***30V 100mA Low Power CMOS LDO***

## *DESCRIPTION*

The YHT75xx-2series is a set of three-terminal low power high voltage implemented in CMOS technology. They can deliver 100mA output current and allow an input voltage as high as 30V. They are available with several fixed output voltages ranging from 2.1V to 5.5V. CMOS technology ensure low voltage drop and low quiescent current

Although designed primarily as fixed voltage regulators, these devices can be used with external components to obtain variable voltages and currents

## *FEATURE*

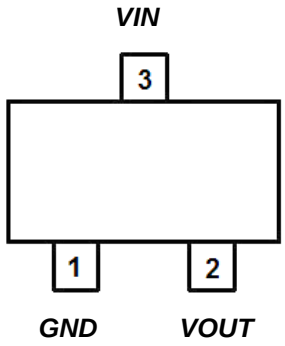
- ***Low power consumption***
- ***Low voltage drop***
- ***Low temperature coefficient***
- ***High input voltage 30V***
- ***Quiescent current 2.5uA***
- ***High output current 100mA***
- ***Output voltage accuracy : tolerance ±1%***
- ***SOT89, TO92, SOT23-5 packages***

## *APPLICATIONS*

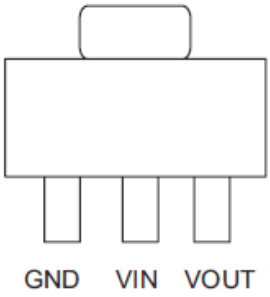
- Battery-powered equipment
- Communication equipment
- Audio/Video equipment

## *PIN CONFIGURATION*

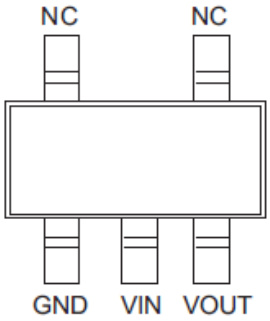
***SOT23-3***




**SOT89**




**SOT23-5**



## *ABSOLUTE MAXIMUM RATINGS ( $T_A$ = 25℃ Unless otherwise noted )*

| Symbol | Parameter | Typical | Unit |
|---|---|---|---|
| $V_{IN(MAX)}$ | Supply Voltage | 33 | V |
| $T_J$ | Operation Junction Temperature | 150 | ℃ |
| $T_{STG}$ | Storage Temperature Range | -55~+150 | ℃ |
| $T_{OPR}$ | Operation Temperature | -40~+80 | ℃ |

**Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress rating only and functional device operation is not implied**

## *THERMAL DATA*

| Symbol | Parameter | Package | Max | Unit |
|---|---|---|---|---|
| $R_{\theta JA}$ | Thermal Resistance-Junction to Ambient | SOT23-3L | 500 | ℃/W |
| | | SOT89 | 200 | ℃/W |
| | | TO92 | 200 | ℃/W |
| $P_D$ | Power Dissipation | SOT23-3L | 0.2 | W |
| | | SOT89 | 0.5 | W |
| | | TO92 | 0.5 | W |

## *ELECTRICAL CHARACTERISTICS($T_A$=25℃ Unless otherwise noted)*

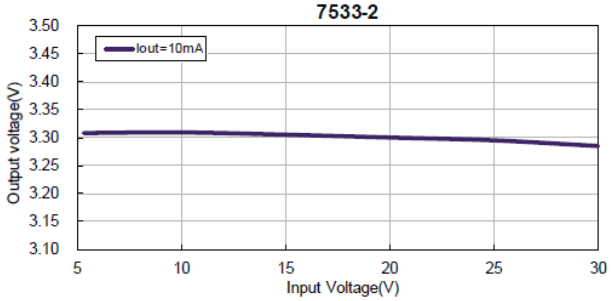
| Symbol | Parameter | Condition | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| $V_{IN}$ | Input Voltage | | | | 30 | V |
| $V_{OUT}$ | Output Voltage | $V_{IN}=V_{OUT}+2V$, $I_{OUT}$=10mA | $V_{OUT}$*0.99 | | $V_{OUT}$*1.01 | V |
| $I_{OUT}$ | Output Current | $V_{IN}=V_{OUT}+2V$ | 70 | 100 | | mA |
| $\Delta V_{OUT}$ | Load Regulation | $V_{IN}=V_{OUT}+2V$, 1mA≤$I_{OUT}$≤50mA | | 25 | 60 | mV |
| $V_{DIF}$ | Dropout Voltage | $I_{OUT}$=1mA,$\Delta V_{OUT}$=2 | | 30 | 100 | mV |
| $I_{SS}$ | Quiescent Current | No Load | | 2.5 | 4.0 | uA |
| $\Delta V_{OUT}/\Delta V_{IN}*V_{OUT}$ | Line Regulation | $V_{OUT}$+1V≤$V_{IN}$≤30V, $I_{OUT}$=1mA | | | 0.2 | %V |

