

To all our customers

Regarding the change of names mentioned in the document, such as Mitsubishi Electric and Mitsubishi XX, to Renesas Technology Corp.

The semiconductor operations of Hitachi and Mitsubishi Electric were transferred to Renesas Technology Corporation on April 1st 2003. These operations include microcomputer, logic, analog and discrete devices, and memory chips other than DRAMs (flash memory, SRAMs etc.) Accordingly, although Mitsubishi Electric, Mitsubishi Electric Corporation, Mitsubishi Semiconductors, and other Mitsubishi brand names are mentioned in the document, these names have in fact all been changed to Renesas Technology Corp. Thank you for your understanding. Except for our corporate trademark, logo and corporate statement, no changes whatsoever have been made to the contents of the document, and these changes do not constitute any alteration to the contents of the document itself.

Note : Mitsubishi Electric will continue the business operations of high frequency & optical devices and power devices.

Renesas Technology Corp.
Customer Support Dept.
April 1, 2003

MITSUBISHI STANDARD LINEAR IC
**M6270X, M6271X,
M6272X, M6273X, M6274XML/SL**
VOLTAGE DETECTING, SYSTEM RESETTNG IC SERIES

GENERAL 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
- Hysteresis Voltage 80mV
- Delay Time M6270X 0sec
M6271X 200 μ sec
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 $R_L=22k\Omega$
- Wide supply voltage range 1.5V to 7.0V
- Sudden change in power supply has minimal effect on the ICs
- Extra small 3-pin package (3-pin FLAT)
- Built-in long delay time

APPLICATION

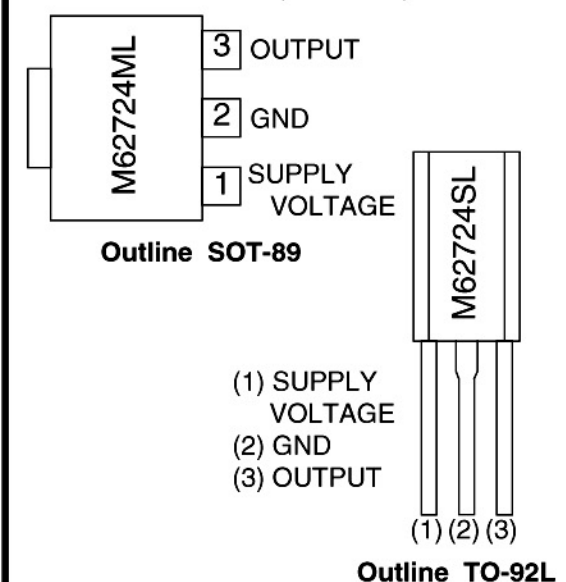
- Reset pulse generation for almost all logic circuits
- Battery checking, level detecting, waveform shaping circuits
- Delayed waveform generator
- Switching circuit to a back-up power supply
- DC/DC converter
- Over voltage protection circuit

RECOMMENDED OPERATING CONDITION

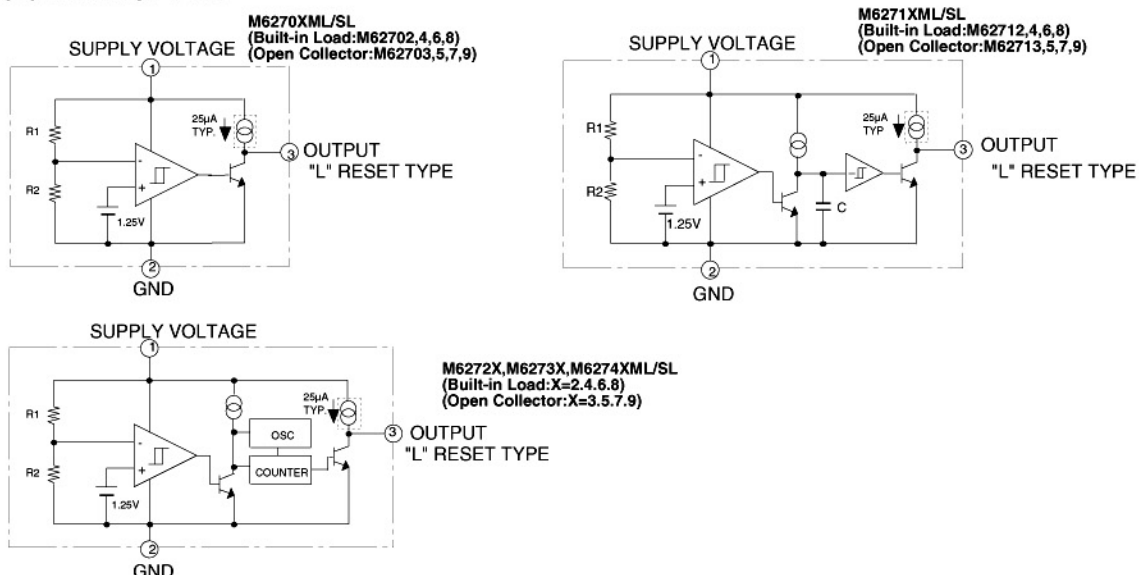
- Supply voltage range 1.5V to 7.0V

This product is on during the development, and there is a case rescheduling it future technical standard.

