Features

- Low Quiescent Current：2.5uA
- High Input Voltage Rating：Up to 30V
- Low voltage drop
- Fixed Output Voltages：
  1.8V, 2.5V,3.0V, 3.3V,3.6V,
  4.0V,4.4V and 5.0V
- High-accuracy Output Voltage: ±2%
- Fast Transient Response
- Over current protection

Description

The YT75XXM series are highly accurate, LDO Voltage Regulators that are manufactured using CMOS technology and the input voltage of YT75XXM series is in Excess of 30V.

The YT75XXM features very fast response against line voltage transient and load current transient, and ensures no overshoot voltage during the YT75XXM start up and short circuit recovery.

The YT75XXM features integrated short-circuit shutdown protection.

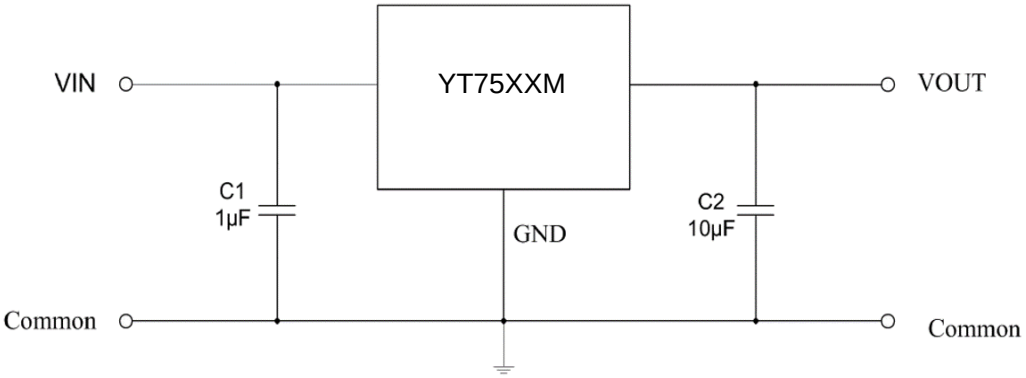
The YT75XXM is available with fixed output voltages of 1.8V, 2.5V, 3.0V, 3.3V,3.6V,4.0V,4.4V and 5.0V.

Application

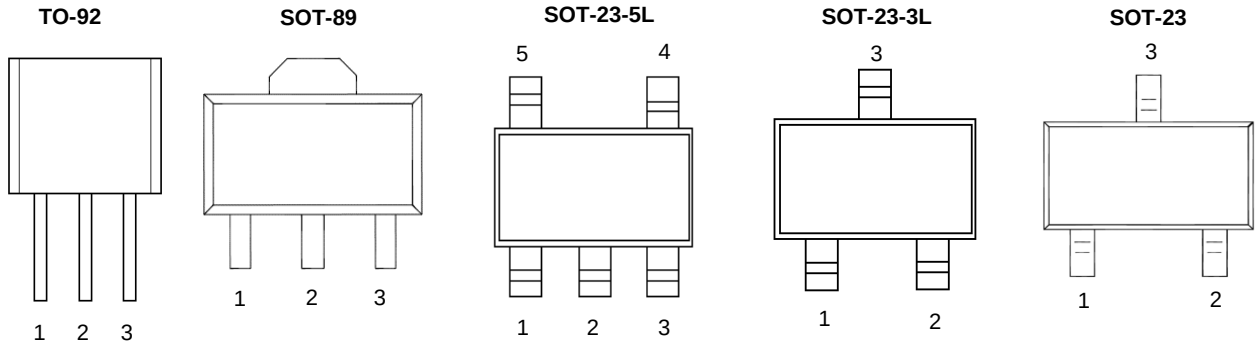
- Battery-powered equipment
- Smoke detector and sensor
- Micro controller Applications
- Home Appliance

Type	Output voltage	Package
YT7518M	1.8V	SOT-23 SOT-23-3L SOT-23-5L SOT-89 TO-92
YT7525M	2.5V	
YT7530M	3.0V	
YT7533M	3.3V	
YT7536M	3.6V	
YT7540M	4.0V	
YT7544M	4.4V	
YT7550M	5.0V	

