M6270X, M6271X, M6272X, M6273X, M6274XML/SL

Voltage Detecting, System Resetting IC Series

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Description

The M627XXML/SL is a voltage threshold detector designed for detection of a supply voltage and generation of a system reset pulse for almost all logic circuits such as microprocessor.

It also has extensive applications including battery checking, level detecting and waveform shaping circuits.

Features

- Detecting voltage
  - M627X2, M627X3: 2.87V
  - M627X4, M627X5: 2.58V
  - M627X6, M627X7: 2.39V
  - M627X8, M627X9: 1.72V
- Hysterisis voltage 80mV
- Delay time
  - M6270X: 0sec
  - M6271X: 200usec
  - M6272X: 50msec
  - M6273X: 100msec
  - M6274X: 200msec
- Few external parts
- Low threshold operating voltage
  (Supply voltage to keep low-state at low supply voltage) 0.65V (Typ.) at R_L=22kΩ
- Wide supply voltage range 1.5V to 7.0V
- Extra small 3-pin package (3-pin FLAT)
- Built-in long delay time

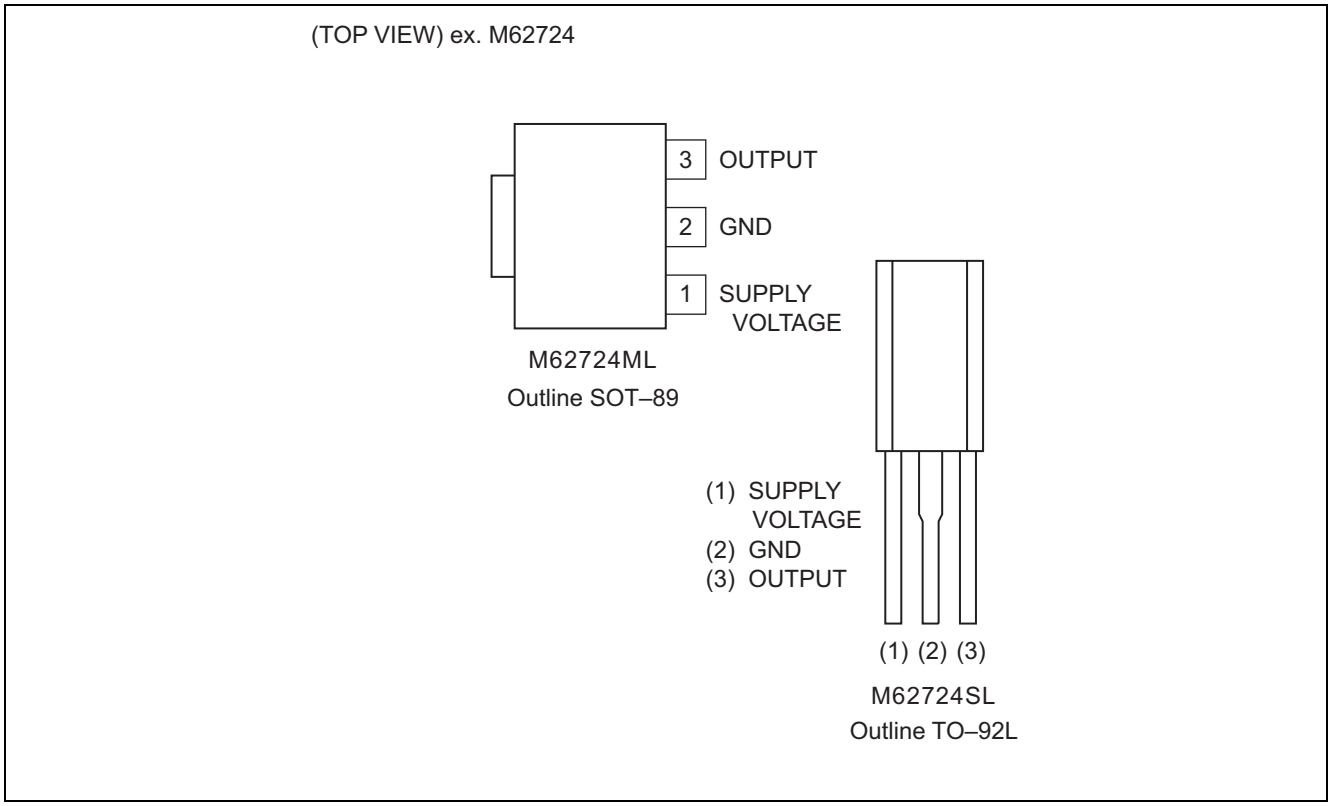
Application

- Reset pulse generation for almost all logic circuits
- Battery checking, level detecting, waveform shaping circuits
- Delayed waveform generator
- Switching circuit to a back-up power supply
- DC/DC converter
- Over voltage protection circuit

