# WL2860CT

**Ultra-Low Noise, High PSRR LDO, 450mA Linear Regulator for RF and Analog Circuits**

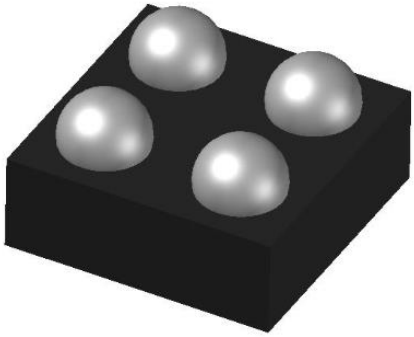
**Http://www.ovt.com**

## Descriptions

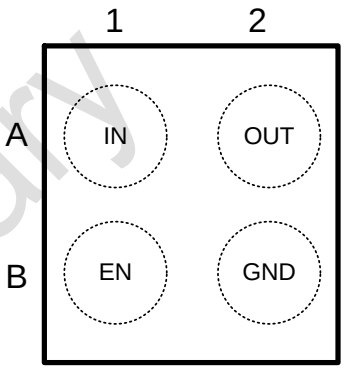
The WL2860CT is a linear regulator capable of supplying 450mA output current. Designed to meet the requirements of RF and analog circuits, the WL2860CT device provides low noise, high PSRR, low quiescent current and very good load /line transients.

The device is designed to work with a 1μF input and 1μF output ceramic capacitor (no separate noise Operation bypass capacitor is required).

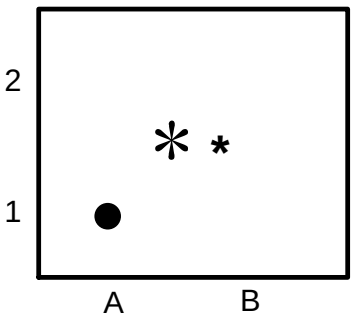
The WL2860CT regulators are available in standard CSP-4L Package. Standard products are Pb-free and Halogen-free.



**CSP-4L**




**Pin Configuration (Top View)**




**Marking**

*** : Voltage Code**

*** : Month Code**

## Features

- Input Voltage Range :2.2V~5.5V
- Output Voltage Range :1.2V~4.3V
- Output current :450mA
- PSRR :Typ.100dB at 10mA, f =1KHz
  :Typ. 45dB at 10mA , f =1MHz
- Low Dropout :Typ. 152mV at 450mA
- Quiescent current :Typ. 22μA
- Low Output Voltage Noise :Typ. 6μVRMS
- Output Voltage Tolerance :±2%
- Shutdown Current :Typ. 0.01μA
- UVLO Threshold(V) :Typ. 2.05V
- Recommend capacitor :1uF
- Stable with 1μF Ceramic Input and Output capacitor
- No Noise Bypass Capacitor Required
- Thermal-Overload Protection

## Applications

- Cell phones , radiophone, digital cameras
- Bluetooth, wireless handsets
- HiFi products
- Others portable electronic device

## Order Information

For detail order information, please see page 5



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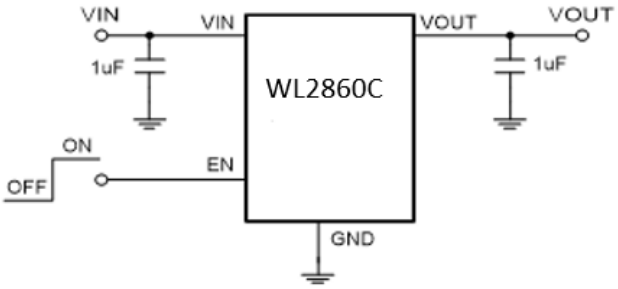
## Typical Application