Application Circuits

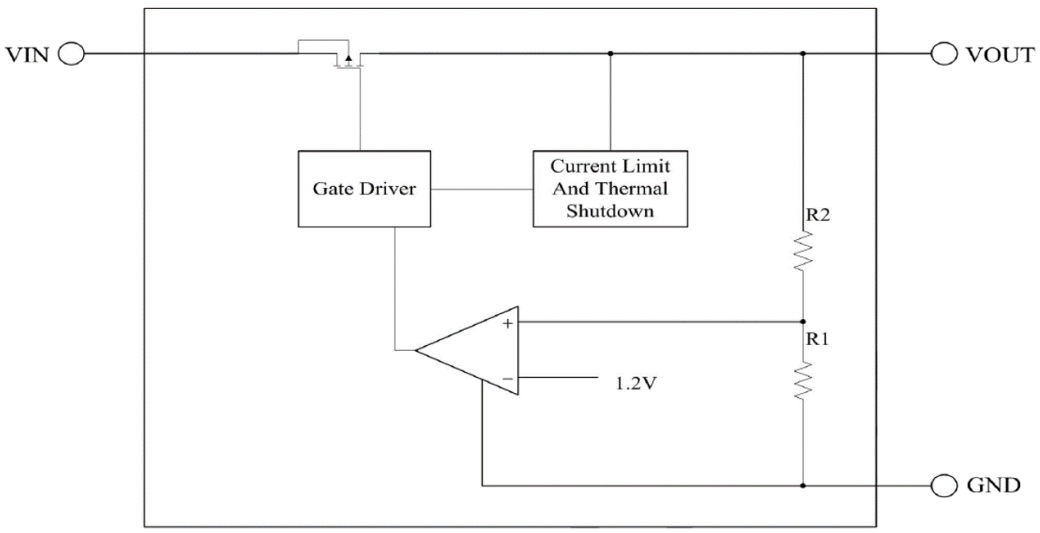


Packages And Pin Assignment



Pin No.					Pin Name	Pin Description
SOT-23	SOT-23-3L	SOT-23-5L	SOT-89	TO-92		
1	1	1	1	1	GND	Ground pin
3	3	2	2	2	VIN	Input pin
2	2	3	3	3	OUT	Output pin
-	-	4,5	-	-	NC	No connection

Functional Block Diagram



Absolute Maximum Ratings

Item	Description	Min	Max	Unit
Voltage	VIN to GND	-0.3	30	V
	VOUT to GND	-0.3	6	V
	VOUT to VIN	-30	0.3	V
Current	Peak Output Current	Internally Limited		
Temperature	Operating Junction Temperature	-40	125	℃
	Storage Temperature	-65	150	℃
Power Dissipation	TO-92	600		mW
	SOT-89	600		mW
	SOT-23-5L	400		mW
	SOT-23-3L	380		mW
	SOT-23	280		mW
Thermal Resistance (Junction to Ambient)	TO-92	165		℃/W
	SOT-89	165		℃/W
	SOT-23-5L	250		℃/W
	SOT-23-3L	260		℃/W
	SOT-23	360		℃/W
Electrostatic Discharge Rating	Human Body Model（HBM）	2		KV
	Charged Device Model（MM）	100		V

Electrical Characteristics

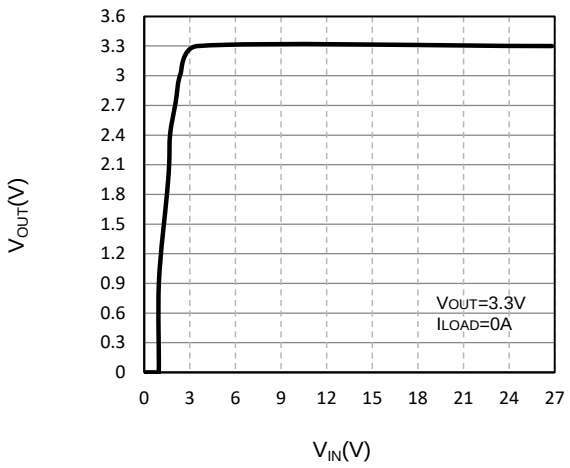
（At T_A=25℃, C_{IN}=1uF, V_{IN}=V_{OUTNOM}+1.0V, C_{OUT}=10uF, unless otherwise noted）

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
V_{IN}	Input Voltage	-	3.0	-	30	V
V_{OUT}	Output Voltage	V_{IN}=12V, I_{OUT}=10mA	V_{OUTNOM} * 0.98	V_{OUTNOM}	V_{OUTNOM} *1.02	V
I_{OUT}	Output Current		-	150	-	mA
I_{GND}	Quiescent Current	V_{IN}=12V,No load	-	2.5	-	uA
V_{DROP}	Dropout Voltage(1)	V_{OUT}=5V, I_{OUT}=50mA , V_{IN}=V_{OUTNOM}+0.7V	-	300	-	mV
I_{SHORT}	Short Current		-	100	-	mA
$\frac{\Delta VOUT}{\Delta VOUT}$	Load Regulation	V_{IN}=6V,1mA≤I_{OUT}≤50mA	-	0.2	-	mV/mA
$\frac{\Delta VOUT}{\Delta VIN}$	Line Regulation	I_{OUT}=1mA,V_{OUTNOM}+1V≤V_{IN}≤24V	-	0.1	-	mV/V
e_N	Output Noise	10Hz to 100kHz,I_{OUT}=30mA	-	120	-	uV_{RMS}

