Microsemi
SANTA ANA DIVISION

TCP009A

DUAL ASYMETRICAL TRANSIENT SUPPRESSOR FOR XDSL AND DATA LINES

PRODUCT PREVIEW

DESCRIPTION

This Thyristor Surge Suppressor device has been especially designed to protect 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,10/1000µs
- HOLDING CURRENT:50mA min.
- BREAKDOWN VOLTAGE: TCP009A: 9 V LOW DYNAMIC CHARACTERISTICS
- STAND CCITT K20 AND LSSGR

APPLICATIONS/BENEFITS

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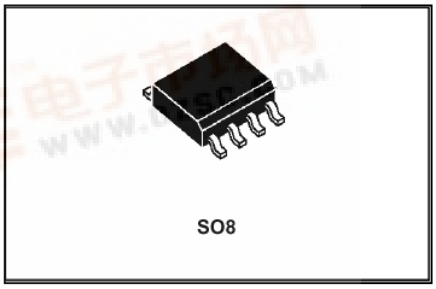
COMPLIES WITH THE FOLLOWING STANDARDS:

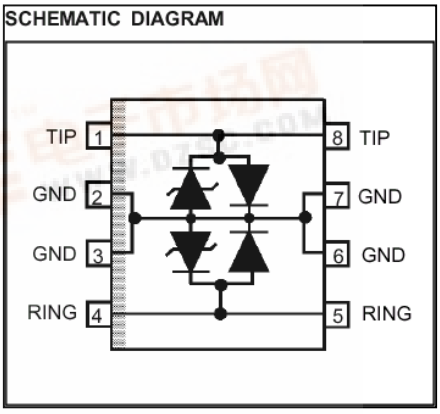
CCITT K20:	10/700 µs	1 kV
	5/310 µs	38 A
VDE 0433:	10/700 µs	2 kV
	5/310 µs	50 A
VDE 0878:	1.2/50 µs	1.5 kV
	1/20 µs	40 A
I3124:	0.5/700 µs	1 Kv
	0.2/310 µs	38 A
FCC part 68:	02/10 µs	2.5 kv
	02/10 µs	125 A (*)
BELLCORE TR-NWT-001089:	02/10 µs	2.5 kv
	02/10 µs	125 A (*)
	10/1000 µs	1 kV
	10/1000 µs	40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

(*) with series resistors or PTC.



SO8

SCHEMATIC DIAGRAM



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

DUAL ASYMETRICAL TRANSIENT SUPPRESSOR FOR XDSL AND DATA LINES

PRODUCT PREVIEW

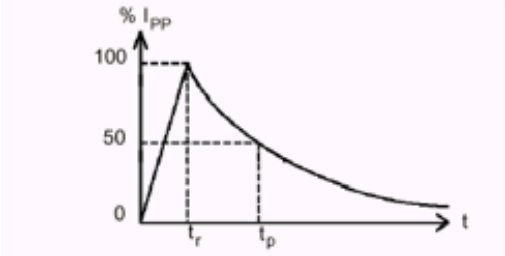
ABSOLUTE MAXIMUM RATINGS (T_{amb} = 25°C)

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

waveform: **Note 1 : Pulse waveform :**

Note 1: Pulse wave

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

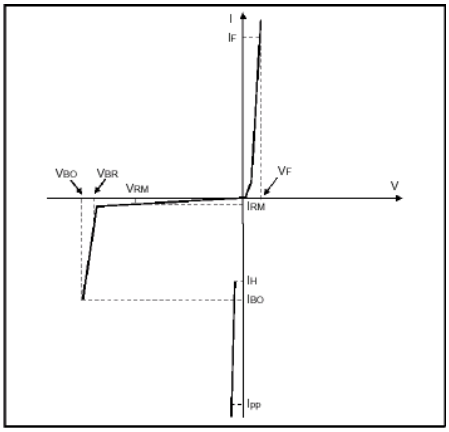


THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
$R_{th\ (j-a)}$	Junction to ambient	170	°C/W

ELECTRICAL CHARACTERISTICS (Tamb= 25°C)

Symbol	Parameter
V_{RM}	Stand-off voltage
I_{RM}	Leakage current at stand-offvoltage
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



