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

NEW PRODUCT

GENERAL DESCRIPTION
The M62032AFP is an IC for detection of two different input voltages to reset almost all logic circuits including MCU.
It contains a delay circuit with which any delay time can be obtained only by adding an external capacitor.
The IC is widely applicable to a battery check circuit, a level detection circuit, a waveform shaping circuit, etc.
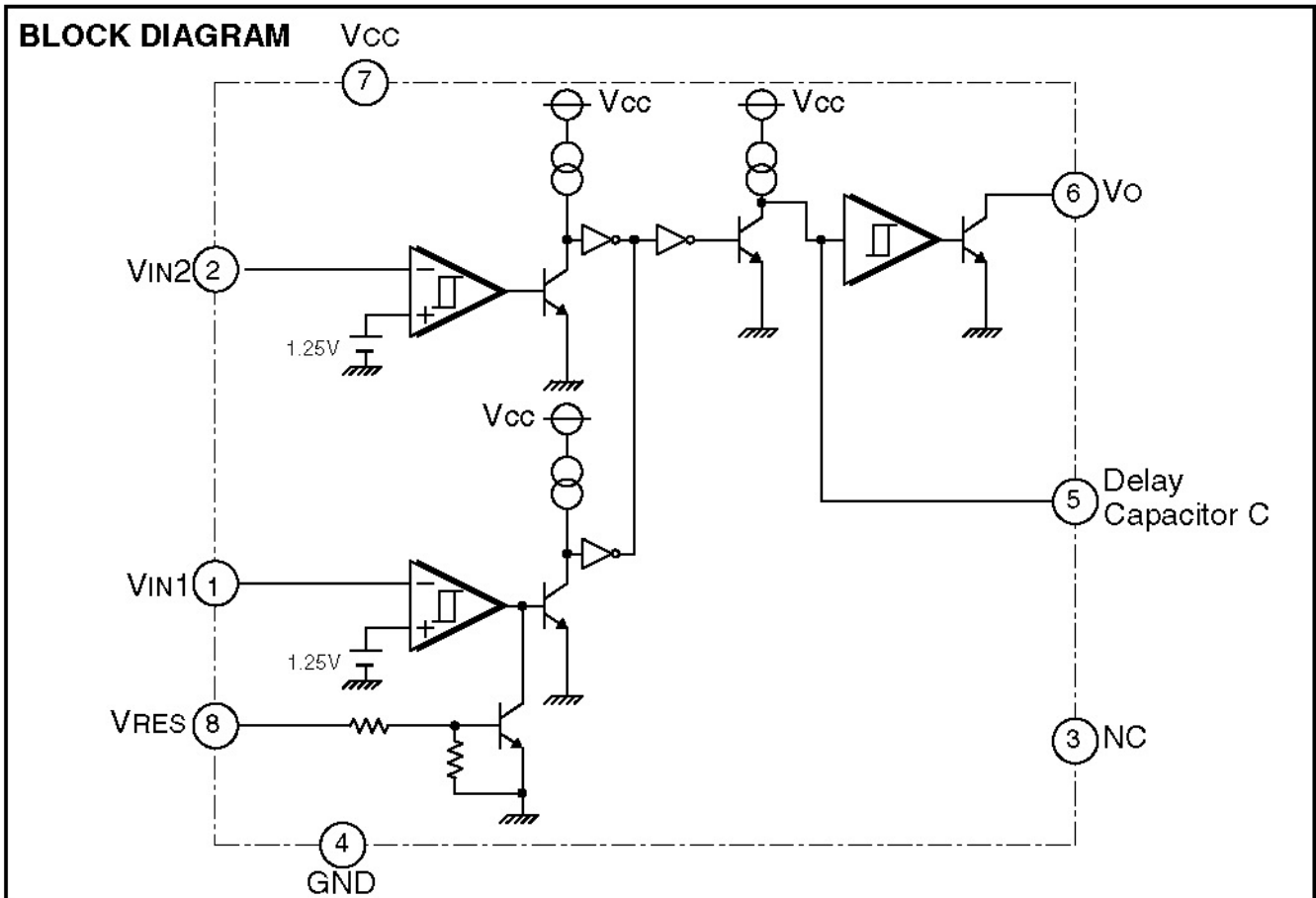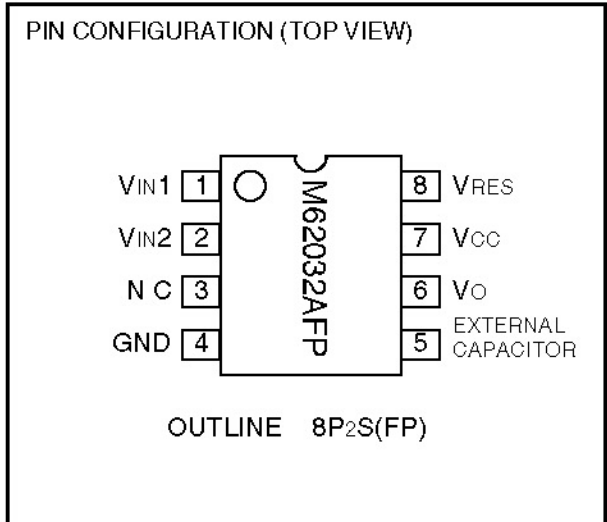
FEATURES
• A small number of external components
• Built-in 2 input voltage detection circuits
• Wide supply voltage range .... 2 to 10V
• Small 8-pin package
• Open collector output

APPLICATION
Reset circuit of MPU, MCU and logic

RECOMMENDED OPERATING CONDITION
Supply voltage range .... 2 to 10V

PIN CONFIGURATION (TOP VIEW)

```
VIN1  [1]         [8]  VRES
VIN2  [2]  M62032AFP  [7]  VCC
N C   [3]         [6]  VO