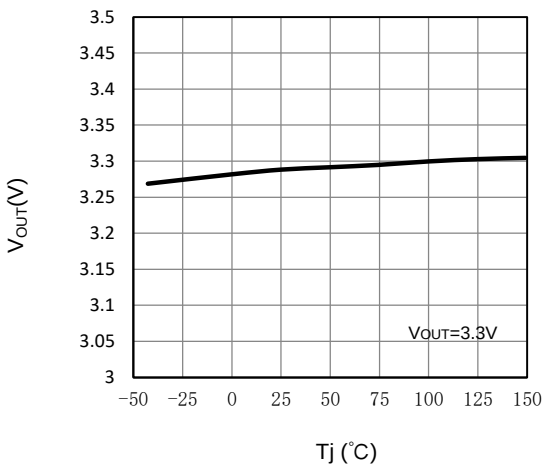
Note：(1) Dropout Voltage is the voltage difference between the input and the output at which the output voltage drops 2% below its nominal value.

Typical Performance Characteristic

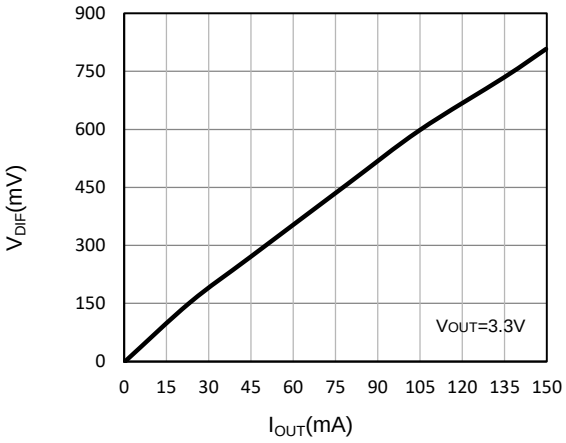
Output Voltage VS Input Voltage



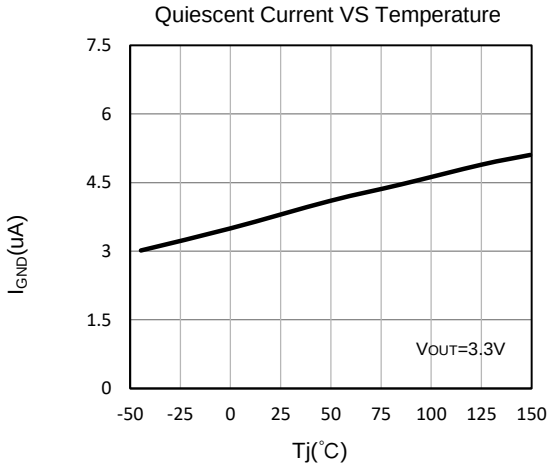
Output Voltage VS Temperature



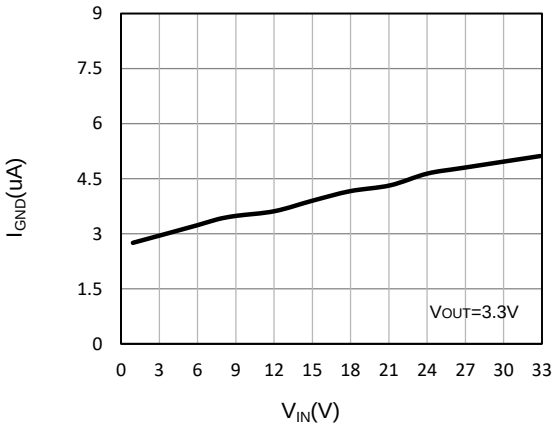
Dropout Voltage VS Output Current



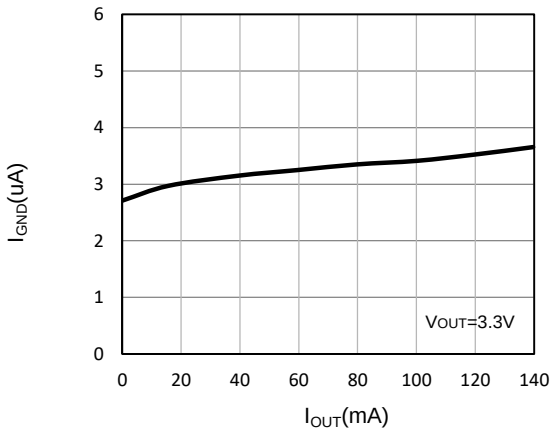
Quiescent Current VS Temperature



