

Microprocessor Reset IC

Features

- Precision Monitoring of +3V, +3.3V, and +5V Power-Supply Voltages
- Fully Specified Over Temperature
- Available in Three Output Configurations
Push-Pull $\overline{\text{RESET}}$ Output (G670L)
Push-Pull RESET Output (G670H)
Open-Drain $\overline{\text{RESET}}$ Output (G671L)
- 2ms max Power-On Reset Pulse Width
- 14 μ A Supply Current
- Guaranteed Reset Valid to $V_{CC} = +1V$
- Power Supply Transient Immunity
- No External Components
- 3-Pin SOT-23, TO-92, SC-70-3(SOT-323) and SOT-89 Packages
- 2% Reset Threshold Accuracy with 5% Hysteresis

Applications

- Computers
- Controllers
- Intelligent Instruments
- Critical μ P and μ C Power Monitoring
- Portable / Battery-Powered Equipment
- Automotive

General Description

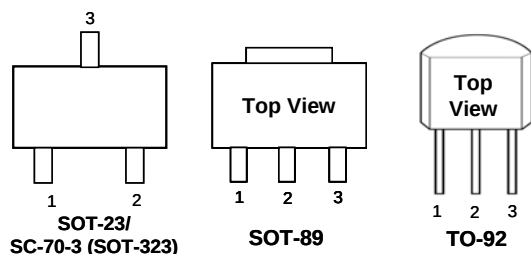
The G670/G671 are microprocessor (μ P) supervisory circuits used to monitor the power supplies in μ P and digital systems. They provide excellent circuit reliability and low cost by eliminating external components and adjustments when used with +5V, +3.3V, +3.0V- powered circuits.

These circuits perform a single function: they assert a reset signal whenever the V_{CC} supply voltage declines below a preset threshold. Reset thresholds suitable for operation with a variety of supply voltages are available.

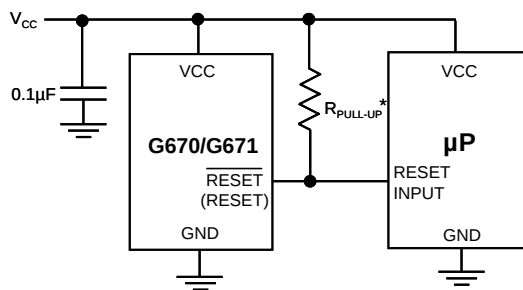
The G671L has an open-drain output stage, while the G670 have push-pull outputs. The G671L's open-drain $\overline{\text{RESET}}$ output requires a pull-up resistor that can be connected to a voltage higher than V_{CC} . The G670L have an active-low $\overline{\text{RESET}}$ output, while the G670H has an active-high RESET output. The reset comparator is designed to ignore fast transients on V_{CC} , and the outputs are guaranteed to be in the correct logic state for V_{CC} down to 1V.

Low supply current makes the G670/G671 ideal for use in portable equipment. The G670/G671 are available in 3-pin SOT-23, TO-92, SC-70-3(SOT-323) and SOT-89 packages.

Pin Configuration



Typical Application Circuit



*G671 only

ICC may increased at high T_A , Therefore, can not connect Resistors to V_{CC} to prevent I_{CC} abnormal behavior at high T_A .

Ordering Information

ORDER NUMBER (Pb free/Green)	TEMP. RANGE	OUTPUT TYPE
G670LxxxTDXBf	-40°C ~ +105°C	Push-Pull Active Low
G670HxxxTDXBf	-40°C ~ +105°C	Push-Pull Active High
G671LxxxTDXBf	-40°C ~ +105°C	Open-Drain
G670LxxxT2xUf	-40°C ~ +105°C	Push-Pull Active Low
G670HxxxT2xUf	-40°C ~ +105°C	Push-Pull Active High
G671LxxxT2xUf	-40°C ~ +105°C	Open-Drain
G670LxxxT7xUf	-40°C ~ +105°C	Push-Pull Active Low
G670HxxxT7xUf	-40°C ~ +105°C	Push-Pull Active High
G671LxxxT7xUf	-40°C ~ +105°C	Open-Drain
G670LxxxT93U	-40°C ~ +105°C	Push-Pull Active Low
G671LxxxT93U	-40°C ~ +105°C	Open-Drain

Note: U : Tape & Reel B: Bag

Order Number Identification



PART NUMBER

G670L : Push-Pull Active Low Output
 G670H : Push-Pull Active High Output
 G671L : Open-Drain Output

THRESHOLD VOLTAGE OPTION

* xxx specifies the threshold voltage.
 e.g. 263 denotes the 2.64V threshold voltage.

PACKAGE TYPE

TD : TO-92
 T2 : SOT-89
 T7 : SOT-23
 T9 : SC-70-3(SOT-323)

PIN OPTION

1	2	3
1 : $\overline{\text{RESET}}$	GND	V _{CC}
2 : $\overline{\text{RESET}}$	V _{CC}	GND
3 : GND	$\overline{\text{RESET}}$	V _{CC}
4 : GND	V _{CC}	$\overline{\text{RESET}}$
5 : V _{CC}	GND	$\overline{\text{RESET}}$
6 : V _{CC}	$\overline{\text{RESET}}$	GND

