

GS2401C 40V μ A-power LDO Regulator

Features

- Maximum Operating Voltage: 40V
- Output Voltage: 1.8V, 2.5V, 3.0V, 3.3V, 3.6V, 4.0V, 4.2V and 5.0V
- Output Accuracy: $\pm 1\%$
- Low Power Consumption: 1.5 μ A
- <0.1 μ A Standby Current When Shutdown
- Low Temperature Coefficient
- Current Limiting, Thermal Shutdown
- Available in TO-92, SOT89-3, SOT23/SOT23-3L and SOT23-5 Packages

Applications

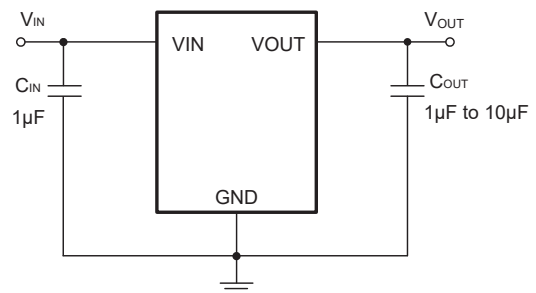
- Battery Supplied Systems
- Telecom Systems
- Audio & Video Devices

General Description

The GS2401C is a 40V μ A-power high accuracy LDO regulator. The 1 μ A power consumption makes it ideal for most HV power-saving systems. The maximum operating voltage can be as high as 40V. The output accuracy is as excellent as $\pm 1\%$.

The other features include low dropout voltage, current limiting protection and thermal shutdown protection.

Typical Application Circuit

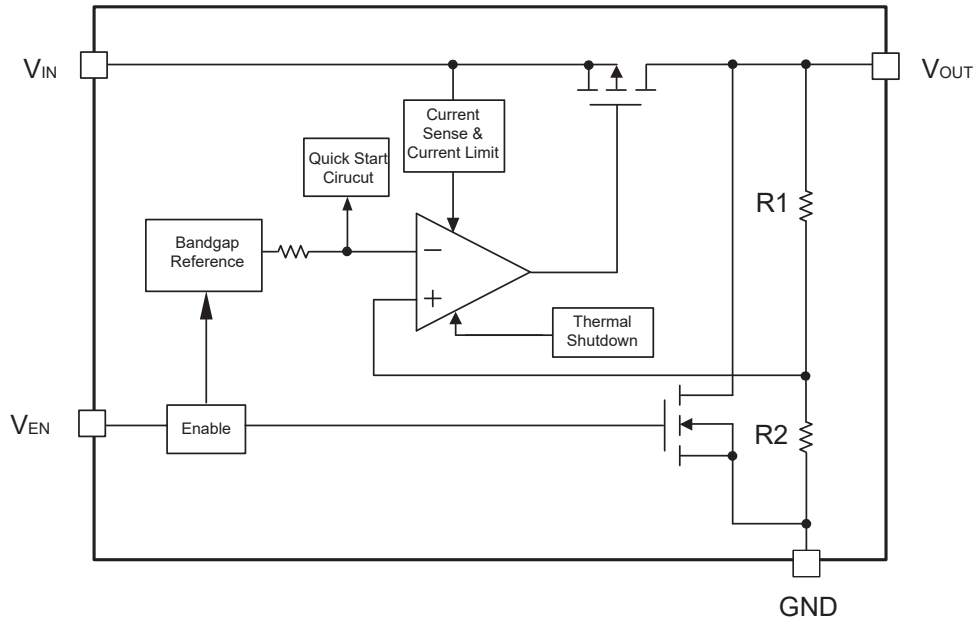


Order Information

| Model | PIN-PACKAGE | Ordering Number | Packing Option |
|---------|----------------|-----------------|----------------|
| GS2401C | SOT23/SOT23-3L | GS2401C-XXTR3 | 3000pcs/Reel |
| | SOT23-5A | GS2401C-XXTR5 | 3000pcs/Reel |
| | SOT23-5B | GS2401CY-XXTR5 | 3000pcs/Reel |
| | SOT89-3A | GS2401C-XXSTR3 | 3000pcs/Reel |
| | SOT89-3B | GS2401CY-XXSTR3 | 3000pcs/Reel |
| | TO92 | GS2401C-XXOTR2 | 3000pcs/Reel |

