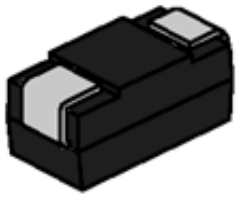
## P0220A TSS

Rev.1.3

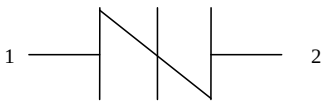
### DESCRIPTION:

RoHS

P0220A thyristors are a type of semiconductor component. This device has been especially designed to protect for low voltage or signal line, as well as power line communication circuit interface, against transient over-voltage.



SMA




Symbol

### 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.
- ✧ IEC61000-4-2 (ESD) ±30kV (air), ±30kV (contact).
- ✧ Non degenerative.

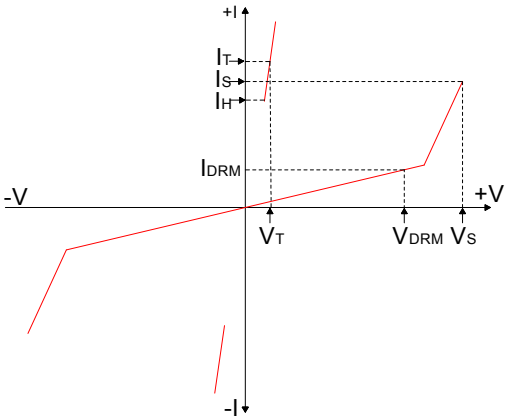
### ABSOLUTE MAXIMUM RATINGS ($T_A$=25ºC, RH=45%-75%, unless otherwise noted)

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Storage temperature range | $T_{stg}$ | -60 to +150 | ℃ |
| Operating junction temperature range | $T_j$ | -40 to +125 | ℃ |
| Repetitive peak pulse current@10/1000μs | $I_{PP}$ | 80 | A |

### ELECTRICAL CHARACTERISTICS ($T_A$=25℃)

| 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 |

**V-I Curve**



## ELECTRICAL CHARACTERISTICS ($T_A$=25℃, continued)

| Part Number | $I_{DRM}$@$V_{DRM}$ | | $V_S$①@$I_S$ | | $V_T$@$I_T$ | | $I_H$ | $C_O$② | Marking |
|---|---|---|---|---|---|---|---|---|---|
| | μA | V | V | mA | V | A | mA | pF | |
| | max | | max | max | max | max | max | max | |
| P0220A | 5 | 22 | 30 | 800 | 4 | 2.2 | 50 | 100 | P250B |

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 | 10/700μs | 10/1000μs |
| A | 250 | 250 | 100 | 80 |

## SOLDERING PARAMETERS

| Reflow Condition | | Pb-Free assembly (see FIG.2) |
|---|---|---|
| Pre Heat | -Temperature Min ($T_{s(min)}$) | +150℃ |
| | -Temperature Max($T_{s(max)}$) | +200℃ |
| | -Time (Min to Max) (ts) | 60-180 secs. |
| Average ramp up rate (Liquid us Temp ($T_L$) to peak) | | 3℃/sec. Max |
| $T_{s(max)}$ to $T_L$ - Ramp-up Rate | | 3℃/sec. Max |
| Reflow | -Temperature($T_L$) (Liquid us) | +217℃ |
| | -Temperature($t_L$) | 60-150 secs. |
| Peak Temp ($T_p$) | | +260(+0/-5)℃ |
| Time within 5℃ of actual Peak Temp ($t_p$) | | 30 secs. Max |
| Ramp-down Rate | | 6℃/sec. Max |
| Time 25℃ to Peak Temp ($T_P$) | | 8 min. Max |
| Do not exceed | | +260℃ |

