

## VERY LOW DROP VOLTAGE REGULATORS WITH INHIBIT

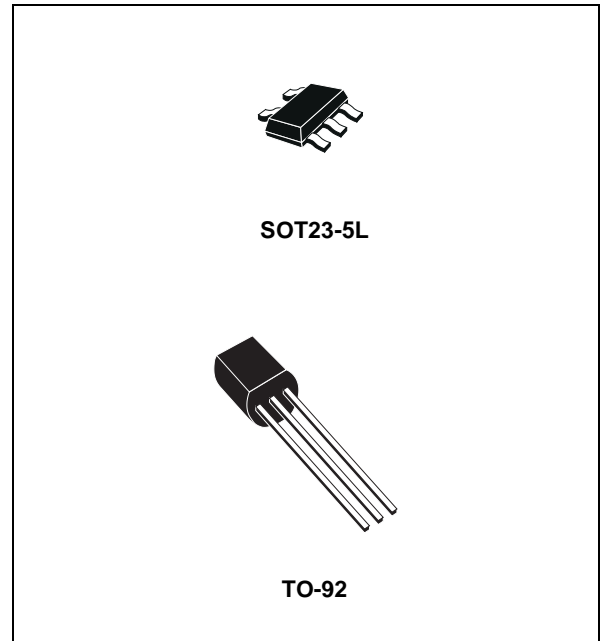
- VERY LOW DROPOUT VOLTAGE (0.2V TYP. AT 50mA LOAD)
- VERY LOW QUIESCENT CURRENT (TYP. 500 $\mu$ A AT 50mA LOAD)
- OUTPUT CURRENT UP TO 50mA
- LOGIC-CONTROLLED ELECTRONIC SHUTDOWN
- OUTPUT VOLTAGES OF 2.85; 3.0; 3.2; 3.3; 3.8; 5.0V
- INTERNAL CURRENT AND THERMAL LIMIT
- SUPPLY VOLTAGE REJECTION: 63dB (TYP)
- ONLY 1 $\mu$ F FOR STABILITY
- SELECTION AT 25°C
- TEMPERATURE RANGE: -25°C TO 125°C
- PACKAGE AVAILABLE: SOT23-5L AND TO-92

### DESCRIPTION

The LD2979 series are very Low Drop regulators available in SOT23-5L and TO-92.

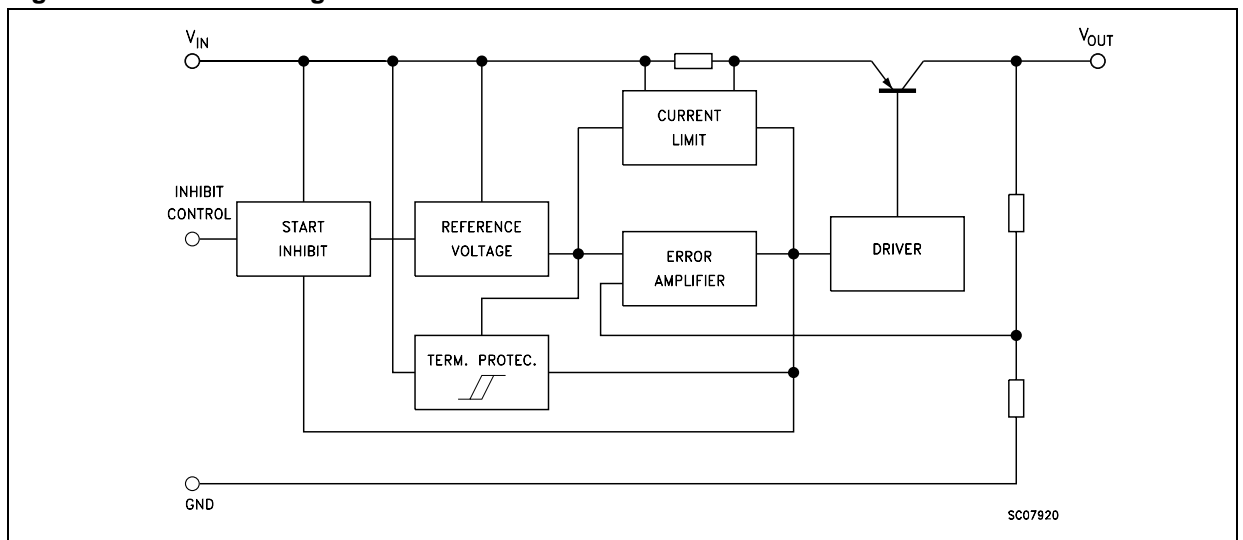
The very low drop-voltage and the very low quiescent current make them particularly suitable for low noise, low power applications and in battery powered systems.

Shutdown Logic Control function is available on five pin version (TTL compatible). This means that



when the device is used as local regulator, it is possible to put a part of the board in standby, decreasing the total power consumption.

