M62015L/FP, M62016L/FP

Low Power 2 Output System Reset IC

Description

The M62015 and 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 and M62016 carry out voltage detection in two steps and have two 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 Renesas microcomputer the M16C.

Features

- Bi-CMOS process realizes a configuration of low current dissipating circuits.
  Circuit current
  I_{CC} = 3 µA (Typ, normal mode, V_{CC} = 3.0 V)
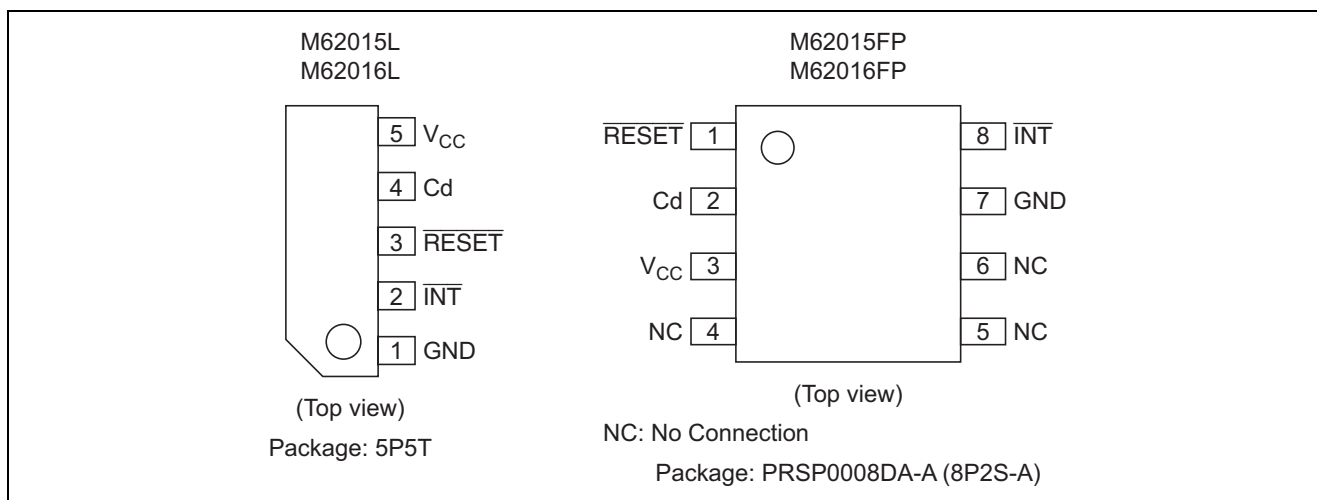 I_{CC} = 1 µA (Typ, backup mode, V_{CC} = 2.5 V)
- Two-step detection of supply voltage
  Detection voltage in normal mode: V_S = 2.7 V (Typ)
  Detection voltage in backup mode: V_{BATT} = 2.0 V (Typ)
- Two outputs
  Reset output ($\overline{\text{RESET}}$): output of compulsive reset signal
  Interruption output ($\overline{\text{INT}}$): output of interruption signal
- Two types of output forms
  CMOS output: M62015L/FP
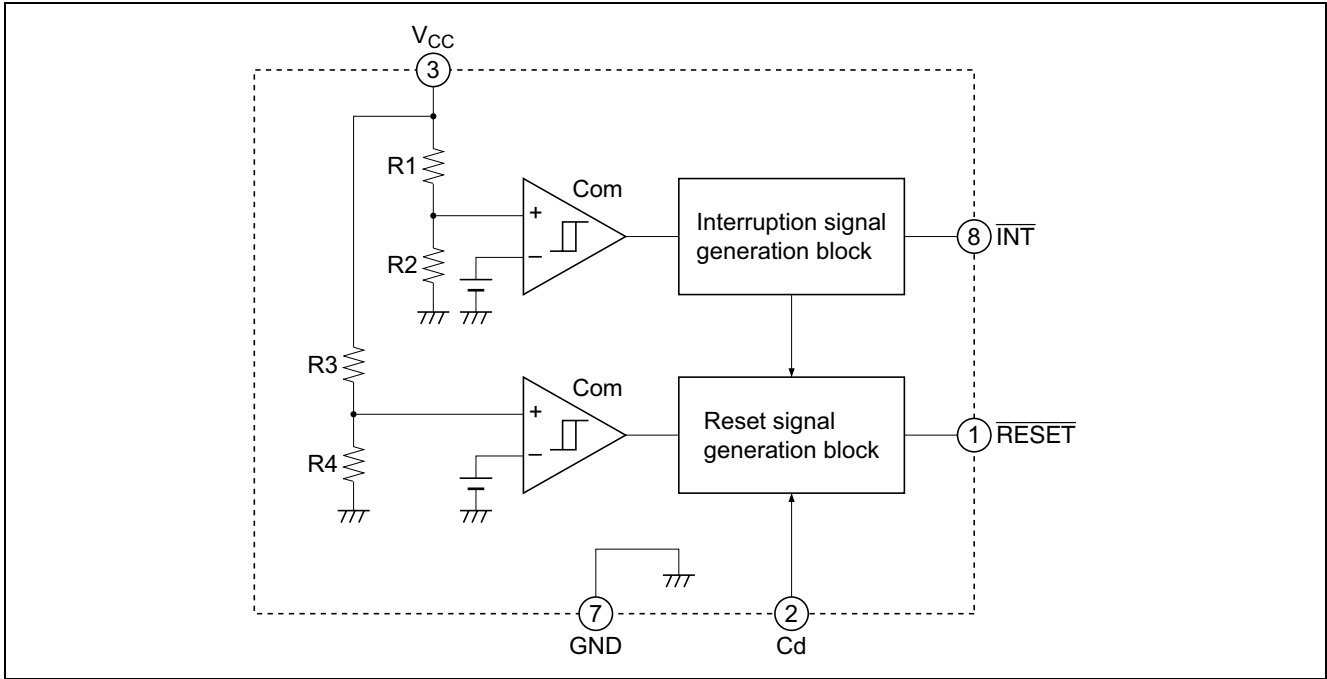 open drain output: M62016L/FP

