

### Features

- 2.5μA Ground Current at no Load
- ±2% Output Accuracy
- 200mA Output Current
- Wide Operating Input Voltage Range: 3V to 36V
- SOT-23 SOT89-3 SOT23-5 Package Available

### Applications

- Portable, Battery Powered Equipment
- Low Power Microcontrollers
- Laptop, Palmtops and PDAs
- Wireless Communication Equipment

### General Description

The TP375C series is a set of low power high voltage regulators implemented in CMOS technology which can provide 150mA output current. The device allows input voltage as high as 36V. The TP375C series is available in several fixed output voltages. CMOS technology ensures low dropout voltage and low quiescent current.

Although designed primarily as fixed voltage regulators, the device can be used with external components to obtain variable output voltages.

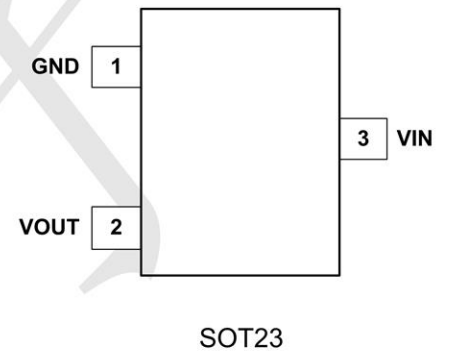
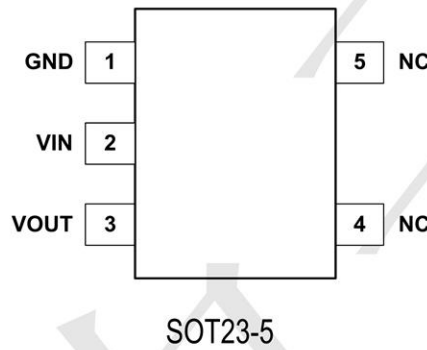
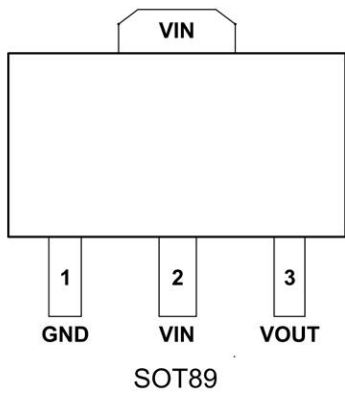
### Ordering Information

#### TP375C50S3

S5:SOT23-5 Package  
T3:SOT89-3Package  
S3:SOT23 Package

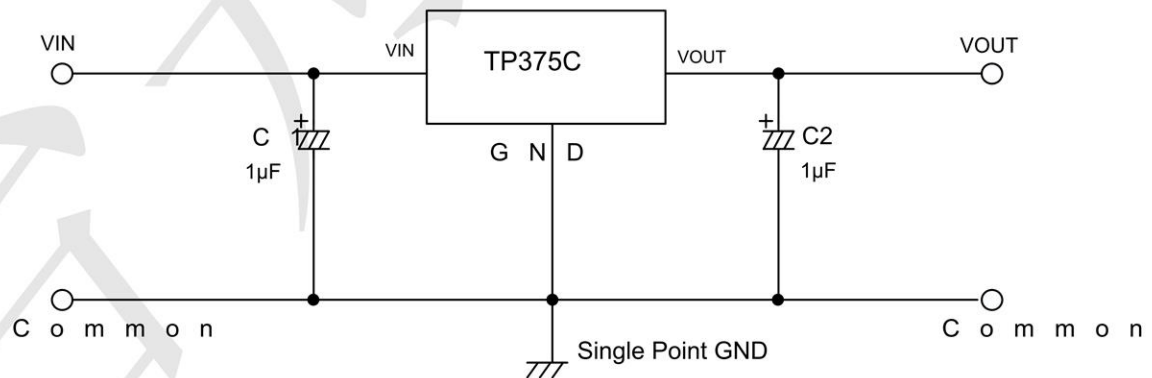
Output voltage: 12=1.2V  
15=1.5V  
18=1.8V  
30=3.0V  
33=3.3V  
50=5.0V