**Figure 1: Schematic Diagram**

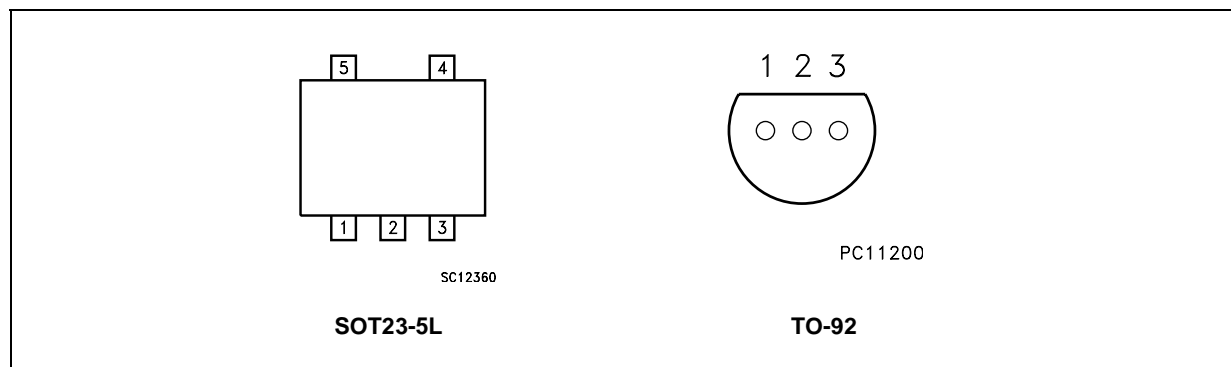


**Table 1: Absolute Maximum Ratings**

Symbol	Parameter	Value	Unit
$V_I$	DC Input Voltage	16	V
$V_{INH}$	DC Inhibit Input Voltage	$V_{IN}$	V
$I_O$	Output Current	Internally limited	
$P_{tot}$	Power Dissipation	Internally limited	
$T_{stg}$	Storage Temperature Range	-40 to 150	°C
$T_{op}$	Operating Junction Temperature Range	-25 to 125	°C

Absolute Maximum Ratings are those values beyond which damage to the device may occur. Functional operation under these condition is not implied.

**Figure 2: Pin Connection (top view)**



**Table 2: Pin Description**

SYMBOL	NAME AND FUNCTION	PIN NUMBER	
		SOT23-5L	TO-92
$V_{IN}$	Input Voltage	1	3
GND	Ground	2	2
INHIBIT	Control Switch ON/OFF (*)	3	
NC	Not to be connected	4	
$V_{OUT}$	Output Voltage	5	1

(\*) Only for the version in SOT23-5L package: Inhibit pin is not internally pulled-up then it must not be left floating. Connect to a positive voltage higher than 2V to able the device.

**Table 3: Order Codes**

SOT23-5L (T&R)	TO-92	TO-92 (T&R) (*)	TO-92 (Ammopak)(*)	OUTPUT VOLTAGES
LD2979M28TR	LD2979Z28	LD2979Z28TR	LD2979Z28AP	2.85 V
LD2979M30TR	LD2979Z30	LD2979Z30TR	LD2979Z30AP	3.0 V
LD2979M32TR	LD2979Z32	LD2979Z32TR	LD2979Z32AP	3.2 V
LD2979M33TR	LD2979Z33	LD2979Z33TR	LD2979Z33AP	3.3 V
LD2979M38TR	LD2979Z38	LD2979Z38TR	LD2979Z38AP	3.8 V
LD2979M50TR	LD2979Z50	LD2979Z50TR	LD2979Z50AP	5.0 V

(\*) Please note that in these cases pins are shaped according to Tape & Reel specifications.

