



SOT-223



Pin Definition:

1. Input
2. Ground (tab)
3. Output

General Description

TS4264 is a 5V low-drop fixed-voltage regulator in an SOT-223 package. The IC regulates an input voltage in the range of $5.5V < V_{IN} < 45V$ to $V_{OUT} \text{ (rated)} = 5.0V$. The maximum output current is more than 150mA. This IC is designed with short circuit-proof and features temperature protection that disables the circuit at over-temperature.

Features

- Fixed Output Voltage 5V
- Output Voltage Tolerance $\pm 2\%$
- 150mA Current Capability
- Ultra Low Dropout Voltage
- Over Temperature Protection
- Very Low Current Consumption 400uA (max.)
- Short-Circuit Proof
- Reverse Polarity Proof
- Wide Temperature Polarity Range
- Suitable for use in Automotive Electronics

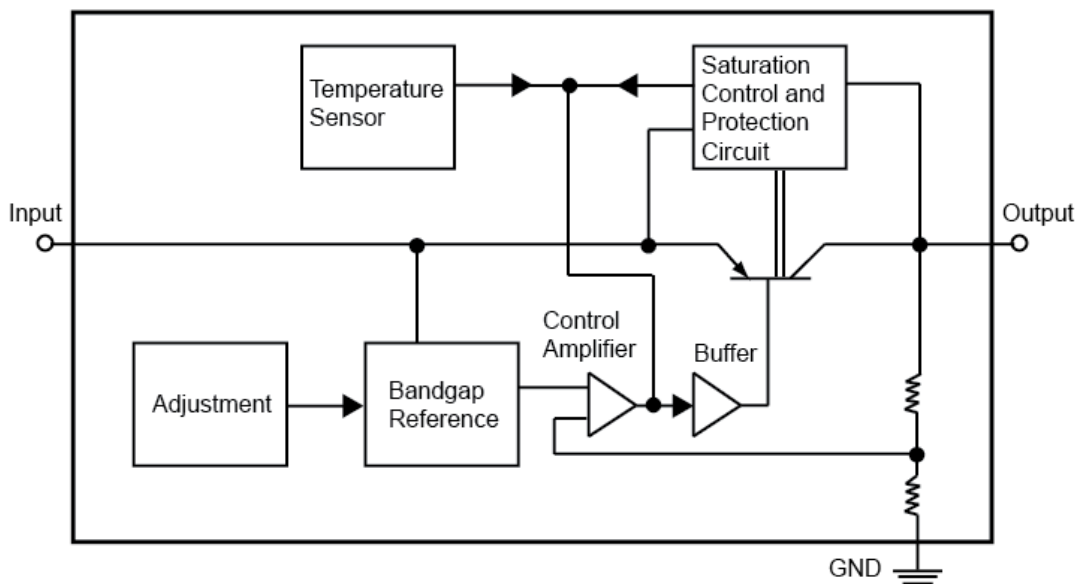
Ordering Information

| Part No. | Package | Packing |
|---------------|---------|--------------------|
| TS4264CW50 RP | SOT-223 | 2.5Kpcs / 13" Reel |

Pin Definition and Function

| Pin | Symbol | Function |
|-----|--------|---|
| 1 | Input | Block to ground directly on IC with ceramic capacitor |
| 2 | Ground | Ground |
| 3 | Output | Block to ground with 10uF capacitor, ESR < 10Ω |

Block Diagram



Absolute Maximum Rating

| Parameter | Symbol | Limit Values | | Unit | Notes |
|--|---------------|--------------|------|------|--------------------|
| | | Min. | Max. | | |
| Input Voltage | V_{IN} | -42 | 45 | V | |
| Input Voltage (Operating Range) | $V_{IN(OPR)}$ | 5.5 | 45 | V | |
| Input Current | I_{IN} | -- | -- | -- | Internally Limited |
| Output Voltage | V_{OUT} | -0.3 | 32 | V | |
| Output Current | I_{OUT} | -- | -- | -- | Internally Limited |
| Ground Current | I_{GND} | 50 | -- | mA | |
| Junction Temperature | T_J | -- | 150 | °C | |
| Junction Temperature (Operating Range) | $T_{J(OPR)}$ | -40 | 150 | °C | |
| Storage Temperature | T_{STG} | -50 | 150 | °C | |

