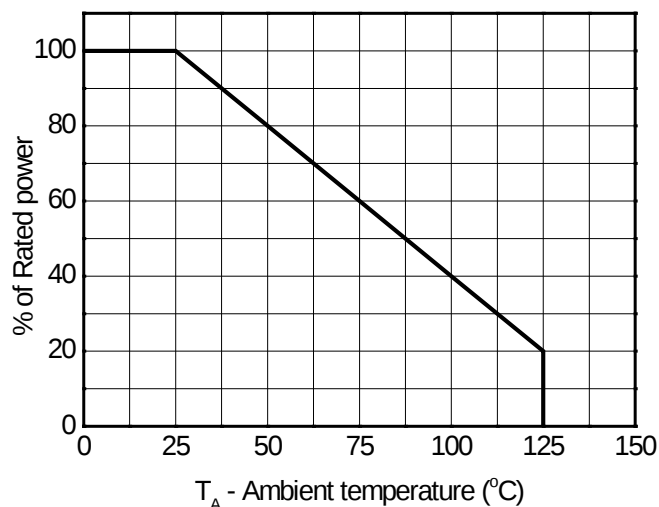
Clamping voltage vs. Peak pulse current



Capacitance vs. Reverse voltage

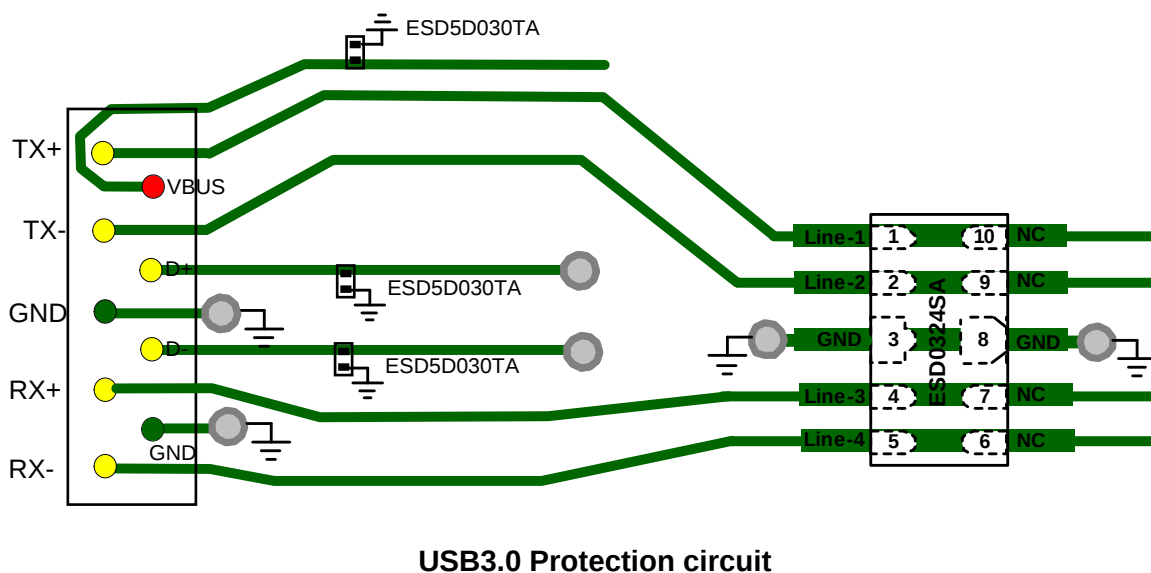
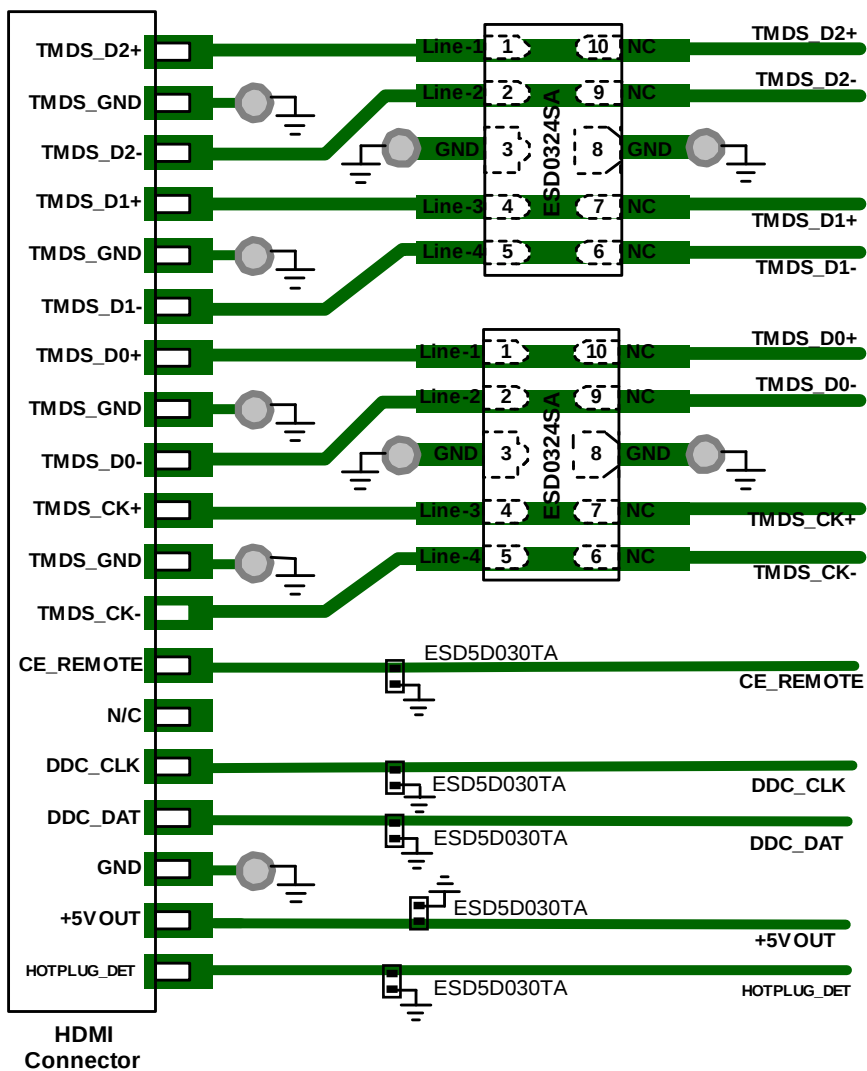