*RESET for G670H

Selector Guide

ORDER NUMBER (Pb free/Green)	RESET THRESHOLD (V)	OUTPUT TYPE	TOP MARK
			TO-92
G671L463TD5Bf	4.60	Open-Drain	663G xx
G671L438TD5Bf	4.32	Open-Drain	663F xx
G671L400TD5Bf	3.96	Open-Drain	663E xx
G671L330TD5Bf	3.30	Open-Drain	663D xx
G671L308TD5Bf	3.10	Open-Drain	663C xx
G671L293TD5Bf	2.91	Open-Drain	663B xx
G671L263TD5Bf	2.64	Open-Drain	663A xx
G670H463TD5Bf	4.60	Push-Pull RESET	662N xx
G670H438TD5Bf	4.32	Push-Pull RESET	662M xx
G670H400TD5Bf	3.96	Push-Pull RESET	662L xx
G670H330TD5Bf	3.30	Push-Pull RESET	662K xx
G670H308TD5Bf	3.10	Push-Pull RESET	662J xx
G670H293TD5Bf	2.91	Push-Pull RESET	662I xx
G670H263TD5Bf	2.64	Push-Pull RESET	662H xx
G670L463TD5Bf	4.60	Push-Pull	662G xx
G670L438TD5Bf	4.32	Push-Pull	662F xx
G670L400TD5Bf	3.96	Push-Pull	662E xx
G670L330TD5Bf	3.30	Push-Pull	662D xx
G670L308TD5Bf	3.10	Push-Pull	662C xx
G670L293TD5Bf	2.91	Push-Pull	662B xx
G670L263TD5Bf	2.64	Push-Pull	662A xx

Note: TD: TO-92

Not all product options are ready for mass production, please contact factory for availability.

Selector Guide

ORDER NUMBER (Pb free/Green)	RESET THRESHOLD (V)	OUTPUT TYPE	TOP MARK
			SOT-89
G671L463T25Uf	4.60	Open-Drain	663G xx
G671L438T25Uf	4.32	Open-Drain	663F xx
G671L400T25Uf	3.96	Open-Drain	663E xx
G671L330T25Uf	3.30	Open-Drain	663D xx
G671L308T25Uf	3.10	Open-Drain	663C xx
G671L293T25Uf	2.91	Open-Drain	663B xx
G671L263T25Uf	2.64	Open-Drain	663A xx
G670H463T25Uf	4.60	Push-Pull RESET	662N xx
G670H438T25Uf	4.32	Push-Pull RESET	662M xx
G670H400T25Uf	3.96	Push-Pull RESET	662L xx
G670H330T25Uf	3.30	Push-Pull RESET	662K xx
G670H308T25Uf	3.10	Push-Pull RESET	662J xx
G670H293T25Uf	2.91	Push-Pull RESET	662I xx
G670H263T25Uf	2.64	Push-Pull RESET	662H xx
G670L463T25Uf	4.60	Push-Pull	662G xx
G670L438T25Uf	4.32	Push-Pull	662F xx
G670L400T25Uf	3.96	Push-Pull	662E xx
G670L330T25Uf	3.30	Push-Pull	662D xx
G670L308T25Uf	3.10	Push-Pull	662C xx
G670L293T25Uf	2.91	Push-Pull	662B xx
G670L263T25Uf	2.64	Push-Pull	662A xx

Note: T2: SOT-89

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Selector Guide

ORDER NUMBER (Pb free/Green)	RESET THRESHOLD (V)	OUTPUT TYPE	TOP MARK
			SOT-23
G671L463T71Uf	4.60	Open-Drain	669Gx
G671L438T71Uf	4.32	Open-Drain	669Fx
G671L400T71Uf	3.96	Open-Drain	669Ex
G671L330T71Uf	3.30	Open-Drain	669Dx
G671L308T71Uf	3.10	Open-Drain	669Cx
G671L293T71Uf	2.91	Open-Drain	669Bx
G671L263T71Uf	2.64	Open-Drain	669Ax
G670H463T71Uf	4.60	Push-Pull RESET	668Nx
G670H438T71Uf	4.32	Push-Pull RESET	668Mx
G670H400T71Uf	3.96	Push-Pull RESET	668Lx
G670H330T71Uf	3.30	Push-Pull RESET	668Kx
G670H308T71Uf	3.10	Push-Pull RESET	668Jx
G670H293T71Uf	2.91	Push-Pull RESET	668Ix
G670H263T71Uf	2.64	Push-Pull RESET	668Hx
G670L463T71Uf	4.60	Push-Pull	668Gx
G670L438T71Uf	4.32	Push-Pull	668Fx
G670L400T71Uf	3.96	Push-Pull	668Ex
G670L330T71Uf	3.30	Push-Pull	668Dx
G670L308T71Uf	3.10	Push-Pull	668Cx
G670L293T71Uf	2.91	Push-Pull	668Bx
G670L263T71Uf	2.64	Push-Pull	668Ax

Note: T7: SOT-23

Not all product options are ready for mass production, please contact factory for availability.

Selector Guide

ORDER NUMBER (Pb free/Green)	RESET THRESHOLD (V)	OUTPUT TYPE	TOP MARK
			SOT-23
G671L463T72Uf	4.60	Open-Drain	667Gx
G671L438T72Uf	4.32	Open-Drain	667Fx
G671L400T72Uf	3.96	Open-Drain	667Ex
G671L330T72Uf	3.30	Open-Drain	667Dx
G671L308T72Uf	3.10	Open-Drain	667Cx
G671L293T72Uf	2.91	Open-Drain	667Bx
G671L263T72Uf	2.64	Open-Drain	667Ax
G670H463T72Uf	4.60	Push-Pull RESET	666Nx
G670H438T72Uf	4.32	Push-Pull RESET	666Mx
G670H400T72Uf	3.96	Push-Pull RESET	666Lx
G670H330T72Uf	3.30	Push-Pull RESET	666Kx
G670H308T72Uf	3.10	Push-Pull RESET	666Jx
G670H293T72Uf	2.91	Push-Pull RESET	666Ix
G670H263T72Uf	2.64	Push-Pull RESET	666Hx
G670L463T72Uf	4.60	Push-Pull	666Gx
G670L438T72Uf	4.32	Push-Pull	666Fx
G670L400T72Uf	3.96	Push-Pull	666Ex
G670L330T72Uf	3.30	Push-Pull	666Dx
G670L308T72Uf	3.10	Push-Pull	666Cx
G670L293T72Uf	2.91	Push-Pull	666Bx
G670L263T72Uf	2.64	Push-Pull	666Ax

Note: T7: SOT-23

Not all product options are ready for mass production, please contact factory for availability.