GND   [4]         [5]  EXTERNAL CAPACITOR
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OUTLINE   8P2S(FP)

BLOCK DIAGRAM

NEW PRODUCT

FUNCTIONAL DIAGRAM
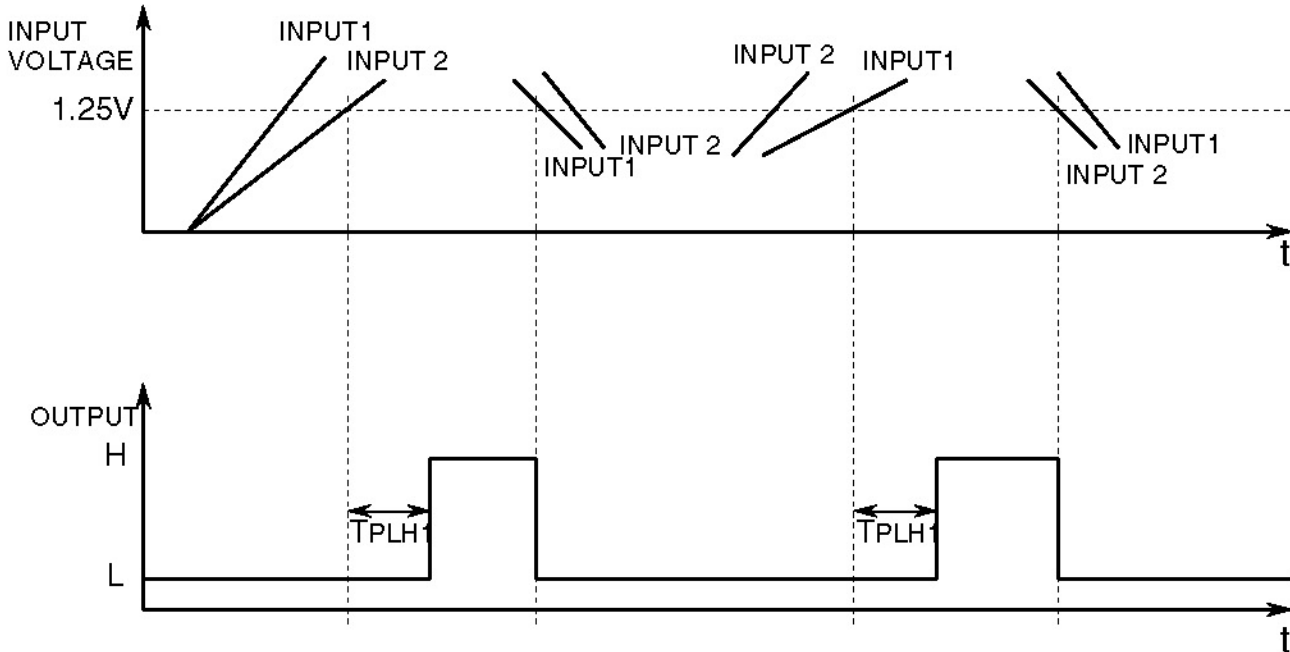
TERMINAL DESCRIPTION

Terminal No.	Symbol	Functional Description
1	VIN1	Detecting voltage input 1
2	VIN2	Detecting voltage input 2
3	NC	No connection
4	GND	Ground
5	EXTERNAL CAPACITOR	Delay capacitor connection
6	Vo	Output (open collector)
7	VCC	Supply voltage
8	VRES	It outputs "L" and "H" to the Vo terminal when VRES input is "H" and "L", respectively.

NEW PRODUCT

ABSOLUTE MAXIMUM RATINGS (Ta=25 °C, unless otherwise noted)

Symbol	Parameter	Conditions	Ratings	Unit
Vcc	Supply Voltage		10	V
ISINK	Output Sink Current		8.0	mA
Vo	Output Voltage		10	V
VRES	Self Reset Input Voltage		10	V
Pd	Power Dissipation		300	mW
Ktheta	Thermal Derating	Ta ≥ 25°C	3.0	mW/°C
Topr	Operating Temperature		-20 to +75	°C
Tstg	Storage Temperature		-40 to +125	°C