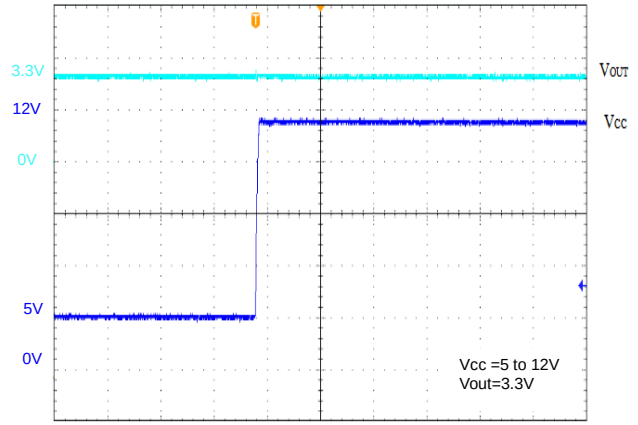
Quiescent Current VS Input Voltage



Quiescent Current VS Output Current

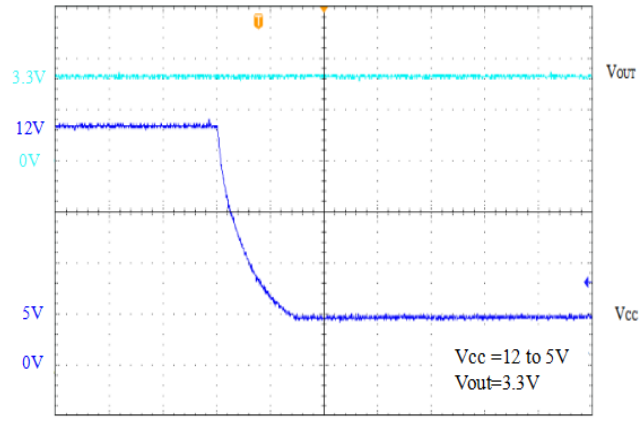


Line Transient Response



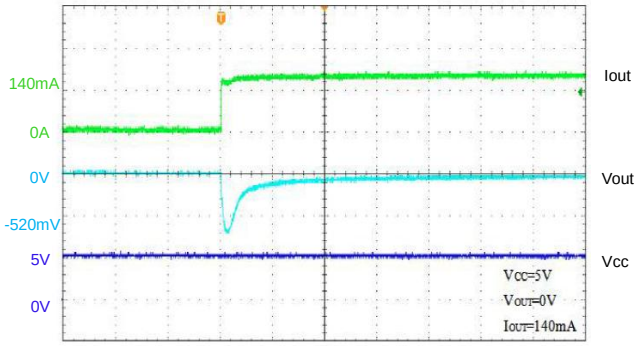
Time(4us/div)

Line Transient Response



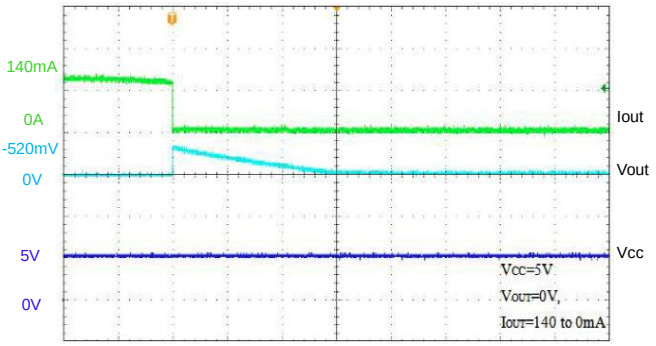
Time(4us/div)

Load Transient Response



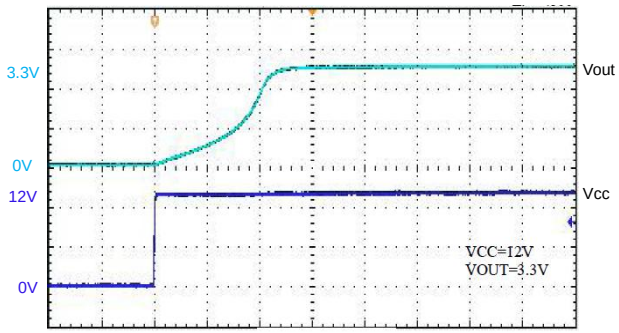
Time(20ns/div)

Load Transient Response



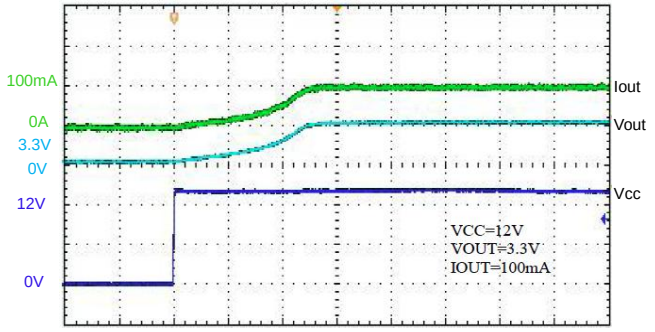
Time(200us/div)

