

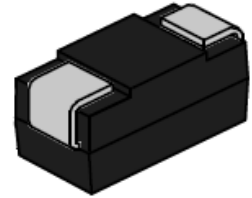


CPxxxxSB Series TSS

Rev.4.3

DESCRIPTION:

CPxxxxSB series thyristors are a type of semiconductor 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:

- ✧ Lower capacitance.
- ✧ Low profile package.
- ✧ Low on-state voltage.
- ✧ 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.
- ✧ UL 497B item recognized. (File No.: E480698).
- ✧ IEC61000-4-2 (ESD) $\pm 30\text{kV}$ (air), $\pm 30\text{kV}$ (contact).
- ✧ Non degenerative.



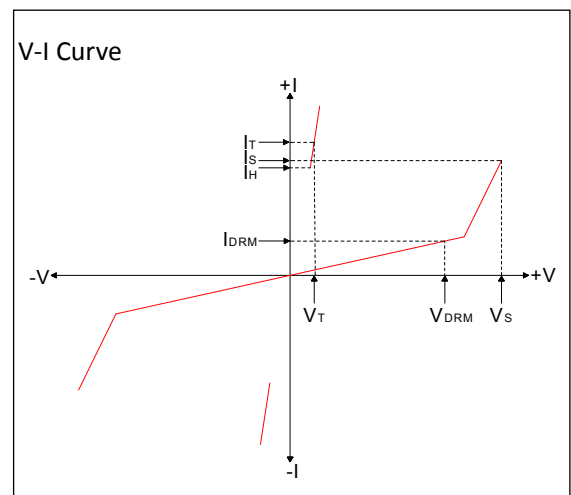
Symbol

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

| Parameter | Symbol | Value | Unit |
|---|-----------|-------------|------------------|
| Storage temperature range | T_{STG} | -60 to +150 | $^\circ\text{C}$ |
| Operating junction temperature range | T_J | -40 to +125 | $^\circ\text{C}$ |
| Repetitive peak pulse current@10/1000 μs | I_{PP} | 80 | A |

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

| Symbol | Parameter |
|-----------|------------------------|
| V_{DRM} | Peak off-state voltage |
| I_{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 |



MARKING



CP22B: Device Marking Code
2009: In ninth week, 2020

ELECTRICAL CHARACTERISTICS (T_A=25°C, continued)

| Part Number | I _{DRM} @V _{DRM} | | V _S ^① @I _S | | V _T @I _T | | I _H | Co ^② | Marking |
|-------------|------------------------------------|-----|---|-----|--------------------------------|-----|----------------|-----------------|---------|
| | μA | V | V | mA | V | A | mA | pF | |
| | max | | max | max | max | max | min | max | |
| CP0220SB | 1 | 18 | 30 | 800 | 4 | 2.2 | 30 | 50 | CP22B |
| CP0300SB | 1 | 25 | 40 | 800 | 4 | 2.2 | 30 | 50 | CP03B |
| CP0640SB | 1 | 58 | 77 | 800 | 4 | 2.2 | 120 | 40 | CP06B |
| CP0720SB | 1 | 66 | 87 | 800 | 4 | 2.2 | 120 | 40 | CP07B |
| CP0900SB | 1 | 75 | 98 | 800 | 4 | 2.2 | 120 | 40 | CP09B |
| CP1100SB | 1 | 90 | 130 | 800 | 4 | 2.2 | 120 | 35 | CP11B |
| CP1300SB | 1 | 120 | 160 | 800 | 4 | 2.2 | 120 | 35 | CP13B |
| CP1500SB | 1 | 140 | 180 | 800 | 4 | 2.2 | 120 | 35 | CP15B |
| CP1800SB | 1 | 170 | 220 | 800 | 4 | 2.2 | 120 | 35 | CP18B |
| CP2300SB | 1 | 190 | 260 | 800 | 4 | 2.2 | 120 | 30 | CP23B |
| CP2600SB | 1 | 220 | 300 | 800 | 4 | 2.2 | 120 | 30 | CP26B |
| CP3100SB | 1 | 275 | 350 | 800 | 4 | 2.2 | 120 | 25 | CP31B |
| CP3500SB | 1 | 320 | 400 | 800 | 4 | 2.2 | 120 | 25 | CP35B |
| CP3800SB | 1 | 340 | 450 | 800 | 4 | 2.2 | 120 | 25 | CP38B |

① V_S is measured at 100kV/s

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

SURGE RATINGS

| Series | I _{PP} (A) min | | | |
|--------|-------------------------|--------|----------|-----------|
| | 2/10μs | 8/20μs | 10/360μs | 10/1000μs |
| B | 250 | 250 | 125 | 80 |

ORDERING INFORMATION

| | | | | |
|--------------------------|----------------|------------------|--------------|-----------------------------|
| CP | 022 | 0 | S | B |
| Low capacitance sidactor | Median Voltage | 0:Bi-directional | Package type | Surge Ratings:4kV(10/700μs) |

SOLDERING PARAMETERS

| | | |
|--|-----------------------------------|---------------------------------|
| Reflow Condition | | Pb-Free assembly (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) | | 30secs. 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: tr × td pulse waveform