**PIN CONFIGURATION**

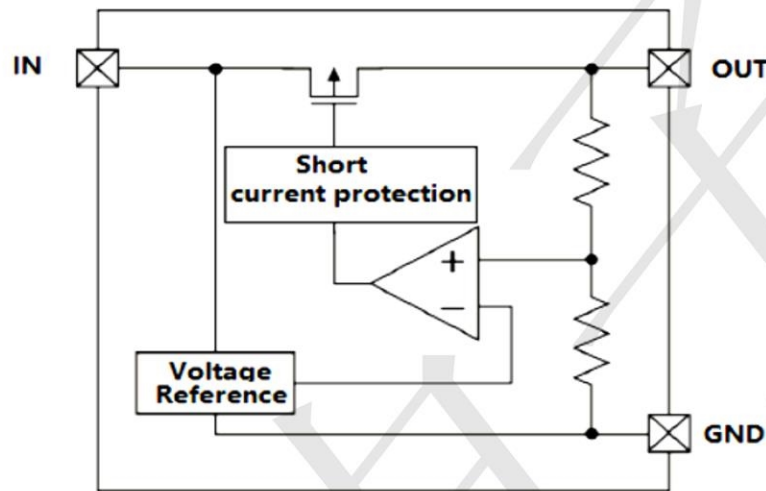


Pin Name	Pin Function
VIN	Power Input Voltage
GND	Ground
OUT	Output Voltage
NC	NO Connected
NC	NO Connected

**Typical Application Circuit**



**BLOCK DIAGRAM**



**Absolute Maximum Ratings**

Parameter		Value	Unit
Supply Voltage		-0.3 ~ +40	V
Power Dissipation	SOT-23	300	mW
	SOT-23-3	400	mW
	SOT-23-5	400	mW
	SOT-89	600	mW
Thermal Resistance, Junction-to-Ambient	SOT-23	330	°C/W
	SOT-23-3	380	°C/W
	SOT-23-5	380	°C/W
	SOT-89	180	°C/W
Operating Junction Temperature		-40 ~ +125	°C
Storage Temperature Range		-65 ~ +150	°C
Lead Temperature (Soldering, 10 sec)		300	°C
ESD(HBM mode, ESDA/JEDECJS-001-2017)		+2000	V

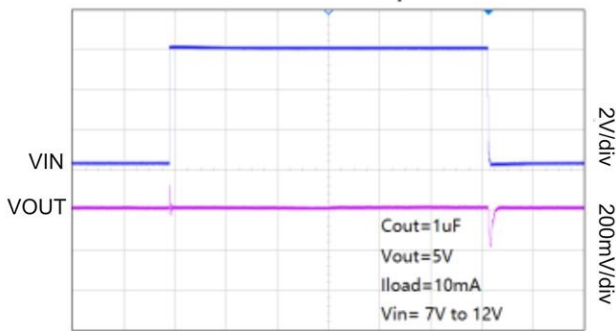
**Electrical Characteristics**

( $V_{IN}=V_{OUT}+2$ ,  $C_{IN}=1\mu F$ ,  $C_{OUT}=1\mu F$ ,  $T_A=25^\circ C$ , unless otherwise noted.)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit	
Input Voltage	$V_{IN}$		3	--	36	V	
Output Voltage Accuracy	$\Delta V_{OUT}$	$I_{OUT}=1mA$	-2	--	+2	%	
Maximum Output Current	$I_{OUT(Max)}$		150	--	--	mA	
Quiescent Current	$I_Q$	$I_{OUT}=0mA$	--	2.5	4	$\mu A$	
Dropout Voltage	$V_{DROP}$	$V_{OUT}=1.8V$	$I_{OUT}=150mA$	--	1250	1450	mV
			$I_{OUT}=100mA$	--	880	1050	mV
		$V_{OUT}=2.5V$	$I_{OUT}=150mA$	--	1150	1350	mV
			$I_{OUT}=100mA$	--	800	1000	mV
		$V_{OUT}=3.0V$	$I_{OUT}=150mA$	--	820	960	mV
			$I_{OUT}=100mA$	--	530	700	mV
		$V_{OUT}=3.3V$	$I_{OUT}=150mA$	--	800	950	mV
			$I_{OUT}=100mA$	--	520	680	mV
		$V_{OUT}=3.6V$	$I_{OUT}=150mA$	--	750	930	mV
			$I_{OUT}=100mA$	--	500	660	mV
$V_{OUT}=5.0V$	$I_{OUT}=150mA$	--	670	900	mV		
	$I_{OUT}=100mA$	--	420	600	mV		
Line Regulation	$\Delta V_{LINE}$	$V_{IN}=V_{OUT}+2V$ to 30V $I_{OUT}=10mA$	--	--	0.2	%/V	
Load Regulation	$\Delta V_{LOAD}$	$V_{IN}=V_{OUT}+2V$ , $1mA < I_{OUT} < 150mA$	--	25	60	mV	
Short Current Protection	$I_{Short}$	OUT Short to GND	--	80	--	mA	
Output Noise	$e_N$	10Hz to 100KHz $I_{OUT}=30mA$	--	120	--	$\mu V_{RMS}$	
Power Supply Rejection Ratio	PSRR	$V_{IN}=12V$ , $I_{OUT}=1mA$	--	68	--	dB	

