# PT5127

## Dual Outputs 200mA High PSRR LDO

## GENERAL DESCRIPTION

The PT5127 is a dual channel low-dropout voltage regulator designed for portable and wireless applications that require high PSRR, low quiescent current and excellent line and load transient response. The PT5127 is stable with a small 1µF ceramic capacitor on the output. With its better than 75dB PSRR at 1kHz, the PT5127 is ideal for battery powered systems for delivering low dropout voltage and low quiescent current.

This device can be used for mobile phones and similar battery powered wireless applications. It provides up to 200mA at each channel, from a 2.0V to 5.5V input. The PT5127 consumes less than 0.1µA in shutdown mode. The PT5127 is available in 6 pin SOT23 package. The output voltage is available at 1.8V, 2.5V, 2.8V, 3.3V and 1.5V/3.0V.

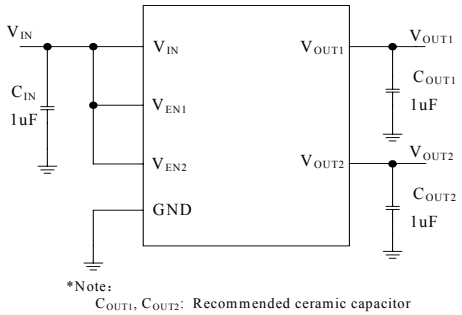
## FEATURES

- 2.0V to 5.5V input range
- 200mA guaranteed output current (each channel)
- High PSRR: 75dB at 1KHz (each channel)
- 180mV maximum low dropout voltage with 100mA load (each channel)
- Low quiescent current: 50uA (Typ.)
- Current Limiting and Thermal Protection
- -40°C to +85°C junction temperature for operation

## APPLICATIONS

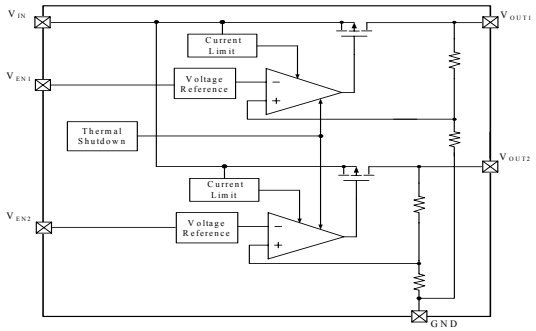
- CDMA/GSM mobile phone
- Laptop computers
- PDAs/MP3
- WLAN and bluetooth appliances
- Cordless telephones
- Battery powered portable devices

## TYPICAL APPLICATIONS

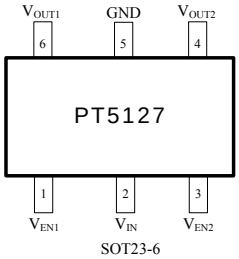



*Note:
$C_{OUT1}$, $C_{OUT2}$: Recommended ceramic capacitor

## BLOCK DIAGRAM




## PIN ASSIGNMENT




SOT23-6

## PIN DESCRIPTIONS

| Symbol | SOT23-6 | Description |
|---|---|---|
| $V_{IN}$ | 2 | Input of LDO |
| GND | 5 | Ground |
| $V_{EN1}$ | 1 | LDO1 Enable Input Logic, Enable High |
| $V_{EN2}$ | 3 | LDO2 Enable Input Logic, Enable High |
| $V_{OUT1}$ | 6 | Output of LDO1 |
| $V_{OUT2}$ | 4 | Output of LDO2 |

## ABSOLUTE MAXIMUM RATINGS

| PARAMETER | | VALUE | UNIT |
|---|---|---|---|
| $V_{IN}$ Range | | -0.3~6.0V | V |
| $V_{OUT1}$, $V_{OUT2}$ Range | | -0.3~($V_{IN}$+0.3)< 6.0V | V |
| $V_{EN\,1}$, $V_{EN\,2}$ Range | | -0.3~6.0V | V |
| Maximum Power Dissipation | SOT23-5 | 360 | mW |
| | SC70-5 | | |
| Junction Temp. | | 150 | °C |
| Storage Temp. | | -65~150 | °C |
| Lead Temp. | | 235 | °C |
| ESD Rating, HBM | | 2 | KV |