DUAL ASYMETRICAL TRANSIENT SUPPRESSOR FOR XDSL AND DATA LINES

PRODUCT PREVIEW

1 - PARAMETERS RELATED TO DIODE LINE / GND

Symbol	Test Conditions	Min	Typ	Max	Unit
V_F	I_F=1A tp=100 µs			2	V

2 – PARAMETERS RELATED TO PROTECTION THYRISTOR

Types	I_{RM} @ V_{RM} max		I_R @ V_{BR} min		V_{BO} max	I_{BO} min	I_{BO} max	I_H min	C max
	µA	V	mA	V	V	V	mA	mA	pF
TCP009A	10	8	1	9	12	50	400	50	30

NOTES

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TCP009E

TRANSIENT SUPPRESSOR FOR XDSL AND DATA LINES

PRODUCT PREVIEW

DESCRIPTION

Transient suppressor TCP009 is dedicated to XDSL, 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.

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

KEY FEATURES

- BIDIRECTIONAL TRIPLE CROWBAR PROTECTION
- PEAK PULSE CURRENT: I_{PP} = 30 A, 10/1000 µs
- BREAKDOWN VOLTAGE: 9 V
- AVAILABLE IN SO8 PACKAGES
- LOW DYNAMIC BREAKOVER VOLTAGE: 15 V @ 2/10 µs
- Low Capacitance: 30 pF

APPLICATIONS/BENEFITS

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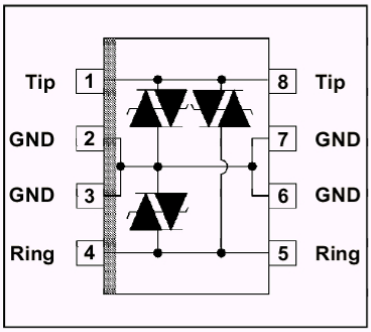
COMPLIES WITH THE FOLLOWING STANDARDS:

CCITT K17 - K20	10/700 µs	1.5 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
CNET	0.5/700 µs	1.5 KV
	0.2/310 µs	38 A

SO 8

SCHEMATIC DIAGRAM



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

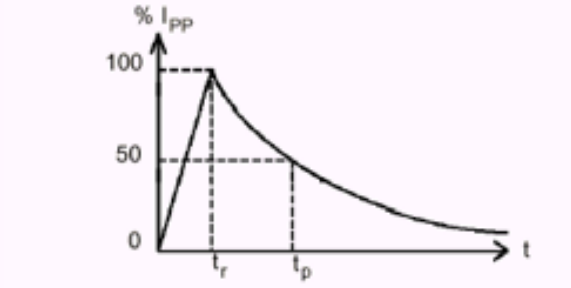
TRANSIENT SUPPRESSOR FOR XDSL AND DATA LINES

PRODUCT PREVIEW

ELECTRICAL PARAMETERS @ 25°C (unless otherwise specified)				
Symbol	**Parameter**		**Value**	**Unit**
I_{PP}	Peak pulse current (see note 1)	10/1000 µs 5/320 µs 2/10 µs	30 40 90	A
I_{TSM}	Non repetitive surge peak on-state current (F = 50 Hz).	tp = 10 ms t = 1 s	8 3.5	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 :

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



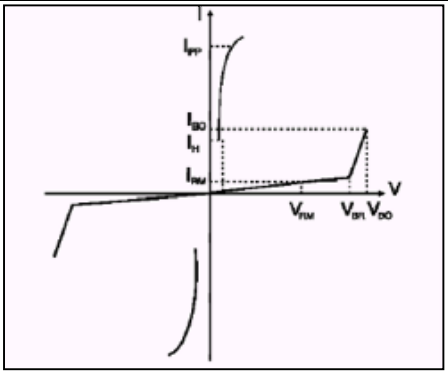
THERMAL RESISTANCES				
Symbol	**Parameter**		**Value**	**Unit**
$R_{th\ (j-a)}$	Junction to ambient	SO 8	170	°C/W

TCP009E

TRANSIENT SUPPRESSOR FOR XDSL AND DATA LINES

PRODUCT PREVIEW

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} max		I_R @ V_{BR} min		V_{BO} max note 1	V_{BO} dyn typ	I_{BO} min note 1	I_{BO} max note 1	I_H min	C_P max
	µA	V	mA	V	V	V	mA	mA	mA	pF
TCP009E	10	5	1	9	12	15	50	400	50	30

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

NOTES