Start Up



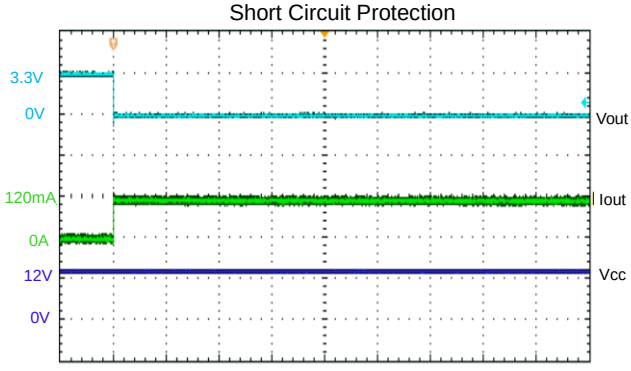
Time(40us/div)

Start Up



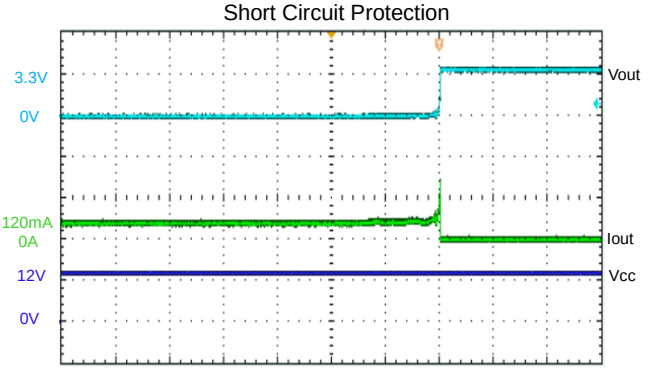
Time(40us/div)

Short Circuit Protection



Time(2ms/div)

Short Circuit Protection



Time(2ms/div)

Functional Description

Input Capacitor

A 1μF ceramic capacitor is recommended to connect between VIN and GND pins to decouple input power supply glitch and noise. The amount of the capacitance may be increased without limit. This input capacitor must be located as close as possible to the device to assure input stability and less noise. For PCB layout, a wide copper trace is required for both VIN and GND.

Output Capacitor

An output capacitor is required for the stability of the YT75XXM . The recommended minimum output capacitance is 10μF, ceramic capacitor is recommended, and temperature characteristics are X7R or X5R. Higher capacitance values help to improve load/line transient response. The output capacitance may be increased to keep low undershoot/overshoot. Place output capacitor as close as possible to VOUT and GND pins.

Current Limit and Short Circuit Protection

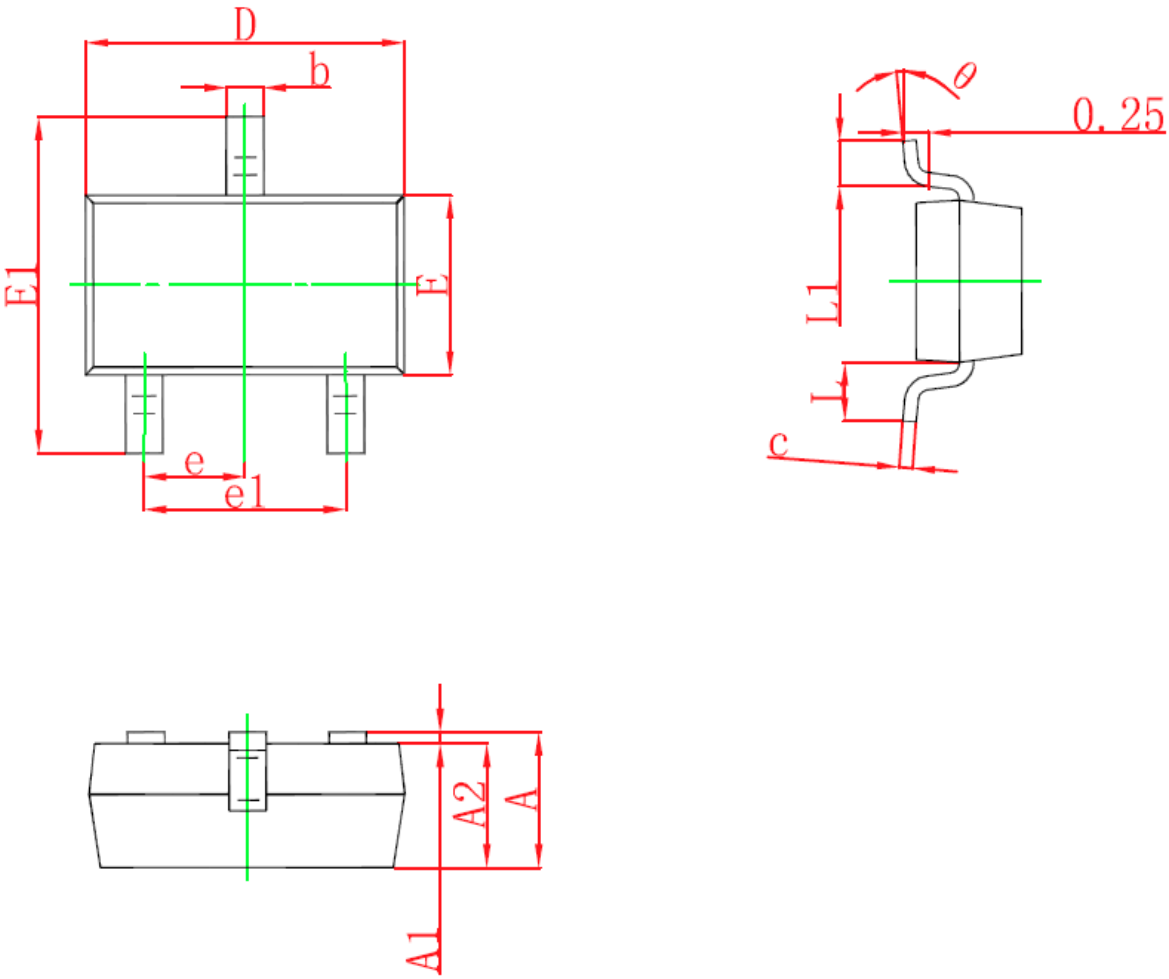
When output current at VOUT pin is higher than current limit threshold or the VOUT pin is direct short to GND, the current limit protection will be triggered and clamp the output current at a pre-designed level to prevent over-current and thermal damage.

