

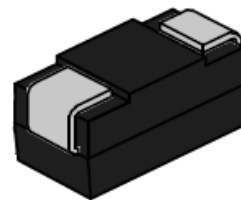


## CP1101SD/CP1301SD TSS

Rev.1

## DESCRIPTION:

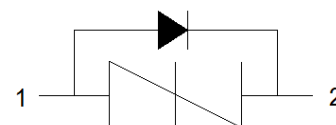
CP1101SD/CP1301SD thyristors are a type of uni-directional semiconduct component. They are designed to protect baseband equipment from damaging overvoltage transients. such as modems, telephones, line cards, answering machines, FAX machines, T1/E1, xDSL and more.



SMB

## FEATURES:

- ✧ Excellent capability of absorbing transient surge.
- ✧ Quick response to surge voltage (ns Level).
- ✧ Eliminates overvoltage caused by fast rising transients.
- ✧ Moisture sensitivity level: Level 1.
- ✧ Non degenerative.



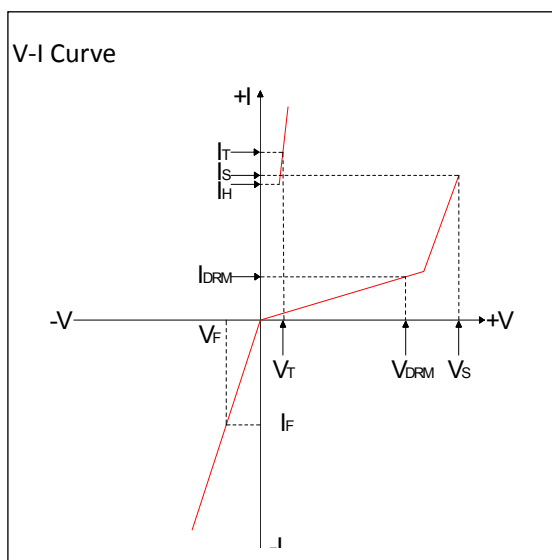
Symbol

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

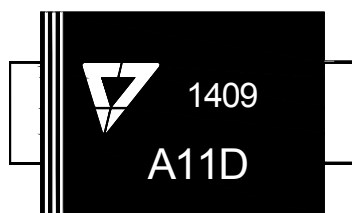
| Parameter                                        | Symbol           | Value       | Unit               |
|--------------------------------------------------|------------------|-------------|--------------------|
| Storage temperature range                        | $T_{\text{STG}}$ | -60 to +150 | $^{\circ}\text{C}$ |
| Operating junction temperature range             | $T_J$            | -40 to +125 | $^{\circ}\text{C}$ |
| Repetitive peak pulse current@8/20 $\mu\text{s}$ | $I_{\text{PP}}$  | 750         | A                  |

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

| Symbol           | Parameter              |
|------------------|------------------------|
| $V_{\text{DRM}}$ | Peak off-state voltage |
| $I_{\text{DRM}}$ | Off-state current      |
| $V_S$            | Switching voltage      |
| $I_S$            | Switching current      |
| $V_T$            | On-state voltage       |
| $I_T$            | On-state current       |
| $I_H$            | Holding current        |
| $C_O$            | Off-state capacitance  |
| $V_F$            | Forward voltage        |



## MARKING



A11D : Device Marking Code  
1409: In ninth week, 2014

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

| Part Number | $I_{\text{DRM}}@V_{\text{DRM}}$<br>PIN2-1 |     | $V_S^{①}@I_S$<br>PIN2-1 |     | $V_T@I_T$<br>PIN2-1 |     | $I_H$<br>PIN2-1 | $V_F@I_F=10\text{mA}$<br>PIN1-2 | $C_O^{②}$<br>PIN2-1 | Marking |
|-------------|-------------------------------------------|-----|-------------------------|-----|---------------------|-----|-----------------|---------------------------------|---------------------|---------|
|             | $\mu\text{A}$                             | V   | V                       | mA  | V                   | A   | mA              | V                               | pF                  |         |
|             | max                                       |     | max                     | max | max                 | max | min             | max                             | max                 |         |
| CP1101SD    | 1                                         | 95  | 130                     | 800 | 4                   | 2.2 | 50              | 1.0                             | 150                 | A11D    |
| CP1301SD    | 1                                         | 115 | 140                     | 800 | 4                   | 2.2 | 100             | 1.0                             | 150                 | A13D    |

①  $V_S$  is measured at 100KV/s

② Off-state capacitance is measured in  $V_{\text{DC}}=2\text{V}, V_{\text{RMS}}=1\text{V}, f=1\text{MHz}$