Application

- Prevention of errors in microcomputer system in electronic equipment that requires RAM backup, such as office, industrial, and home-use equipment.

Pin Arrangement

M62015L
M62016L

5	V_{CC}
4	Cd
3	$\overline{\text{RESET}}$
2	$\overline{\text{INT}}$
1	GND

(Top view)

Package: 5P5T

M62015FP
M62016FP

$\overline{\text{RESET}}$	1		8	$\overline{\text{INT}}$
Cd	2		7	GND
V_{CC}	3		6	NC
NC	4		5	NC

(Top view)

NC: No Connection

Package: PRSP0008DA-A (8P2S-A)

Block Diagram

Absolute Maximum Ratings

(Ta = 25°C, unless otherwise noted)

Item	Symbol	Ratings	Unit	Conditions
Supply voltage	V_{CC}	8	V	
Output sink current	Isink	4	mA	
Power dissipation	Pd	440	mW	
Thermal derating	Kθ	4.4	mW/°C	Ta ≥ 25°C
Operating temperature	Topr	−20 to +75	°C	
Storage temperature	Tstg	−40 to +125	°C	

Electrical Characteristics

(Ta = 25°C, unless otherwise noted)

| Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Supply voltage	V_S	2.55	2.70	2.85	V	Interruption level during V_{CC} drop
Battery voltage	V_{BATT}	1.85	2.00	2.15	V	Reset level at backup
Hysteresis voltage	ΔV_S	—	60	—	mV	$\Delta V_S = V_{SH} - V_{SL}$
Circuit current	I_{CC}	—	3.0	12	μA	V_{CC} = 3.0V: in normal mode
		—	1.0	4.0		V_{CC} = 2.5V: in backup mode
Sink ability	Vsat	—	0.4	0.6	V	V_{CC} = 2.5V, Isink = 2mA
Delay time	td	—	50	—	ms	External capacitance Cd = 0.33μF
Reset output response time	$t_{\overline{RESET}}$	—	50	—	μs	When V_{CC} falling
Interruption output reset time	$t_{\overline{INT}}$	—	40	—	μs	When V_{CC} falling