**Table 4: Electrical Characteristics For LD2979** (refer to the test circuits,  $T_a = 25^\circ\text{C}$ ,  $V_{IN} = V_{O(NOM)} + 1\text{V}$ ,  $I_O = 1\text{mA}$ ,  $V_{INH} = 2\text{V}^{(*)}$ ,  $C_O = 1\mu\text{F}$ ) (unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$V_O$	Output Voltage	$V_{IN} = 3.85\text{ V}$	2.793	2.85	2.907	V
		$I_O = 1\text{ to }50\text{mA}$ $T_a = -25\text{ to }125^\circ\text{C}$	2.736		2.964	
$V_O$	Output Voltage	$V_{IN} = 4\text{ V}$	2.940	3	3.060	V
		$I_O = 1\text{ to }50\text{mA}$ $T_a = -25\text{ to }125^\circ\text{C}$	2.880		3.120	
$V_O$	Output Voltage	$V_{IN} = 4.2\text{ V}$	3.136	3.2	3.264	V
		$I_O = 1\text{ to }50\text{mA}$ $T_a = -25\text{ to }125^\circ\text{C}$	3.072		3.328	
$V_O$	Output Voltage	$V_{IN} = 4.3\text{ V}$	3.234	3.3	3.366	V
		$I_O = 1\text{ to }50\text{mA}$ $T_a = -25\text{ to }125^\circ\text{C}$	3.168		3.432	
$V_O$	Output Voltage	$V_{IN} = 4.8\text{ V}$	3.724	3.8	3.876	V
		$I_O = 1\text{ to }50\text{mA}$ $T_a = -25\text{ to }125^\circ\text{C}$	3.648		3.952	
$V_O$	Output Voltage	$V_{IN} = 6\text{ V}$	4.9	5	5.1	V
		$I_O = 1\text{ to }50\text{mA}$ $T_a = -25\text{ to }125^\circ\text{C}$	4.8		5.2	
$I_{out}$	Output Current Limit		100			mA
$\Delta V_O$	Line Regulation	$V_{IN} = V_{O(NOM)} + 1\text{V to }16\text{V}$ , $I_O = 1\text{mA}$			0.028	%/ $V_{IN}$
		$T_a = -25\text{ to }125^\circ\text{C}$			0.064	
$I_d$	Quiescent Current (On Mode)	$I_O = 0$		80	110	$\mu\text{A}$
		$I_O = 0$ $T_a = -25\text{ to }125^\circ\text{C}$			170	
		$I_O = 50\text{mA}$		500	700	
		$I_O = 50\text{mA}$ $T_a = -25\text{ to }125^\circ\text{C}$			1300	
$I_d$	Quiescent Current (Off Mode) (*)	$V_{INH} < 0.18\text{ V}$		0		$\mu\text{A}$
		$V_{INH} < 0.18\text{ V}$ $T_a = -25\text{ to }125^\circ\text{C}$			1	
SVR	Supply Voltage Rejection	$I_O = 50\text{mA}$ $C_{OUT} = 10\mu\text{F}$ $f = 120\text{Hz}$		63		dB
$V_d$	Dropout Voltage	$I_O = 0$		6	12	mV
		$I_O = 0$ $T_a = -25\text{ to }125^\circ\text{C}$			18	
		$I_O = 1\text{mA}$		30	60	
		$I_O = 1\text{mA}$ $T_a = -25\text{ to }125^\circ\text{C}$			90	
		$I_O = 10\text{mA}$		100	200	
		$I_O = 10\text{mA}$ $T_a = -25\text{ to }125^\circ\text{C}$			300	
		$I_O = 50\text{mA}$		200	400	
		$I_O = 50\text{mA}$ $T_a = -25\text{ to }125^\circ\text{C}$			600	
$V_{IL}$	Inhibit Input Logic Low	Device Off $T_a = -25\text{ to }125^\circ\text{C}$ (*)			0.18	V
$V_{IH}$	Inhibit Input Logic High	Device On $T_a = -25\text{ to }125^\circ\text{C}$ (*)	2			V
$I_I$	Inhibit Input Current	$V_{INH} = 0\text{ V}$ (*)		0	-1	$\mu\text{A}$
		$V_{INH} = 5\text{ V}$ $T_a = -25\text{ to }125^\circ\text{C}$		5	15	
eN	Output Noise Voltage (RMS)	$\text{BW} = 300\text{Hz to }50\text{KHz}$ $C_O = 10\mu\text{F}$		160		$\mu\text{V}$

(\*) Note: Only for types in SOT23-5L

TYPICAL CHARACTERISTICS (unless otherwise specified  $T_a = 25^\circ\text{C}$ )