**FIG.1:** tr × td pulse waveform

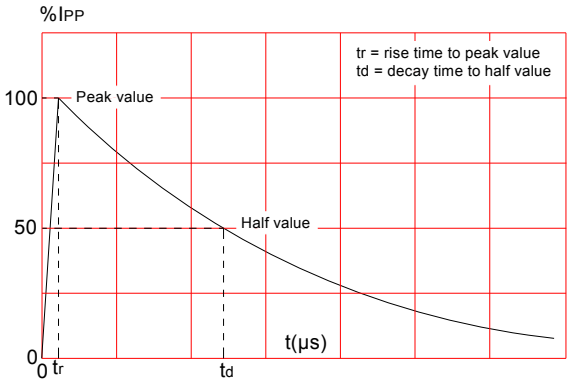



**FIG.2:** Reflow condition

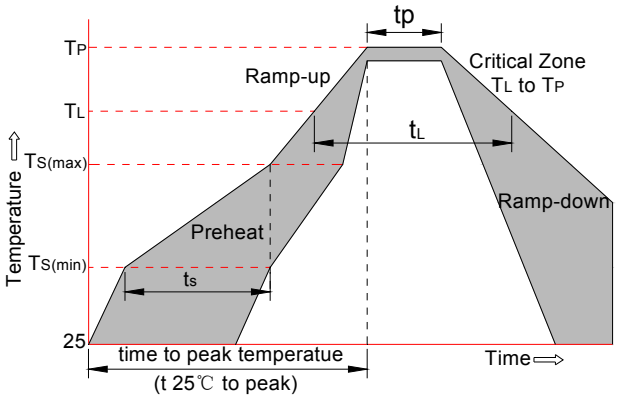



**FIG.3:** Normalized Vs change vs. junction temperature

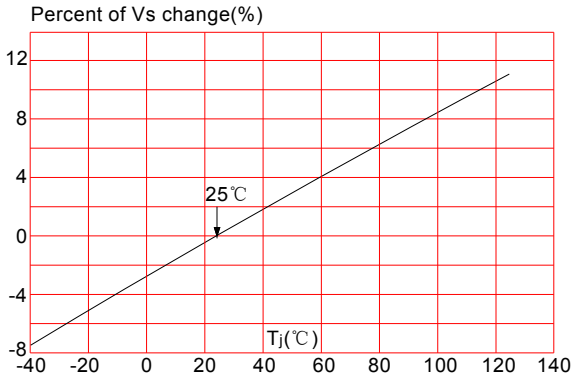
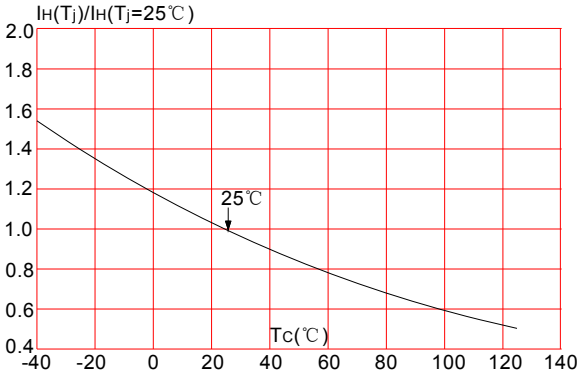
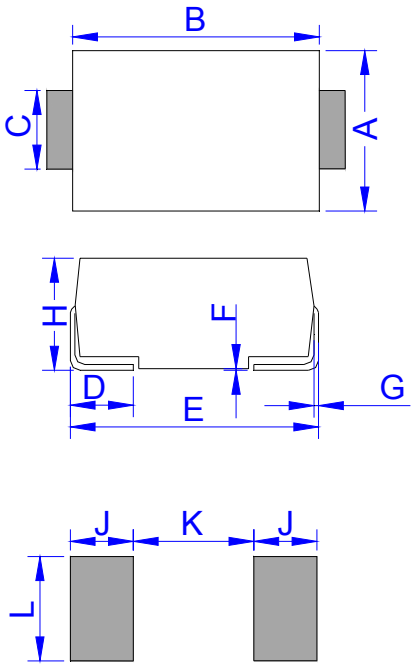



**FIG.4:** Normalized DC holding current vs. case temperature



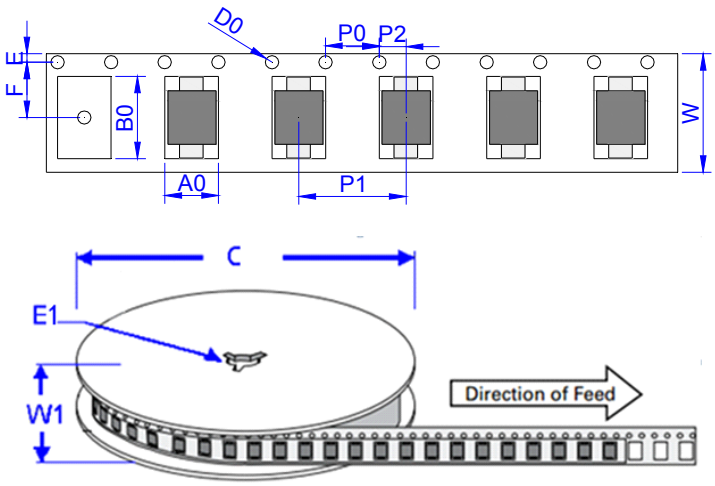

## PACKAGE MECHANICAL DATA




DO-214AC (SMA)

| Ref. | Dimensions | | | |
|---|---|---|---|---|
| | Millimeters | | Inches | |
| | Min. | Max. | Min. | Max. |
| A | 2.60 | 3.00 | 0.102 | 0.118 |
| B | 4.15 | 4.65 | 0.163 | 0.183 |
| C | 1.25 | 1.65 | 0.049 | 0.065 |
| D | 0.95 | 1.52 | 0.037 | 0.060 |
| E | 4.90 | 5.30 | 0.193 | 0.209 |
| F | 0.051 | 0.203 | 0.002 | 0.008 |
| G | 0.15 | 0.31 | 0.006 | 0.012 |
| H | 2.00 | 2.44 | 0.079 | 0.096 |
| J | 2.00 | | 0.079 | |
| K | | 2.30 | | 0.091 |
| L | 1.80 | | 0.071 | |

## TAPE AND REEL SPECIFICATION-SMA




| Ref. | Dimensions | |
|---|---|---|
| | Millimeters | Inches |
| A0 | 2.79 ± 0.3 | 0.110 ± 0.012 |
| B0 | 5.33 ± 0.3 | 0.210 ± 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 | 4.00 ± 0.2 | 0.157 ± 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 |
|---|---|---|---|---|
| P0220A | 0.066 | 7,500 | 120,000 | 13 inch reel pack |