

**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:
 $I_{pp}=40A, 10/1000\mu s$
- HOLDING CURRENT: 50mA min.
- BREAKDOWN VOLTAGE:
TCP009A: 9 V
LOW DYNAMIC CHARACTERISTICS
- STAND CCITT K20 AND LSSGR

COMPLIES WITH THE FOLLOWING STANDARDS:

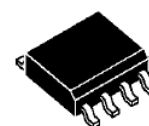
CCITT K20:	10/700 μs	1 kV
	5/310 μs	38 A
VDE 0433:	10/700 μs	2 kV
	5/310 μs	50 A
VDE 0878:	1.2/50 μs	1.5 kV
	1/20 μs	40 A
I3124:	0.5/700 μs	1 Kv
	0.2/310 μs	38 A
FCC part 68:	02/10 μs	2.5 kv
	02/10 μs	125 A (*)
BELLCORE		
TR-NWT-001089:	02/10 μs	2.5 kv
	02/10 μs	125 A (*)
	10/1000 μs	1 kV
	10/1000 μs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

(*) with series resistors or PTC.

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

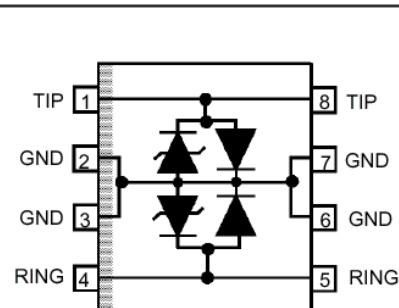
APPLICATIONS/BENEFITS

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SO8

SCHEMATIC DIAGRAM



**DUAL ASYMETRICAL TRANSIENT
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PRODUCT PREVIEW
ABSOLUTE MAXIMUM RATINGS ($T_{amb} = 25^{\circ}\text{C}$)

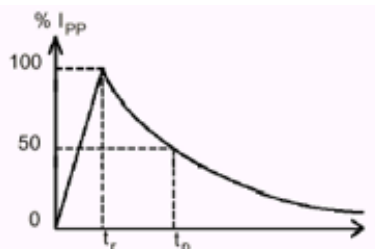
Symbol	Parameter		Value	Unit
I_{PP}	Peak pulse current (see note 1)	10/1000 μs 5/310 μs 2/10 μs	40 50 125	A
I_{TSM}	Non repetitive surge peak on-state current $F = 50\text{ Hz}$	$t = 300\text{ ms}$ $t = 1\text{ s}$ $t = 5\text{ s}$	10 50 1	A
I_{TSM}	$F=50\text{Hz}$, 60x1s, 2mn between pulse		1	A
T_{stg}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

waveform:

Note 1 : Pulse waveform :

Note 1: Pulse wave

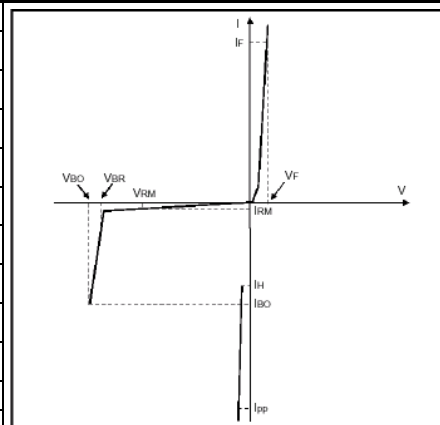
10/1000 μs	$t_r = 10\text{ }\mu\text{s}$	$t_p = 1000\text{ }\mu\text{s}$
5/310 μs	$t_r = 5\text{ }\mu\text{s}$	$t_p = 310\text{ }\mu\text{s}$
2/10 μs	$t_r = 2\text{ }\mu\text{s}$	$t_p = 10\text{ }\mu\text{s}$


THERMAL RESISTANCES

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

ELECTRICAL CHARACTERISTICS ($T_{amb} = 25^{\circ}\text{C}$)

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



**DUAL ASYMETRICAL TRANSIENT
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PRODUCT PREVIEW
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
TCP009A	10	8	1	9	12	50	400	50	30



TCP009A

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www.Microsemi.com

NOTES

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.

KEY FEATURES

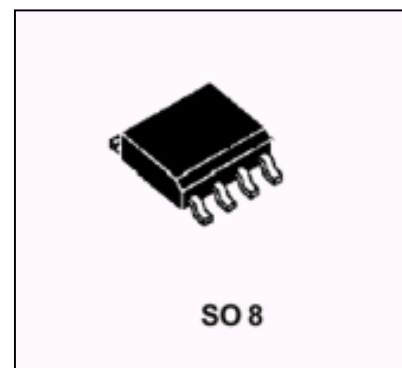
- BIDIRECTIONAL TRIPLE CROWBAR PROTECTION
- PEAK PULSE CURRENT:
 $I_{PP} = 30 \text{ A}$, 10/1000 μs
- BREAKDOWN VOLTAGE:
9 V
- AVAILABLE IN SO8 PACKAGES
- LOW DYNAMIC BREAKOVER VOLTAGE:
15 V @ 2/10 μs
- Low Capacitance: 30 pF

APPLICATIONS/BENEFITS

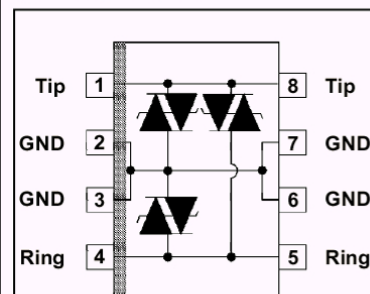
IMPORTANT: For the most current data, consult MICROSEMI's website: <http://www.microsemi.com>

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



SCHEMATIC DIAGRAM



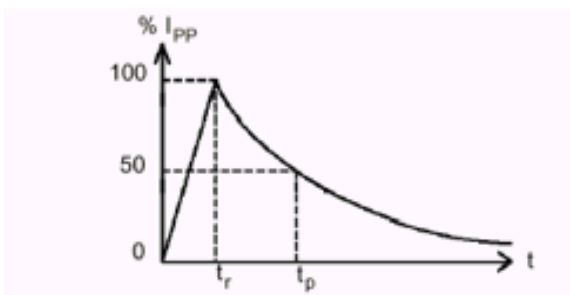
UL94V-0 TCPxx packages comply with requirements of UL94V-0

**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 μ s 5/320 μ s 2/10 μ s	30 40 90	A
I_{TSM}	Non repetitive surge peak on-state current (F = 50 Hz).	$t_p = 10$ 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 :

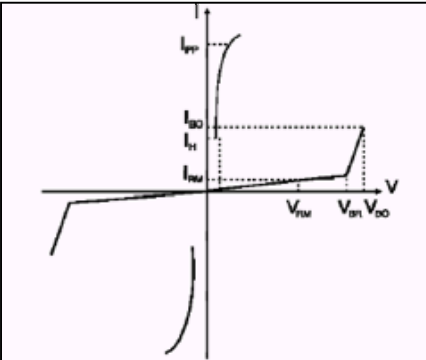
10/1000 μ s $t_r=10\mu$ s $t_p=1000\mu$ s
 5/310 μ s $t_r=5\mu$ s $t_p=310\mu$ s
 2/10 μ s $t_r=2\mu$ s $t_p=10\mu$ s


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}	I_{BO}		I_H	C_P
	max		min		max	dyn	min	max	min	max
	μA	V	mA	V	note 1	typ	note 1			
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.



TCP009E

**TRANSIENT SUPPRESSOR FOR XDSL AND
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PRODUCT PREVIEW

www.Microsemi.com

NOTES