Figure 3: Output Voltage vs Temperature

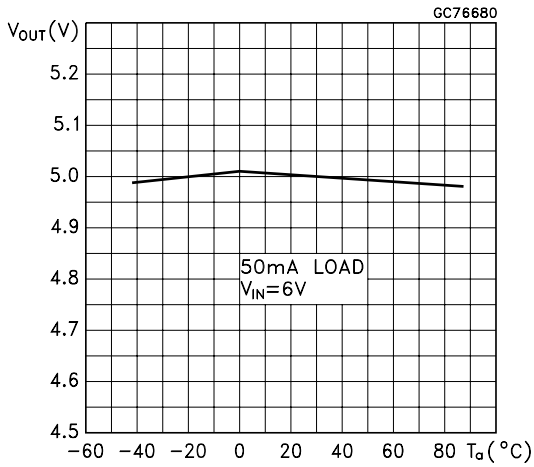


Figure 4: Output Voltage vs Input Voltage

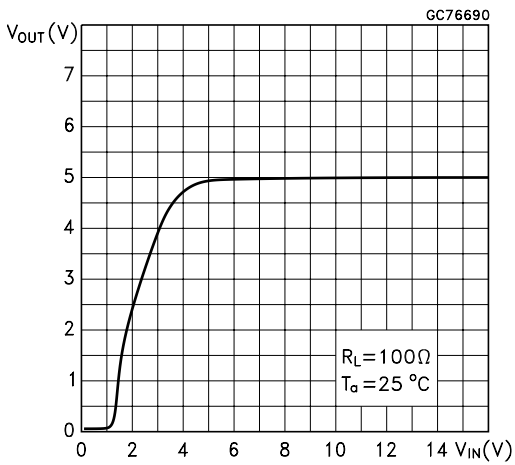


Figure 5: Output Voltage vs Input Voltage

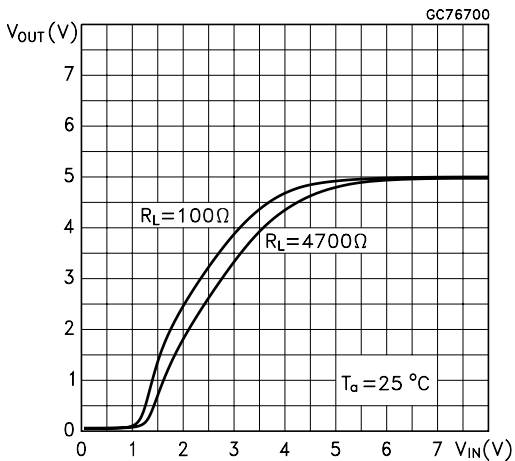


Figure 6: Dropout Voltage vs Output Current

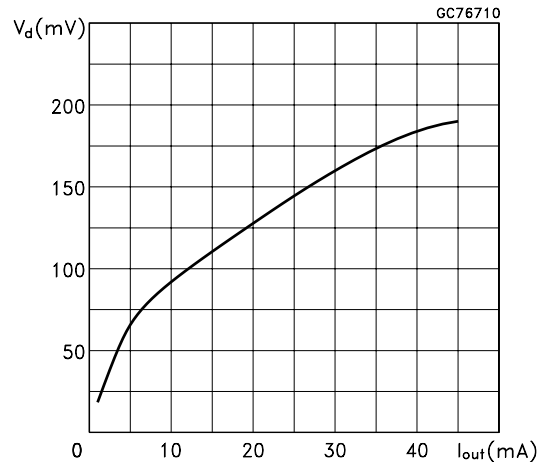


Figure 7: Dropout Voltage vs Temperature

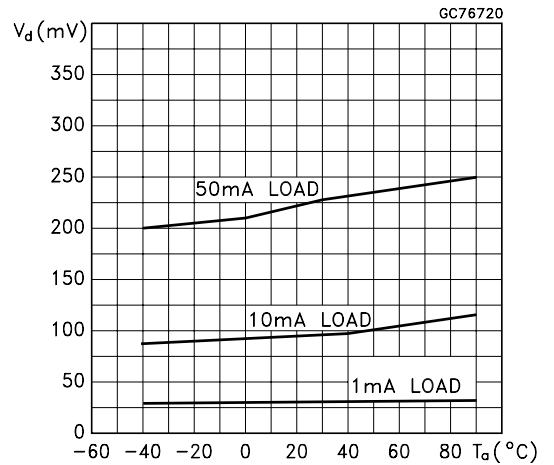
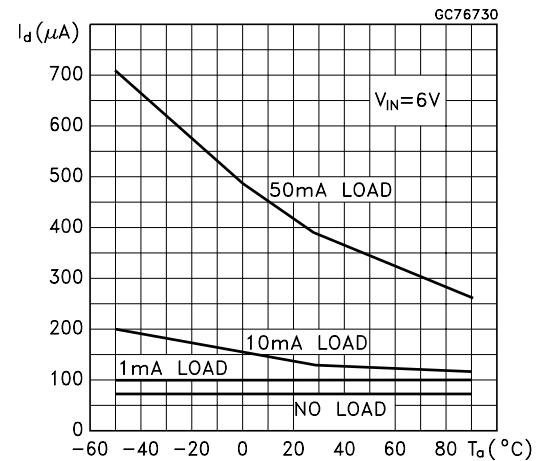
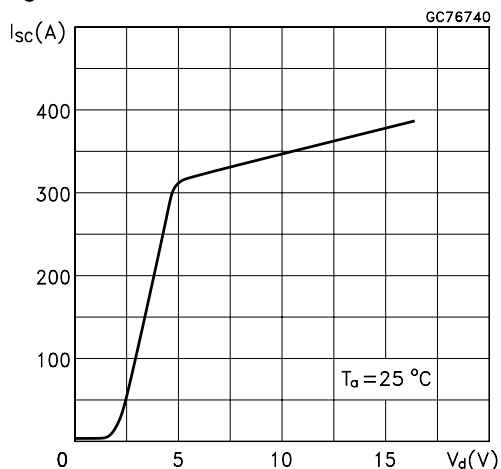


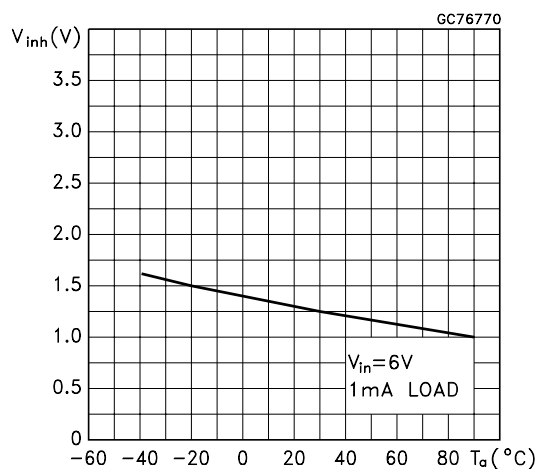
Figure 8: Quiescent Current vs Temperature



