



LA5623M

Combination System Reset IC

Overview

The LA5623M is a combination reset IC that provides two reset functions. The first, reset 1, detects the input voltage and applies a reset to the CPU system and other logic systems. The second, reset 2, detects the power supply voltage when the power is turned on or off, and applies a reset to the CPU system and other logic systems. This latter function allows the reset time to be adjusted from two external pins.

Features

- Reset circuit (output 1) that detects the input voltage and provides a delay time of 200 μ s.
- System reset circuit (output 2) that provides a switchable delay time of 25, 50, 100, or 200 ms.
- Low operating limit voltage
- Both reset 1 and reset 2 have hysteresis characteristics.

Specifications

Maximum Ratings at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Supply voltage	V_{CC}		-0.3 to +12	V
Output 1 sink current	I_{SINK1}		8	mA
Output 2 sink current	I_{SINK2}		8	mA
Output voltage	V_O		-0.3 to +10	V
Manual input voltage	V_{RES}		-0.3 to +10	V
Input voltage range	V_{IN1}		-0.3 to +10	V
Ct0, Ct1 voltage	V_{ct}		0 to +10	V
Allowable power dissipation	$P_d \text{ max}$		250	mW
Operating temperature	T_{opr}		-20 to +75	$^\circ\text{C}$
Storage temperature	T_{stg}		-40 to +125	$^\circ\text{C}$

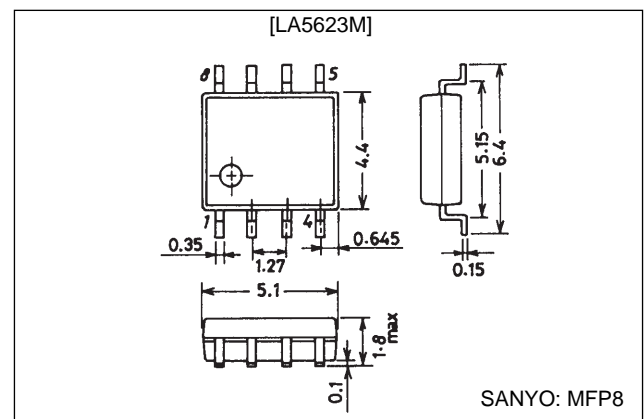
Operating Conditions at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Recommended supply voltage	V_{CC}		2 to 10	V
Input voltage range	V_{IN}	For pulse widths of up to 20 ns	-2 to $V_{CC} + 1$	V
Input high-level voltage	V_{RESH}	For pulse widths of up to 20 ns	$V_{CC} + 1$	V
Input low-level voltage	V_{RESL}	For pulse widths of up to 20 ns	-2	V

Package Dimensions

unit: mm

3032B-MFP8



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Operating Characteristics at $T_a = 25^\circ\text{C}$, $V_{CC} = 5\text{ V}$