Thermal Protection

The YT75XXM has internal thermal sense and protection circuits. When excessive power dissipation happens on the device, such as short circuit at the output pin or very heavy load current with a large voltage drop across the YT75XXM , the internal thermal protection circuit will be triggered, and it will shut down the power MOSFET to prevent the YT75XXM from damage. As soon as excessive thermal condition is removed and the temperature of the device drops down, thethermal protection circuit will lease the control of the power MOSFET, and the YT75XXM goes to normal operation.

Package Outline Dimensions

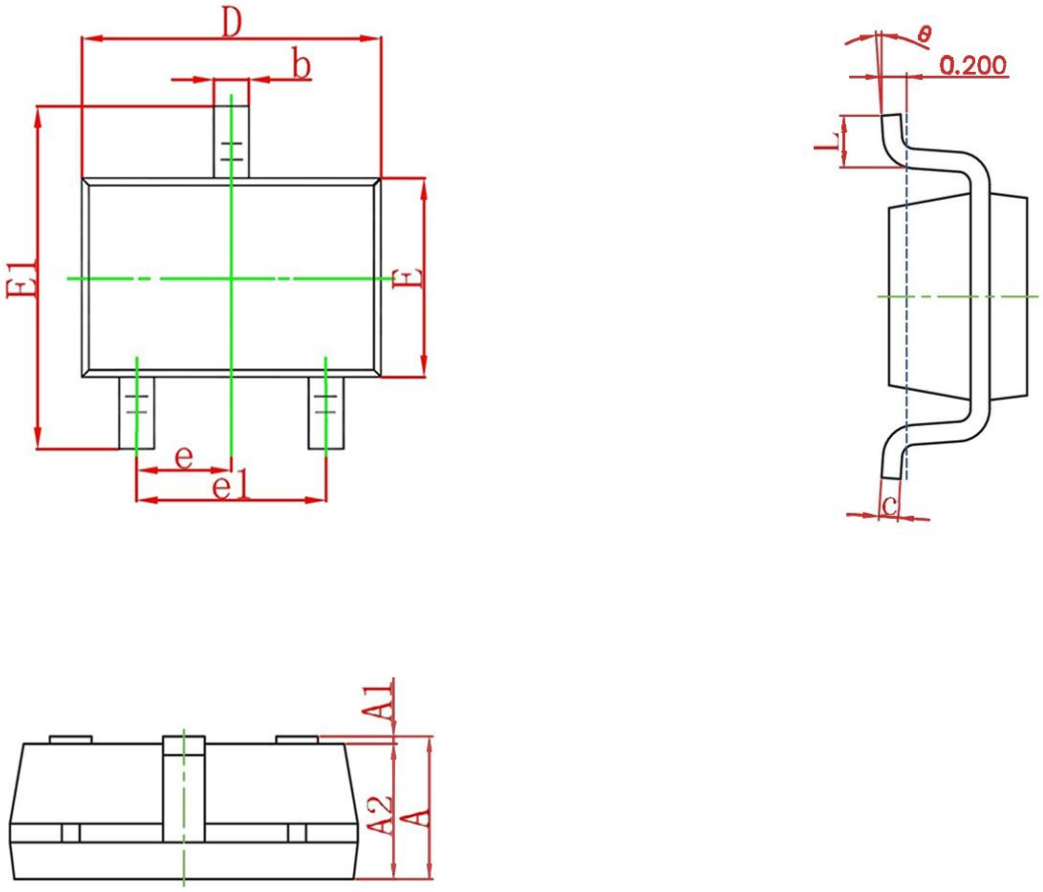
SOT-23



Symbol	Dimensions in Millimeters(mm)		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
E1	2.250	2.550	0.088	0.100
E	1.200	1.400	0.047	0.055
e	0.950TYP		0.037TYP	
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
θ	0°	8°	0°	8°