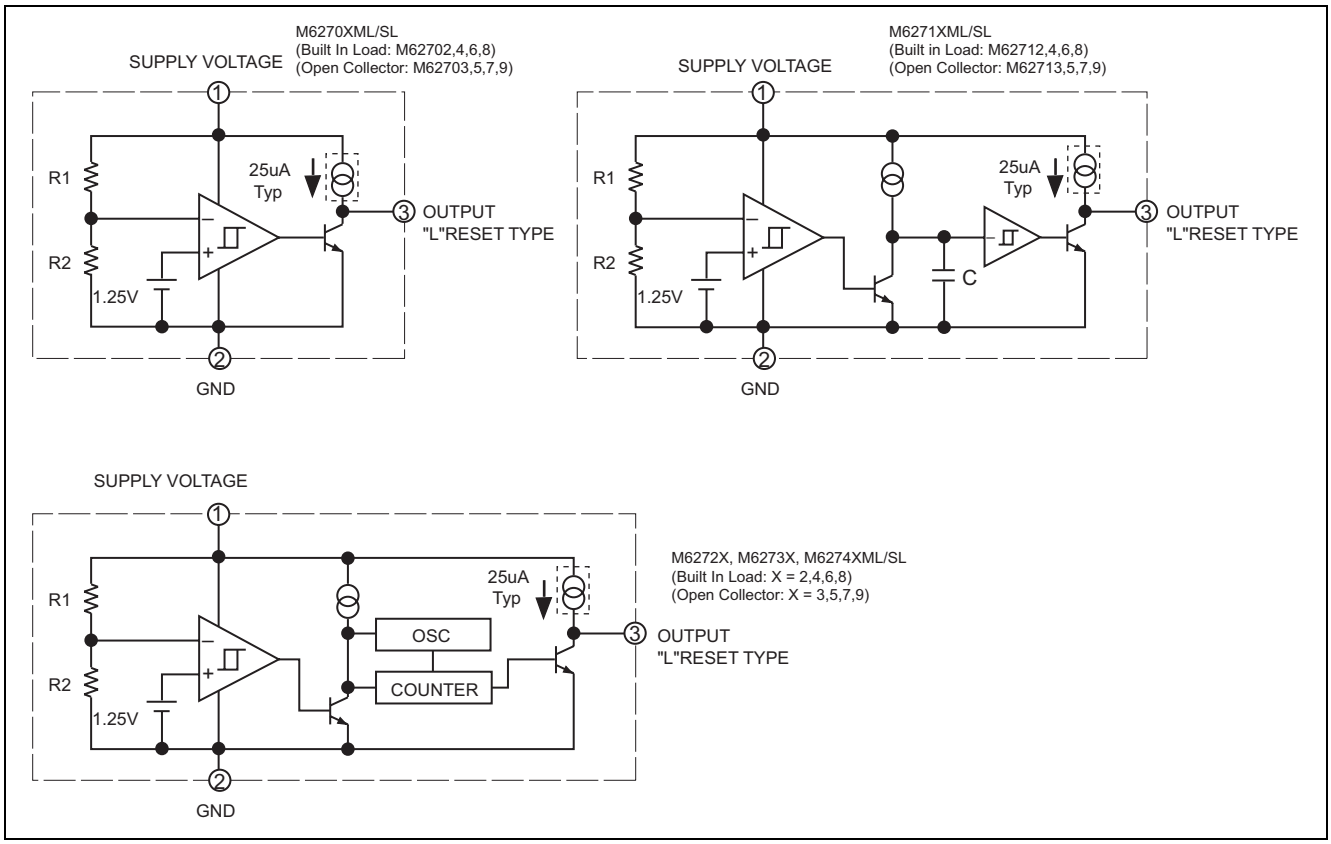
Recommended Operating Condition

- Supply voltage range 1.5V to 7.0V

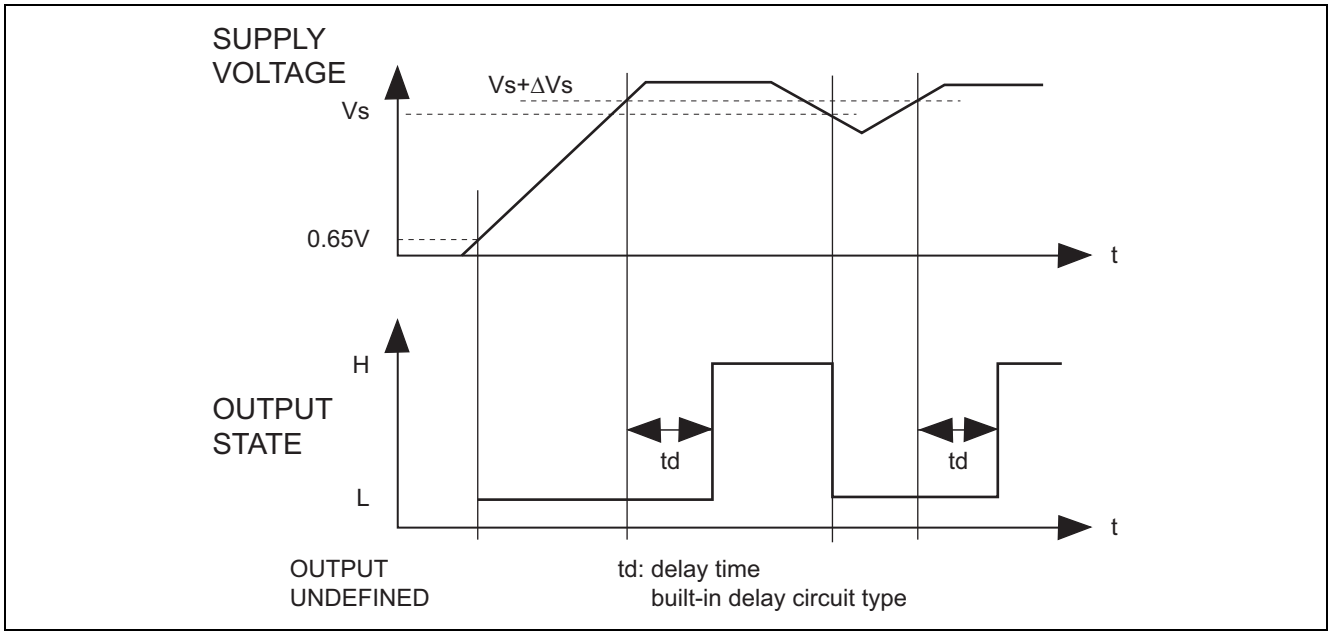
Pin Arrangement



Block Diagram



Function Diagram



Output Form

Built-in Load	Open Collector
M627X2	M627X3
M627X4	M627X5
M627X6	M627X7
M627X8	M627X9

Absolute Maximum Ratings

(Ta = 25°C, unless otherwise noted)

Item	Symbol	Ratings	Unit	Test Conditions	
Supply voltage	V_{CC}	7	V		