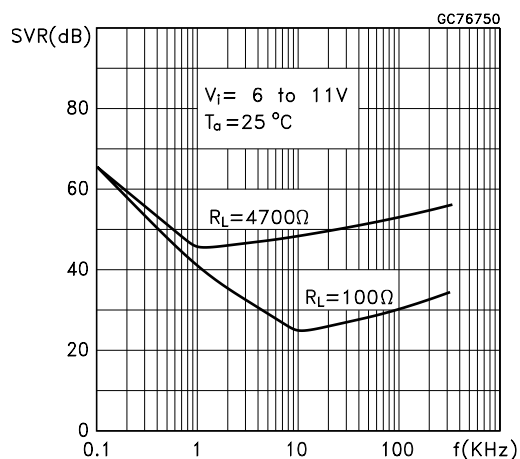
**Figure 9:** Short Circuit Current vs Dropout Voltage



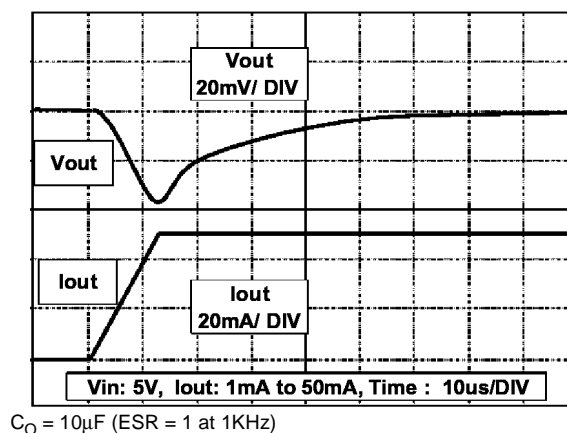
**Figure 12:** Inhibit Voltage vs Temperature



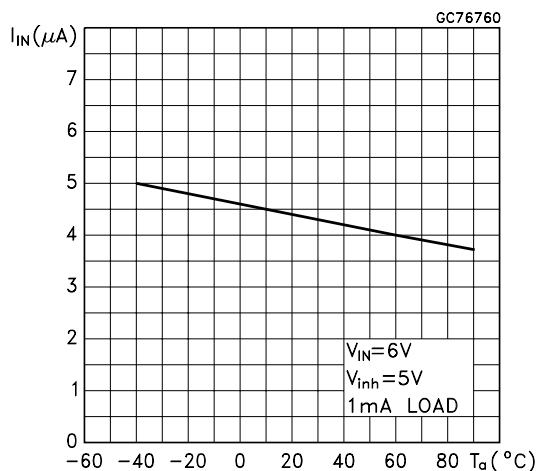
**Figure 10:** Supply Voltage Rejection vs Frequency



**Figure 13:** Load Transient Response



**Figure 11:** Inhibit Current vs Temperature



**Figure 14:** Load Transient Response

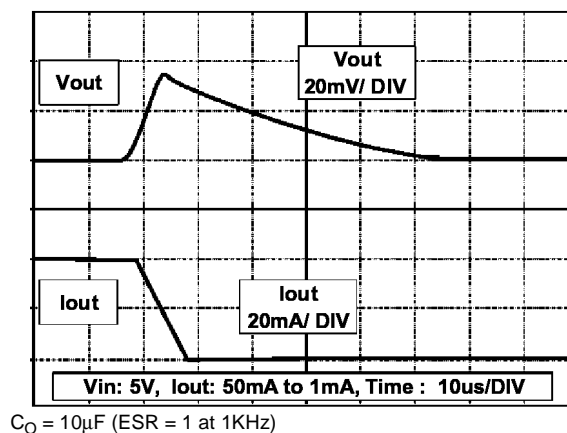
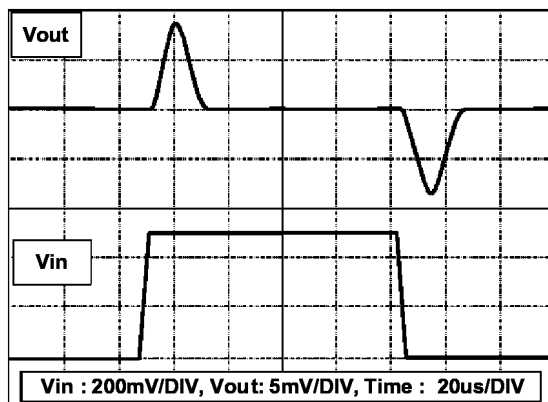


