# Linear Voltage Regulator – SiS193050

**Positive Fixed 5V 0.3A Low Power, Low Dropout Voltage Regulator in bare die form**

**Rev 1.0**
**12/12/25**

## Description

The SiS193050 low power, low dropout, precision linear regulator operates with up to 24V input and provides 300mA output current. Power consumption is typically 3.5µA and guaranteed 5µA maximum. An enable/disable pin further reduces quiescent consumption to 1µA in shut-down state. Ruggedized features include internal output current limiting; short-circuit protection and thermal overload protection. Very small die size enables high integration.

## Features:

- Input Voltage up to 24V (absolute max 28V)
- Low Temperature Coefficient: ±150ppm/°C
- Low Dropout: 380mV at 150mA
- ± 3% Voltage Accuracy at 300mA load
- Low Quiescent Current: 3.5µA
- Enable/Disable for reduced power consumption
- Output current limiting
- Thermal overload protection

## Ordering Information

The following part suffixes apply:

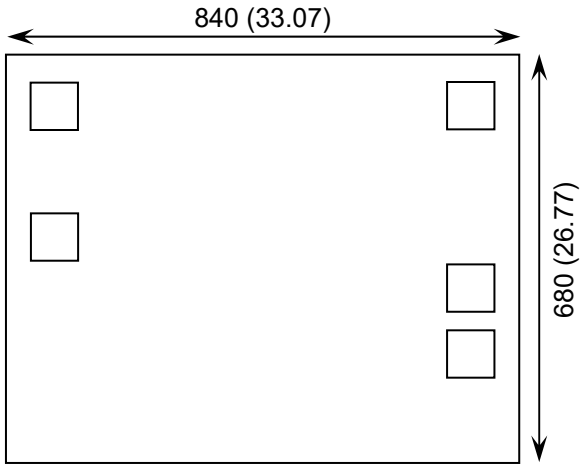
- No suffix - MIL-STD-883 /2010B Visual Inspection
- "**H**" - MIL-STD-883 /2010B Visual Inspection
  + MIL-PRF-38534 Class H LAT
- "**K**" - MIL-STD-883 /2010A Visual Inspection (Space)
  + MIL-PRF-38534 Class K LAT

LAT = Lot Acceptance Test.

For further information on LAT process flows see below.

www.siliconsupplies.com\quality\bare-die-lot-qualification

## Die Dimensions in µm (mils)




## Supply Formats:

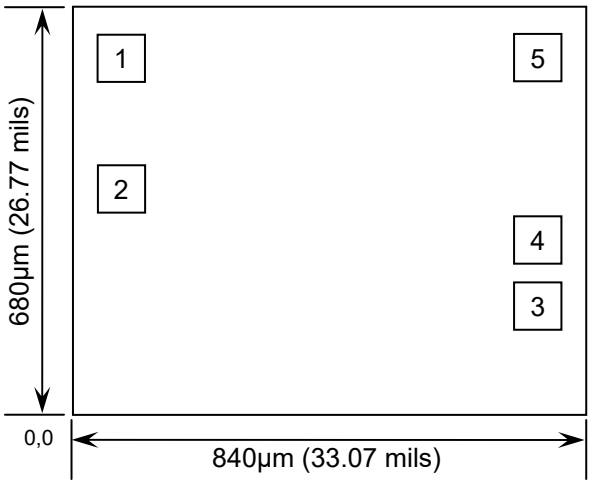
- Default – Die in Waffle Pack (400 per tray capacity)
- Sawn Wafer on Tape – On request
- Unsawn Wafer – On request
- Tape & Reel – On request
- In Metal or Ceramic package – On request

## Mechanical Specification

| | | |
|---|---|---|
| Die Size (Including Scribe) | 840 x 680<br>33.07 x 26.77 | µm<br>mils |
| Minimum Bond Pad Size | 70 x 70<br>2.75 x 2.75 | µm<br>mils |
| Die Thickness | 350 (±20)<br>13.78 (±0.79) | µm<br>mils |
| Top Metal Composition | Al 99.5% Cu 0.5%2µm | |
| Back Metal Composition | Si | |