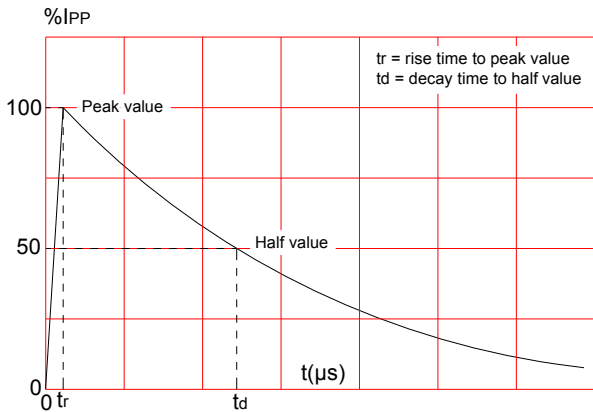


FIG.2: Reflow condition

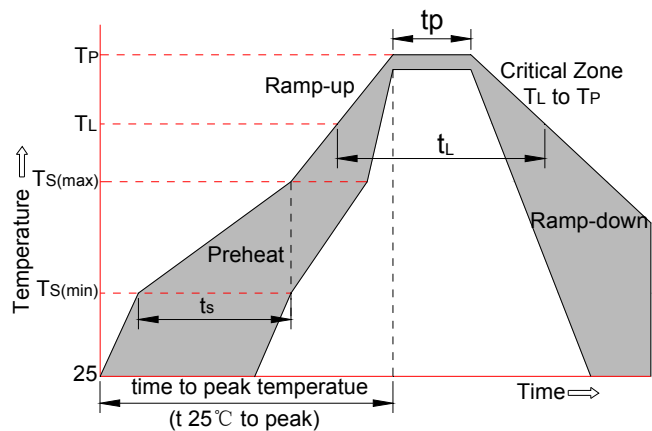


FIG.3: Normalized Vs change vs. junction temperature

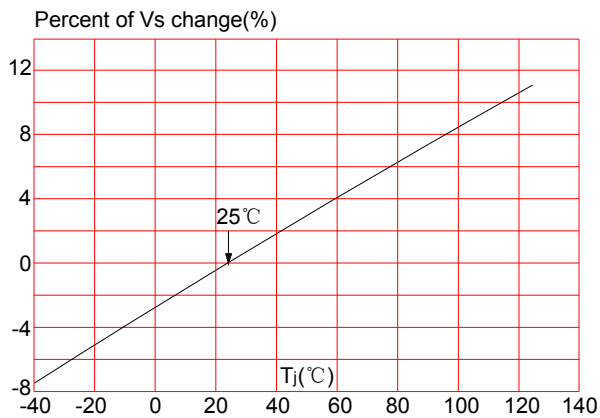
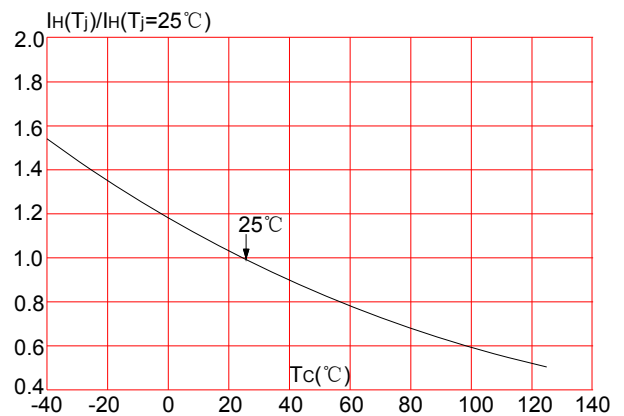
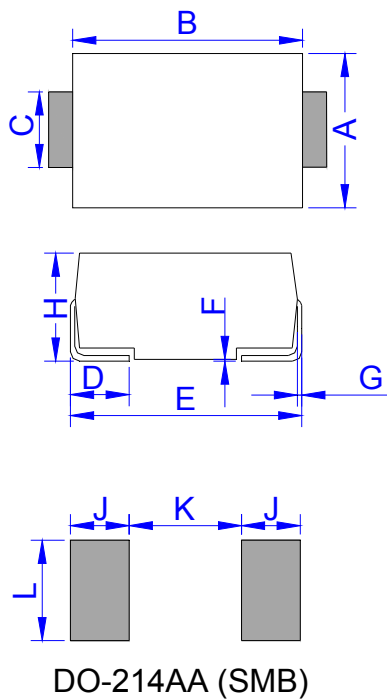


FIG.4: Normalized DC holding current vs. case temperature

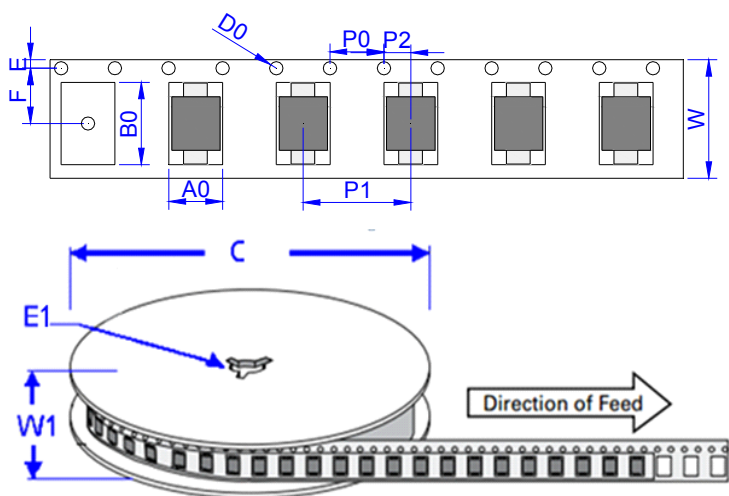


PACKAGE MECHANICAL DATA



| 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 |

| PART No. | UNIT WEIGHT (g/PCS) typ. | REEL (PCS) | PER CARTON (PCS) | DESCRIPTION |
|----------|-----------------------------|---------------|---------------------|-------------------|
| CPxxxxSB | 0.098 | 3,000 | 48,000 | 13 inch reel pack |

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