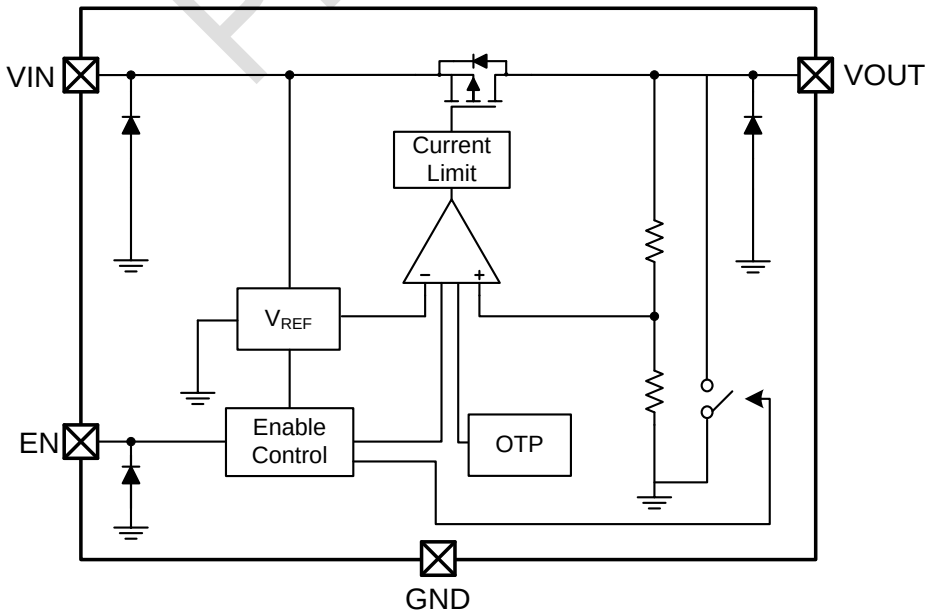

**Note : The input and output capacitor must be located a distance of not more than 1 cm**

## PIN Functions

| PIN | Symbol | Description |
|---|---|---|
| A1 | IN | Input voltage supply pin , 1μF capacitor should be connected at this input |
| A2 | OUT | Regulated output voltage. 1μF capacitor should be connected at this input |
| B1 | EN | Chip enable: Applying VEN < 0.4 V disables the regulator, Pulling VEN > 1.2 V enables the LDO. |
| B2 | GND | Common ground connection |



## Block Diagram



## Absolute Maximum Ratings

| Parameter | | Value | Unit |
|---|---|---|---|
| Power Dissipation, PD@$T_A$=25 ºC | | Internally Limited | mW |
| $V_{IN}$ Range | | -0.3～6.0 | V |
| $V_{EN}$ Range | | −0.3 to $V_{IN}$ + 0.3 | V |
| $V_{OUT}$ Range | | −0.3 to $V_{IN}$ + 0.3 | V |
| $I_{OUT}$ | | 450 | mA |
| Lead Temperature Range | | 260 | ºC |
| Storage Temperature Range | | -55 ~ 150 | ºC |
| Operating Junction Temperature Range | | 150 | ºC |
| ESD Ratings | HBM | 2000 | V |
| | MM | 200 | V |

## Recommend Operating Ratings

| Parameter | Value | Unit |
|---|---|---|
| Operating Supply voltage | 2.2～5.5 | V |
| Operating Temperature Range | -40～85 | ºC |
| Thermal Resistance, $R_{\theta JA}$ | TBD | ºC/W |



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**Electronics Characteristics ($V_{IN}$=$V_{OUT(NOM)}$+1V, $C_{IN}$=$C_{OUT}$=1uF, $V_{EN}$ = 1.2 V. Typical values are at Ta = +25°C ,unless otherwise noted)**