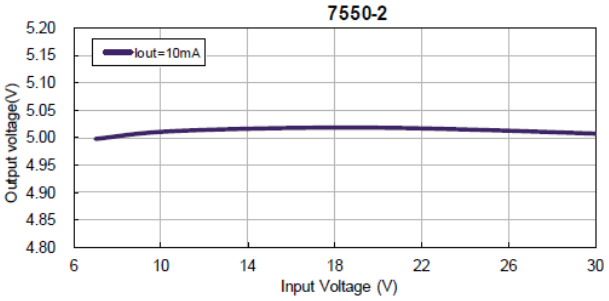
**Note: Dropout voltage is defined as the input voltage minus the output voltage that produces a 2% change in the output voltage from the value at $V_{IN}=V_{OUT}$+2V with a fixed load**

## *TYPICAL PERFORMANCE CHARACTERISTICS*

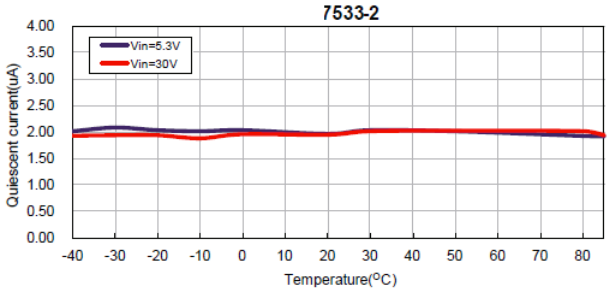
Test Condition : $V_{IN}=V_{OUT}+2V$, $I_{OUT}=10mA$, $T_J=25℃$, unless otherwise noted