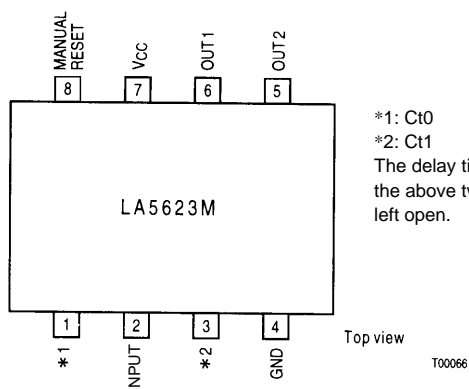
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
[Reset Circuit 1, 2 Common]						
Current drain when off	I_{CC1}		–	1.4	2.0	mA
Current drain when on	I_{CC2}	When reset 1 and 2 are both on	–	2	3	mA
Detection voltage temperature coefficient	$VS/\Delta T$		–	0.01		%/ $^\circ\text{C}$
Output high-level voltage	V_{OH}	$I_{OH} = -40\ \mu\text{A}$	$0.9 V_{CC}$	–	–	V
Low-level signal propagation delay	t_{PHL}	$C_L = 100\ \text{pF}$	–	10	–	μs
Operating limit voltage *1	V_{OPL}	$R_L = 2.2\ \text{k}\Omega$, $V(\text{sat}) \leq 0.4\ \text{V}$	–	0.67	0.80	V
		$R_L = 100\ \text{k}\Omega$, $V(\text{sat}) \leq 0.4\ \text{V}$	–	0.55	0.70	V
Internal pull-up resistance	R		5	10	15	$\text{k}\Omega$
[Reset Circuit 1]						
Sense voltage 1	$VS1$		1.20	1.25	1.30	V
Hysteresis voltage 1	$\Delta VS1$		9	15	23	mV
High-level signal propagation delay 1	t_{PLH1}	$C_L = 100\ \text{pF}$	80	200	500	μs
Output low voltage 1	V_{OL1}	$V_{IN} < 1.2\ \text{V}$, $I_{OL} = 5\ \text{mA}$	–	0.2	0.4	V
Input voltage range	V_{IN1}		–0.3	–	+10	V
Input current	I_{IN1}	$V_{IN} = 1.25\ \text{V}$	–	100	500	nA
[Reset Circuit 2]						
Sense voltage 2	$VS2$		4.0	4.2	4.4	V
Hysteresis voltage 2	$\Delta VS2$		30	50	100	mV
High-level signal propagation delay 2	t_{PLH2}	$Ct0 = \text{"L"}, Ct1 = \text{"H"} : C_L = 100\ \text{pF}$	15	25	35	ms
		$Ct0 = \text{"H"}, Ct1 = \text{"L"} : C_L = 100\ \text{pF}$	30	50	70	ms
		$Ct0 = \text{"H"}, Ct1 = \text{"H"} : C_L = 100\ \text{pF}$	60	100	140	ms
		$Ct0 = \text{"L"}, Ct1 = \text{"L"} : C_L = 100\ \text{pF}$	120	200	280	ms
Output low-level voltage 2	V_{OL2}	$V_{CC} < 4.0\ \text{V}$, $I_{OL} = 5\ \text{mA}$	–	0.2	0.4	V
Input high-level voltage *2	V_{RESH2}		2	–	10	V
Input high-level current *2	I_{RESH2}	$V_{RES} = 2\ \text{V}$	–	–	80	μA
Input low-level voltage *2	V_{RESL2}		–0.3	–	+0.8	V

Notes: 1. The minimum supply voltage such that a low-level output can be maintained.

2. Manual reset.

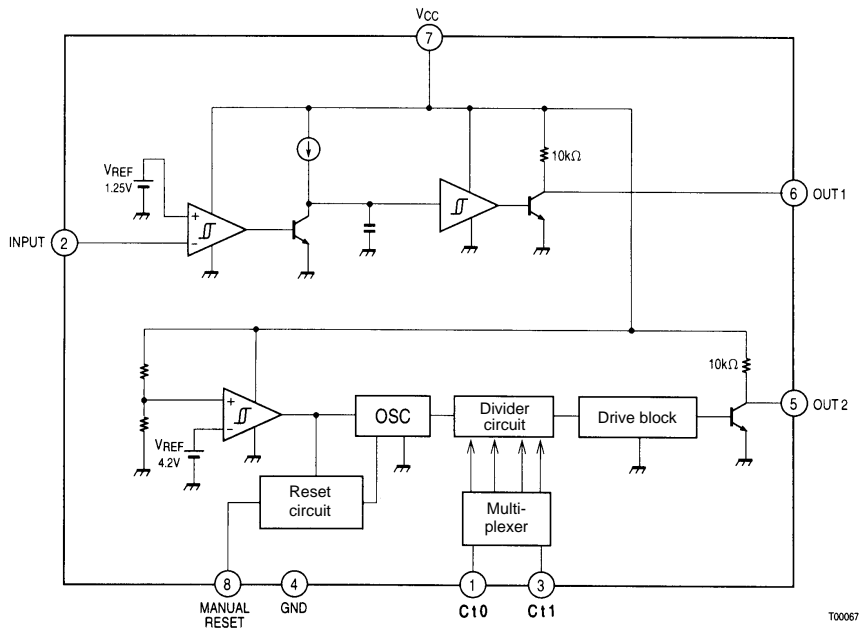
A high level applied to the manual reset pin sets the output 2 pin low, and a low level sets the output 2 pin high.

