

# M62015L,FP

# M62016L,FP

LOW POWER 2 OUTPUT SYSTEM RESET IC

## DESCRIPTION

The M62015, M62016 are semiconductor integrated circuits whose optimum use is for the detection of the rise and fall in the power supply to a microcomputer system in order to reset or release the microcomputer system.

The M62015, M62016 carry out voltage detection in 2 steps and have 2 output pins. As Bi-CMOS process and low power dissipating circuits are employed, they output optimum signals through each output pin to a system that requires RAM backup.

These ICs also support the backup mode of Mitsubishi microcomputer the M16C.

## FEATURES

- Bi-CMOS process realizes a configuration of low current dissipating circuits.

Circuit current

$I_{CC}=3\mu A$  (Typ. , normal mode,  $V_{CC}=3.0V$ )

$I_{CC}=1\mu A$  (Typ. , backup mode,  $V_{CC}=2.5V$ )

- Two-step detection of supply voltage

Detection voltage in normal mode  $V_S=2.7V$  (Typ.)

Detection voltage in backup mode  $V_{BATT}=2.0V$  (Typ.)

- Two outputs

Reset output ( $\overline{RESET}$ ) : Output of compulsive reset signal

Interruption output ( $\overline{INT}$ ) : Output of interruption signal

- Output forms

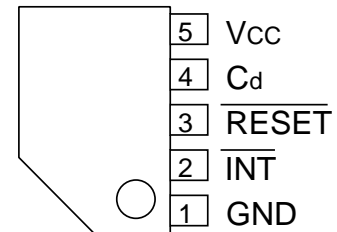
CMOS output : M62015

Open drain : M62016

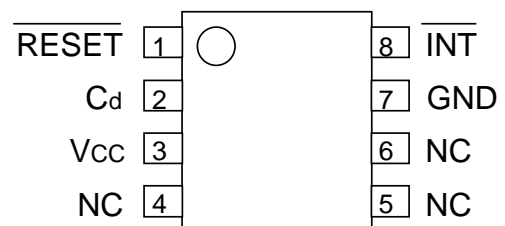
## APPLICATION

Prevention of malfunction of microcomputer systems in electronic, equipment such as OA equipment, industrial equipment, and home-use electronic appliances.

### PIN CONFIGURATION (TOP VIEW)



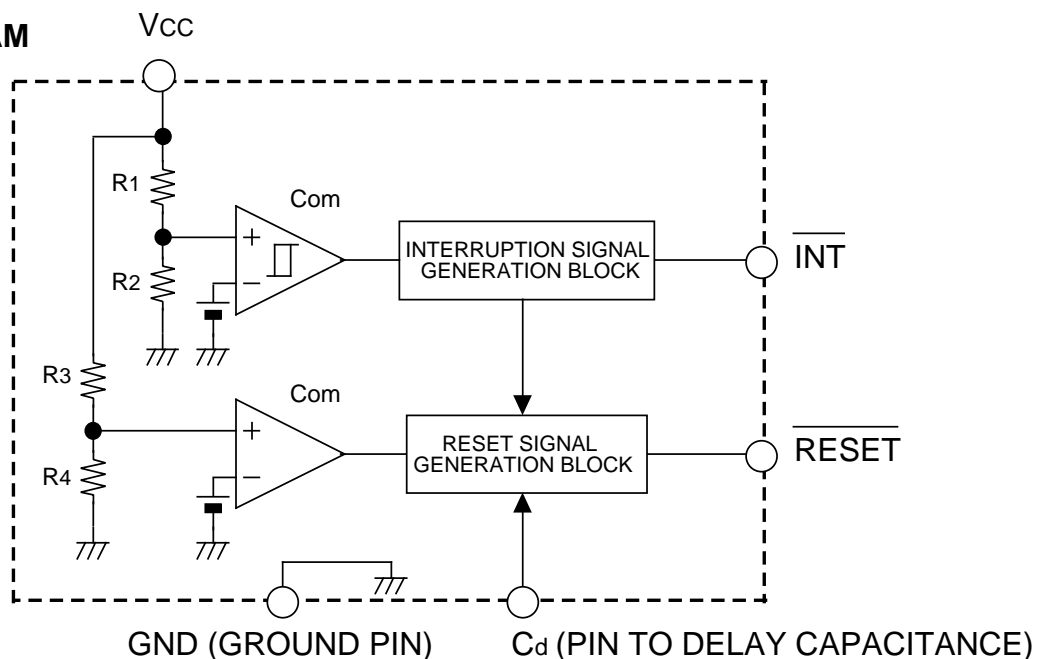
Outline 5P5T



Outline 8P2S-A

NC : NO CONNECTION

### BLOCK DIAGRAM



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**LOW POWER 2 OUTPUT SYSTEM RESET IC**