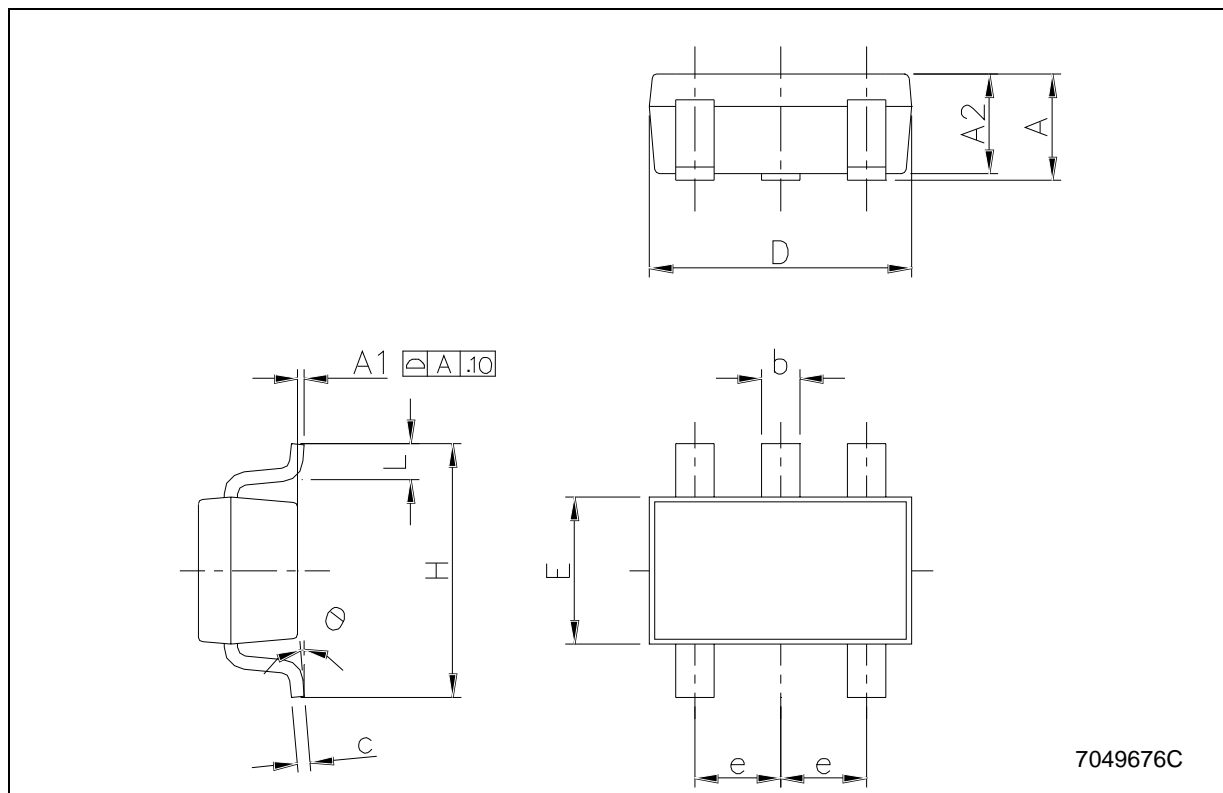
Figure 15: Line Transient Response



$C_O = 10\mu\text{F}$  (ESR = 1 at 1KHz)

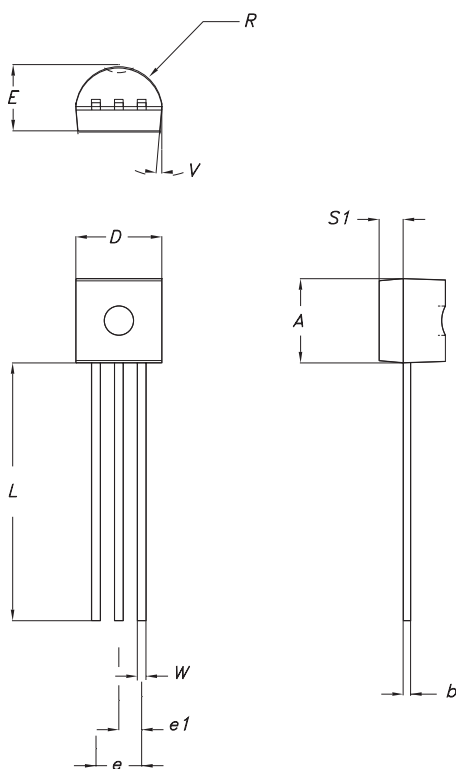
## SOT23-5L MECHANICAL DATA

DIM.	mm.			mils		
	MIN.	TYP	MAX.	MIN.	TYP.	MAX.
A	0.90		1.45	35.4		57.1
A1	0.00		0.10	0.0		3.9
A2	0.90		1.30	35.4		51.2
b	0.35		0.50	13.7		19.7
C	0.09		0.20	3.5		7.8
D	2.80		3.00	110.2		118.1
E	1.50		1.75	59.0		68.8
e		0.95			37.4	
H	2.60		3.00	102.3		118.1
L	0.10		0.60	3.9		23.6