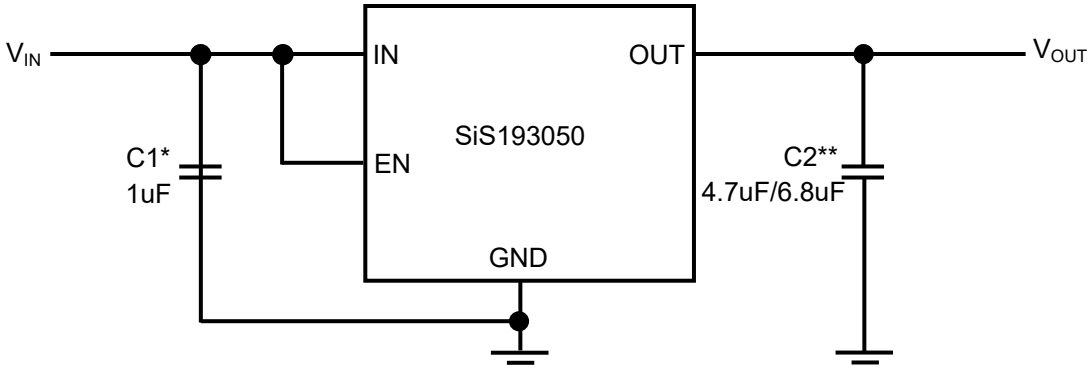
**Rev 1.0**
**12/12/25**

## Pad Layout and Functions




| PAD | FUNCTION | COORDINATES (µm) | | DESCRIPTION |
|---|---|---|---|---|
| | | X | Y | |
| 1 | VOUT | 75 | 545 | Regulator Output. Requires 4.7µF Tantalum or 6.8µF ceramic capacitor low-ESR capacitor to GND for stable operation. |
| 2 | NC | 75 | 346.36 | Not Connected |
| 3 | EN | 705.005 | 168.265 | Enable Control Input: High = Activate, Low = Shutdown |
| 4 | GND | 705.005 | 268.27 | Ground pin. |
| 5 | $V_{IN}$ | 705.005 | 544.995 | Supply Input. Connect to power source (6V to 24V). Bypass with 1µF capacitor to GND. |
| CONNECT CHIP BACK TO $V_{IN}$ | | | | |

## Typical Application




* C1 Input capacitor is recommended for all applications
** C2 is recommended for stability. 4.7µF Tantalum capacitor or 6.8µF ceramic capacitor is recommended.

## Absolute Maximum Ratings[1]

| PARAMETER | SYMBOL | VALUE | UNIT |
|---|---|---|---|
| Supply Voltage | $V_{IN}$ | 28V | V |
| Power Dissipation[2] | $P_D$ | Internally Limited | |
| Operating Junction Temperature[3] | $T_J$ | -40 to 125 | °C |
| Storage Temperature | $T_{STG}$ | -65 to 150 | °C |
| Thermal Resistance (Assembled in SOT-89-3) | $R_{\theta JA}$ | 93.4 | °C/W |
| ESD Capability(HBM) | $V_{ESD}$ | 2 | kV |

## Recommended Operating Conditions

| PARAMETER | SYMBOL | MIN | MAX | UNIT |
|---|---|---|---|---|
| Input Voltage | $V_{IN}$ | 6 | 24 | V |
| Output Current | $I_{OUT}$ | 1 | 300 | mA |
| Operating Junction Temperature Range[3] | $T_J$ | -40 to 125 | | °C |