Application Example
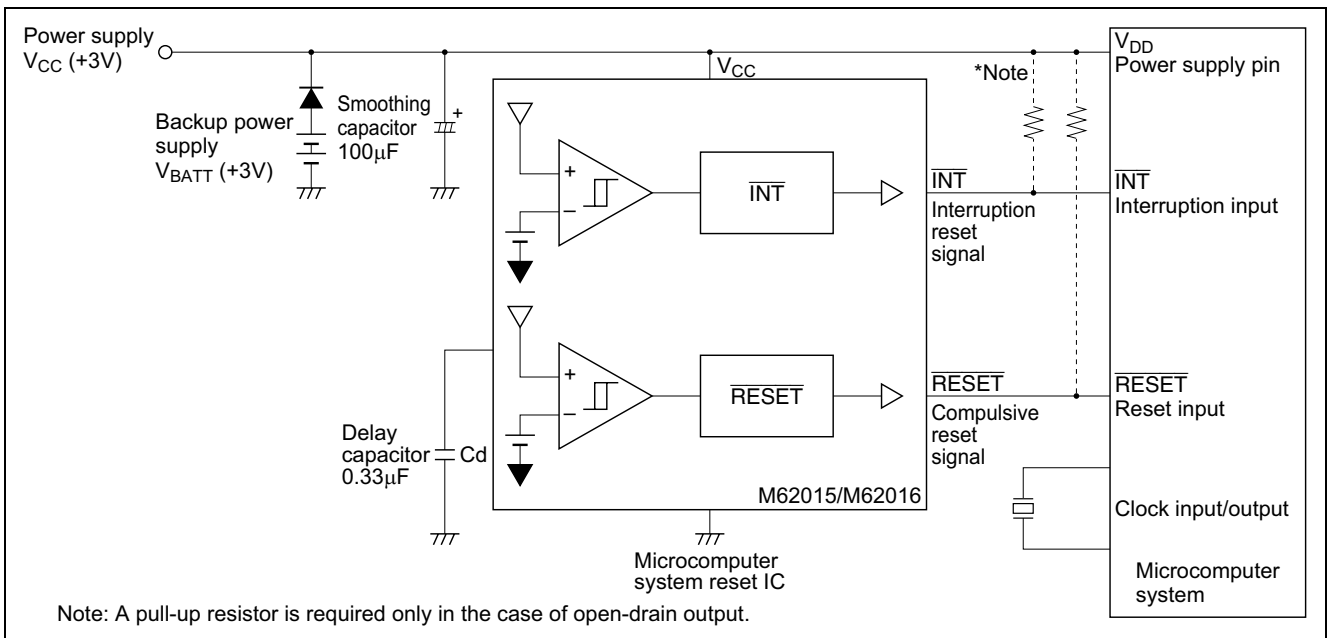
