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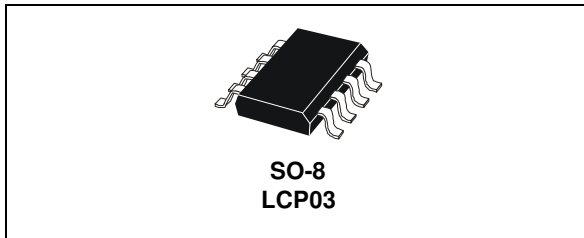
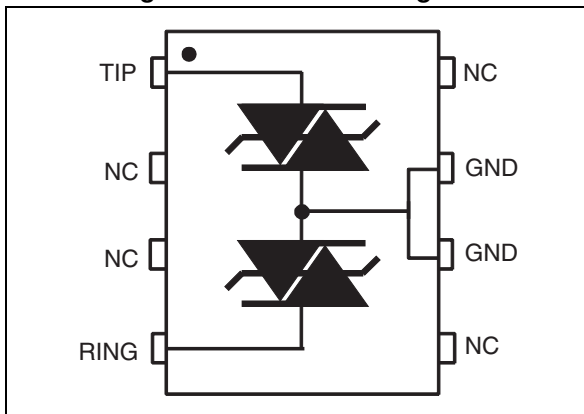
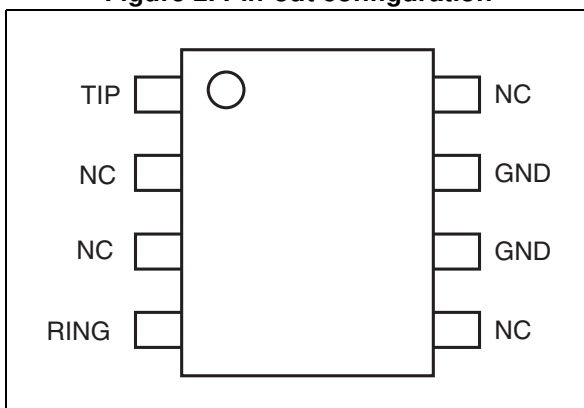
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## Transient voltage suppressor for dual voltage SLIC

Datasheet – production data


**Figure 1. Functional diagram**

**Figure 2. Pin-out configuration**


### Features

- Protection IC recommended for ringing SLICs
- Negative stand-off voltage:  $V_R = -53\text{ V}$
- Positive stand-off voltage:  $V_R = 83\text{ V}$
- Peak pulse current:  $I_{PP} = 60\text{ A}$  (5/310  $\mu\text{s}$ )
- Holding current:  $I_H = 150\text{ mA min.}$

### Applications

- Central office (CO)
- Private branch exchange (PBX)
- Digital loop carrier (DLC)
- Digital subscriber line access multiplexer (DSLAM)
- Fiber in the Loop (FITL)
- Wireless local loop (WLL)
- Hybrid fiber coax (HFC)
- ISDN terminal adapter
- Cable modem

### Description

The LCP03 has been developed to protect SLICs operating on both negative and positive battery supplies. It provides crowbar mode protection for both TIP and RING lines. The surge suppression is assumed for each wire by two thyristor structures, one dedicated to positive surges the second one for negative surges.

LCP03 can be used to help equipment to meet various standards such as UL1950, IEC 60950 / CSAC22.2, UL1459 and TIA-968-A (formerly FCC part68). A Trisil™ meets UL94 V0. (Trisils are UL497B approved - file: E136224).

