

DUAL ASYMETRICAL TRANSIENT SUPPRESSOR

PRODUCT PREVIEW

DESCRIPTION

This Thyristor Surge Suppressor device has been especially designed to protect subscriber line cards against overvoltage. Two diodes clamp positive overloads while negative surges are suppressed by two protection thyristors.

Particular attention has been given to the internal wire bonding. The "4-point" configuration ensures a reliable protection, eliminating overvoltages introduced by the parasitic inductances of the wiring (Ldi/dt), especially for very fast transient overvoltages.

IMPORTANT: For the most current data, consult MICROSEMI's website: <http://www.microsemi.com>

KEY FEATURES

- DUAL ASYMETRICAL TRANSIENT SUPPRESSOR
- PEAK PULSE CURRENT:
 $I_{pp}=40A, 10/1000\mu s$
- HOLDING CURRENT: 150mA min.
- BREAKDOWN VOLTAGE:
TCP058A: 58 V
TCP065A: 65 V
TCP072A: 60 V
TCP082A: 70 V
TCP080A: 80 V
TCP120A: 120 V
- LOW DYNAMIC CHARACTERISTICS
- STAND CCITT K20 AND LSSGR

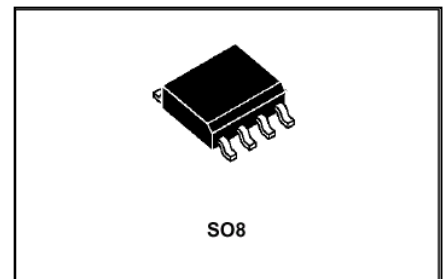
COMPLIES WITH THE FOLLOWING STANDARDS:

| | | |
|----------------|-----------------|-----------|
| CCITT K20: | 10/700 μs | 1 kV |
| | 5/310 μs | 38 A |
| VDE 0433: | 10/700 μs | 2 kV |
| | 5/310 μs | 50 A |
| VDE 0878: | 1.2/50 μs | 1.5 kV |
| | 1/20 μs | 40 A |
| I3124: | 0.5/700 μs | 1 Kv |
| | 0.2/310 μs | 38 A |
| FCC part 68: | 02/10 μs | 2.5 kv |
| | 02/10 μs | 125 A (*) |
| BELLCORE | | |
| TR-NWT-001089: | 02/10 μs | 2.5 kv |
| | 02/10 μs | 125 A (*) |
| | 10/1000 μs | 1 kV |
| | 10/1000 μs | 40 A (*) |

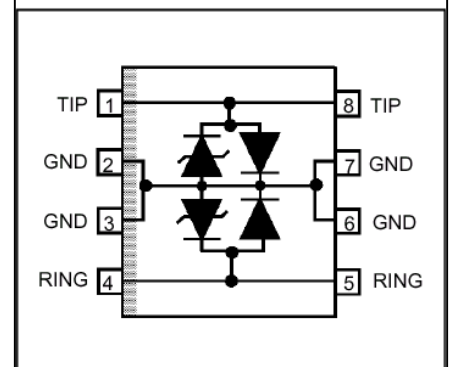
(*) with series resistors or PTC.

UL94V-0 TCPxx packages comply with requirements of UL94V-0

APPLICATIONS/BENEFITS



SCHEMATIC DIAGRAM



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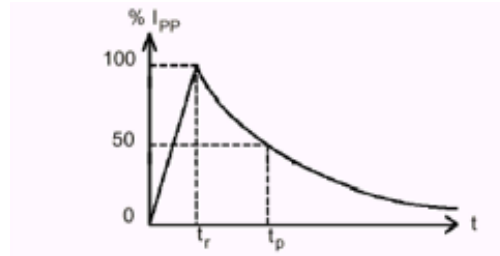
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ABSOLUTE MAXIMUM RATINGS (T_{amb} = 25°C)

| Symbol | Parameter | Value | Unit |
|------------------|--|--------------|------|
| I _{PP} | Peak pulse current (see note 1) | 10/1000 μs | 40 |
| | | 5/310 μs | 50 |
| | | 2/10 μs | 125 |
| I _{TSM} | Non repetitive surge peak on-state current F = 50 Hz | t = 300 ms | 10 |
| | | t = 1 s | 50 |
| | | t = 5 s | 1 |
| I _{TSM} | F=50Hz, 60x1s, 2mn between pulse | 1 | A |
| T _{stg} | Storage temperature range | -55 to + 150 | °C |
| T _j | Maximum junction temperature | 150 | |
| T _L | Maximum lead temperature for soldering during 10s | 260 | °C |

Note 1: Pulse waveform:

10/1000 μs tr = 10 μs tp = 1000 μs
 5/310 μs tr = 5 μs tp = 310 μs
 2/10 μs tr = 2 μs tp = 10 μs

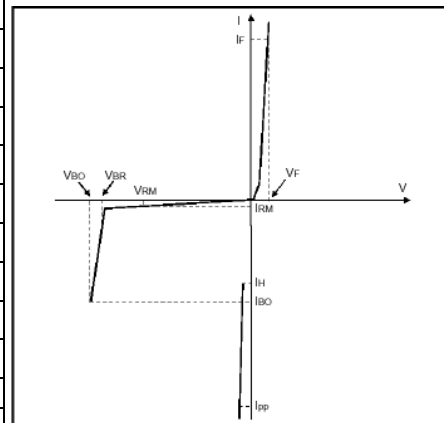


THERMAL RESISTANCES

| Symbol | Parameter | Value | Unit |
|----------------------|---------------------|-------|------|
| R _{th(j-a)} | Junction to ambient | 170 | °C/W |

ELECTRICAL CHARACTERISTICS (T_{amb}= 25°C)

| Symbol | Parameter |
|-----------------|--------------------------------------|
| V _{RM} | Stand-off voltage |
| I _{RM} | Leakage current at stand-off voltage |
| V _{BR} | Breakdown voltage |
| V _{BO} | Breakover voltage |
| I _H | Holding current |
| V _F | Forward voltage drop |
| V _{FP} | Peak forward voltage |
| I _{BO} | Breakover current |
| I _{PP} | Peak pulse current |
| C | Capacitance |
| αT | Temperature coefficient |



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1 - PARAMETERS RELATED TO DIODE LINE / GND

| Symbol | Test Conditions | Min | Typ | Max | Unit |
|--------|--------------------------|-----|-----|-----|------|
| V_F | $I_F=1A$ $t_p=100 \mu s$ | | | 2 | V |

2 - PARAMETERS RELATED TO PROTECTION THYRISTOR

| Types | I_{RM} @ V_{RM} | | I_R @ V_{BR} | | V_{BO} | I_{BO} | | I_H | C |
|---------|---------------------|-----|------------------|-----|----------|----------|-----|-------|-----|
| | max | | min | | max | min | max | min | max |
| | μA | V | mA | V | V | V | mA | mA | pF |
| TCP058A | 10 | 56 | 1 | 58 | 80 | 100 | 400 | 150 | 100 |
| TCP065A | 10 | 63 | 1 | 65 | 85 | 100 | 400 | 150 | 100 |
| TCP072A | 10 | 56 | 1 | 60 | 72 | 100 | 400 | 150 | 100 |
| TCP082A | 10 | 66 | 1 | 70 | 82 | 100 | 400 | 150 | 100 |
| TCP080A | 10 | 70 | 1 | 80 | 120 | 100 | 400 | 150 | 100 |
| TCP120A | 10 | 105 | 1 | 120 | 180 | 100 | 400 | 150 | 100 |



TCP058A thru TCP120A

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NOTES