## TO-92 MECHANICA DATA

DIM.	mm.			mils		
	MIN.	TYP	MAX.	MIN.	TYP.	MAX.
A	4.32		4.95	170.1		194.9
b	0.36		0.51	14.2		20.1
D	4.45		4.95	175.2		194.9
E	3.30		3.94	129.9		155.1
e	2.41		2.67	94.9		105.1
e1	1.14		1.40	44.9		55.1
L	12.7		15.49	500.0		609.8
R	2.16		2.41	85.0		94.9
S1	0.92		1.52	36.2		59.8
W	0.41		0.56	16.1		22.0

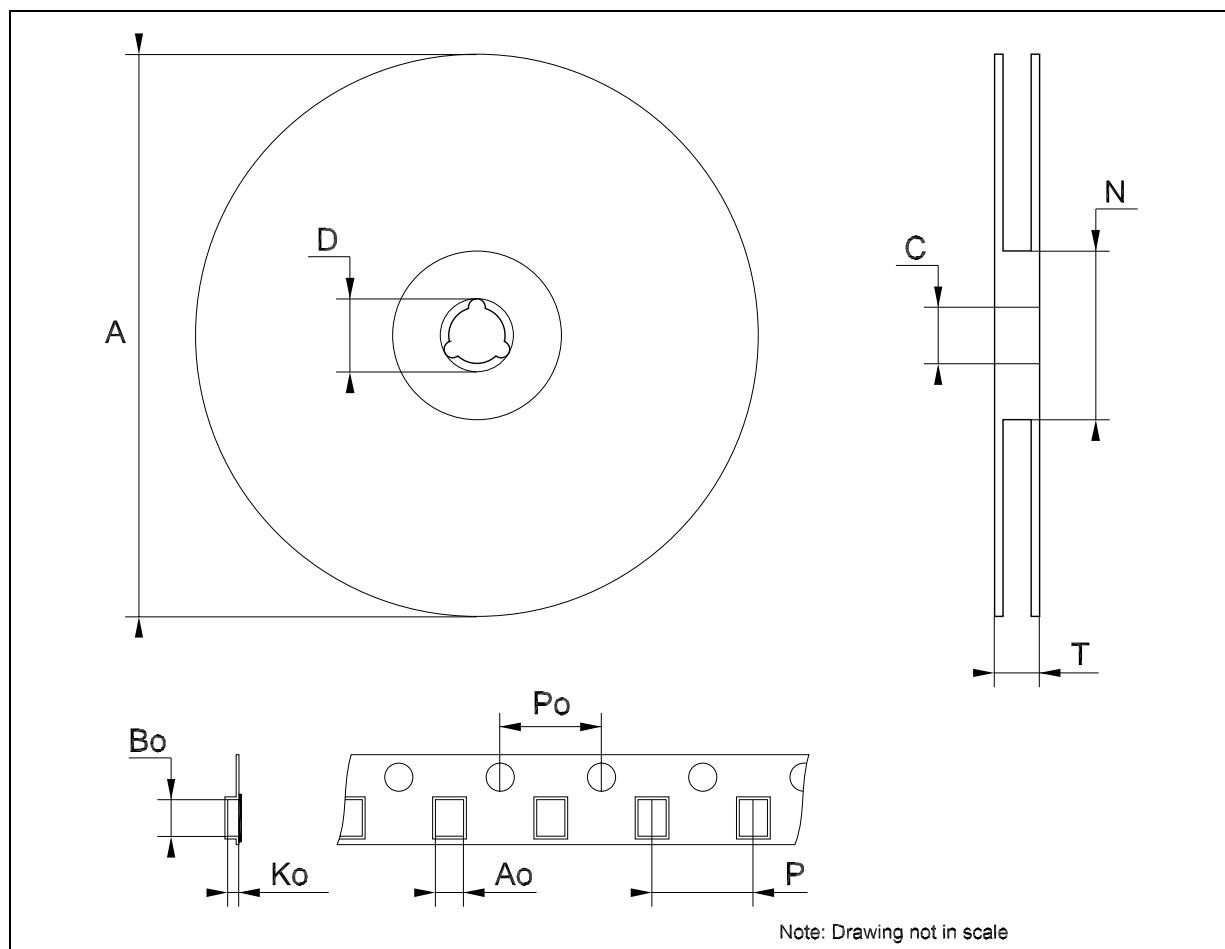


0102782/C



## Tape &amp; Reel SOT23-xL MECHANICAL DATA

DIM.	mm.			inch		
	MIN.	TYP	MAX.	MIN.	TYP.	MAX.
A			180			7.086
C	12.8	13.0	13.2	0.504	0.512	0.519
D	20.2			0.795		
N	60			2.362		
T			14.4			0.567
Ao	3.13	3.23	3.33	0.123	0.127	0.131
Bo	3.07	3.17	3.27	0.120	0.124	0.128
Ko	1.27	1.37	1.47	0.050	0.054	0.058
Po	3.9	4.0	4.1	0.153	0.157	0.161
P	3.9	4.0	4.1	0.153	0.157	0.161