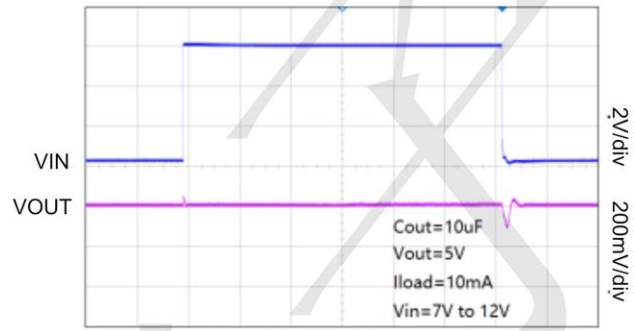
**Typical Operating Characteristics**

Line-Transient Response



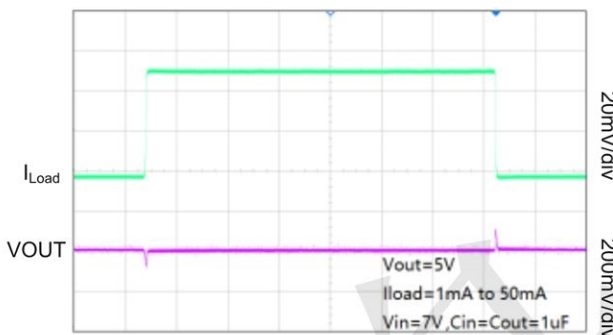
Time(1ms/div)

Line-Transient Response



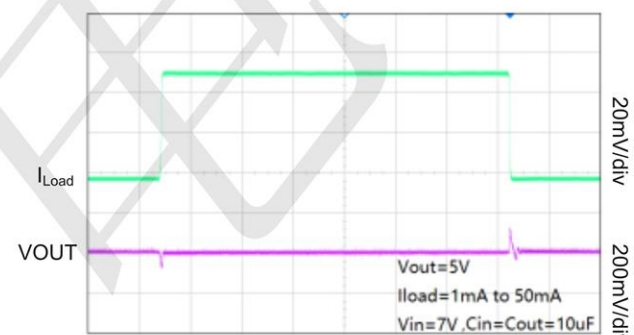
Time(1ms/div)

Load-Transient Response



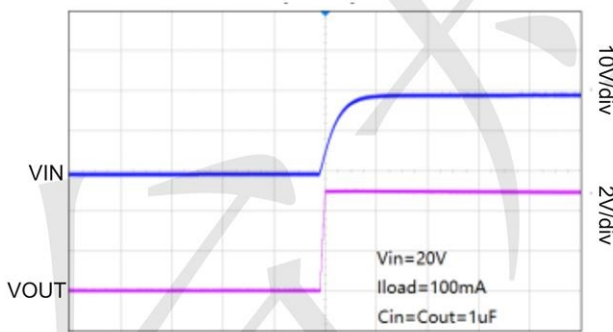
Time(5ms/div)

Load-Transient Response



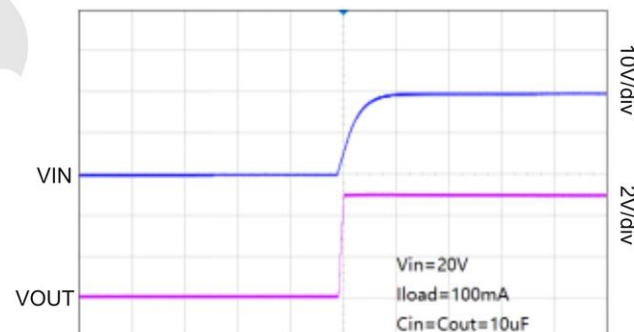
Time(5ms/div)

Start up Response



Time(10ms/div)

Start up Response



Time(10ms/div)