Selector Guide

ORDER NUMBER (Pb free/Green)	RESET THRESHOLD (V)	OUTPUT TYPE	TOP MARK
			SOT-23
G671L463T73Uf	4.60	Open-Drain	671Gx
G671L438T73Uf	4.32	Open-Drain	671Fx
G671L400T73Uf	3.96	Open-Drain	671Ex
G671L330T73Uf	3.30	Open-Drain	671Dx
G671L308T73Uf	3.10	Open-Drain	671Cx
G671L293T73Uf	2.91	Open-Drain	671Bx
G671L263T73Uf	2.64	Open-Drain	671Ax
G670H463T73Uf	4.60	Push-Pull RESET	670Nx
G670H438T73Uf	4.32	Push-Pull RESET	670Mx
G670H400T73Uf	3.96	Push-Pull RESET	670Lx
G670H330T73Uf	3.30	Push-Pull RESET	670Kx
G670H308T73Uf	3.10	Push-Pull RESET	670Jx
G670H293T73Uf	2.91	Push-Pull RESET	670Ix
G670H263T73Uf	2.64	Push-Pull RESET	670Hx
G670L463T73Uf	4.60	Push-Pull	670Gx
G670L438T73Uf	4.32	Push-Pull	670Fx
G670L400T73Uf	3.96	Push-Pull	670Ex
G670L330T73Uf	3.30	Push-Pull	670Dx
G670L308T73Uf	3.10	Push-Pull	670Cx
G670L293T73Uf	2.91	Push-Pull	670Bx
G670L263T73Uf	2.64	Push-Pull	670Ax

Note: T7: SOT-23

Not all product options are ready for mass production, please contact factory for availability.

Selector Guide

ORDER NUMBER (Pb free/Green)	RESET THRESHOLD (V)	OUTPUT TYPE	TOP MARK
			SOT-23
G671L463T76Uf	4.60	Open-Drain	665Gx
G671L438T76Uf	4.32	Open-Drain	665Fx
G671L400T76Uf	3.96	Open-Drain	665Ex
G671L330T76Uf	3.30	Open-Drain	665Dx
G671L308T76Uf	3.10	Open-Drain	665Cx
G671L293T76Uf	2.91	Open-Drain	665Bx
G671L263T76Uf	2.64	Open-Drain	665Ax
G670H463T76Uf	4.60	Push-Pull RESET	664Nx
G670H438T76Uf	4.32	Push-Pull RESET	664Mx
G670H400T76Uf	3.96	Push-Pull RESET	664Lx
G670H330T76Uf	3.30	Push-Pull RESET	664Kx
G670H308T76Uf	3.10	Push-Pull RESET	664Jx
G670H293T76Uf	2.91	Push-Pull RESET	664Ix
G670H263T76Uf	2.64	Push-Pull RESET	664Hx
G670L463T76Uf	4.60	Push-Pull	664Gx
G670L438T76Uf	4.32	Push-Pull	664Fx
G670L400T76Uf	3.96	Push-Pull	664Ex
G670L330T76Uf	3.30	Push-Pull	664Dx
G670L308T76Uf	3.10	Push-Pull	664Cx
G670L293T76Uf	2.91	Push-Pull	664Bx
G670L263T76Uf	2.64	Push-Pull	664Ax

Note: T7: SOT-23

Not all product options are ready for mass production, please contact factory for availability.

Selector Guide

ORDER NUMBER (Green)	RESET THRESHOLD (V)	OUTPUT TYPE	TOP MARK
			SC-70-3 (SOT-323)
G671L463T93U	4.60	Open-Drain	F1Ax
G671L438T93U	4.32	Open-Drain	F1Bx
G671L400T93U	3.96	Open-Drain	F1Cx
G671L330T93U	3.30	Open-Drain	F1Dx
G671L308T93U	3.10	Open-Drain	F1Ex
G671L293T93U	2.91	Open-Drain	F1Fx
G671L263T93U	2.64	Open-Drain	F1Gx
G670L463T93U	4.60	Push-Pull	F0Ax
G670L438T93U	4.32	Push-Pull	F0Bx
G670L400T93U	3.96	Push-Pull	F0Cx
G670L330T93U	3.30	Push-Pull	F0Dx
G670L308T93U	3.10	Push-Pull	F0Ex
G670L293T93U	2.91	Push-Pull	F0Fx
G670L263T93U	2.64	Push-Pull	F0Gx

Note: T9: SC-70-3(SOT-323)

Not all product options are ready for mass production, please contact factory for availability

Absolute Maximum Ratings

Terminal Voltage (with respect to GND)

V_{CC} -0.3V to +6.0V

RESET, $\overline{\text{RESET}}$ (push-pull) -0.3V to ($V_{CC} + 0.3V$)

$\overline{\text{RESET}}$ (open drain) -0.3V to +6.0V

Input Current, V_{CC} 20mA

Output Current, RESET, $\overline{\text{RESET}}$ 20mA

Thermal Resistance Junction to Ambient, (θ_{JA})

SOT-23 250°C/W

SOT-89 140°C/W

TO-92 170°C/W

SC-70-3(SOT-323) 330°C/W

Continuous Power Dissipation ($T_A = +25^\circ\text{C}$)

SOT-23 500mW

SOT-89 890mW

TO-92 730mW

SC-70-3(SOT-323) 380mW

Thermal Resistance Junction to Case, (θ_{JC})

SOT-23 60°C/W

SOT-89 30°C/W

TO-92 40°C/W

SC-70-3(SOT-323) 120°C/W

Operating Temperature Range -40°C to +105°C

Junction Temperature 150°C

Storage Temperature Range -65°C to +150°C

Reflow Temperature (soldering, 10sec) +260°C

*Please refer to Minimum Footprint PCB Layout Section.

Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

Electrical Characteristics

(V_{CC} = full range, $T_A = -40^\circ\text{C}$ to $+105^\circ\text{C}$, unless otherwise noted. Typical values are at $T_A = +25^\circ\text{C}$, $V_{CC} = 5V$ for 463/438/400/330 versions, $V_{CC} = 3.3V$ for 308/293 versions, and $V_{CC} = 3V$ for 263 version.) (Note 1)

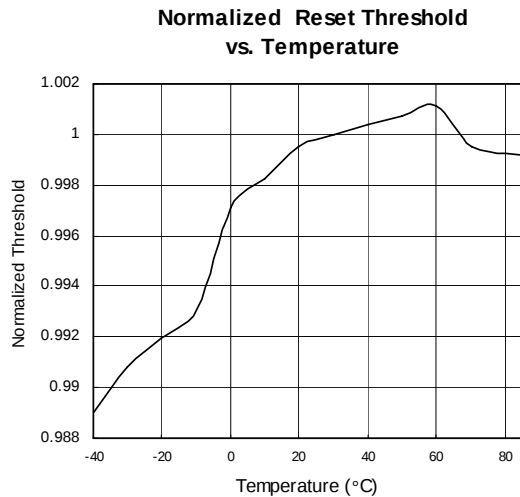
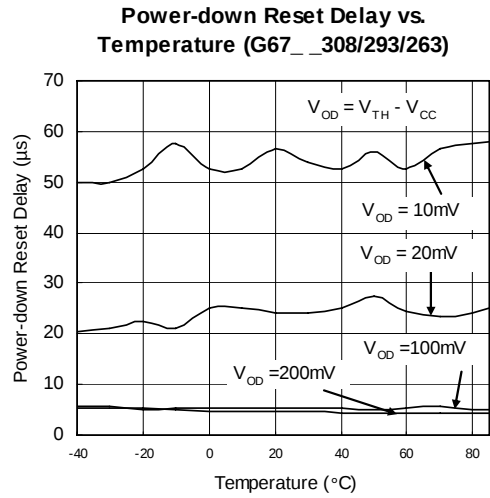
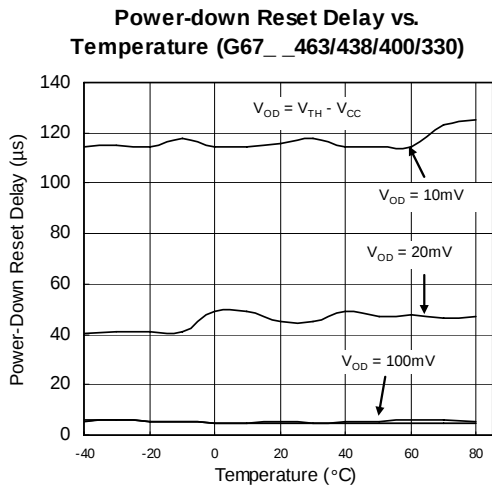
PARAMETER	SYMBOL	CONDITION	MIN	TYP	MAX	UNIT
V _{CC} Range		$T_A = 0^\circ\text{C} + 70^\circ\text{C}$	1.0	---	5.5	V
		$T_A = -40^\circ\text{C} + 105^\circ\text{C}$	1.2	---	5.5	
Supply Current	I_{CC}	$V_{CC} < 5.5V$, G67_463/438/400/330, $T_A = +25^\circ\text{C}$	---	16.5	25	μA
		$V_{CC} < 3.6V$, G67_308/293/263	---	13.9	22	
Reset Threshold	V_{TH}	G67_463, $T_A = +25^\circ\text{C}$	4.50	4.60	4.69	V
		G67_438	4.23	4.32	4.40	
		G67_400	3.88	3.96	4.04	
		G67_330	3.24	3.30	3.37	
		G67_308	3.04	3.10	3.16	
		G67_293	2.86	2.91	2.96	
		G67_263	2.59	2.64	2.69	
Reset Threshold Hysteresis	V_{HYST}		3.60	5.30	7.00	%
Reset Threshold Tempco			---	40	---	ppm/°C
V _{CC} to Reset Delay (Note 2)		$V_{CC} = V_{TH}$ to ($V_{TH} - 100\text{mV}$)	---	7	---	μs
Reset Active Timeout Period		$V_{CC} = V_{TH}$ max,	---	---	2	ms
RESET Output Current Low (push-pull active low, and open-drain active-low, G670L and G671L)	I_{OL}	$V_{CC} = 2.5V$, $V_{\overline{\text{RESET}}} = 0.5V$	8	---	---	mA
RESET Output Current High (push-pull active low, G670L)	I_{OH}	$V_{CC} = 5V$, $V_{\overline{\text{RESET}}} = 4.5V$, G670L463/438/400/330	4.5	---	---	mA
		$V_{CC} = 3.3V$, $V_{\overline{\text{RESET}}} = 2.8V$, G670L308/293	3	---	---	
		$V_{CC} = 3V$, $V_{\overline{\text{RESET}}} = 2.5V$, G670L263	2	---	---	
RESET Output Current Low (push-pull active high, G670H)	I_{OL}	$V_{CC} = 5V$, $V_{\text{RESET}} = 0.5V$, G670H463/438/400/330	16	---	---	mA
		$V_{CC} = 3.3V$, $V_{\text{RESET}} = 0.5V$, G670H308/293	12	---	---	
		$V_{CC} = 3V$, $V_{\text{RESET}} = 0.5V$, G670H263	10	---	---	
RESET Output Current High (push-pull active high, G670H)	I_{OH}	$V_{CC} = 2.5V$, $V_{\text{RESET}} = 2V$	2	---	---	mA
RESET Open-Drain Output Leakage Current (G671L)		$V_{CC} > V_{TH}$, $\overline{\text{RESET}}$ deasserted	---	---	1	μA

Note 1: Production testing done at $T_A = +25^\circ\text{C}$; limits over temperature guaranteed by design.