**Tape & Reel for TO-92 MECHANICAL DATA**

DIM.	mm.			inch		
	MIN.	TYP	MAX.	MIN.	TYP.	MAX.
A1		4.80			0.189	
T		3.80			0.150	
T1		1.60			0.063	
T2		2.30			0.091	
d		0.48			0.019	
P0	12.5		12.9	0.492		0.508
P2	5.65		7.05	0.222		0.278
F1, F2	2.44	2.54	2.94	0.096	0.100	0.116
delta H		±2			0.079	
W	17.5	18.00	19.0	0.689	0.709	0.748
W0	5.7		6.3	0.224		0.248
W1	8.5		9.25	0.335		0.364
W2		0.50			0.20	
H		18.50	18.70		0.728	0.726
H0	15.50		16.50	0.610		0.650
H1		25.00			0.984	
D0	3.8		4.2	0.150		0.165
t		0.90			0.035	
L1		3			0.118	
delta P		±1			0.039	
u		50			1.968	
Φ1		360			14.173	
Φ2		30			1.181	

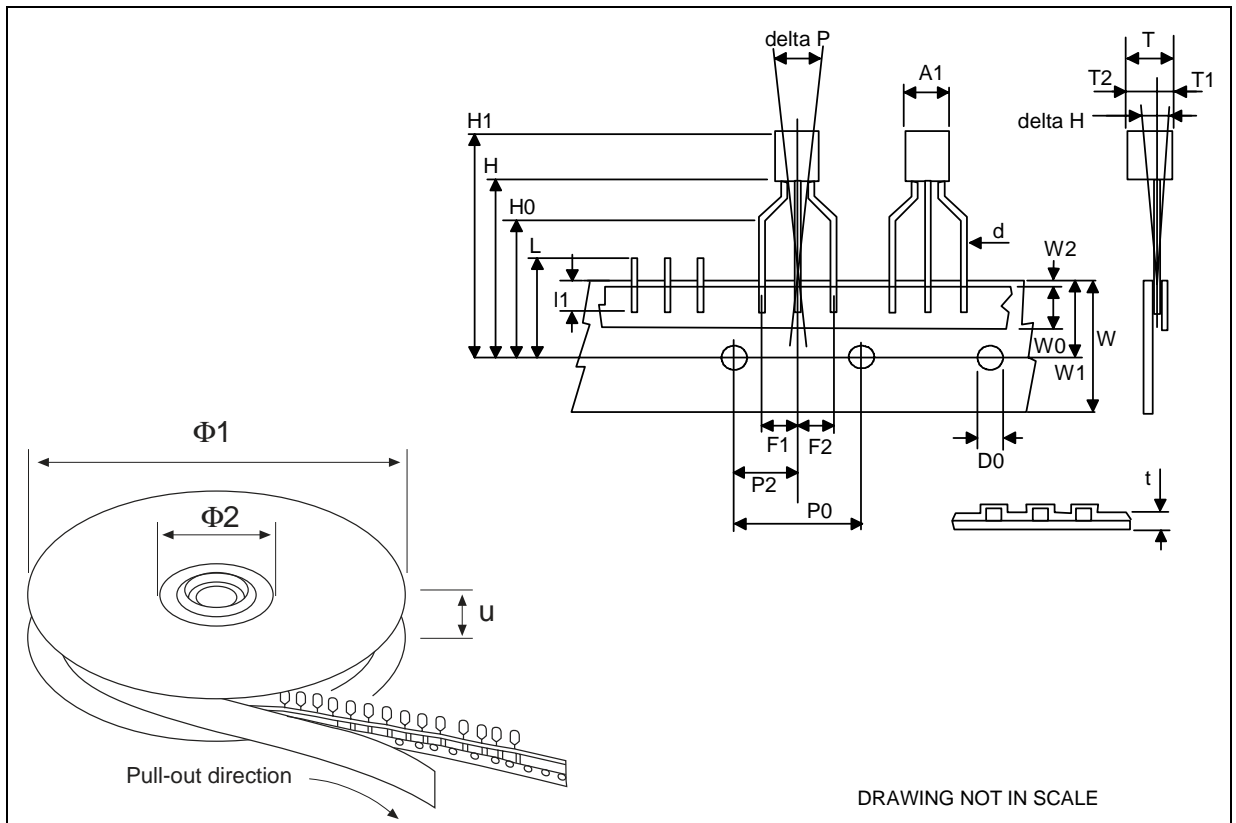


Table 5: Revision History

Date	Revision	Description of Changes
15-Mar-2005	10	Add Tape & Reel for TO-92.

Information furnished is believed to be accurate and reliable. However, STMicroelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of STMicroelectronics. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. STMicroelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of STMicroelectronics.

The ST logo is a registered trademark of STMicroelectronics

All other names are the property of their respective owners

© 2005 STMicroelectronics - All Rights Reserved

STMicroelectronics group of companies

Australia - Belgium - Brazil - Canada - China - Czech Republic - Finland - France - Germany - Hong Kong - India - Israel - Italy - Japan - Malaysia - Malta - Morocco - Singapore - Spain - Sweden - Switzerland - United Kingdom - United States of America

[www.st.com](http://www.st.com)