 **Note:** "XX" represents the type of voltage value.

Block Diagram

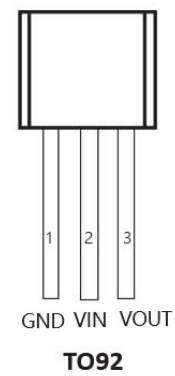
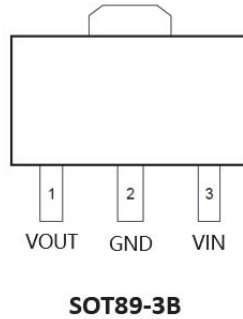
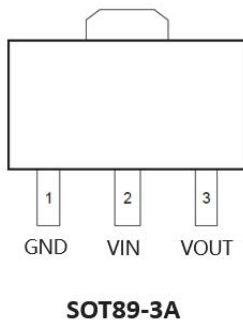
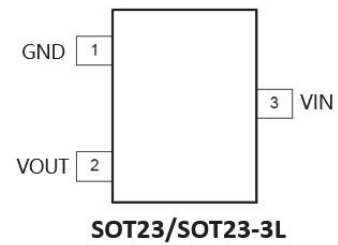
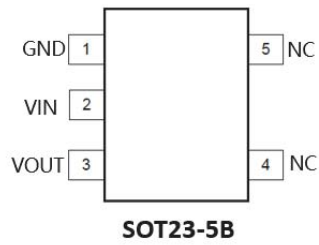
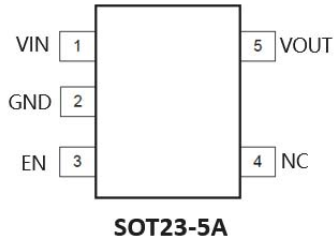


Absolute Maximum Ratings

| Parameter | Symbol | Rating | Unit |
|------------------------------------|--------------|------------|------|
| Supply Voltage | V_{IN} | -0.3~44 | V |
| EN pin to GND Voltage | V_{EN} | -0.3~44 | V |
| VOUT pin to GND Voltage | V_{IO} | -0.3~6 | V |
| VOUT pin to VIN Voltage | V_{IO2} | -46~0.3 | V |
| Maximum Power Dissipation, SOT89-3 | P_D | 1.2 | W |
| Maximum Power Dissipation, SOT23-3 | | 0.4 | W |
| Junction Temperature Range | T_J | -40~150 | °C |
| Storage Temperature Range | T_{STG} | -50~150 | °C |
| Operating Temperature Range | T_{OP} | -45~80 | °C |
| Lead Temperature (Soldering) | T_{SOLDER} | 260°C, 10s | |

Note: Absolute Maximum Ratings are threshold limit values that must not be exceeded even for an instant under any condition. Moreover, such values for any two items must not be reached simultaneously. Operation above these absolute maximum ratings may cause degradation or permanent damage to the device. These are stress ratings only and do not necessarily imply functional operation below these limits.

