

**Tripolar Overvoltage Protection For
Network Interfaces**

PRELIMINARY

DESCRIPTION

Transient suppressor TCP020E is dedicated to ISDN, T1, Ethernet, and data lines protection. Important features - very low breakover voltage combined with low capacitance. May be used as a triple or a single bi-directional suppressor – see schematic diagram.

This product provides:

- low capacitance, allowing high speed signal transmissions with low losses
- low dynamic breakover voltage, protecting submicron microelectronic circuitry
- Compliance with BELLCORE 1089-GR requirements for intrabuilding lightning and power fault surges.

This low stand-off voltage and low capacitance protector is well suited for use in high-speed interfaces as ISDN.

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

COMPLIES WITH THE FOLLOWING STANDARDS:

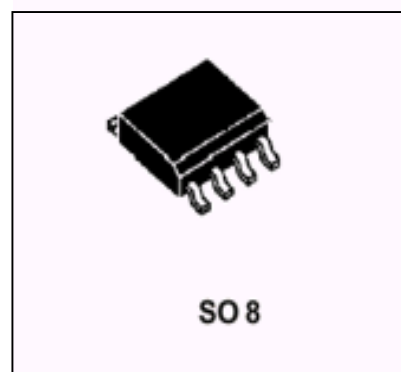
CCITT K17 - K20	10/700 μ s	1.5 KV
	5/310 μ s	38 A
VDE 0433	10/700 μ s	2 KV
	5/310 μ s	50 A
VDE 0878	1.2/50 μ s	1.5 KV
	1/20 μ s	40 A
CNET	0.5/700 μ s	1.5 KV
	0.2/310 μ s	38 A
IEC801-2	15kV	air discharge
IEC801-5	1.2/50 μ s	4kV
	8/20 μ s	100 A

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

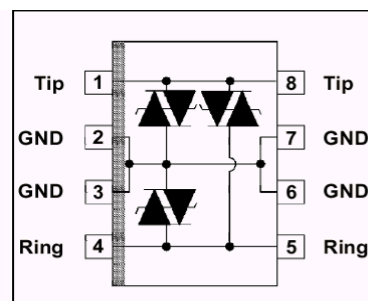
KEY FEATURES

- BIDIRECTIONAL TRIPLE CROWBAR PROTECTION
- PEAK PULSE CURRENT:
 $I_{PP} = 30 \text{ A}, 10/1000 \mu\text{s}$
- BREAKDOWN VOLTAGE:
18 V
- AVAILABLE IN SO8 PACKAGES
- LOW DYNAMIC BREAKOVER VOLTAGE:
25 V @ 2/10 μ s
- Low Capacitance: 30 pF

APPLICATIONS/BENEFITS



SCHEMATIC DIAGRAM

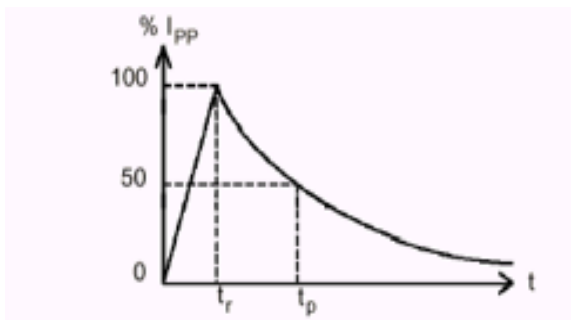


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ELECTRICAL PARAMETERS @ 25°C (unless otherwise specified)

Symbol	Parameter		Value	Unit
I_{PP}	Peak pulse current (see note 1)	10/1000 μ s	30	A
		8/20 μ s	150	
		2/10 μ s	200	
I_{TSM}	Non repetitive surge peak on-state current (F = 50 Hz).	$t_p = 10$ ms	8	A
		$t = 1$ s	3.5	
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

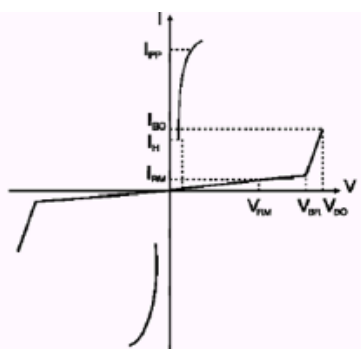
Note 1 : Pulse waveform :

10/1000 μ s $t_r=10\mu$ s $t_p=1000\mu$ s
 8/20 μ s $t_r=8\mu$ s $t_p=20\mu$ s
 2/10 μ 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	170	°C/W

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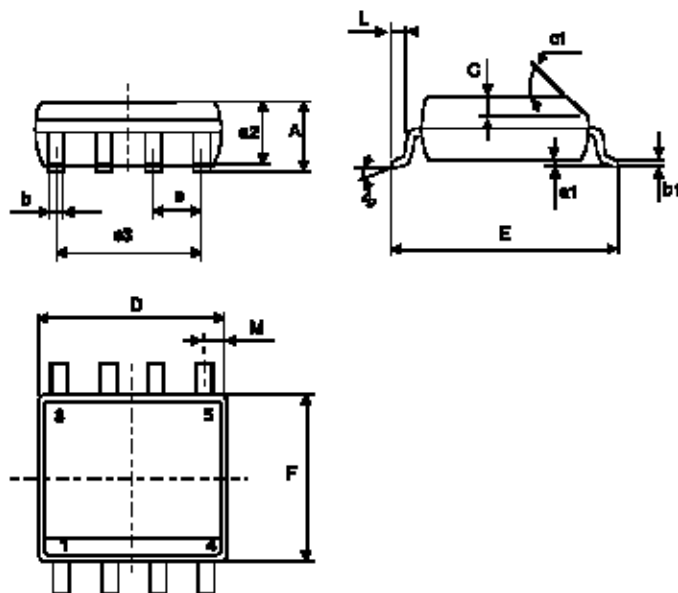
ELECTRICAL CHARACTERISTICS (Tamb= 25°C)									
	Symbol	Parameter							
	V _{RM}	Stand-off voltage							
	I _{RM}	Leakage current							
	V _{BR}	Breakdown voltage							
	V _{BO}	Breakover voltage							
	I _H	Holding current							
	I _{BO}	Breakover current							
	I _{PP}	Peak pulse current							
	V _F	Forward Voltage Drop							
	C	Capacitance							
Types	I _{RM} @ V _{RM}		I _R @ V _{BR}		V _{BO}	V _{BO} dyn typ	I _{BO}	I _H	C _P
	max		min		max		max	min	max
	μA	V	mA	V	V	V	mA	mA	pF
TCP020E	1	16	1	18	22	25	100	50	30

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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)					



TCP020E

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www.Microsemi.com

NOTES