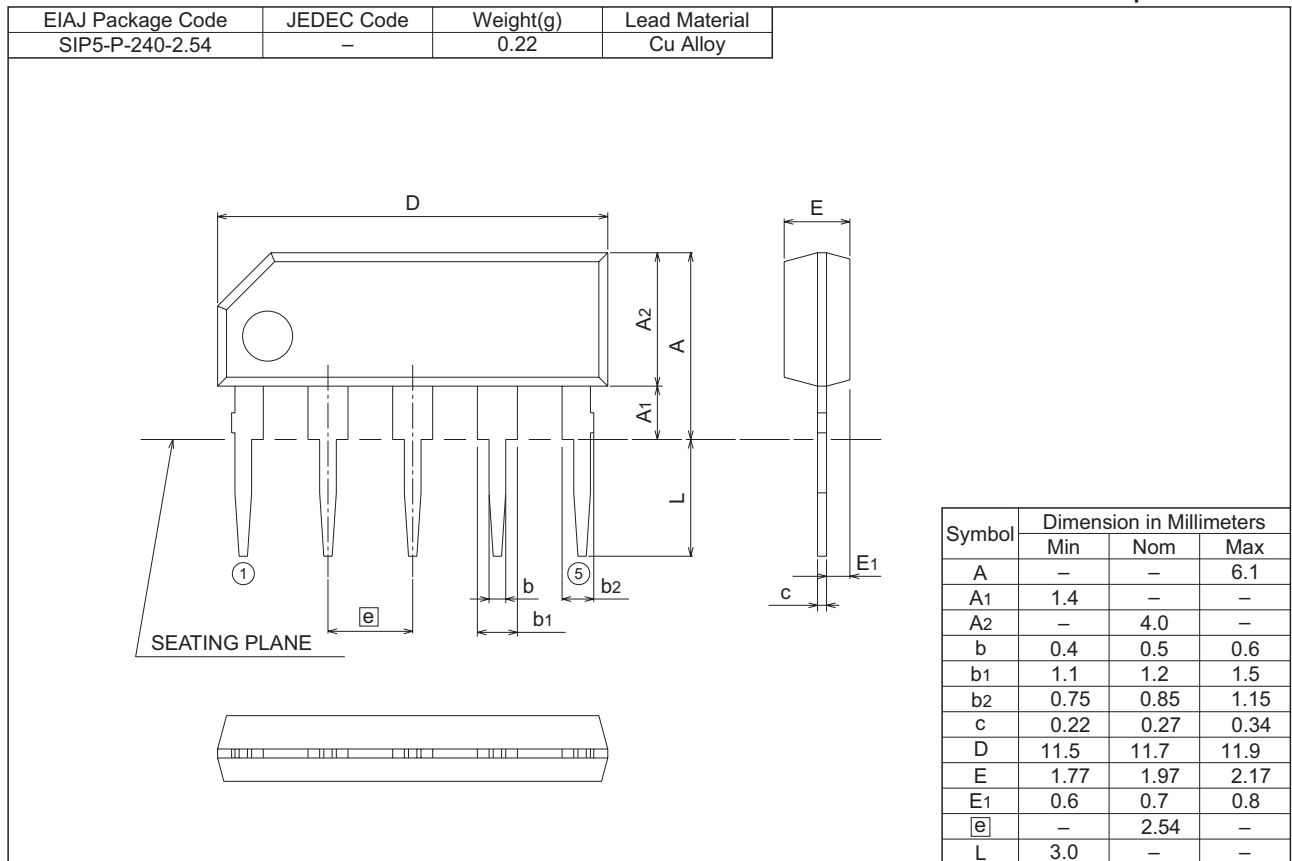**Figure 1   Application Example**