TM: Trisil is a trademark of STMicroelectronics

# 1 Characteristics

**Table 1. Compliant with the following standards**

Standard	Peak surge voltage (V)	Voltage waveform	Required peak current (A)	Current waveform	Minimum series resistor to meet standard ( $\Omega$ )
GR-1089 Core First level	2500	2/10 $\mu$ s	500	2/10 $\mu$ s	14
	1000	10/1000 $\mu$ s	100	10/1000 $\mu$ s	24
GR-1089 Core Second level	5000	2/10 $\mu$ s	500	2/10 $\mu$ s	29
GR-1089 Core Intra-building	1500	2/10 $\mu$ s	100	2/10 $\mu$ s	0
ITU-T-K20/K21	6000	10/700 $\mu$ s	150	5/310 $\mu$ s	60
	4000		100		27
	1500		37.5		0
ITU-T-K20 (IEC61000-4-2)	8000	1/60 ns	ESD contact discharge		0
	15000		ESD air discharge		0
IEC61000-4-5	4000	10/700 $\mu$ s	100	5/310 $\mu$ s	27
	4000	1.2/50 $\mu$ s	100	8/20 $\mu$ s	0

**Table 2. Absolute maximum ratings ( $T_{amb} = 25\text{ }^\circ\text{C}$ )**

Symbol	Parameter		Value	Unit
$I_{PP}$	Peak pulse current	10/1000 $\mu$ s	30	A
		5/310 $\mu$ s	60	
		2/10 $\mu$ s	130	
$I_{TSM}$	Non repetitive surge peak on-state current (F = 50 Hz) $I_{TSM}$ value specified for each line $I_{TSM}$ value can be applied on both lines at the same time (GND capability is twice the line $I_{TSM}$ )	$t_p = 20$ ms	8	A
		$t_p = 0.2$ s	5	
		$t_p = 1$ s	3.5	
		$t_p = 15$ min.	1.4	
$V_{Gn}$	Negative battery voltage range		53	V
$V_{Gp}$	Positive battery voltage range		83	
$T_j$	Operating junction temperature range		150	$^\circ\text{C}$
$T_{stg}$	Storage temperature range		-55 to +150	$^\circ\text{C}$
$T_L$	Lead solder temperature (10 s duration)		260	$^\circ\text{C}$

Figure 3. Pulse waveform

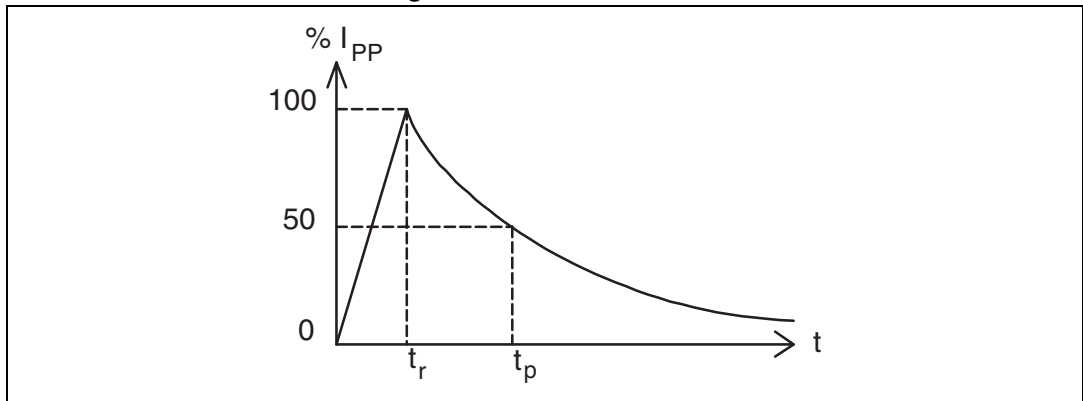


Table 3. Dynamic electrical characteristics

Symbol	Parameter	Test conditions	Min	Typ	Max	Unit
$I_{HN}$	Negative holding current		150			mA
$I_{RN}$	Leakage current at $V_R$				5	$\mu A$
$I_{RP}$	Leakage current at $V_{R+}$				5	$\mu A$
$V_{BOP}$	Positive breakover voltage	1.5 kV 10/700 $\mu s$ $R_s = 20 \Omega$			110	V
$V_{BON}$	Negative breakover voltage				75	
C	Capacitance	$V_R = 50 V$ bias, $V_{RMS} = 1 V$ , $F = 1 MHz$		10		pF
		$V_R = 2 V$ bias, $V_{RMS} = 1 V$ , $F = 1 MHz$		22		pF