| Parameter | Symbol | Condition | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| Operating Input Voltage | $V_{IN}$ | | 2.2 | | 5.5 | V |
| Output Voltage Accuracy | $V_{OUT}$ | $V_{IN}$ = $V_{OUT(NOM)}$ + 1 V<br>$I_{OUT}$=1mA | -2 | | +2 | % |
| Output Current Limit | $I_{LIM}$ | $V_{OUT}$ = 90% VOUT(NOM) | 450 | | | mA |
| Dropout Voltage | | $V_{OUT}$=2.8$V_{(NOM)}$, $I_{OUT}$=450mA | | 152 | | mV |
| | | $V_{OUT}$=3.0$V_{(NOM)}$, $I_{OUT}$=450mA | | 145 | | |
| Line Regulation | △$V_{LINE}$ | $V_{IN}$=($V_{OUT}$+1)V~5V ,<br>$I_{OUT}$=1mA | | 0.1 | 6.5 | mV |
| Load Regulation | △$V_{Load}$ | $I_{OUT}$=1~450mA | | 10 | | mV |
| Quiescent Current | $I_Q$ | $I_{OUT}$=0mA | | 22 | | μA |
| Short Current | $I_{SHORT}$ | $V_{OUT}$=0V | | 550 | | mA |
| Shut-down Current | $I_{SHDN}$ | $V_{EN}$=0V, $V_{IN}$ = 4.8 V | | 0.01 | 1.0 | μA |
| Power Supply Rejection Rate | PSRR | $I_{OUT}$ =10mA, f=100Hz | | 95 | | dB |
| | | f=1KHz | | 100 | | |
| | | f=100KHz | | 62 | | |
| | | f=1MHz | | 45 | | |
| EN logic high voltage | $V_{ENH}$ | $V_{IN}$=5.5V, $I_{OUT}$=1mA | 1.2 | | | V |
| EN logic low voltage | $V_{ENL}$ | $V_{IN}$=5.5V, $V_{OUT}$=0V | | | 0.4 | V |
| EN Input Current | $I_{EN}$ | $V_{EN}$ = 0 to 5.5V | | | 1 | μA |
| Turn−On Time | | $C_{OUT}$ = 1μF, From assertion of VEN to<br>$V_{OUT}$ = 95% $V_{OUT}$ (NOM) | | 1 | | mS |
| Output Voltage Noise | $e_{NO}$ | 10Hz to 100KHz, $I_{OUT}$ =1mA | | 6 | | μVRMS |
| | | $I_{OUT}$ =200mA | | 5 | | |
| Thermal shutdown threshold | $T_{SDH}$ | Temperature rising | | 150 | | °C |
| | $T_{SDL}$ | Temperature falling | | 120 | | °C |
| Under voltage lock out threshold | $V_{UVLO}$ | | | 2.05 | | V |
| Active Output Discharge Resistance | $R_{LOW}$ | $V_{EN}$<0.4V | | 300 | | Ω |
| Line Transient | $Tran_{LINE}$ | $V_{IN}$ = ( $V_{OUT(NOM)}$ + 2 V ) to ( $V_{OUT(NOM)}$ + 1 V ) in 30 us, $I_{OUT}$ = 1 mA | −1 | | | mV |
| | | $V_{IN}$ = ( $V_{OUT(NOM)}$ + 1 V ) to ( $V_{OUT(NOM)}$ + 2 V ) in 30 us, $I_{OUT}$ = 1 mA | | | +1 | |
| Load Transient | $Tran_{LOAD}$ | $I_{OUT}$ = 1 mA to 450 mA in 10 us | −20 | | | mV |
| | | $I_{OUT}$ = 450 mA to 1 mA in 10 us | | | +20 | |



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# ORDER INFORMATION

| Ordering No. | Vout (V) | Package | Operating Temperature | Marking | Shipping |
|---|---|---|---|---|---|
| WL2860CT12-4/TR | 1.2 | CSP-4L | -40~+85°C | ** | Tape and Reel, 3000 |
| WL2860CT18-4/TR | 1.8 | CSP-4L | -40~+85°C | ** | Tape and Reel, 3000 |
| WL2860CT28-4/TR | 2.8 | CSP-4L | -40~+85°C | ** | Tape and Reel, 3000 |
| WL2860CT29-4/TR | 2.9 | CSP-4L | -40~+85°C | ** | Tape and Reel, 3000 |
| WL2860CT30-4/TR | 3.0 | CSP-4L | -40~+85°C | ** | Tape and Reel, 3000 |
| WL2860CT33-4/TR | 3.3 | CSP-4L | -40~+85°C | ** | Tape and Reel, 3000 |

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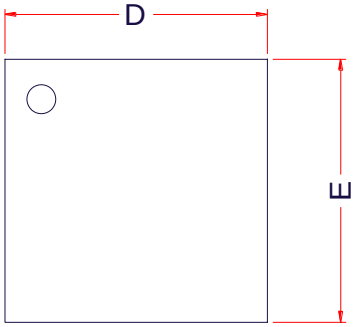
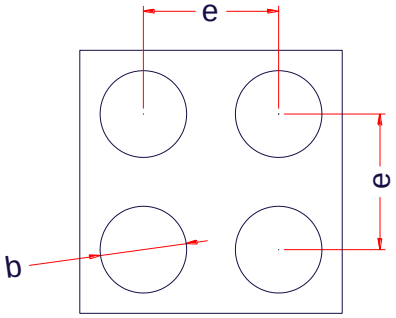
## PACKAGE OUTLINE DIMENSIONS