Thermal Performance

| Parameter | Symbol | Limit Values | | Unit | Notes |
|-------------------------------------|----------------|--------------|------|------|-------|
| | | Min. | Max. | | |
| Thermal Resistance Junction-Ambient | $R\theta_{JA}$ | -- | 80 | °C/W | |
| Thermal Resistance Junction-Pin | $R\theta_{JP}$ | -- | 17 | °C/W | |

Note: Measured to pin 2 (tab)

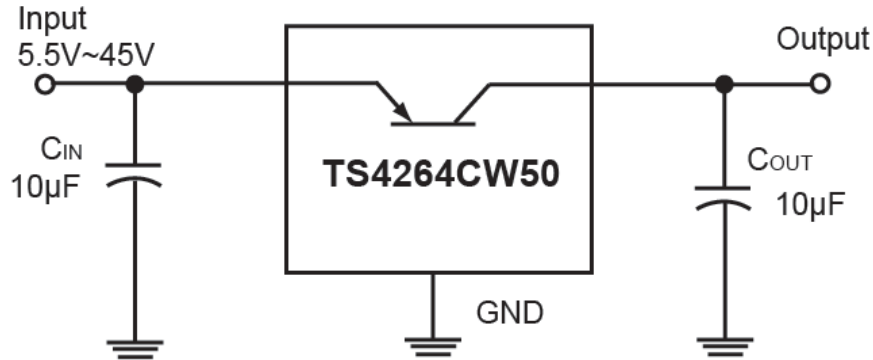
Electrical Characteristics $V_{IN}=13.5V$, $-40 \leq T_J \leq +150$, unless otherwise specified.

| Parameter | Symbol | Limit Values | | | Unit | Notes |
|------------------------|--------------|--------------|------|------|------|---|
| | | Min. | Typ. | Max. | | |
| Output Voltage | V_{OUT} | 4.90 | 5.0 | 5.10 | V | $6V \leq V_{IN} \leq 28V$, $5mA \leq I_o \leq 100mA$ |
| Output Current Limit | I_{OUT} | 120 | 150 | -- | mA | |
| Current Consumption | I_Q | -- | -- | 400 | uA | $I_o=1mA$ |
| | | -- | 10 | 15 | mA | $I_o=100mA$ |
| Dropout Voltage (Note) | V_{DROP} | -- | 0.25 | 0.5 | V | $I_o=100mA$ |
| Load Regulation | REG_{LOAD} | -- | 50 | 90 | mV | $5mA \leq I_o \leq 100mA$, $V_{IN} = 13.5V$ |
| Line Regulation | REG_{LINE} | -- | 15 | 30 | mV | $6V \leq V_{IN} \leq 28V$, $I_o=5mA$ |
| Ripple Rejection | PSRR | -- | 54 | -- | dB | $f=100Hz$, $V_R=0.5V_{PP}$ |

Note: Dropout voltage = $V_{IN} - V_{OUT}$

(Measured where V_{OUT} has dropped 100mV from the nominal value obtained at $V_{IN} = 13.5V$)

Typical Application Circuit



Application Information

Dimensioning Information on External Components

The input capacitor C_{IN} is necessary for compensating line influences. Using a resistor of approx. 1Ω in series with C_{IN} , the oscillating of input inductivity and input capacitance can be clamped. The output capacitor C_{OUT} is necessary for the stability of the regulating circuit. Stability is guaranteed at values $C_{OUT} \geq 10\mu F$ and an $ESR \leq 10\Omega$ within the operating temperature range.

Circuit Description

The control amplifier compares a reference voltage, which is kept highly precise by resistance adjustment, to a voltage that is proportional to the output voltage and drives the base of the series transistor via a buffer. Saturation control, working as a function of load current, prevents any over-saturation of the power element. The IC is additionally protected against overload, over temperature and reverse polarity