Pin Description



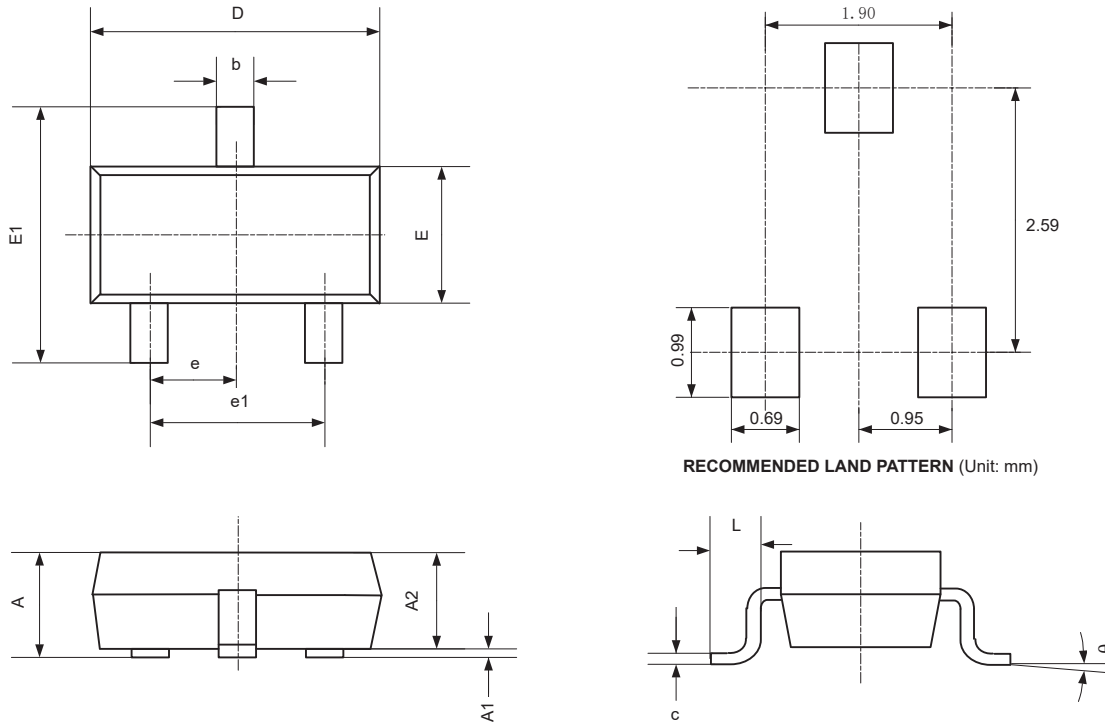
| PIN | | | | | NAME | FUNCTION |
|--------------------|-------------------|----------|----------|----------|------|--------------------|
| SOT23/ SOT23-3L | SOT89-3A/ TO92 | SOT89-3B | SOT23-5A | SOT23-5B | | |
| 1 | 1 | 2 | 2 | 1 | GND | Ground |
| 2 | 3 | 1 | 5 | 3 | VOUT | Output |
| 3 | 2 | 3 | 1 | 2 | VIN | Power Supply Input |
| | | | 3 | | EN | Chip Enable |
| | | | 4 | 4,5 | NC | Not Connected |

Electrical Characteristics

($V_{IN} = V_{OUT} + 1V$, $C_L = 1\mu F$, $T_A = +25^\circ C$, unless otherwise noted.)