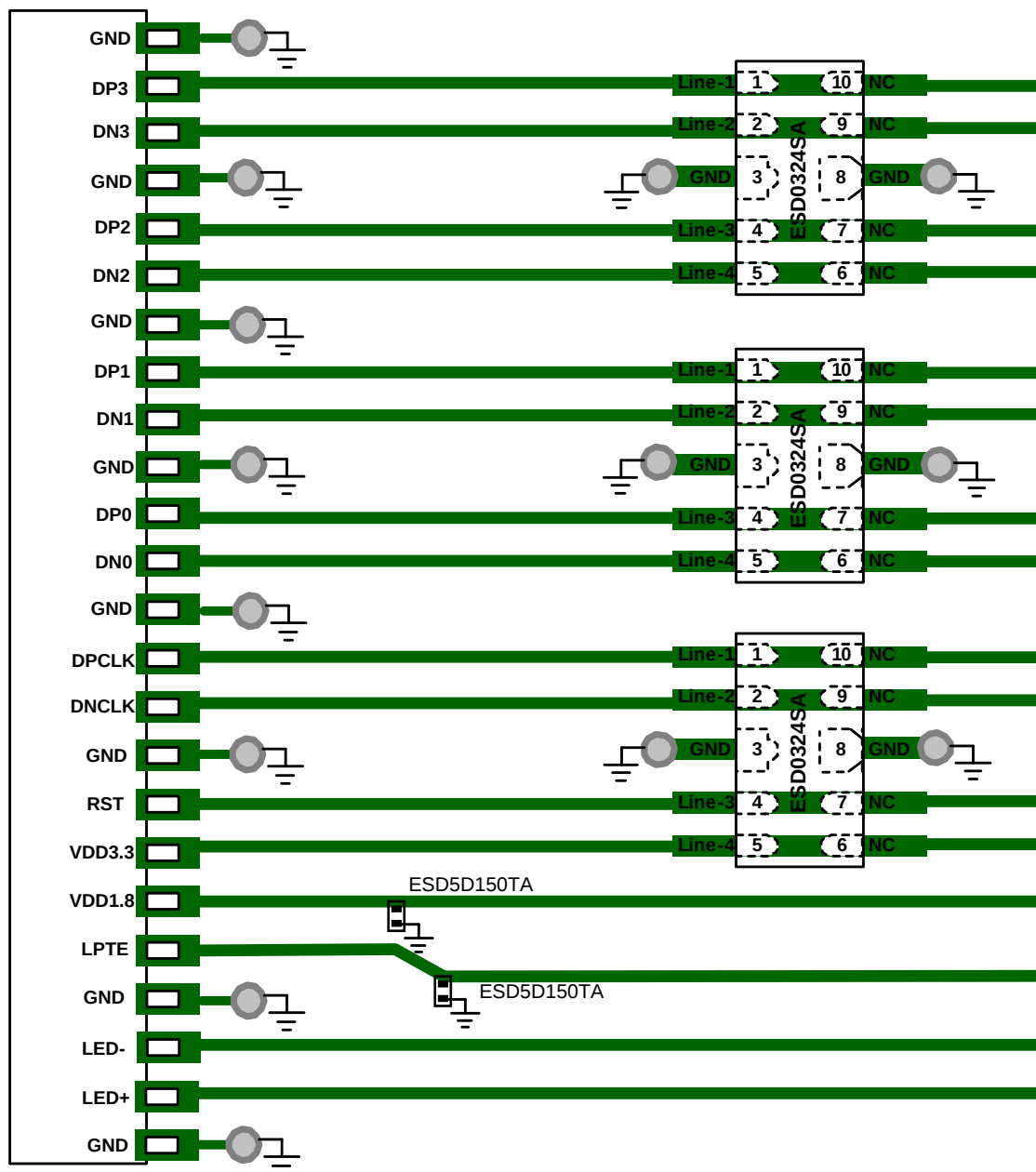
Non-repetitive peak pulse power vs. Pulse time