## SURGE RATINGS

| Series | $I_{\text{PP}}(\text{A})$ min |                         |                           |                            |
|--------|-------------------------------|-------------------------|---------------------------|----------------------------|
|        | $2\times 10\mu\text{s}$       | $8\times 20\mu\text{s}$ | $10\times 360\mu\text{s}$ | $10\times 1000\mu\text{s}$ |
| D      | 750                           | 750                     | 200                       | 150                        |

## ORDERING INFORMATION

|                            |                |                                     |                  |                                          |
|----------------------------|----------------|-------------------------------------|------------------|------------------------------------------|
| CP                         | 110            | 1                                   | S                | D                                        |
| Series code<br>P: SIDACtor | Median voltage |                                     | Package type:SMB | Surge ratings:8KV(10/700 $\mu\text{s}$ ) |
|                            |                | 0: Bi-direction<br>1: Uni-direction |                  |                                          |

## SOLDERING PARAMETERS

| Reflow Condition                                       |                                   | Pb-Free assembly<br>(see FIG.2) |
|--------------------------------------------------------|-----------------------------------|---------------------------------|
| 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                          |
|                                                        | -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                          |

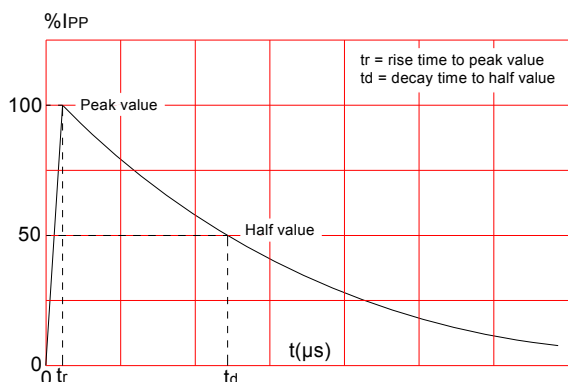
FIG.1:  $t_r \times t_d$  pulse waveform

FIG.2: Reflow condition

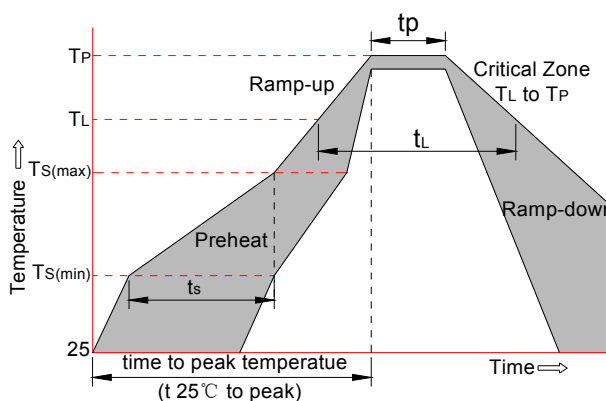
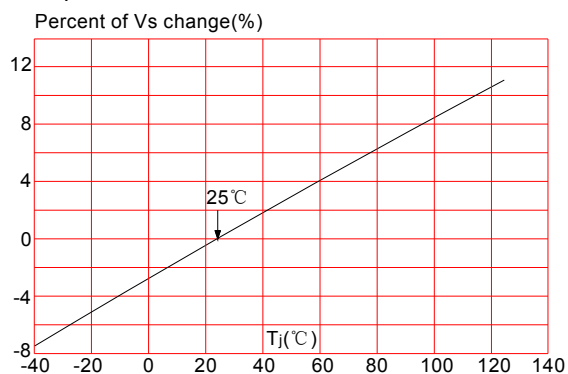
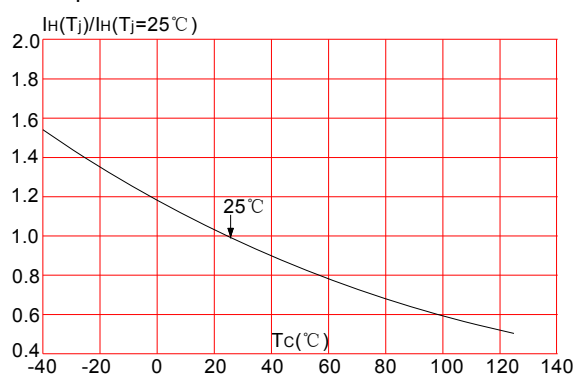
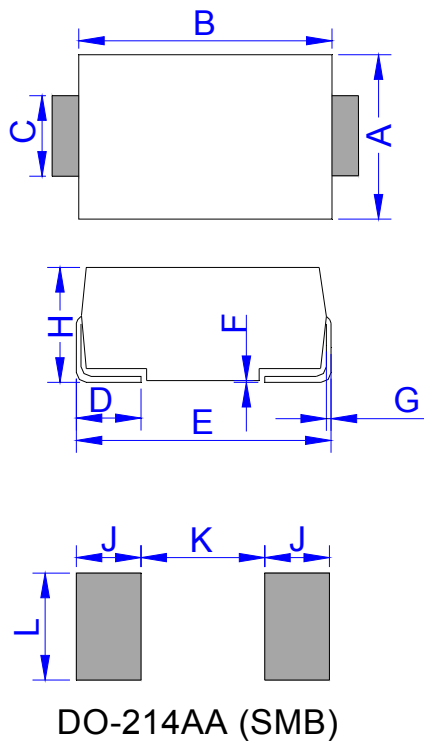
FIG.3: Normalized  $V_s$  change vs. junction temperature