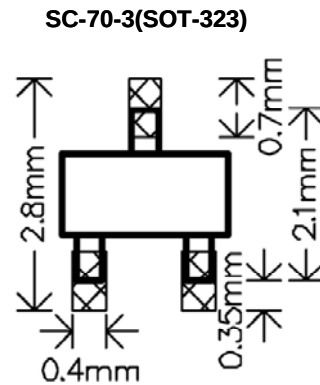
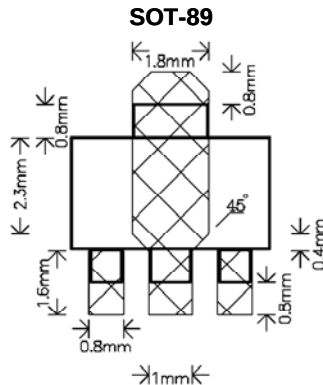
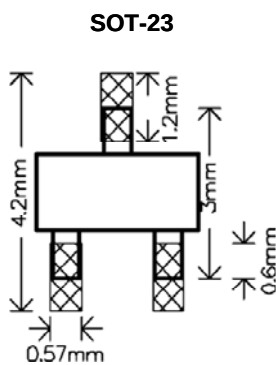
Note 2: RESET output is for G670L/G671L; While RESET output is for G670H.

Typical Operating Characteristics

(V_{CC} = full range, T_A = -40°C to $+105^{\circ}\text{C}$, unless otherwise noted. Typical values are at $T_A = +25^{\circ}\text{C}$, $V_{CC} = 5\text{V}$ for 463/438/400 versions, $V_{CC} = 3.3\text{V}$ for 308/293 versions, and $V_{CC} = 3\text{V}$ for 263 version.)



Minimum Footprint PCB Layout Section



Pin Description

NAME	FUNCTION
GND	Ground
(G671L/G670L)	$\overline{\text{RESET}}$ Output remains low while V_{CC} is below the reset threshold, and for at most 2ms after V_{CC} rises above the reset threshold.
RESET (G670H)	RESET Output remains high while V_{CC} is below the reset threshold, and for at most 2ms after V_{CC} rises above the reset threshold.
VCC	Supply Voltage (+5V, +3.3V, +3.0V)

Detailed Description

A microprocessor's (μP 's) reset input starts the μP in a known state. The G671L/G670L/G670H assert reset to prevent code-execution errors during power-up, power-down, or brownout conditions. They assert a reset signal whenever the V_{CC} supply voltage declines below a preset threshold, keeping it asserted for at most 2ms after V_{CC} has risen above the reset threshold. The G671L uses an open-drain output, and the G670L/G670H have a push-pull output stage. Connect a pull-up resistor on the G671L's $\overline{\text{RESET}}$ output to any supply between 0 and 5.5V.

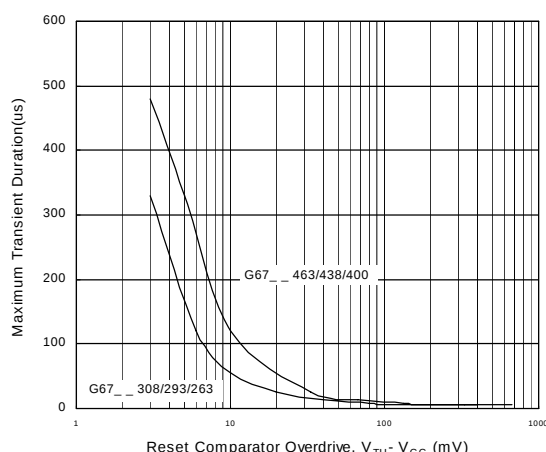


Figure 1. Maximum Transient Duration Without Causing a Reset Pulse vs. Reset Comparator Overdrive

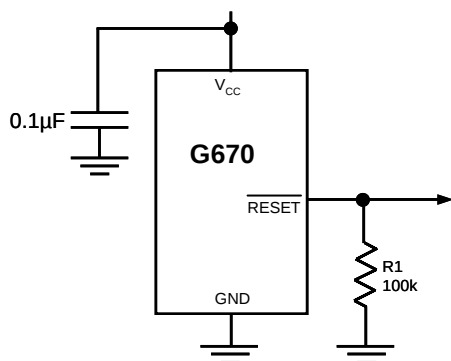


Figure 2. $\overline{\text{RESET}}$ Valid to $V_{CC} = \text{Ground}$ Circuit

Applications Information

Negative-Going V_{CC} Transients

In addition to issuing a reset to the μP during power-up, power-down, and brownout conditions, the G671L/G670H/G670L are relatively immune to short-duration negative-going V_{CC} transients (glitches).

Figure 1 shows typical transient duration vs. reset comparator overdrive, for which the G671L/G670H/G670L do not generate a reset pulse. The graph was generated using a negative-going pulse applied to V_{CC} , starting 0.5V above the actual reset threshold and ending below it by the magnitude indicated (reset comparator overdrive). The graph indicates the maximum pulse width a negative-going V_{CC} transient can have without causing a reset pulse. As the magnitude of the transient increases (goes farther below the reset threshold), the maximum allowable pulse width decreases. Typically, for the G67_463 and G67_438, a V_{CC} transient that goes 100mV below the reset threshold and lasts 7 μs or less will not cause a reset pulse. A 0.1 μF bypass capacitor mounted as close as possible to the V_{CC} pin provides additional transient immunity.

Ensuring a Valid Reset Output Down to $V_{CC} = 0$

When V_{CC} falls below 1V, the G670 $\overline{\text{RESET}}$ output no longer sinks current—it becomes an open circuit. Therefore, high-impedance CMOS logic inputs connected to $\overline{\text{RESET}}$ can drift to undetermined voltages. This presents no problem in most applications since most μP and other circuitry is inoperative with V_{CC} below 1V. However, in applications where $\overline{\text{RESET}}$ must be valid down to 0V, adding a pull-down resistor to $\overline{\text{RESET}}$ causes any stray leakage currents to flow to ground, holding $\overline{\text{RESET}}$ low (Figure 2). R1's value is not critical; 100k Ω is large enough not to load $\overline{\text{RESET}}$ and small enough to pull $\overline{\text{RESET}}$ to ground.

A 100k Ω pull-up resistor to V_{CC} is also recommended for the G671L if $\overline{\text{RESET}}$ is required to remain valid for $V_{CC} < 1\text{V}$.