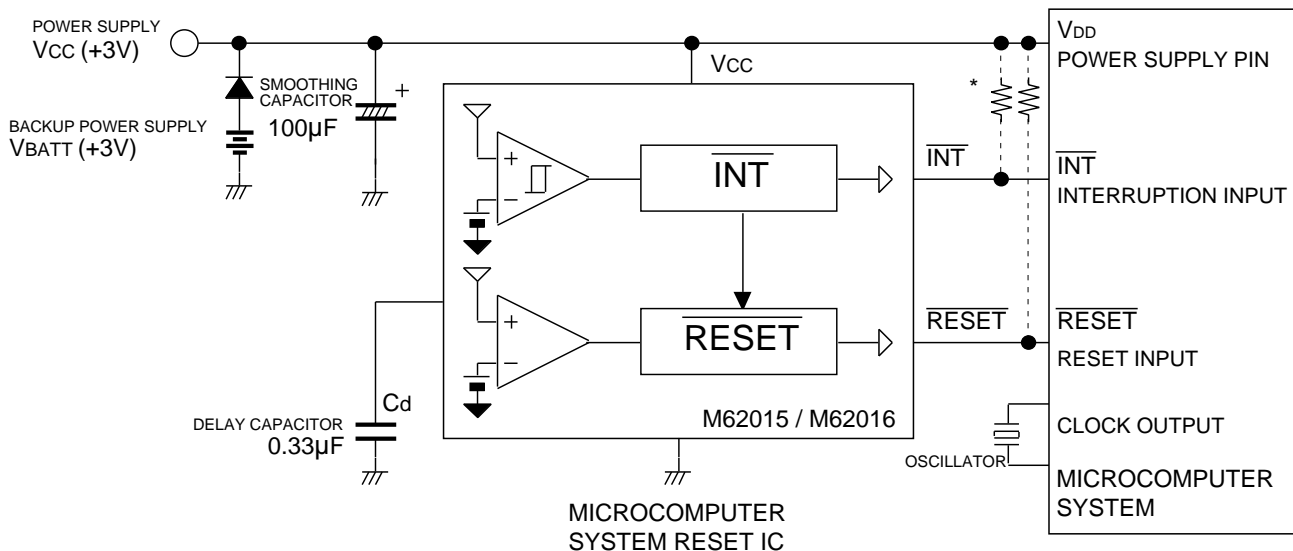
**ABSOLUTE MAXIMUM RATINGS** (Ta=25°C, unless otherwise noted.)

Symbol	Parameter	Conditions	Ratings	Unit
VCC	Supply voltage		8	V
Isink	Output sink voltage		4	mA
Pd	Power dissipation		440	mW
K <sub>θ</sub>	Thermal derating	(Ta 25°C)	4.4	mW/ °C
Topr	Operating temperature		-20 to +75	°C
Tstg	Storage temperature		-40 to +125	°C

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

Symbol	Parameter	Test Conditions	Limits			Unit
			Min	Typ	Max	
Vs	Supply voltage	Interruption level during Vcc drop	2.55	2.70	2.85	V
VBATT	Battery voltage	Reset level at backup	1.85	2.00	2.15	V
Vs	Hysteresis voltage	Vs=VSH-VSH		60		mV
Icc	Circuit current	Vcc=3.0V : In normal mode		3.0	12	μA
		Vcc=2.5V : In backup mode		1.0	4.0	μA
Vsat	Sink ability	Vcc=2.5V, Isink=2mA		0.4	0.6	V
td	Delay time	External capacitance Cd=0.33μF		50		ms
t <sub>RESET</sub>	Reset output response time	When VCC falling		50		μs
t <sub>INT</sub>	Interruption output response time	When VCC falling		40		μs