## DC Electrical Characteristics $C_{IN}$ $C_{OUT}$ = 1μF, $T_J$ = 25°C (unless noted otherwise)

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNITS |
|---|---|---|---|---|---|---|
| Output Voltage | $V_{OUT}$ | $V_{IN}$ = 6V , 1mA ≤ $I_{OUT}$ ≤ 10mA | 4.90 | 5.0 | 5.10 | V |
| Line Regulation[4] | $\Delta V_{OUT}$ | $I_{OUT}$ = 10mA, 4V ≤ $V_{IN}$ ≤6V | - | 0.05 | 0.2 | % / $V_{OUT}$ |
| Load Regulation[4] | $\Delta V_{OUT}$ | $V_{IN}$ = 6V, 1mA ≤ $I_{OUT}$ ≤ 300mA | - | 20 | - | mV |
| Output Voltage Accuracy | | $I_{OUT}$ = 300mA | -3 | - | +3 | % |
| Dropout Voltage | $V_{DO}$ | $I_{OUT}$ = 150mA | - | 380 | - | mV |
| Output Voltage Temperature Coefficient | $\Delta V_{OUT}$ / Δ T.$V_{OUT}$ | $I_{OUT}$ = 10mA | - | ±150 | - | ppm/°C |
| Supply Current | $I_S$ | $V_{IN}$ = 6V, $V_{OUT}$ Floating | - | 3.5 | 5 | μA |
| Shut Down Quiescent Current | $I_{SHUTDOWN}$ | $V_{IN}$ = 8V, EN = GND | - | - | 1 | μA |
| Enable Input Current | $I_{EN}$ | EN = $V_{IN}$ or GND | - | - | 1 | μA |
| Startup time response | t | $V_{OUT}$ = 5V, $R_L$ = 68Ω, $C_{OUT}$ = 1μF | - | 80 | - | μs |
| EN Input Low Voltage | $V_{IL}$ | $V_{IN}$ = 6V to 24V | - | - | 0.8 | V |
| EN Input High Voltage | $V_{IH}$ | $V_{IN}$ = 6V to 24V | 1.8 | - | - | V |

**1.** Operation above absolute maximum rating may cause device failure. Operation at the absolute maximum ratings, for extended periods, may reduce device reliability. **2.** Maximum allowable power dissipation of any $T_A$ (ambient temperature) is $P_{DMAX} = (T_{JMAX}-T_A)/\theta_{JA}$. Exceeding the maximum allowable power dissipation will result in excessive die temperature and the regulator will go into thermal shutdown **3.** This IC includes over temperature protection to protect the device during momentary overload conditions. Junction temperature will exceed 125°C when over temperature protection is active. Continuous operation above the specified maximum operating junction temperature may impair device reliability. **4.** Regulation is measured at a constant junction temperature, using pulse testing with a low duty cycle.

## Typical Electrical Characteristics $C_{IN}$ $C_{OUT}$ = 1µF, $T_J$ = 25°C (unless noted otherwise)

| PARAMETER | SYMBOL | TEST CONDITIONS | | MIN | TYP | MAX | UNITS |
|---|---|---|---|---|---|---|---|
| Output Voltage Noise | $V_n$ | BW = 10Hz~100kHz | | - | 44 | - | $\mu V_{RMS}$ |
| Power Supply Rejection Ratio | PSRR | Ripple = 1V p-p, $V_{IN}$ = 6V | f = 100 Hz | - | 72 | - | dB |
| | | | f = 1 kHz | - | 71 | - | |
| | | | f = 10 kHz | - | 56 | - | |
| Maximum Output Current | $I_{OUT}$ | $V_{IN}$ - $V_{OUT}$ = 1V | | 300 | - | - | mA |
| Output Current Limit | $I_{LIMIT}$ | $R_L$ = 1Ω | | 350 | 450 | 600 | mA |
| Thermal Shutdown Threshold | $T_{SHDN}$ | | | - | 155 | - | °C |
| Thermal Shutdown Hysteresis | $\Delta T_{SHDN}$ | | | - | 25 | - | °C |