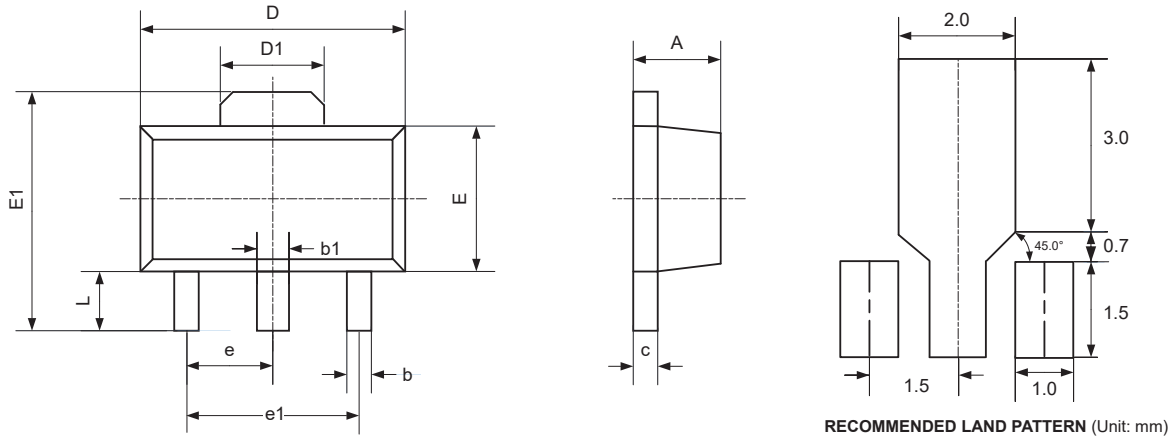
| Parameter | Symbol | Values | | | Unit | Note/Test Condition |
|------------------------------|------------------|--------|-----------|------|----------------|--|
| | | Min. | Typ. | Max. | | |
| Input Voltage | V_{IN} | 2.5 | | 40 | V | |
| Output Voltage | V_{OUT} | -1% | | +1% | V | $I_{OUT}=40mA$ |
| Maxim Output Current | I_{OUT_max} | 150 | | | mA | SOT89-3, TO92 |
| | | 100 | | | mA | SOT23-3 |
| Load Regulation | ΔV_{OUT} | | 25 | 50 | mV | $1mA < I_{OUT} < 60mA$ |
| Dropout Voltage | V_{Drop} | | 260 | | mV | $I_{OUT}=40mA, V_{OUT}=5V$ |
| | | | 700 | | mV | $I_{OUT}=100mA, V_{OUT}=1.8V$ |
| Quiescent Current | I_{QC} | | 1.3 | 2 | μA | $V_{IN}=V_{OUT}+1V, I_{OUT}=0mA$ |
| Short Current | I_{Short} | | 70 | | mA | $V_{OUT}=0V$ |
| Line Regulation | R_{EGI} | | 0.2 | 0.3 | %/V | $V_{IN}=V_{OUT}+1V$ to 24V, $I_{OUT}=40mA$ |
| Power Supply Rejection Ratio | P_{SRR} | | 85 | | dB | Freq=200Hz, $I_{OUT}=50mA$ |
| | | | 80 | | | Freq=1KHz, $I_{OUT}=50mA$ |
| Temperature Coefficient | T_C | | ± 0.7 | | mV/ $^\circ C$ | $I_{OUT}=40mA, -40^\circ C \sim +85^\circ C$ |
| Thermal Shutdown | T_{SD} | | 180 | | $^\circ C$ | Shutdown, Temp increasing |
| Thermal Hysteresis | T_{HYST} | | 20 | | $^\circ C$ | |

Package Outline(SOT23)