## OPERATING RANGE

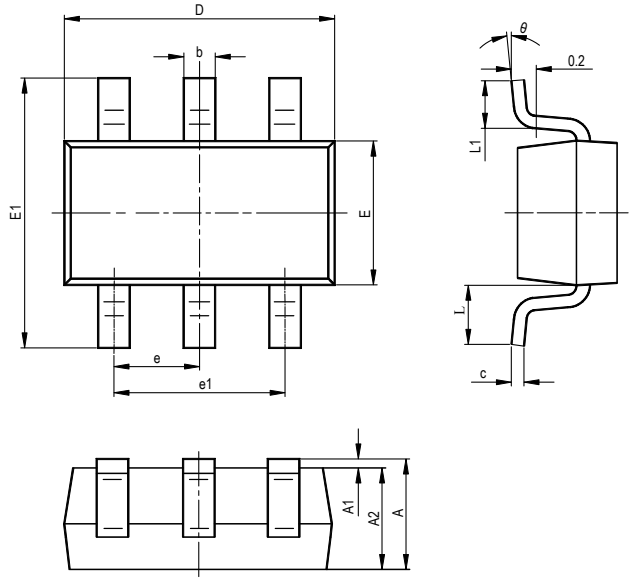
| PARAMETER | | VALUE | UNIT |
|---|---|---|---|
| $V_{IN}$ Range | | -0.3~5.5V | V |
| $V_{EN\,1}$, $V_{EN\,2}$ Range | | -0.3~($V_{IN}$+0.3)<5.5V | V |
| Thermal Resistance, $\theta_{JA}$ | SOT23-5 | 220 | °C/W |
| | SC70-5 | | |
| Maximum Power Dissipation | SOT23-5 | 250 | mW |
| | SC70-5 | | |
| Operation Temp. | | -40~85 | °C |

## ELECTRICAL CHARACTERISTICS

Unless otherwise specified: $V_{IN} = V_{OUT(nom)} + 1.0V$, $V_{EN} = V_{IN}$, $C_{IN} = 1uF$, $I_{OUT} = 30mA$, $C_{OUT} = 1uF$, $T_A = +25°C$.

| Symbol | Parameter | Conditions | | | Typ. | Min. | Max. | Unit |
|---|---|---|---|---|---|---|---|---|
| $\Delta V_{OUT}$ | Output Voltage Error | $I_{OUT}$ = 30mA | | | | -2 | 2 | $\%V_{OUT}$ |
| | Line Regulation Error | $I_{OUT}$ = 30mA, $V_{IN}$=($V_{OUT(nom)}$ + 0.5V) to 5.5V | | | 0.01 | -0.1 | 0.1 | %/V |
| | Load Regulation Error | $I_{OUT}$ = 1mA to 150mA | | | 15 | | 50 | mV |
| $I_{OUTMAX}$ | One output Maximum Output Current | | | | | 200 | | mA |
| PSRR | Power Supply Rejection Ratio | $V_{IN} = V_{OUT(nom)} + 1.0V$ | f = 1kHz | $I_{OUT}$ = 50mA | 75 | | | dB |
| | | | | $I_{OUT}$ = 150mA | 75 | | | |
| | | | f = 10kHz | $I_{OUT}$ = 50mA | 70 | | | |
| | | | | $I_{OUT}$ = 150mA | 65 | | | |
| $I_Q$ | Quiescent Current | $I_{OUT}$ = 0mA，$V_{OUT}$ = 2.5V | | | 50 | | 100 | uA |
| | | $V_{EN}$ = 0V | | | 0.1 | | 1.0 | |
| $V_{DIFF}$ | Dropout Voltage | $I_{OUT}$ = 50mA | | | 50 | | 90 | mV |
| | | $I_{OUT}$ = 100mA | | | 100 | | 180 | |
| $I_{SC}$ | One Output Short Current Limit | One of the Outputs Grounded | | | 500 | | | mA |
| $T_{ON}$ | Turn-On Time | | | | 150 | | | us |
| $V_{IL}$ | Maximum Low Input Level at $V_{EN1}$ and $V_{EN2}$ | $V_{IN}$ = 2.5 to 5.5 | | | | | 0.4 | V |
| $V_{IH}$ | Minimum High Input Level at $V_{EN1}$ and $V_{EN2}$ | $V_{IN}$ = 2.5 to 5.5 | | | | 1.4 | | V |
| TSD | Thermal Shutdown Temperature | | | | 160 | | | °C |
| | Thermal Shutdown Hysteresis | | | | 20 | | | °C |
| $\Delta V_{OUT}$/ $V_{OUT}$ | $V_{OUT}$ Temperature Characteristics | Temperature = -40 to 125°C | | | 100 | | | ppm/°C |

## PACKAG INFORMATION




| Symbol | Millimeters | | 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 | 0.400 | 0.012 | 0.016 |
| 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 | 0.700REF | | 0.028REF | |
| L1 | 0.300 | 0.600 | 0.012 | 0.024 |
| θ | 0° | 8° | 0° | 8° |