PIN CONFIGURATION (TOP VIEW) ex. M62724



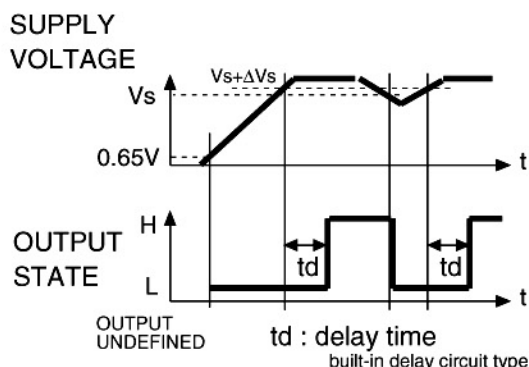
BLOCK DIAGRAM



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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)

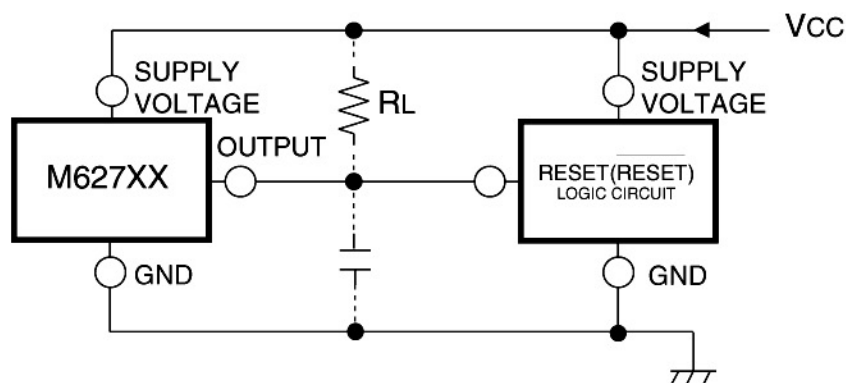
Symbol	Parameter	Test condition		Ratings	Unit
I _{CC}	Supply Voltage			7	V
I _{sink}	Output Sink Current			6	mA
V _O	Output Voltage	Output with constant current load		V _{CC}	V
P _d	Power Dissipation	3pin SIP		700	mW
		3pin FLAT		500	
K _θ	Thermal Derating	Ta≥25°C	3PIN SIP	7	mW/°C
			3PIN FLAT	5	
T _{opr}	Operating Temperature			-30 to +85	°C
T _{stg}	Storage Temperature			-40 to +125	°C

ELECTRICAL CHARACTERISTICS (Ta=25°C, Unless otherwise noted)

Symbol	Parameter	Test condition		Limits			Unit	
				MIN	TYP	MAX		
Vs	Detecting Voltage		M627X2,3	2.74	2.87	3.00	V	
			M627X4,5	2.46	2.58	2.70		
			M627X6,7	2.28	2.39	2.50		
			M627X8,9	1.64	1.72	1.80		
ΔVs	Hysteresis Voltage		50	80	110	mV		
Vs/ΔT	Detecting Voltage Temperature Coefficient			0.01		%/°C		
Icc	Circuit Current	NO OSC & COUNTER	M6270X	100	200	340	μA	
			M6271X	120	220	400		
		Built-in OSC & COUNTER X=2,3,4	Vcc=3.3V	M627X2	250	395		560
				M627X3	225	370		535
			Vcc=3.0V	M627X4	230	375		540
				M627X5	205	350		515
			Vcc=2.7V	M627X6	200	345		510
				M627X7	175	320		485
			Vcc=2.0V	M627X8	130	275		440
	M627X9	105	250	415				
tPd	Delay Time	Response Time	M6270X		3		μs	
		Ta=-30~+85°C	M6271X	80	200	500	ms	
			M6272X	30	50	70		
			M6273X	60	100	140		
			M6274X	120	200	280		
Vsat	Output Saturation Voltage	Vcc=2V, Isink=4mA / M627X8,9: Vcc=1.6V			0.2	0.4	V	
VOPL	Threshold Operating Voltage	Minimum supply voltage for operation	RL=2.2kΩ, Vsat≤0.4V		0.7	0.8	V	
			RL=100kΩ Vsat≤0.4V		0.6	0.7		
Ioc	Output Load Current	Built-in Load type	Vo=1/2*Vcc	-40	-25	-17	μA	
VOH	Output HIGH Voltage	Built-in Load type		Vcc-0.2	Vcc-0.06		V	
IOH	Output Leak Current	Open Collector type				30	nA	
			Ta=-30~+85°C			1	μA	

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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 RL to overcome the pull-down resistor.

⚠ Mitsubishi Electric Corporation puts the maximum effort into making semiconductor products better and more reliable, but there is always the possibility that trouble may occur with them. Trouble with semiconductors may lead to personal injury, fire or property damage. Remember to give due consideration to safety when making your circuit design, in order to prevent fires from spreading, redundancy, malfunction or other mishap.