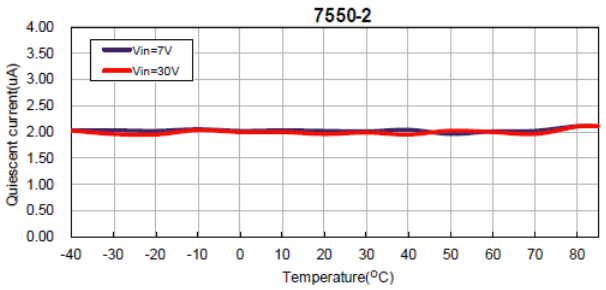
### Output Voltage vs Input Voltage



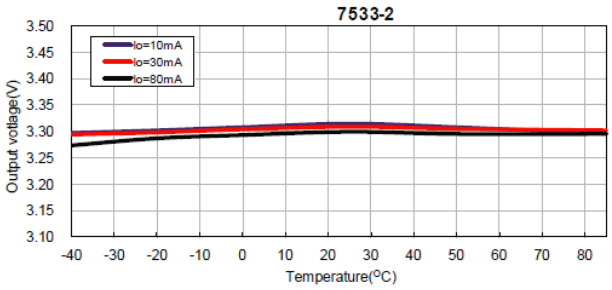



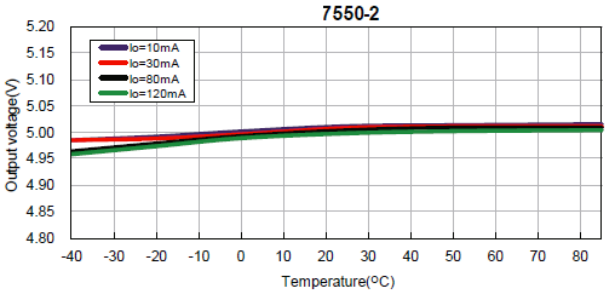

### Quiescent current (Iout=0mA) vs Temperature



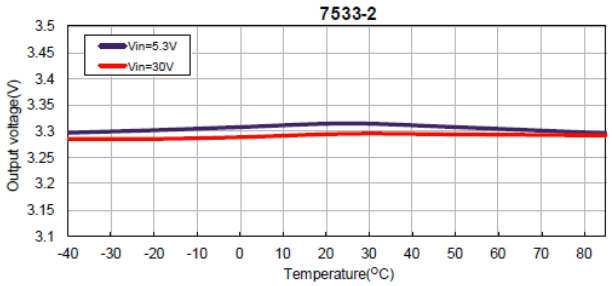



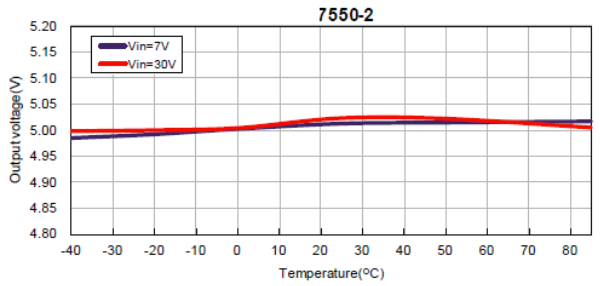

### Output Voltage vs Temperature



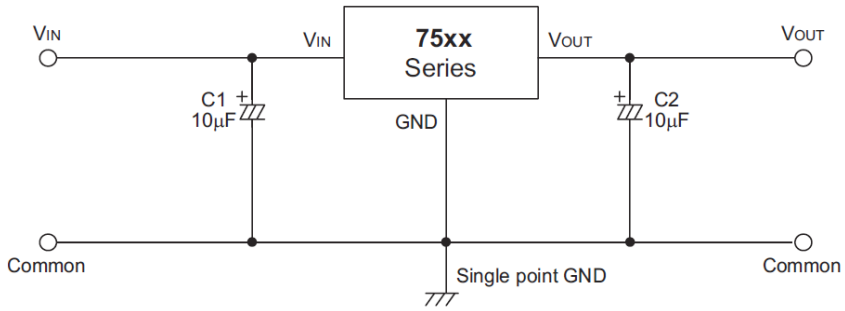

### Output Voltage vs Temperature



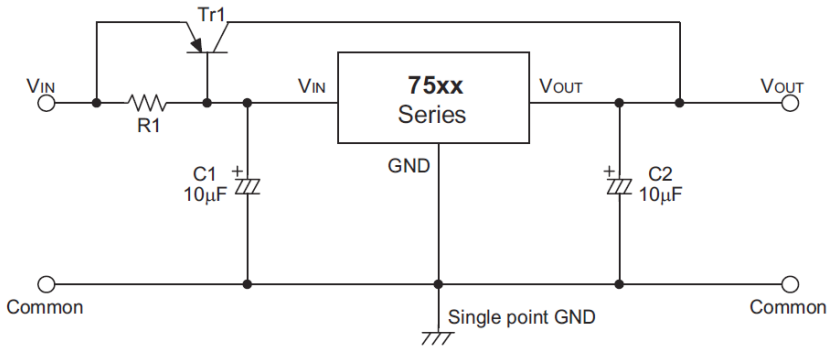



## ■ *APPLICATION CIRCUITS*

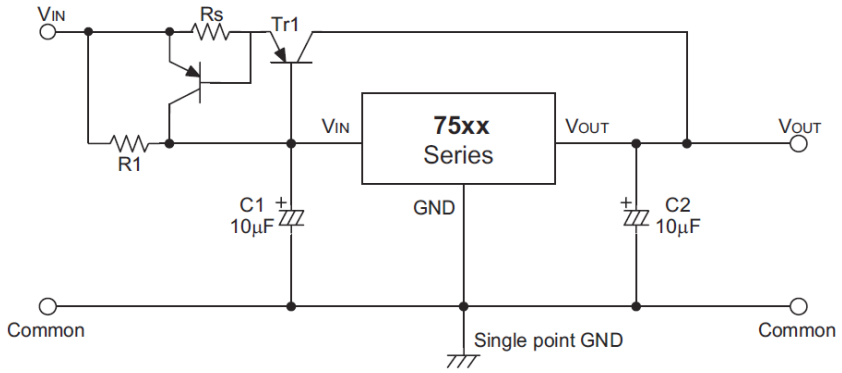
### Basic Circuit




### High Output Current Positive Voltage Regulator



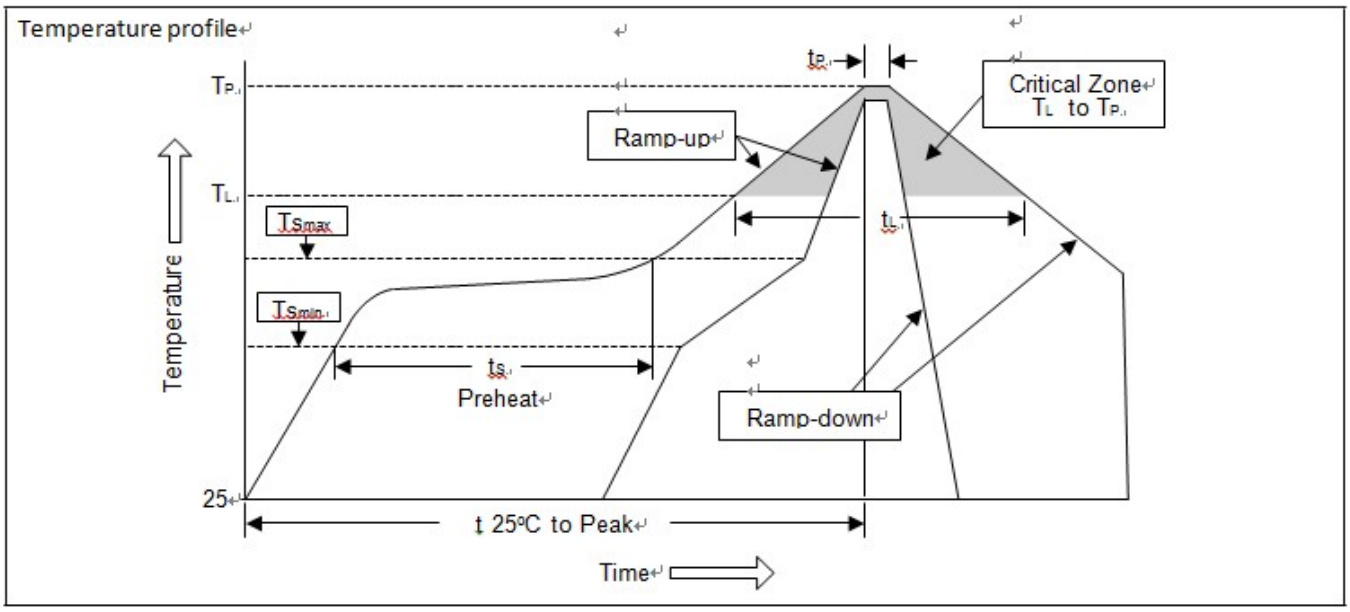

### Short-Circuit Protection for Tr1



## ■ *SOLDERING METHODS FOR UNIVERCHIP*

Storage environment Temperature=10℃~35℃ Humidity=65%±15%

Reflow soldering of surface mount device




| Profile Feature | Sn-Pb Eutectic Assembly | Pb free Assembly |
|---|---|---|
| Average ramp-up rate ($T_L$ to $T_P$) | <3℃/sec | <3℃/sec |
| Preheat<br>-Temperature Min ($Ts_{min}$)<br>-Temperature Max ($Ts_{max}$)<br>-Time (min to max) (ts) | <br>100℃<br>150℃<br>60~120 sec | <br>150℃<br>200℃<br>60~180 sec |
| Tsmax to $T_L$<br>-Ramp-up Rate | <3℃/sec | <3℃/sec |
| Time maintained above<br>-Temperature ($T_L$)<br>-Time ($t_L$) | <br>183℃<br>60~150 sec | <br>217℃<br>60~150 sec |
| Peak Temperature ($T_P$) | 240℃+0/-5℃ | 260℃+0/-5℃ |
| Time within 5℃ of actual Peak Temperature ($t_P$) | 10~30 sec | 20~40 sec |
| Ramp-down Rate | <6℃/sec | <6℃/sec |
| Time 25℃ to Peak Temperature | <6 minutes | <6 minutes |

Flow (wave) soldering (solder dipping)

| Product | Peak Temperature | Dipping Time |
|---|---|---|
| Pb device | 245℃±5℃ | 5sec±1sec |
| Pb-Free device | 260℃+0/-5℃ | 5sec±1sec |

**T**his integrated circuit can be damaged by ESD UniverChip Corporation recommends that all integrated circuits be handled with appropriate precautions. Failure to observe proper handling and installation procedure can cause damage. ESD damage can range from subtle performance degradation to complete device failure. Precision integrated circuits may be more susceptible to damage because very small parametric changes could cause the device not to meet its published specifications.