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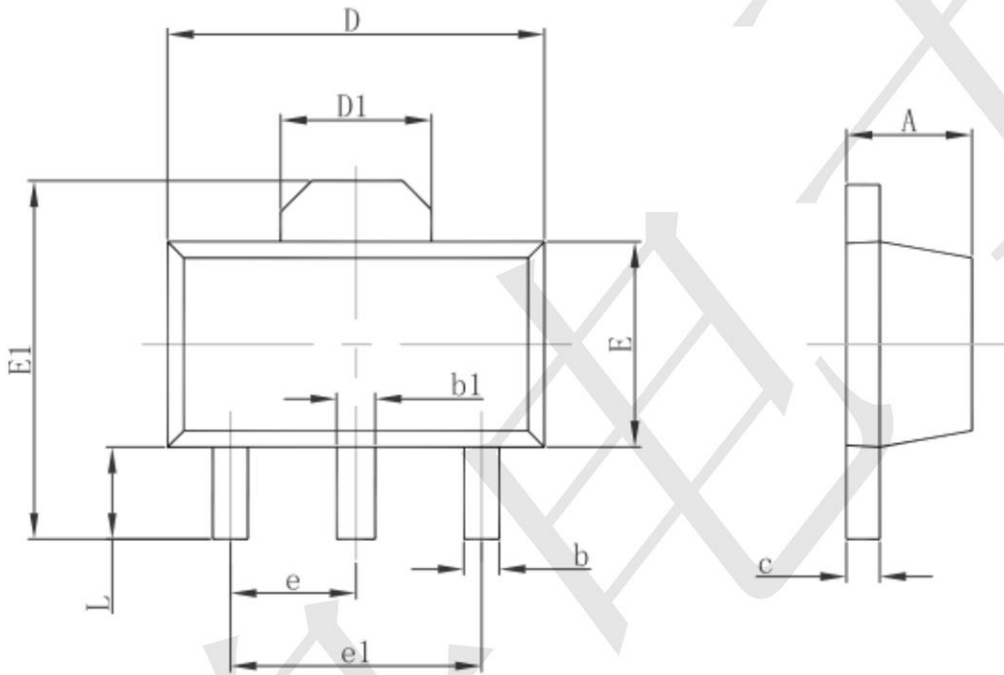
TP375C Series

36V,200mA,2.5uA, CMOS LDO Regulator

[www.sot23.com.tw](http://www.sot23.com.tw)

### Package information

SOT89-3



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.020
b1	0.400	0.580	0.016	0.023
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.550 REF.		0.061 REF.	
E	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500 TYP.		0.060 TYP.	
e1	3.000 TYP.		0.118 TYP.	
L	0.900	1.200	0.035	0.047



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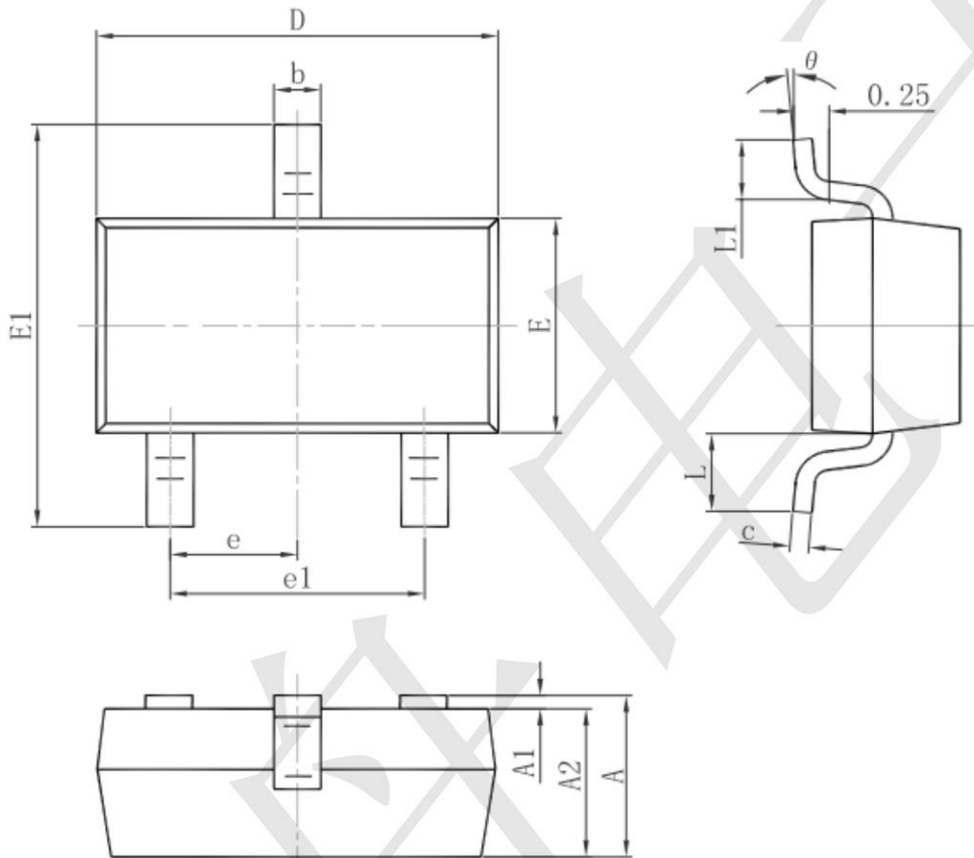
TP375C Series