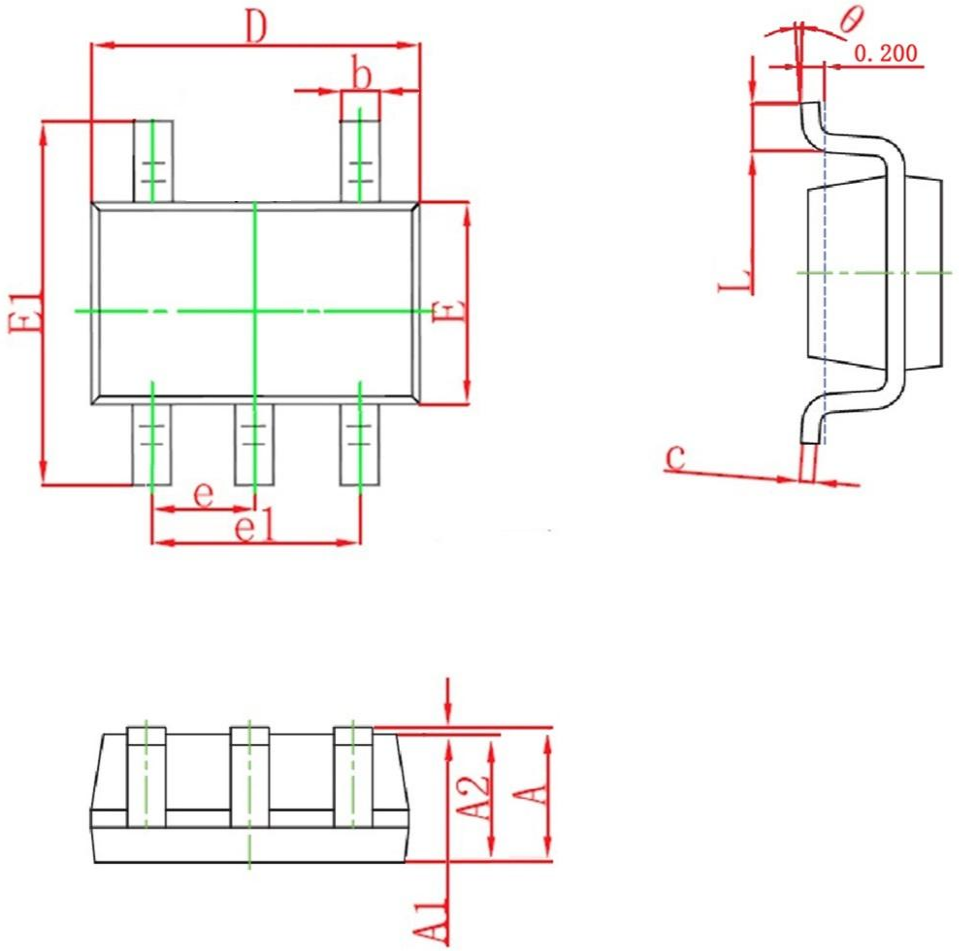
Package Outline Dimensions

SOT-23-3L



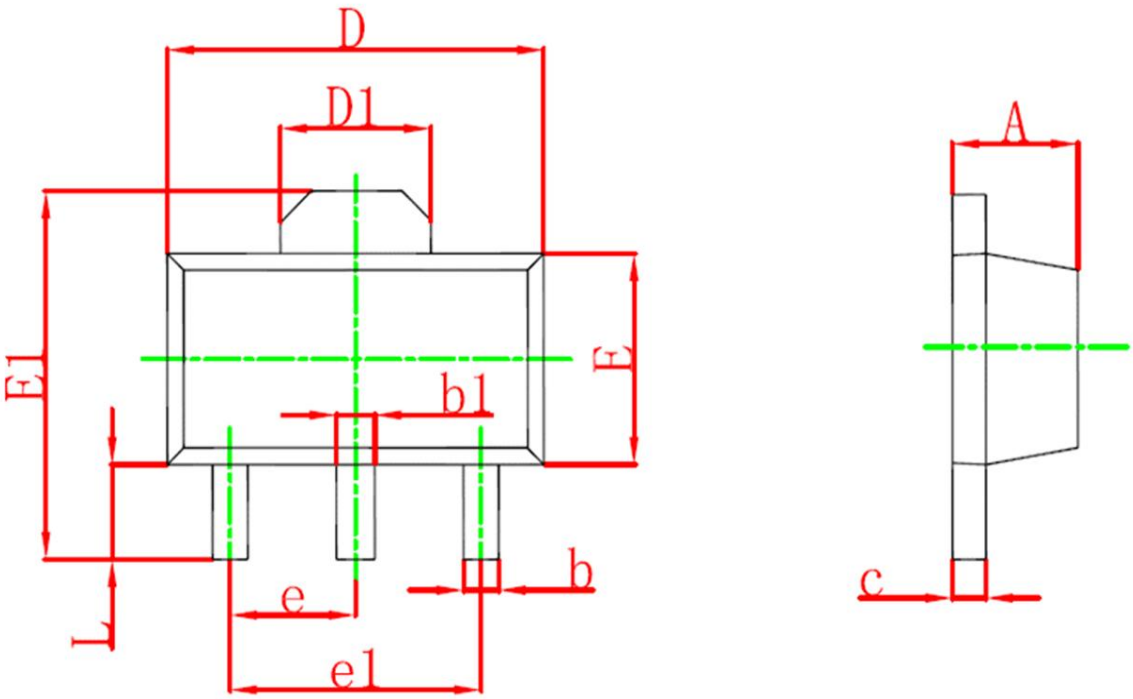
Symbol	Dimensions in Millimeters(mm)		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.042	0.050
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.042	0.046
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.112	0.120
E	1.500	1.700	0.060	0.068
E1	2.650	2.950	0.106	0.118
e	0.950TYP		0.037TYP	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

SOT-23-5L



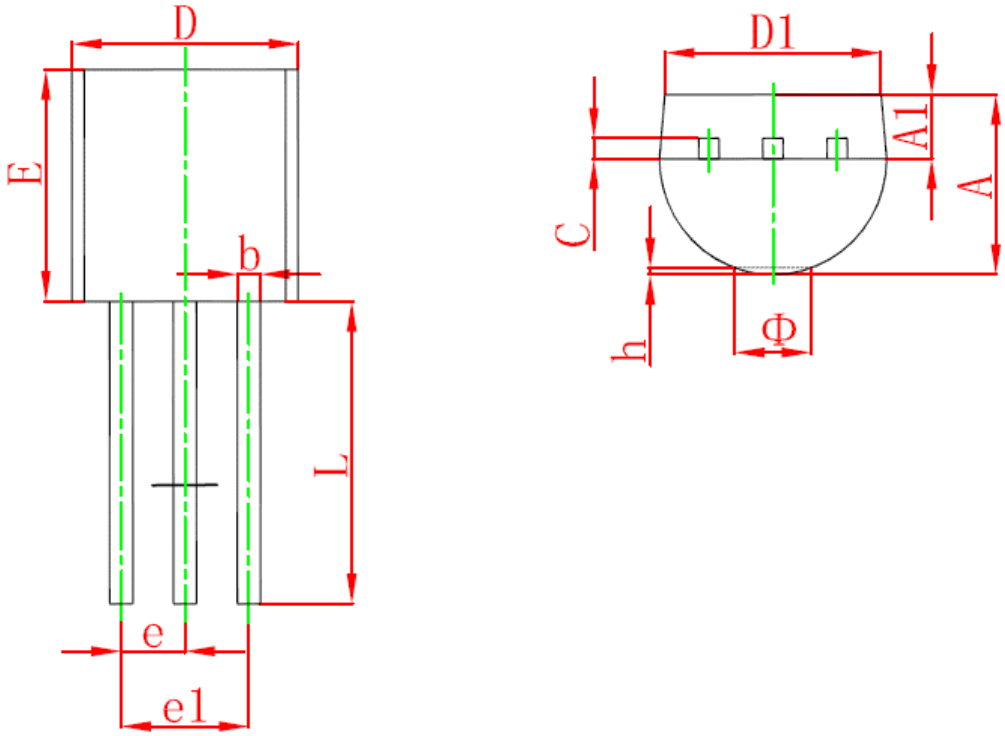
Symbol	Dimensions in Millimeters(mm)		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950TYP		0.037TYP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

SOT-89



Symbol	Dimensions in Millimeters(mm)		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

TO-92



Symbol	Dimensions in Millimeters(mm)		Dimensions In Inches	
	Min	Max	Min	Max
A	3.480	3.560	0.137	0.140
A1	1.100	1.400	0.043	0.055
b	0.390	0.500	0.015	0.020
c	0.360	0.400	0.014	0.016
D	4.400	4.800	0.173	0.189
D1	3.430		0.135	
E	4.500	4.700	0.177	0.185
e	1.250TYP		0.049TYP	
e1	2.440	2.640	0.096	0.104
L	13.000	15.000	0.512	0.590
Φ		1.600		0.063
h	0.000	0.380	0.000	0.015