Figure 4. Relative variation of holding current versus junction temperature

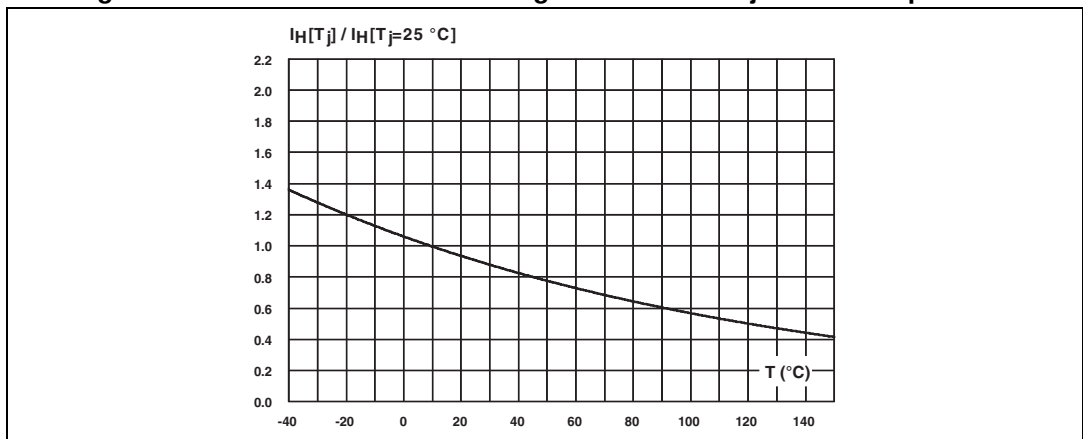
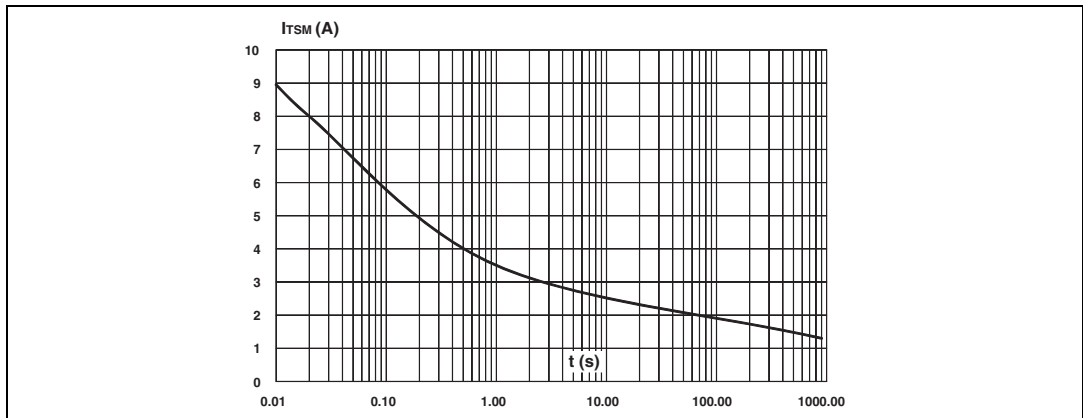


Figure 5. Maximum non repetitive surge peak on state current versus overload duration





## 2 Package information

- Epoxy meets UL94, V0
- Lead-free packages

In order to meet environmental requirements, ST offers these devices in different grades of ECOPACK<sup>®</sup> packages, depending on their level of environmental compliance. ECOPACK<sup>®</sup> specifications, grade definitions and product status are available at: [www.st.com](http://www.st.com). ECOPACK<sup>®</sup> is an ST trademark.