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

<Reset circuit1>

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
VS1	Detecting Voltage 1		1.20	1.25	1.30	V
ΔVS1	Hysteresis Voltage 1		9	15	23	mV
VIN	Input Voltage Range	Vcc ≤ 7V	-0.3		Vcc	V
		Vcc>7V	-0.3		7.0	
IIN	Input Current	VIN=1.25V		100	500	nA
IPD	Constant Current			-1.4		uA
VOL1	Low Output Voltage 1	IOL=5mA		0.2	0.4	V
tpd1	Delay Time	Cd=0.01uF		10		mS
tpdmax	Maximum Delay Time	Cd=0.68uF		680	1130	mS
ΔVSCin	Delay Capacitor part Hysteresis Voltage			250		mV

* The delay time can be varied by changing the connecting capacitance(Cd).
$$Tpd = CV/I = Cd \times 1E6 \ (sec)$$

<Reset circuit2>

Symbol	Parameter	Test conditions	Min	Typ	Max	Unit
VS2	Detecting Voltage2		1.20	1.25	1.30	V
ΔVS2	Hysteresis Voltage2		9	15	23	mV
VIN	Input Voltage Range	Vcc ≤ 7V	-0.3		Vcc	V
		Vcc>7V	-0.3		7.0	
IIN	Input Current	VIN=1.25V		100	500	nA

<Common specification>