FIG.4: Normalized DC holding current vs. case temperature

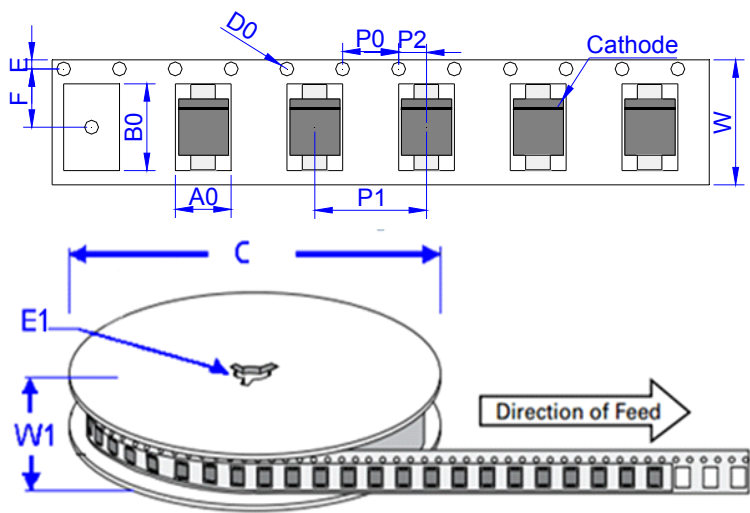


PACKAGE MECHANICAL DATA



| Ref. | Dimensions  |       |        |       |
|------|-------------|-------|--------|-------|
|      | Millimeters |       | Inches |       |
|      | Min.        | Max.  | Min.   | Max.  |
| A    | 3.30        | 3.94  | 0.130  | 0.155 |
| B    | 4.30        | 4.80  | 0.169  | 0.189 |
| C    | 1.90        | 2.20  | 0.075  | 0.087 |
| D    | 0.95        | 1.52  | 0.037  | 0.060 |
| E    | 5.20        | 5.60  | 0.205  | 0.220 |
| F    | 0.051       | 0.203 | 0.002  | 0.008 |
| G    | 0.15        | 0.31  | 0.006  | 0.012 |
| H    | 2.10        | 2.40  | 0.083  | 0.094 |
| J    | 2.20        |       | 0.087  |       |
| K    |             | 2.60  |        | 0.102 |
| L    | 2.30        |       | 0.091  |       |

TAPE AND REEL SPECIFICATION-SMB



| Ref. | Dimensions  |                |
|------|-------------|----------------|
|      | Millimeters | Inches         |
| A0   | 3.76 ± 0.3  | 0.148 ± 0.012  |
| B0   | 5.69± 0.3   | 0.224 ± 0.012  |
| C    | 330.0       | 13.0           |
| D0   | 1.55 ± 0.1  | 0.061 ± 0.004  |
| E    | 1.75 ± 0.2  | 0.069 ± 0.008  |
| E1   | 13.3 ± 0.3  | 0.524± 0.012   |
| F    | 5.5 ± 0.2   | 0.217 ± 0.008  |
| P0   | 4.00 ± 0.2  | 0.157 ± 0.008  |
| P1   | 8.00 ± 0.2  | 0.3145 ± 0.008 |
| P2   | 2.00 ± 0.2  | 0.079 ± 0.008  |
| W    | 12.0± 0.2   | 0.472 ± 0.008  |
| W1   | 15.7 ± 2.0  | 0.618 ± 0.079  |

| OUTLINE | UNIT WEIGHT<br>(g/PCS) typ. | REEL<br>(PCS) | PER CARTON<br>(PCS) | REEL<br>DIAMETERS<br>(mm) |
|---------|-----------------------------|---------------|---------------------|---------------------------|
| TAPING  | 0.098                       | 3,000         | 48,000              | 330                       |

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