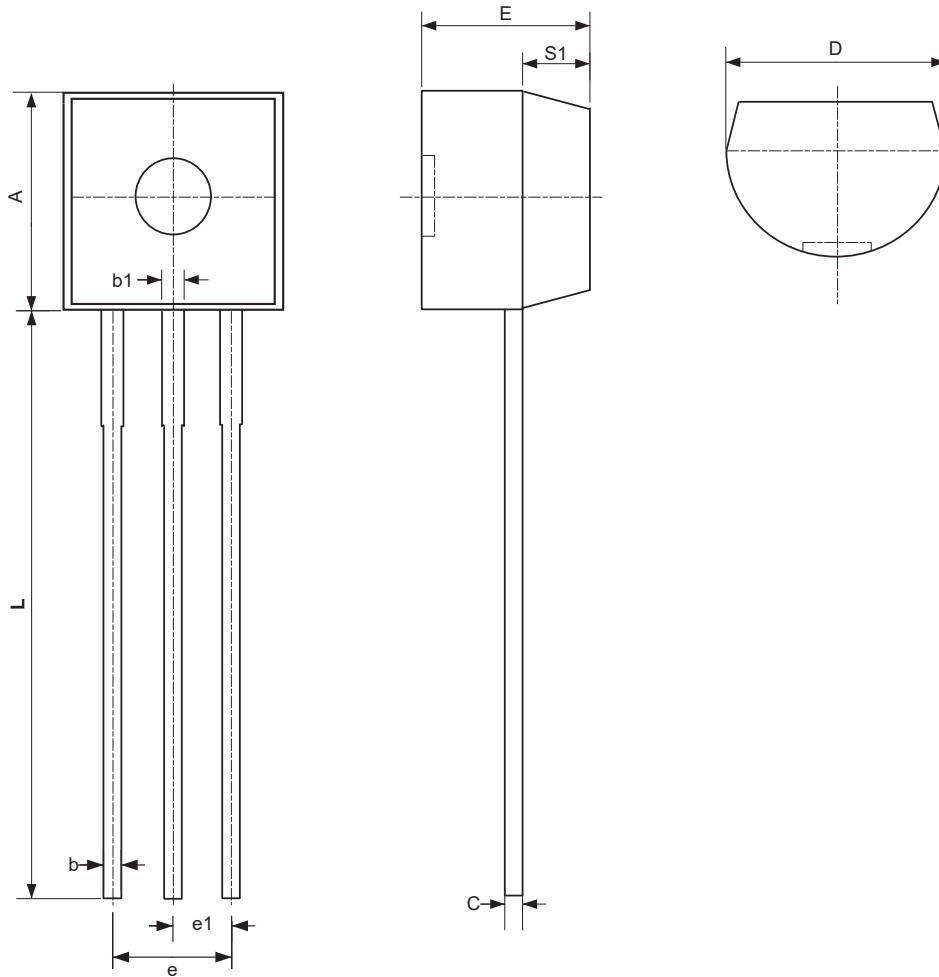
| Symbol | Dimensions in Millimeters | | Dimensions in Inches | |
|--------|---------------------------|-------|----------------------|-------|
| | Min | Max | Min | Max |
| A | 1.050 | 1.250 | 0.041 | 0.049 |
| A1 | 0.000 | 0.100 | 0.000 | 0.004 |
| A2 | 1.050 | 1.150 | 0.041 | 0.045 |
| b | 0.300 | 0.500 | 0.012 | 0.020 |
| 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 | 0.950 BSC | | 0.037 BSC | |
| e1 | 1.900 BSC | | 0.075 BSC | |
| L | 0.300 | 0.600 | 0.012 | 0.024 |
| θ | 0° | 8° | 0° | 8° |

Package Outline(SOT89-3)