36V,200mA,2.5uA, CMOS LDO Regulator

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Package information

SOT23

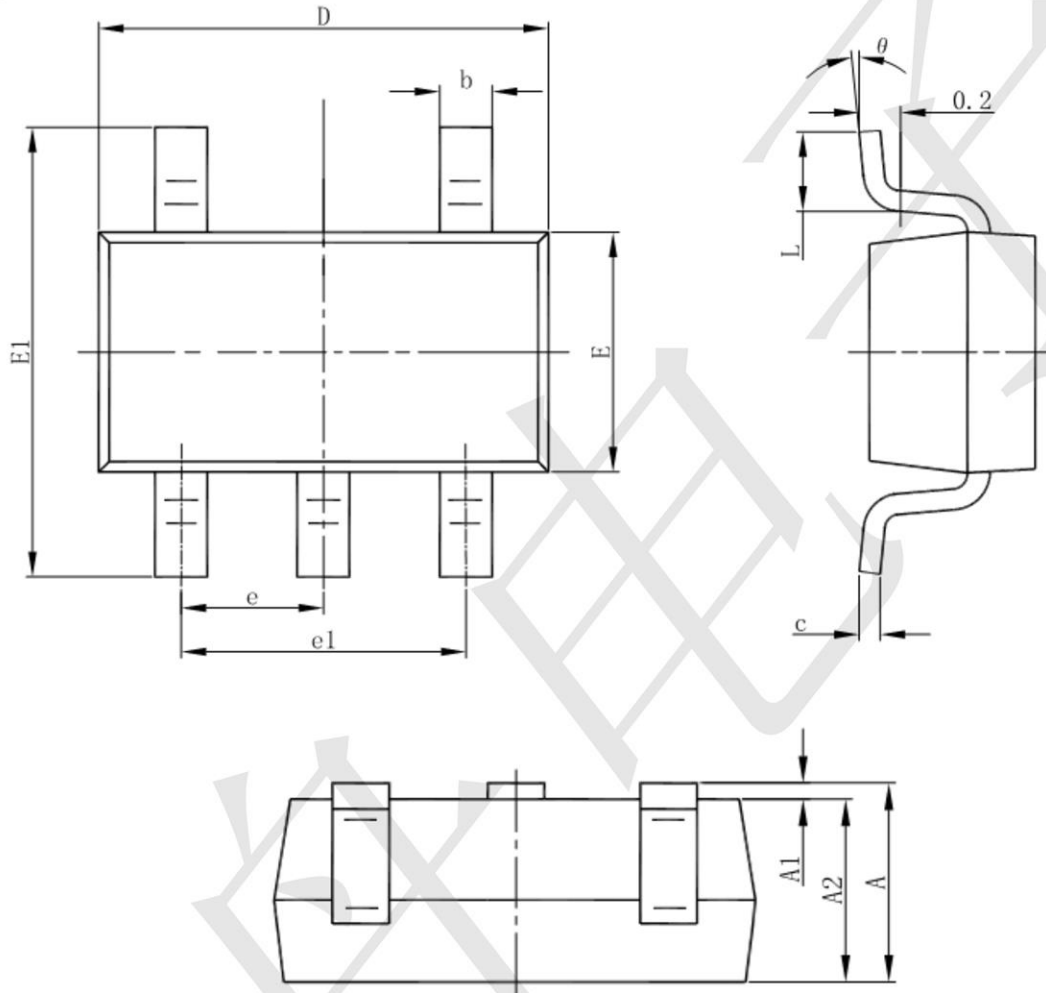


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP.		0.037 TYP.	
e1	1.800	2.000	0.071	0.079
L	0.550 REF.		0.022 REF.	
L1	0.300	0.500	0.012	0.020
$\theta$	0°	8°	0°	8°



**Package information**

SOT23-5



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
$\theta$	0°	8°	0°	8°