Electrical Characteristics Curve

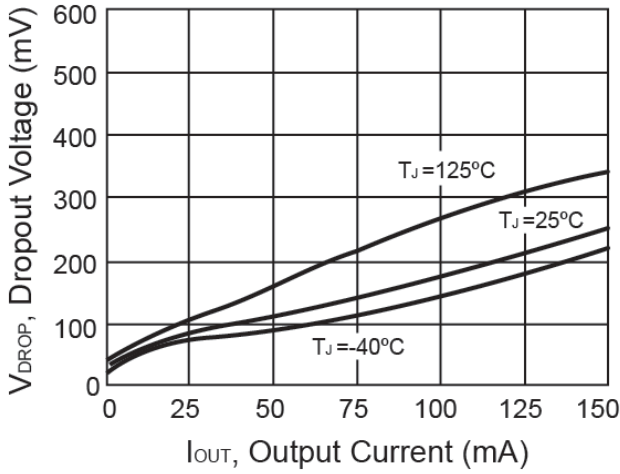


Figure 1. Output Voltage vs. Input Voltage

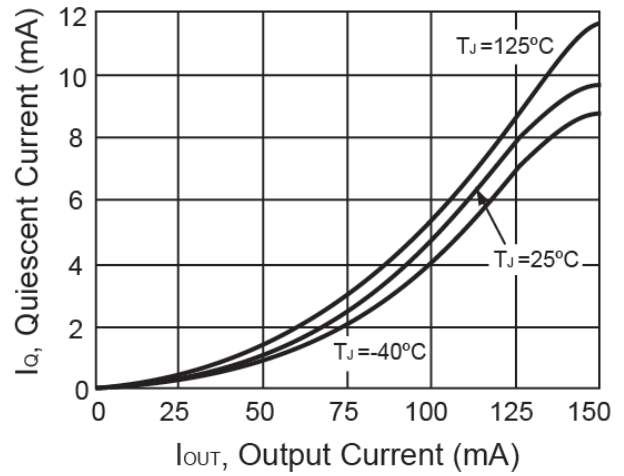


Figure 2. Quiescent Current vs. Output Current

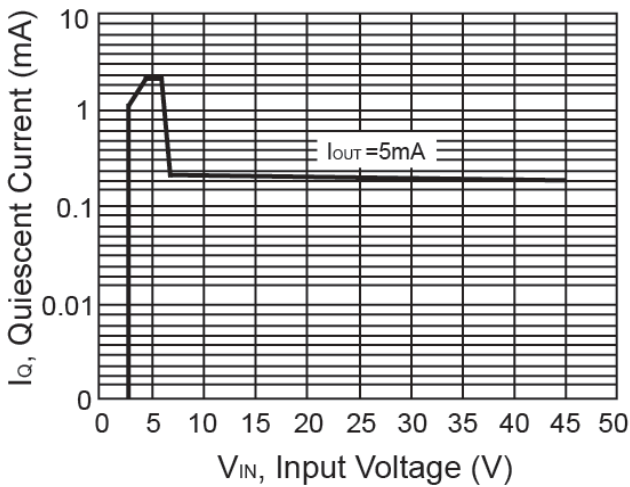


Figure 3. Quiescent Current vs. Input Voltage

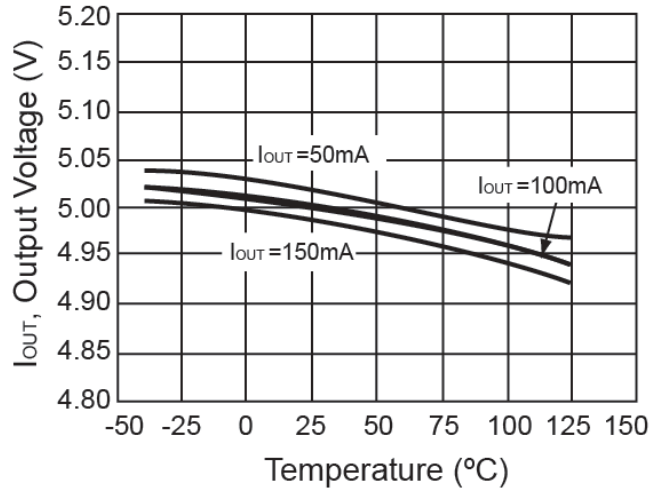


Figure 4. Output Current vs. Temperature

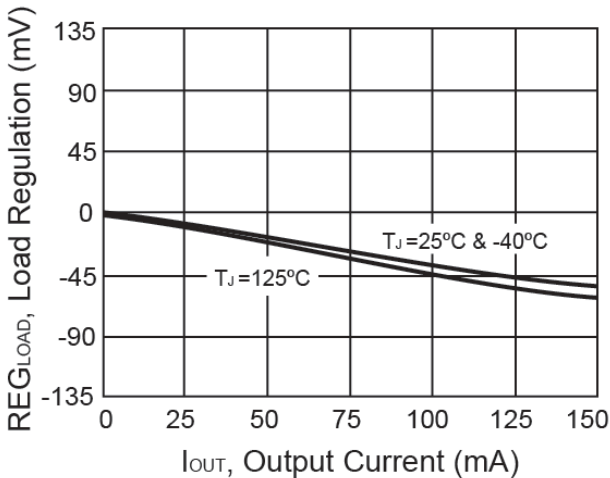


Figure 5. Load Regulation vs. Output Current

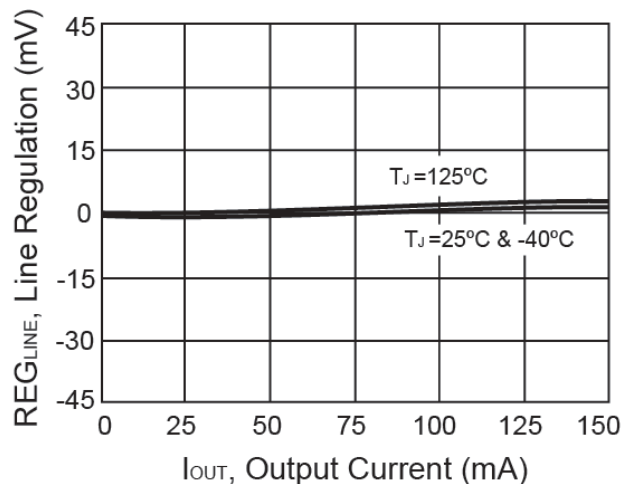
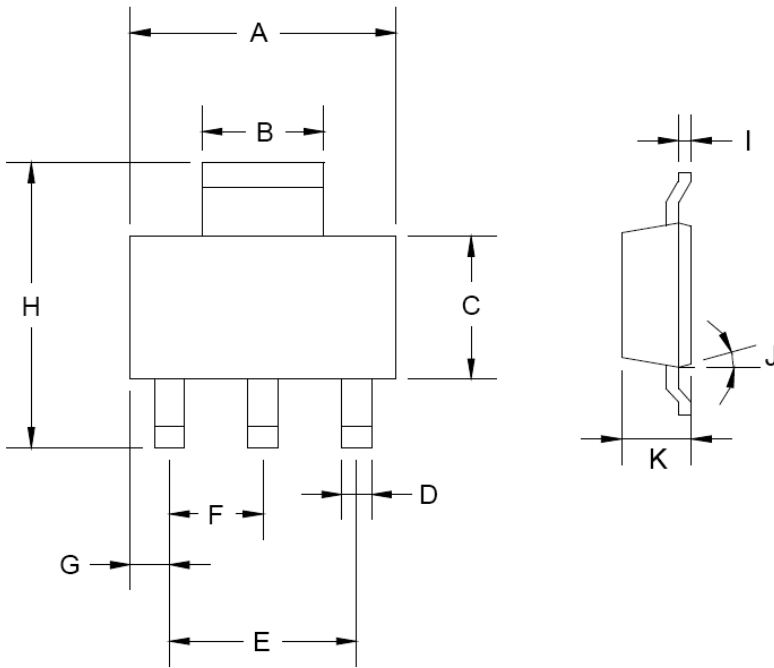


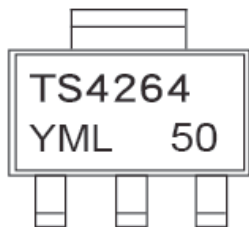
Figure 6. Line Regulation vs. Output Current

SOT-223 Mechanical Drawing



| SOT-223 DIMENSION | | | | |
|-------------------|-------------|-------|--------|-------|
| DIM | MILLIMETERS | | INCHES | |
| | MIN | MAX | MIN | MAX |
| A | 6.350 | 6.850 | 0.250 | 0.270 |
| B | 2.900 | 3.100 | 0.114 | 0.122 |
| C | 3.450 | 3.750 | 0.136 | 0.148 |
| D | 0.595 | 0.635 | 0.023 | 0.025 |
| E | 4.550 | 4.650 | 0.179 | 0.183 |
| F | 2.250 | 2.350 | 0.088 | 0.093 |
| G | 0.835 | 1.035 | 0.032 | 0.041 |
| H | 6.700 | 7.300 | 0.263 | 0.287 |
| I | 0.250 | 0.355 | 0.010 | 0.014 |
| J | 10° | 16° | 10° | 16° |
| K | 1.550 | 1.800 | 0.061 | 0.071 |

Marking Diagram



- 50** = Fixed 5V Output Voltage
- Y** = Year Code
- M** = Month Code
(**A**=Jan, **B**=Feb, **C**=Mar, **D**=Apr, **E**=May, **F**=Jun, **G**=Jul, **H**=Aug, **I**=Sep, **J**=Oct, **K**=Nov, **L**=Dec)
- L** = Lot Code

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