Symbol	Parameter	Test conditions	Min	Typ	Max	Unit
Vcc	Supply Voltage Range		2		10	V
ICC1	Circuit Current in OFF	Vcc=5V		0.3	0.6	mA
VS/ΔT	Detecting Voltage Temperature Coefficient			0.01		%/°C
ΔVS/ΔT	The Hysteresis Voltage Temperature Coefficient			0.01		%/°C
TPLH/ΔT	Propagation Delay Time Temperature Coefficient			0.10		%/°C
IOH	Output Leak Current				1	uA
TPHL	Output "L" Propagation Delay Time	CL=100pF		10		us
VOPL	Threshold Operating Voltage	RL=2.2kΩ,VoL ≤ 0.4V		0.67	0.8	V
		RL=100kΩ,VoL ≤ 0.4V		0.55	0.70	
VRESH	VRES Input "HIGH" voltage		2		Vcc	V
IRESH	VRES Input "HIGH" current	VRES=2V			80	uA
VRESL	VRES Input "LOW" voltage		-0.3		0.8	V

NEW PRODUCT

AN EXAMPLE OF THE APPLICATION CIRCUIT
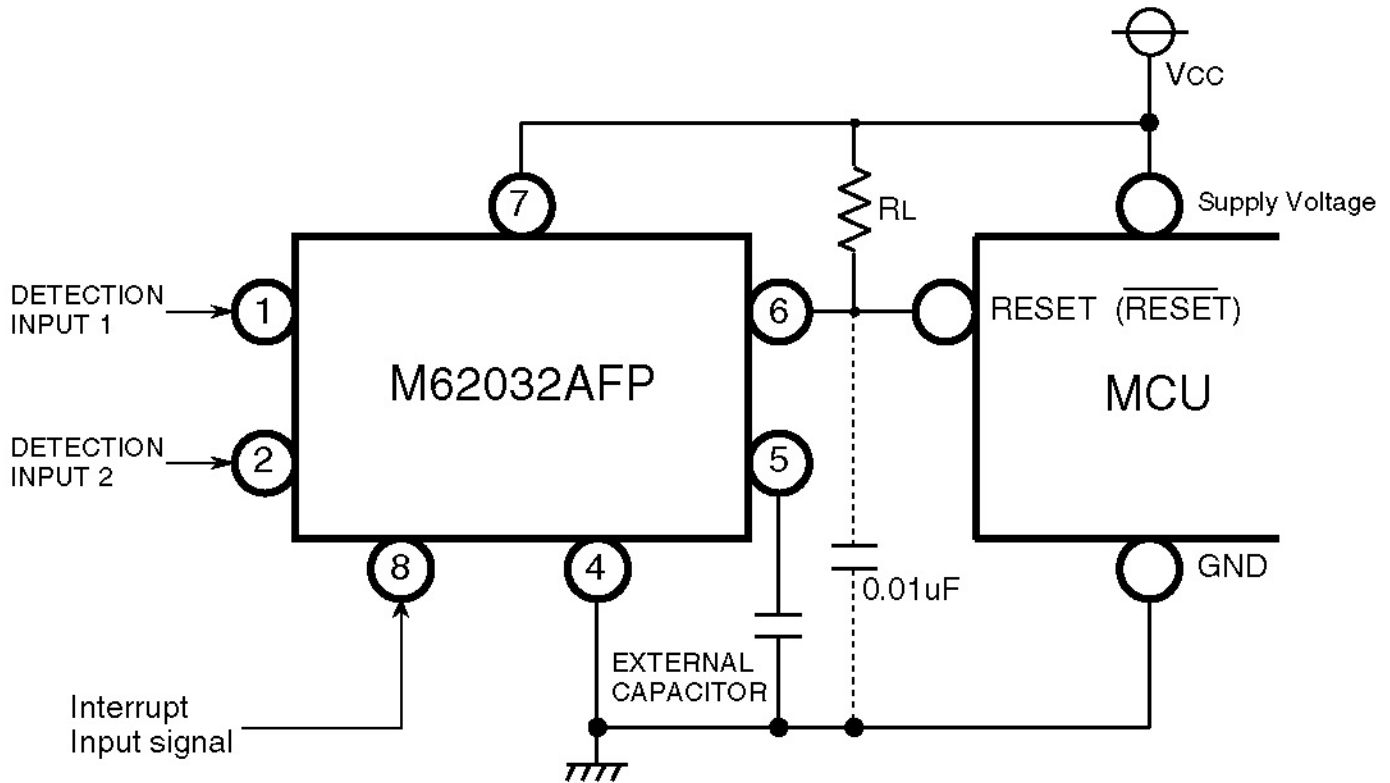
* A forced reset signal (high) into pin 8 from outside can reset this IC (low output) regardless of input signals to pins 1 and 2.

⚠ 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.