

**TRIPOLAR PROTECTION FOR ISDN INTERFACES**

**PRODUCT PREVIEW**

**DESCRIPTION**

This Thyristor Surge Suppressor dedicated devices for SLIC interface and high speed data telecom line protection. Equivalent to a Tripolar TSPD with low capacitance.

These devices provide :

- low capacitance from lines to ground, allowing high speed transmission without signal attenuation.
- good capacitance balance between lines in order to ensure longitudinal balance.
- fixed breakdown voltage in both common and differential modes.
- the same surge current capability in both common and differential modes.
- A 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.

**KEY FEATURES**

- BIDIRECTIONAL TRIPLE CROWBAR PROTECTION
- PEAK PULSE CURRENT:  
 $I_{PP} = 30 \text{ A}, 10/1000 \mu\text{s}$
- BREAKDOWN VOLTAGE:  
TCP072E: 60 V  
TCP080E: 80 V  
TCP082E: 70 V  
TCP7120E: 120 V
- AVAILABLE IN SO8 PACKAGES
- LOW DYNAMIC BREAKOVER VOLTAGE:  
TCP072E: 80 V  
TCP080E: 150 V  
TCP082E: 90 V  
TCP120E: 200 V

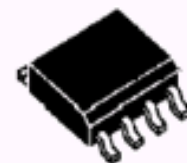
**IMPORTANT:** For the most current data, consult MICROSEMI's website: <http://www.microsemi.com>

**APPLICATIONS/BENEFITS**

**COMPLIES WITH THE FOLLOWING STANDARDS:**

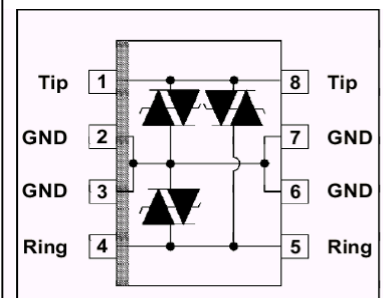
CCITT K17 - K20	10/700 $\mu\text{s}$	1.5 KV
	5/310 $\mu\text{s}$	38 A
VDE 0433	10/700 $\mu\text{s}$	2 KV
	5/310 $\mu\text{s}$	50 A
VDE 0878	1.2/50 $\mu\text{s}$	1.5 KV
	1/20 $\mu\text{s}$	40 A
CNET	0.5/700 $\mu\text{s}$	1.5 KV
	0.2/310 $\mu\text{s}$	38 A

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



SO8

**SCHEMATIC DIAGRAM**



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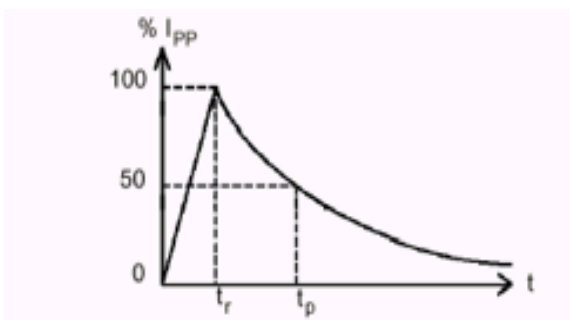
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**ELECTRICAL PARAMETERS @ 25°C (unless otherwise specified)**

Symbol	Parameter	Value	Unit
$I_{PP}$	Peak pulse current (see note 1)	10/1000 $\mu$ s	30
		5/320 $\mu$ s	40
		2/10 $\mu$ s	90
$I_{TSM}$	Non repetitive surge peak on-state current (F = 50 Hz).	$t_p = 10$ ms	8
		$t = 1$ s	3.5
$T_{stg}$	Storage temperature range	-55 to + 150	$^{\circ}$ C
$T_j$	Maximum junction temperature	150	$^{\circ}$ C
$T_L$	Maximum lead temperature for soldering during 10s	260	$^{\circ}$ C

**Note 1 : Pulse waveform :**

10/1000 $\mu$ s     $t_r=10\mu$ s     $t_p=1000\mu$ s  
 5/310 $\mu$ s     $t_r=5\mu$ s     $t_p=310\mu$ s  
 2/10 $\mu$ s     $t_r=2\mu$ s     $t_p=10\mu$ s



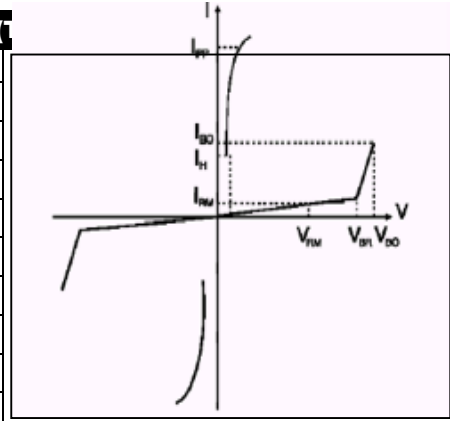
**THERMAL RESISTANCES**

Symbol	Parameter	Value	Unit
$R_{th(j-a)}$	Junction to ambient	SO 8	$^{\circ}$ C/W