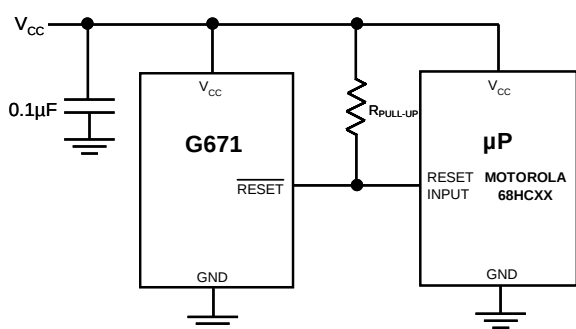


Figure 3. Interfacing to μ Ps with Bidirectional Reset I/O

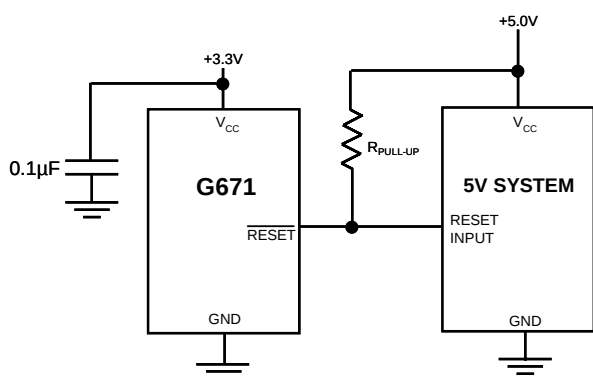


Figure 4. G671L Open-Drain $\overline{\text{RESET}}$ Output Allows Use with Multiple Supplies

Interfacing to μ Ps with Bidirectional Reset Pins

Since the $\overline{\text{RESET}}$ output on the G671L is open drain, this device interfaces easily with μ Ps that have bidirectional reset pins, such as the Motorola 68HC11. Connecting the μ P supervisor's $\overline{\text{RESET}}$ output directly to the microcontroller's (μ C's) $\overline{\text{RESET}}$ pin with a single pull-up resistor allows either device to assert reset (Figure 3).

G671L Open-Drain $\overline{\text{RESET}}$ Output Allows Use with Multiple Supplies

Generally, the pull-up connected to the G671L will connect to the supply voltage that is being monitored at the IC's V_{CC} pin. However, some systems may use the open-drain output to level-shift from the monitored supply to reset circuitry powered by some other supply (Figure 4). Note that as the G671L's V_{CC} decreases below 1V, so does the IC's ability to sink current at $\overline{\text{RESET}}$. Also, with any pull-up, $\overline{\text{RESET}}$ will be pulled high as V_{CC} decays toward 0. The voltage where this occurs depends on the pull-up resistor value and the voltage to which it is connected.

Benefits of Highly Accurate Reset Threshold

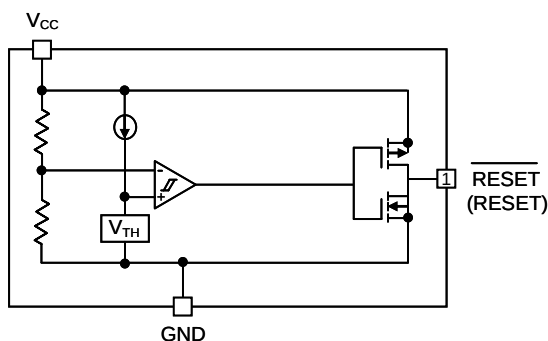
Most μ P supervisor ICs have reset threshold voltages between 5% and 10% below the value of nominal supply voltages. This ensures a reset will not occur within 5% of the nominal supply, but will occur when the supply is 10% below nominal.

When using ICs rated at only the nominal supply $\pm 5\%$, this leaves a zone of uncertainty where the supply is between 5% and 10% low, and where the reset may or may not be asserted.

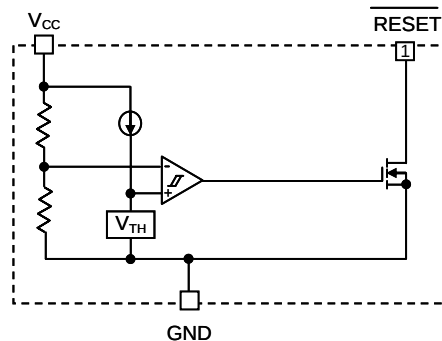
The G67_463/G67_308 use highly accurate circuitry to ensure that reset is asserted close to the 5% limit, and long before the supply has declined to 10% below nominal.