Output sink current	I_{sink}	6	mA		
Output voltage	V_O	V_{CC}	V	Output with constant current load	
Power dissipation	Pd	700	mW	3pin SIP	
		500		3pin FLAT	
Thermal derating	K_θ	7	mW/°C	Ta ≥ 25°C	3pin SIP
		5			3pin FLAT
Operating temperature	T_{opr}	–30 to +85	°C		
Storage temperature	T_{stg}	–40 to +125	°C		

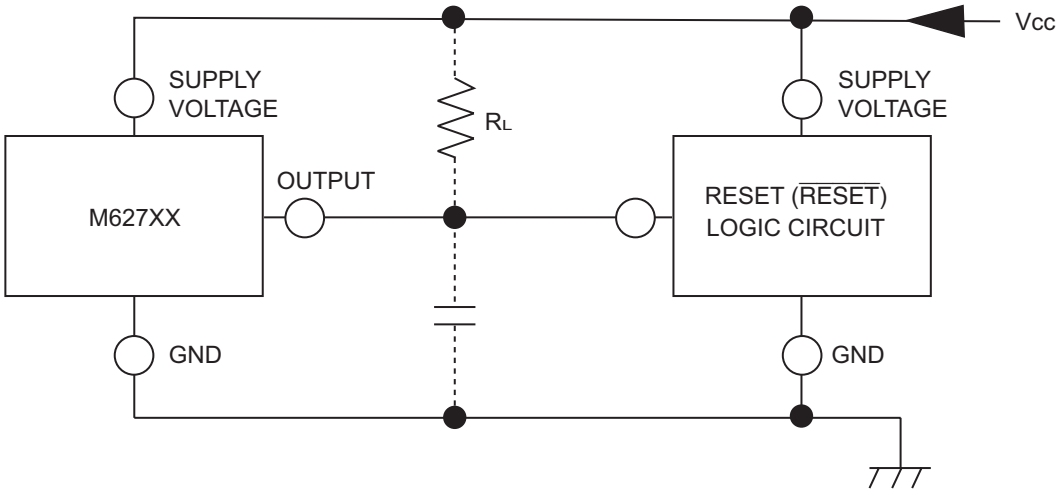
Electrical Characteristics

(Ta = 25°C, unless otherwise noted)