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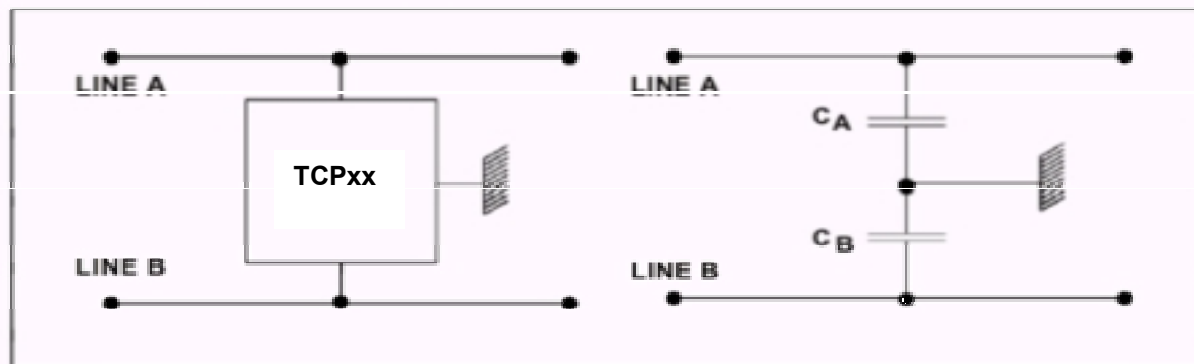
ELECTRICAL CHARACTERISTICS (T	
Symbol	Parameter
$V_{RM}$	Stand-off voltage
$I_{RM}$	Leakage current
$V_{BR}$	Breakdown voltage
$V_{BO}$	Breakover voltage
$I_H$	Holding current
$I_{BO}$	Breakover current
$I_{PP}$	Peak pulse current
$V_F$	Forward Voltage Drop
C	Capacitance



Types	$I_{RM}$ @ $V_{RM}$		$I_R$ @ $V_{BR}$		$V_{BO}$	$V_{BO}$	$I_{BO}$	$I_H$
	max		min		max	dyn	max	min
	$\mu A$	V	mA	V	V	typ	mA	mA
					note 1		note 1	
TCP072E	10	56	1	60	72	80	800	150
TCP080E	10	70	1	80	120	150	800	150
TCP082E	10	66	1	70	82	90	800	150
TCP120E	10	105	1	120	180	200	800	150

Note 1 : Surge test according to CCITT 1.5kV,10/700 ms between Tip or Ring and ground.

**CAPACITANCES CHARACTERISTICS**

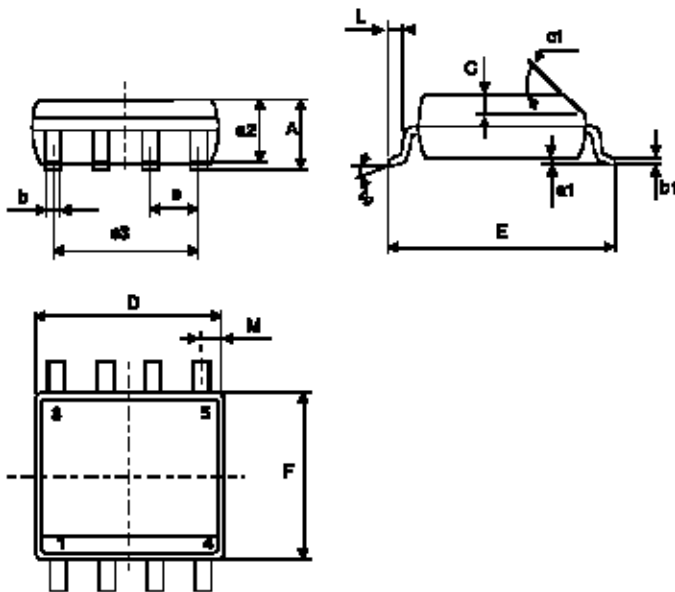


CONFIGURATION	$C_A$ (pF) max	$C_B$ (pF) max	$C_A - C_B$ (pF) max
$V_A = 1V$ $V_B = 56V$	50	30	20
$V_A = 56V$ $V_B = 1V$	30	50	20

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**PACKAGE MECHANICAL DATA**  
SO-8 (Plastic)



REF.	DIMENSIONS					
	Millimetres			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A			1.75			0.069
a1	0.1		0.25	0.004		0.010
a2			1.65			0.065
b	0.35		0.48	0.014		0.019
b1	0.19		0.25	0.007		0.010
C		0.50			0.020	
c1	45° (typ)					
D	4.8		5.0	0.189		0.197
E	5.8		6.2	0.228		0.244
e		1.27			0.050	
e3		3.81			0.150	
F	3.8		4.0	0.15		0.157
L	0.4		1.27	0.016		0.050
M			0.6			0.024
S	8° (max)					



TCP072E thru TCP120E

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NOTES