Pin Assignment

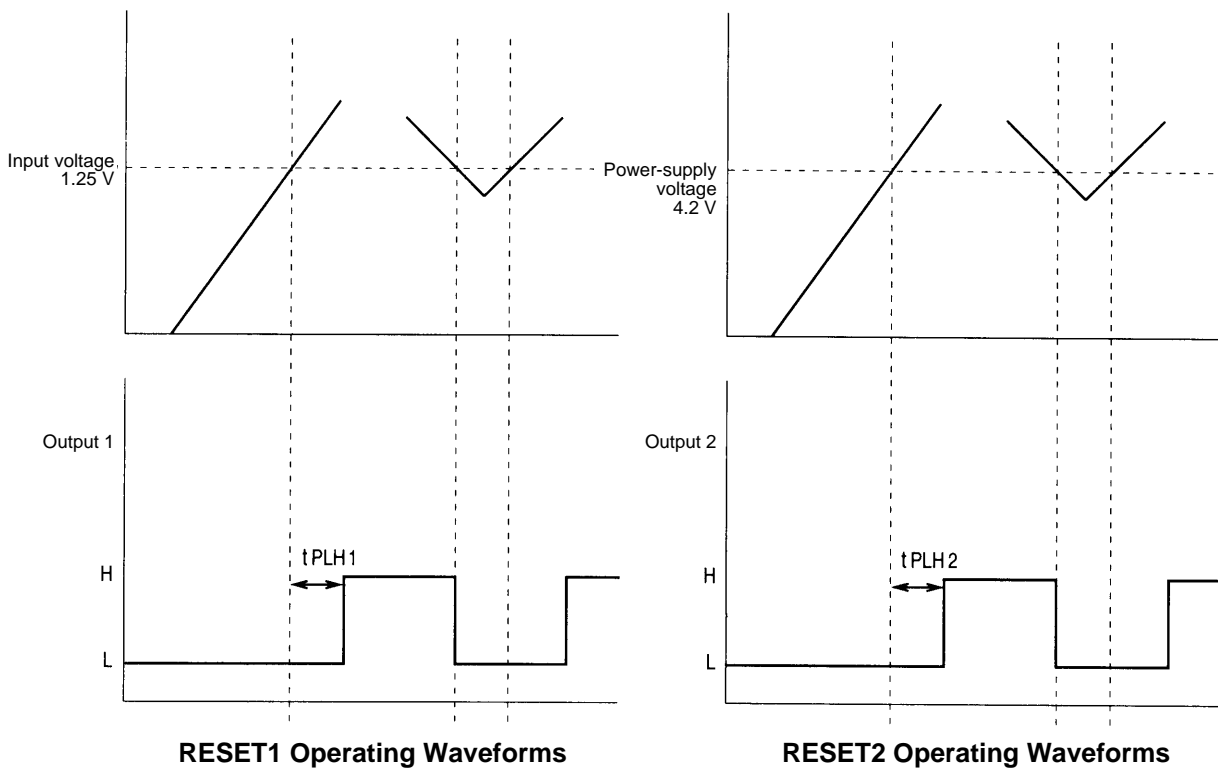


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Block Diagram



Operating Waveforms

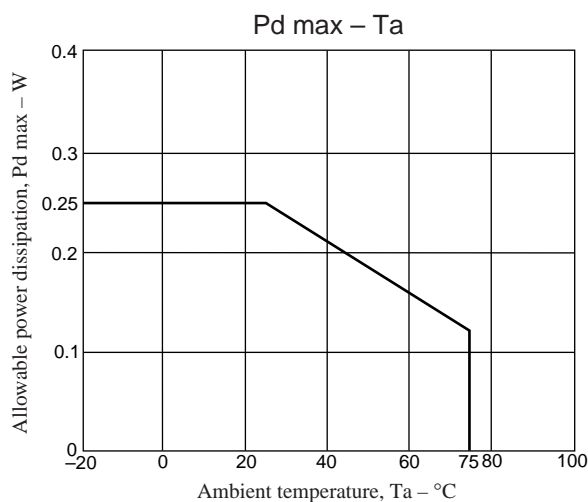


RESET2 Truth Table

Ct0	Ct1	RESET2 delay time
L	H	25 ms
H	L	50 ms
H or OPEN	H or OPEN	100 ms
L	L	200 ms

MANUAL RESET Truth Table

MANUAL RESET	OUT2
H	L
L	H



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