Figure 6. SO-8 dimension definitions

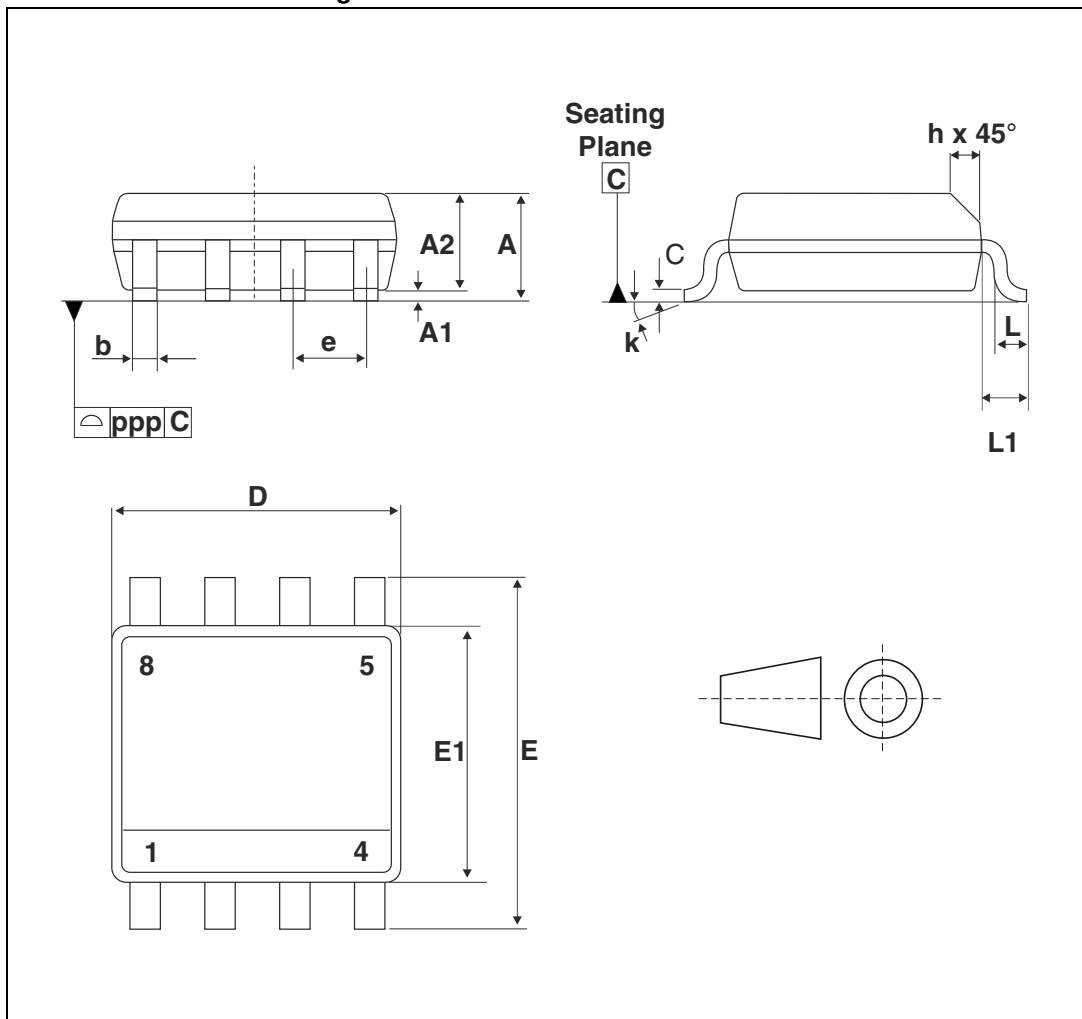


Table 4. SO-8 dimension values

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A			1.75			0.069
A1	0.1		0.25	0.004		0.010
A2	1.25			0.049		
b	0.28		0.48	0.011		0.019
C	0.17		0.23	0.007		0.009
D	4.80	4.90	5.00	0.189	0.193	0.197
E	5.80	6.00	6.20	0.228	0.236	0.244
E1	3.80	3.90	4.00	0.150	0.154	0.157
e		1.27			0.050	
h	0.25		0.50	0.010		0.020
L	0.40		1.27	0.016		0.050
L1		1.04			0.041	
k	0°		8°	0°		8°
ppp			0.10			0.004