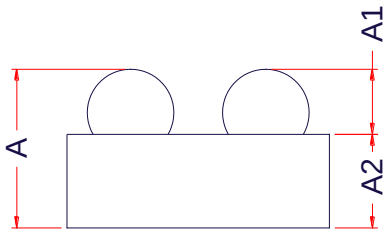
### CSP-4L




TOP VIEW




BOTTOM VIEW




SIDE VIEW



| Symbol | Dimensions in Millimeters | | |
|---|---|---|---|
| | Min. | Typ. | Max. |
| A | 0.220 | 0.260 | 0.300 |
| A1 | 0.040 | 0.060 | 0.080 |
| A2 | 0.180 | 0.200 | 0.220 |
| D | 0.610 | 0.630 | 0.660 |
| E | 0.610 | 0.630 | 0.660 |
| e | 0.350BSC | | |
| b | 0.140 | 0.160 | 0.180 |

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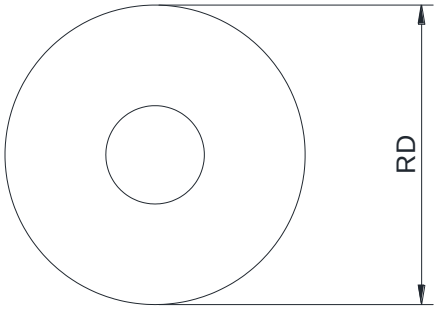
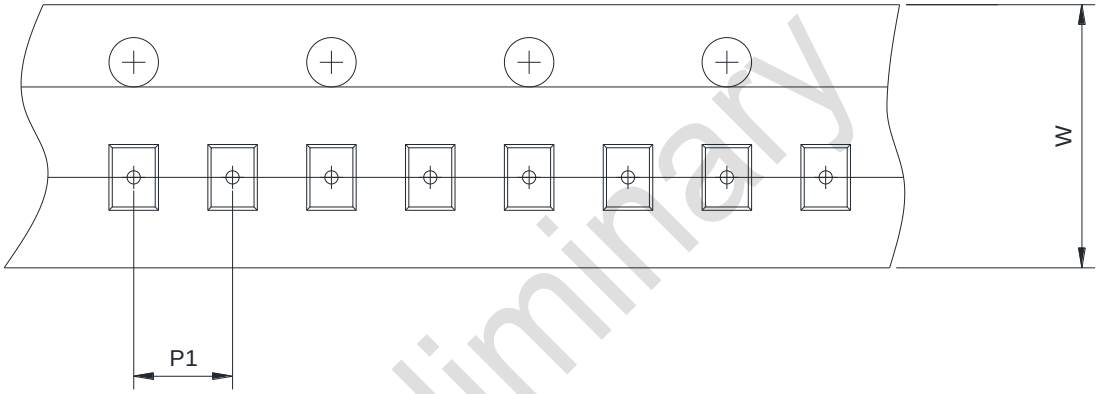
## TAPE AND REEL INFORMATION

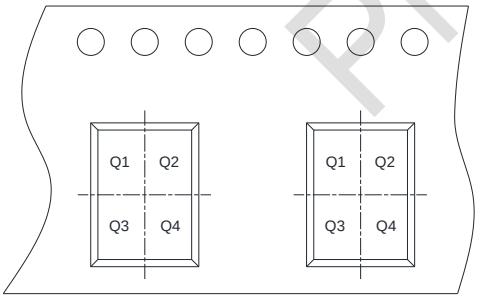
### Reel Dimensions




### Tape Dimensions




### Quadrant Assignments For PIN1 Orientation In Tape




User Direction of Feed

| | | | | | |
|---|---|---|---|---|---|
| RD | Reel Dimension | ☑ 7inch | ☐ 13inch | | |
| W | Overall width of the carrier tape | ☑ 8mm | ☐ 12mm | ☐ 16mm | |
| P1 | Pitch between successive cavity centers | ☐ 2mm | ☑ 4mm | ☐ 8mm | |
| Pin1 | Pin1 Quadrant | ☑ Q1 | ☐ Q2 | ☐ Q3 | ☐ Q4 |



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