Functional Diagram

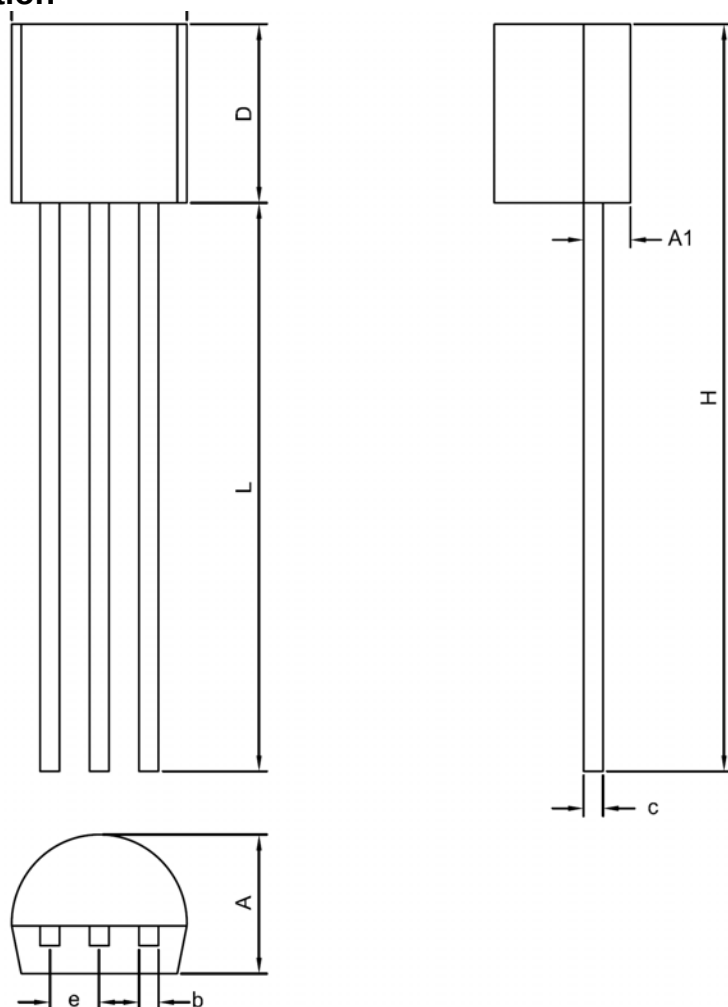
Push-Pull Reset Output



Open-Drain Reset Output



Package Information

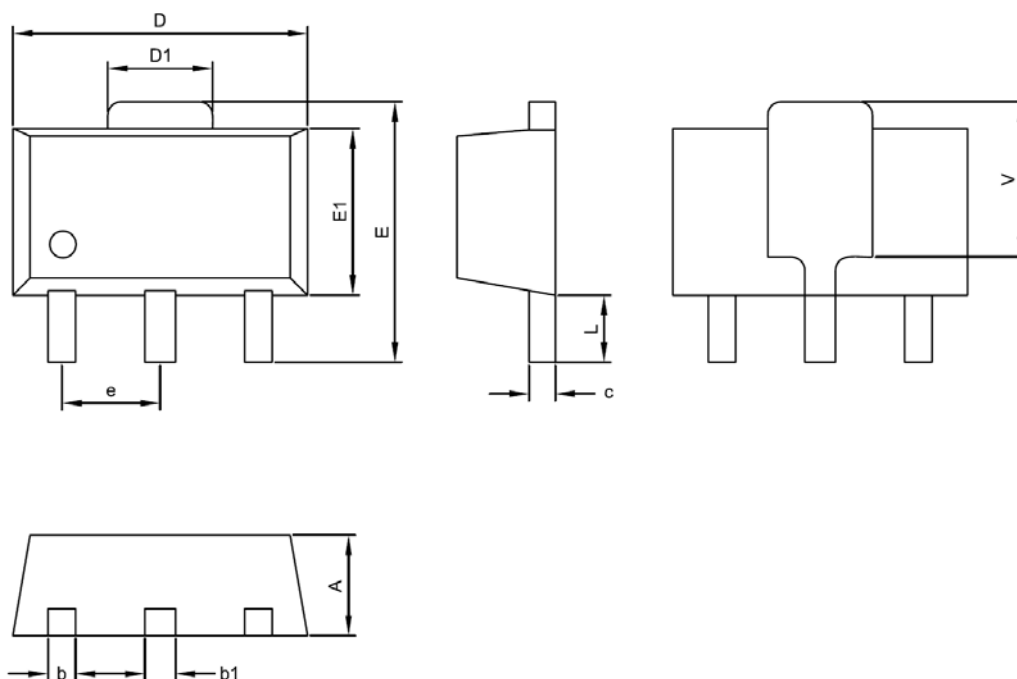


TO-92 (TD) Package

Symble	DIMENSION IN MM			DIMENSION IN INCH		
	MIN.	NOM.	MAX.	MIN.	NOM.	MAX.
A	3.30	3.50	3.70	0.130	0.138	0.146
A1	1.10	1.20	1.40	0.043	0.047	0.055
D	4.30	4.60	4.80	0.169	0.181	0.189
E	4.40	4.60	4.90	0.173	0.181	0.193
b	0.36	0.45	0.51	0.014	0.018	0.020
c	0.36	0.45	0.51	0.014	0.018	0.020
e	1.27 BSC			0.050 BSC		
L	14.30 BSC			0.562 BSC		
H	18.00	19.00	20.00	0.709	0.748	0.787