Figure 7. Footprint, dimensions in mm (inches)

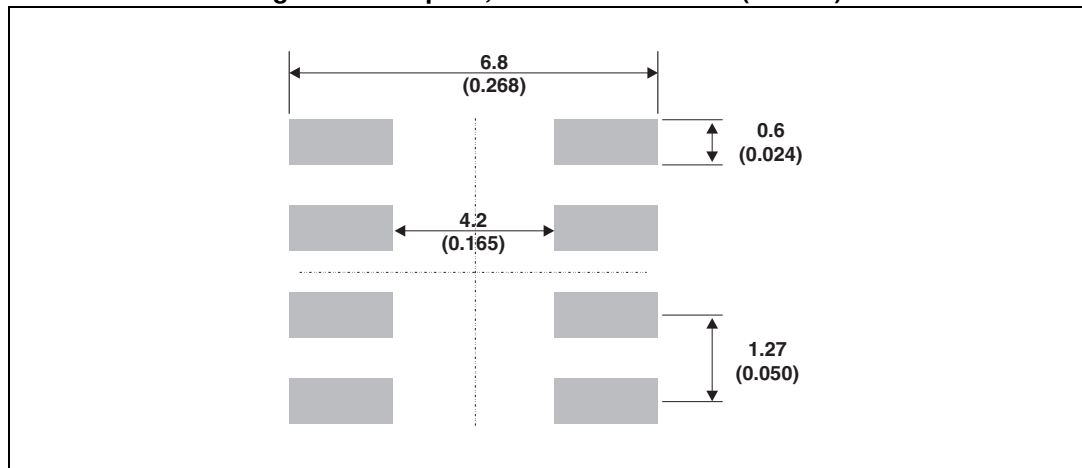
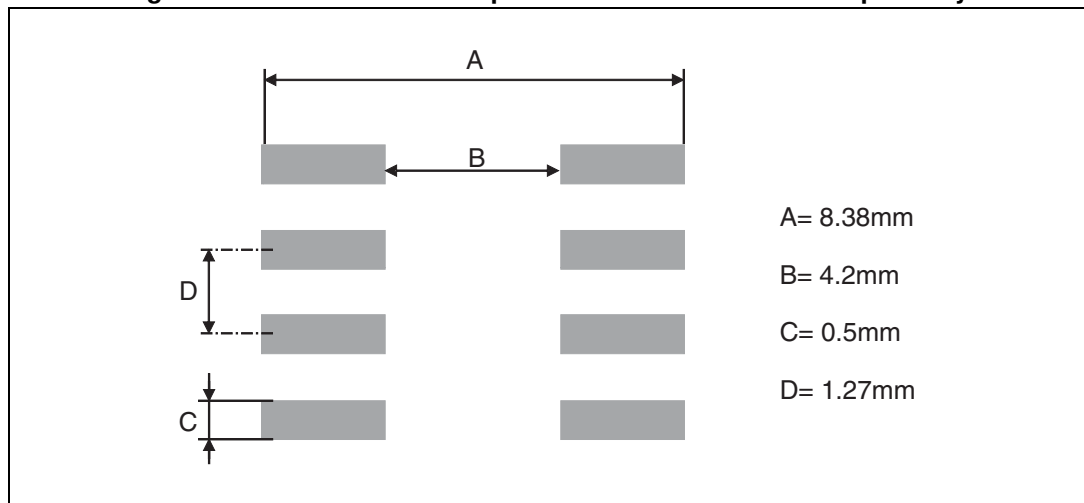


Figure 8. Recommended footprint for SO-8/SO-8 wide compatibility





### 3 Ordering information

**Table 5. Ordering information**

Order code	Marking	Package	Weight	Base qty	Delivery mode
LCP03-1501	LCP03	SO-8	79 mg	2500	Tape and reel

### 4 Revision history

**Table 6. Document revision history**

Date	Revision	Changes
17-Oct-2013	1	Initial release.

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