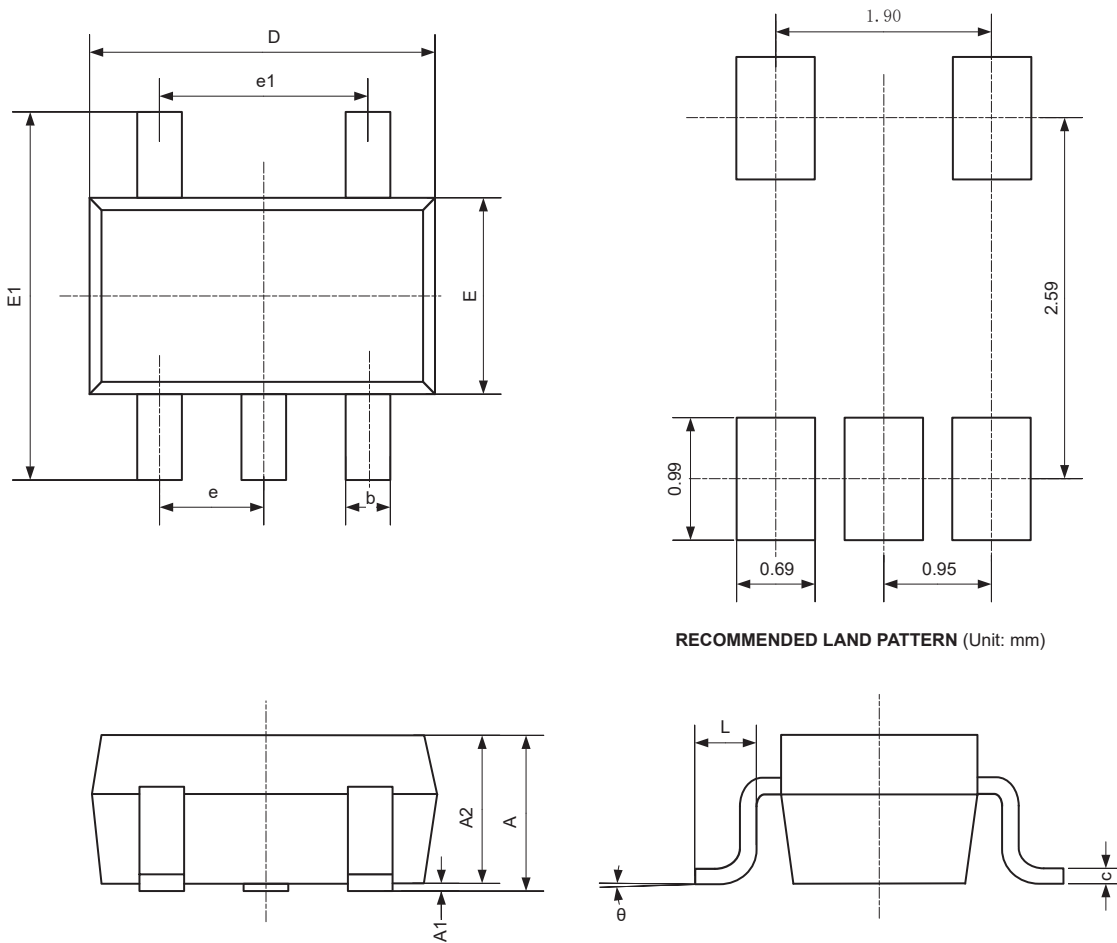
| Symbol | Dimensions in Millimeters | | Dimensions in Inches | |
|--------|---------------------------|-------|----------------------|-------|
| | Min | Max | Min | Max |
| A | 1.400 | 1.600 | 0.055 | 0.063 |
| b | 0.320 | 0.520 | 0.013 | 0.020 |
| b1 | 0.400 | 0.580 | 0.016 | 0.023 |
| c | 0.350 | 0.440 | 0.014 | 0.017 |
| D | 4.400 | 4.600 | 0.173 | 0.181 |
| D1 | 1.550 REF | | 0.061 REF | |
| E | 2.300 | 2.600 | 0.091 | 0.102 |
| E1 | 3.940 | 4.250 | 0.155 | 0.167 |
| e | 1.500 TPY | | 0.060 TPY | |
| e1 | 3.000 TPY | | 0.118 TPY | |
| L | 0.900 | 1.200 | 0.035 | 0.047 |

Package Outline(T092)



| Symbol | Dimensions in Millimeters | | Dimensions in Inches | |
|--------|---------------------------|-------|----------------------|-------|
| | Min | Max | Min | Max |
| A | 4.450 | 4.700 | 0.177 | 0.185 |
| b | 0.360 | 0.510 | 0.014 | 0.020 |
| b1 | 0.360 | 0.760 | 0.016 | 0.023 |
| c | 0.360 | 0.510 | 0.016 | 0.020 |
| D | 4.440 | 4.700 | 0.175 | 0.185 |
| E | 3.300 | 3.810 | 0.130 | 0.150 |
| L | 12.700 | | 0.500 | |
| e1 | 1.150 | 1.390 | 0.045 | 0.055 |
| e | 2.420 | 2.660 | 0.095 | 0.105 |
| S1 | 1.020 | | 0.040 | |

Package Outline(SOT23-5)



| Symbol | Dimensions in Millimeters | | Dimensions in 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 | 0.500 | 0.012 | 0.020 |
| 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 | 0.950 BSC | | 0.037 BSC | |
| e1 | 1.900 BSC | | 0.075 BSC | |
| L | 0.300 | 0.600 | 0.012 | 0.024 |
| θ | 0° | 8° | 0° | 8° |

Revision History

| VERSION | DATE | NOTE |
|---------|------------|-----------------|
| 1.0 | 2022/07/08 | Initial version |