Item	Symbol	Min	Typ	Max	Unit	Test condition		
Detecting voltage	V_S	2.74	2.87	3.00	V	M627X2, 3		
		2.46	2.58	2.70		M627X4, 5		
		2.28	2.39	2.50		M627X6, 7		
		1.64	1.72	1.80		M627X8, 9		
Hysteresis voltage	ΔV_S	50	80	110	mV			
Detecting voltage temperature coefficient	$V_S/\Delta T$	—	0.01	—	%/°C			
Circuit current	I_{CC}	100	200	340	µA	No OSC & counter		M6270X
		120	220	400				M6271X
		250	395	560		Built-in OSC & counter X=2,3,4	V_{CC}=3.3V	M627X2
		225	370	535				M627X3
		230	375	540			V_{CC}=3.0V	M627X4
		205	350	515				M627X5
		200	345	510			V_{CC}=2.7V	M627X6
		175	320	485				M627X7
		130	275	440			V_{CC}=2.0V	M627X8
		105	250	415				M627X9
Delay time	tpd	—	3	—	µs	Response Time		M6270X
		80	200	500	ms	Ta=–30 to +85°C		M6271X
		30	50	70				M6272X
		60	100	140				M6273X
		120	200	280				M6274X
Output saturation voltage	Vsat	—	0.2	0.4	V	V_{CC}=2V, I_{sink}=4mA, M627X8,9: V_{CC}=1.6V		
Threshold operating voltage	V_{OPL}	—	0.7	0.8	V	Minimum supply voltage for operation	R_L=2.2kΩ, Vsat≤0.4V	
		—	0.6	0.7			R_L=100kΩ, Vsat≤0.4V	
Output load current	I_{OC}	–40	–25	–17	µA	Built-in Load type, V_O=1/2*V_{CC}		
Output high voltage	V_{OH}	V_{CC}–0.2	V_{CC}–0.06	—	V	Built-in Load type		
Output leak current	I_{OH}	—	—	30	nA	Open collector type		
		—	—	1	µA		Ta=–30 to +85°C	

Example of Application Circuit

Reset Circuit of M627XX Series

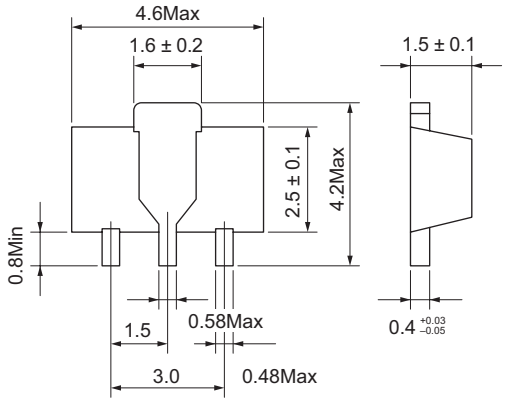


Note: 1. The logic circuit preferably should not have a pull-down resistor, but if one is present, add load resistor R_L to overcome the pull-down resistor.

Package Dimensions

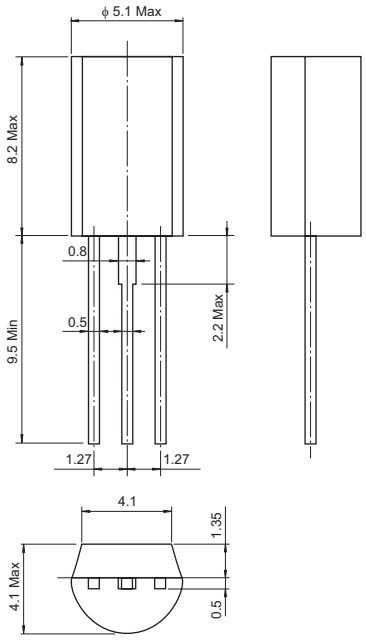
Package Name	JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
SOT-89	SC-62	PLZZ0004CB-A	—	0.48g

Unit: mm



JEITA Package Code	RENESAS Code	Package Name	MASS[Typ.]
—	PRSS0003DF-A	TO-92L	0.34g

Unit: mm



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