Taping Specification

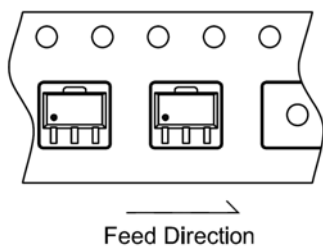
PACKAGE	Q'TY/BY BAG
TO-92	2,000 ea



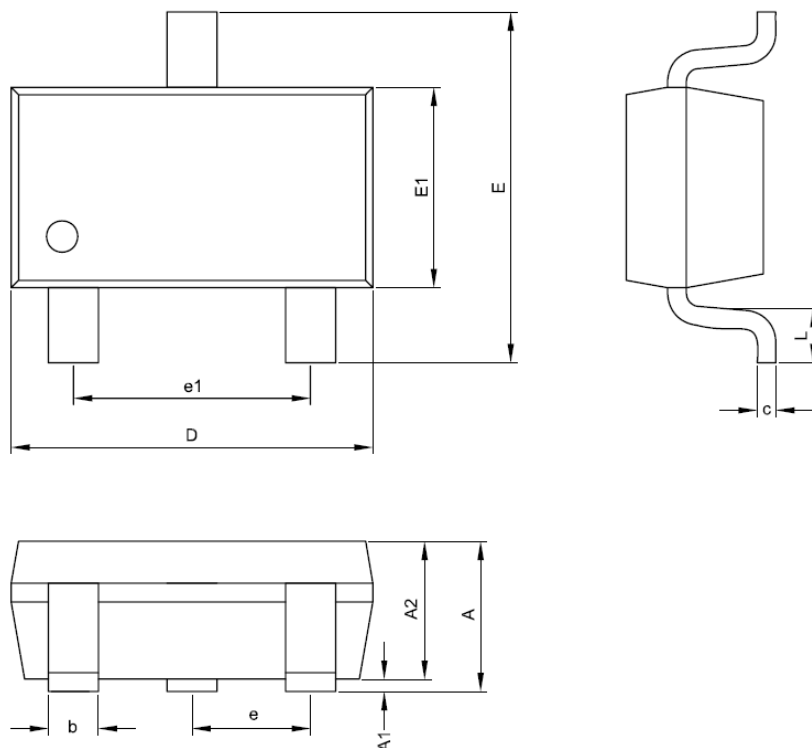
SOT-89 (T2) Package

Symble	DIMENSION IN MM			DIMENSION IN INCH		
	MIN.	NOM.	MAX.	MIN.	NOM.	MAX.
A	1.40	1.50	1.60	0.055	0.059	0.063
D	4.40	4.50	4.60	0.173	0.177	0.181
D1	1.40	1.60	1.75	0.055	0.062	0.069
E	3.85	4.05	4.25	0.152	0.159	0.167
E1	2.40	2.50	2.60	0.094	0.098	0.102
c	0.38	0.40	0.43	0.014	0.015	0.017
b	0.36	0.42	0.48	0.014	0.016	0.018
b1	0.41	0.47	0.53	0.016	0.018	0.020
e	1.50 BSC			0.059 BSC		
L	0.85	1.05	1.20	0.033	0.041	0.047
V	2.60 BSC			0.102 BSC		

Taping Specification



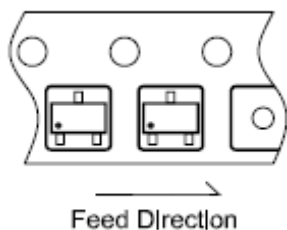
PACKAGE	Q'TY/REEL
SOT-89	1,000 ea



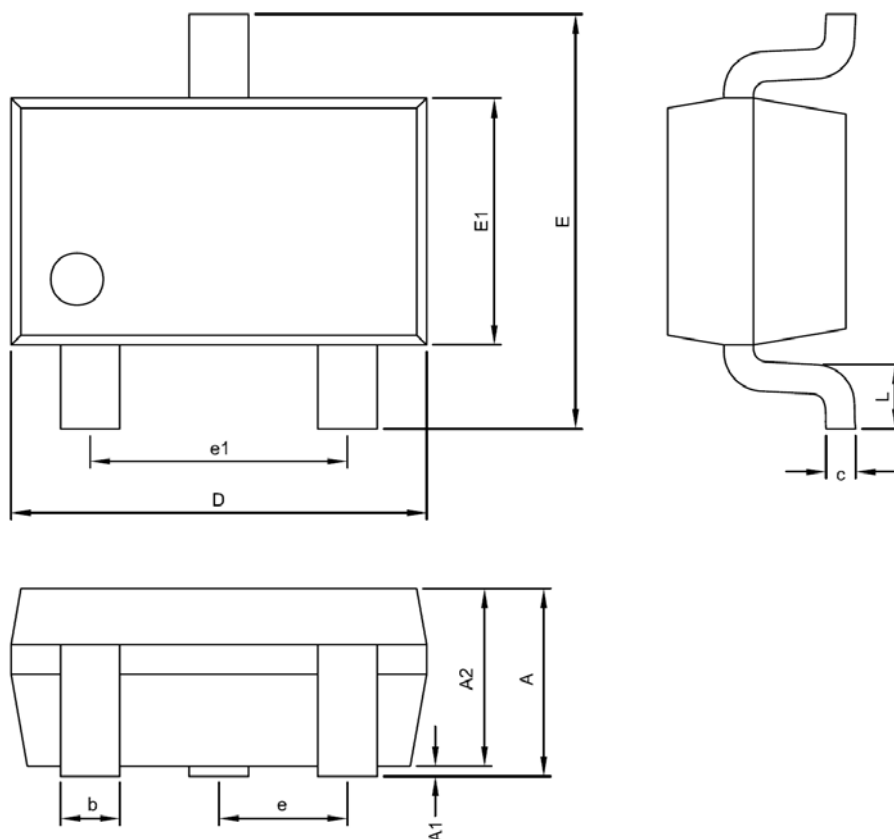
SOT-23 (T7) Package

Symble	DIMENSION IN MM			DIMENSION IN INCH		
	MIN.	NOM.	MAX.	MIN.	NOM.	MAX.
A	1.00	1.10	1.45	0.039	0.043	0.057
A1	0.00	---	0.15	0.000	---	0.006
A2	1.00	1.10	1.30	0.039	0.043	0.051
D	2.70	2.90	3.10	0.106	0.114	0.122
E	2.60	2.80	3.00	0.102	0.110	0.118
E1	1.50	1.60	1.70	0.059	0.063	0.067
c	0.08	0.15	0.25	0.003	0.006	0.010
b	0.30	0.40	0.50	0.012	0.016	0.020
e	0.95 BSC			0.037 BSC		
e1	1.90 BSC			0.075 BSC		
L	0.30	0.45	0.60	0.012	0.018	0.024

Taping Specification



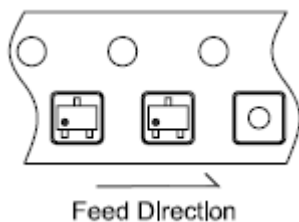
PACKAGE	Q'TY/REEL
SOT-23	3,000 ea



SC-70-3(SOT-323) (T9)Package

Symble	DIMENSION IN MM			DIMENSION IN INCH		
	MIN.	NOM.	MAX.	MIN.	NOM.	MAX.
A	0.80	0.95	1.10	0.031	0.037	0.043
A1	0.00	---	0.10	0.000	---	0.004
A2	0.70	0.90	1.00	0.028	0.035	0.039
D	1.80	2.00	2.20	0.071	0.079	0.087
E	1.80	2.10	2.40	0.071	0.083	0.094
E1	1.15	1.25	1.35	0.045	0.049	0.053
c	0.08	0.15	0.25	0.003	0.006	0.010
b	0.15	0.25	0.40	0.006	0.010	0.016
e	0.65 BSC			0.026 BSC		
e1	1.30 BSC			0.051 BSC		
L	0.26	0.36	0.46	0.010	0.014	0.018

Taping Specification



PACKAGE	Q'TY/REEL
SC-70-3 (SOT-323)	3,000 ea

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