Power derating vs. Ambient temperature

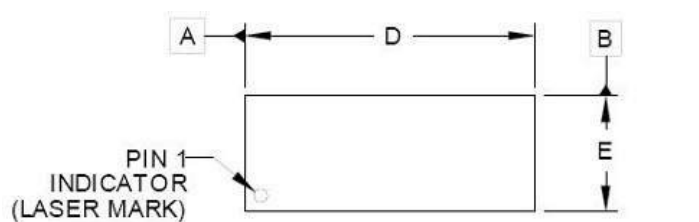
## APPLICATION INFORMATION



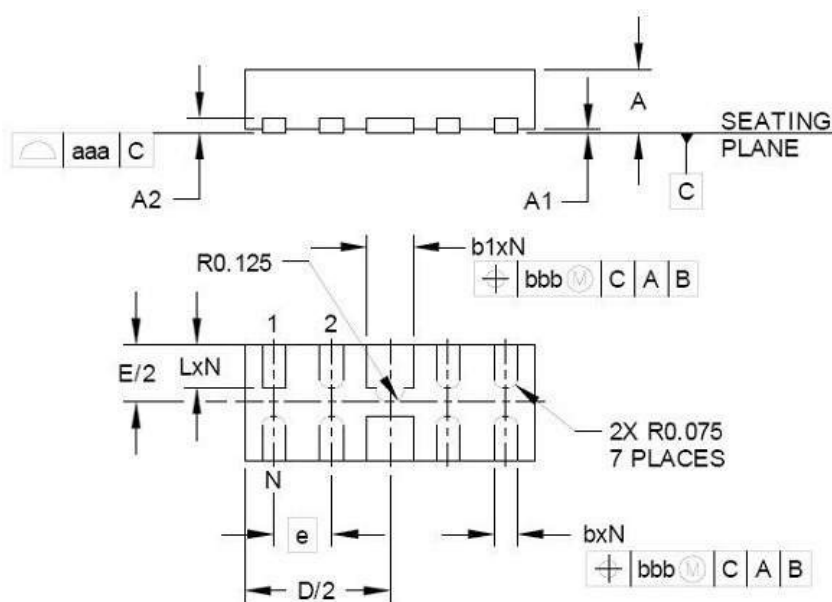


MIPI Protection circuit

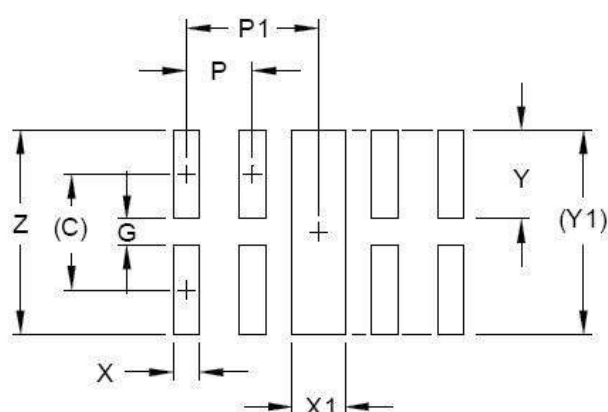
## DFN2510PACKAGEOUTLINE DIMENSIONS



| DIM | DIMENSIONS |        |      |             |        |       |
|-----|------------|--------|------|-------------|--------|-------|
|     | INCHES     |        |      | MILLIMETERS |        |       |
|     | MIN        | NOM    | MAX  | MIN         | NOM    | MAX   |
| A   | .020       | .023   | .026 | 0.50        | 0.58   | 0.65  |
| A1  | 0.00       | .001   | .002 | 0.00        | 0.03   | 0.05  |
| A2  |            | (.005) |      |             | (0.13) |       |
| b   | .006       | .008   | .010 | 0.15        | 0.20   | 0.25  |
| b1  | .014       | .016   | .018 | 0.35        | 0.40   | 0.45  |
| D   | .094       | .098   | .102 | 2.40        | 2.50   | 2.60  |
| E   | .035       | .039   | .043 | 0.90        | 1.00   | 1.10  |
| e   | .020 BSC   |        |      | 0.50 BSC    |        |       |
| L   | .012       | .015   | .017 | 0.30        | 0.38   | 0.425 |
| N   | 10         |        |      | 10          |        |       |
| aaa | .003       |        |      | 0.08        |        |       |
| bbb | .004       |        |      | 0.10        |        |       |



## \*SOLDERINGFOOTPRINT



| DIM | DIMENSIONS |             |
|-----|------------|-------------|
|     | INCHES     | MILLIMETERS |
| C   | (.034)     | (0.875)     |
| G   | .008       | 0.20        |
| P   | .020       | 0.50        |
| P1  | .039       | 1.00        |
| X   | .008       | 0.20        |
| X1  | .016       | 0.40        |
| Y   | .027       | 0.675       |
| Y1  | (.061)     | (1.55)      |
| Z   | .061       | 1.55        |