**APPLICATION EXAMPLE**

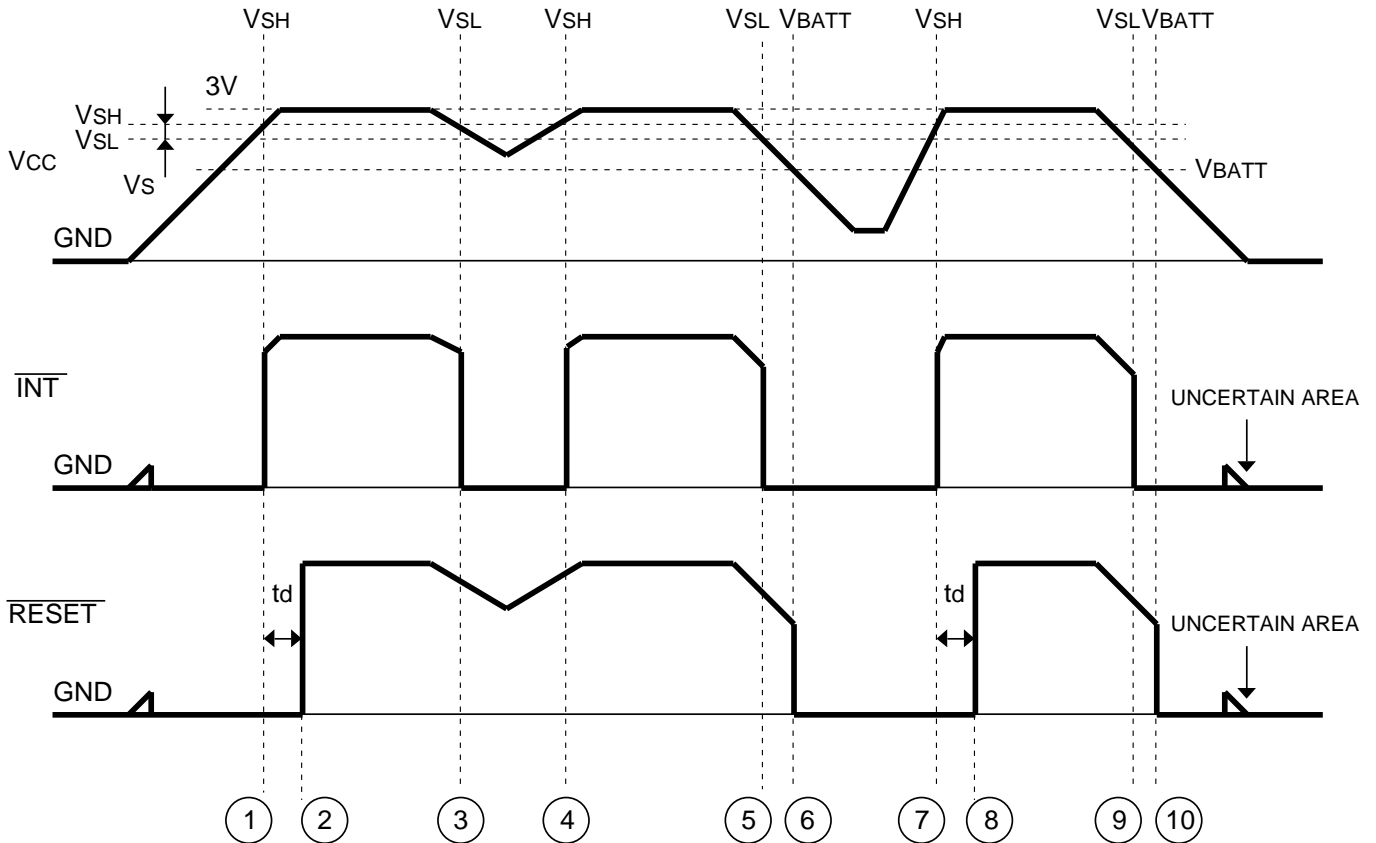


\* : A pull-up resistor is required only in the case of open-drain output.

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LOW POWER 2 OUTPUT SYSTEM RESET IC

**OPERATION DESCRIPTION**



- ① . If VCC rises to VSH(2.76V), the  $\overline{\text{INT}}$  output is set to high level.
- ② .  $\overline{\text{RESET}}$  goes high  $t_d$  (s) after VSH  
 \*  $t_d = 1.52 \times 10^5 \times C$  (sec)
- ③ . If VCC drops to VSH (2.70V),  $\overline{\text{INT}}$  goes low.  
 \*  $\overline{\text{RESET}}$  output continues to be held high.
- ④ . If VCC returns to VSH, the  $\overline{\text{INT}}$  output is set to high level.
- ⑤ . Same as ③
- ⑥ . If VCC becomes lower than VBATT (2.00V), the  $\overline{\text{RESET}}$  output is set to low thereby resetting the microcomputer and initializing system.
- ⑦ . Same as ①
- ⑧ . Same as ②
- ⑨ . Same as ③ and ⑤
- ⑩ . Same as ⑥