Operating Description
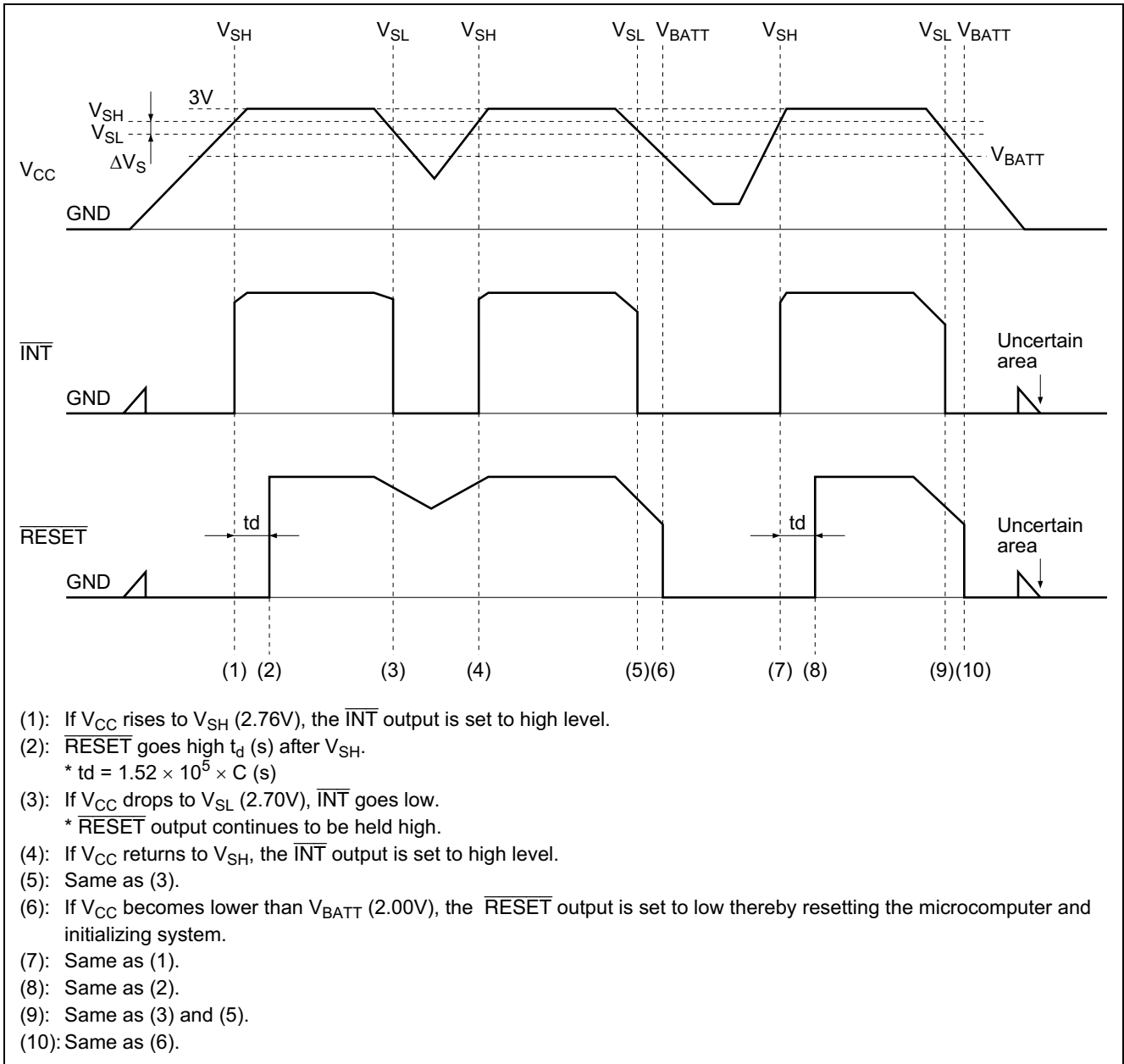
Figure 2   Operating Waveform

(1): If V_{CC} rises to V_{SH} (2.76V), the $\overline{INT}$ output is set to high level.

(2): $\overline{RESET}$ goes high t_d (s) after V_{SH}.
* td = $1.52 \times 10^5 \times C$ (s)

(3): If V_{CC} drops to V_{SL} (2.70V), $\overline{INT}$ goes low.
* $\overline{RESET}$ output continues to be held high.

(4): If V_{CC} returns to V_{SH}, the $\overline{INT}$ output is set to high level.

(5): Same as (3).

(6): If V_{CC} becomes lower than V_{BATT} (2.00V), the $\overline{RESET}$ 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).

RENESAS

Package Dimensions

5P5T
Plastic 5pin 240mil SIP

EIAJ Package Code	JEDEC Code	Weight(g)	Lead Material
SIP5-P-240-2.54	–	0.22	Cu Alloy

Symbol	Dimension in Millimeters		
	Min	Nom	Max
A	–	–	6.1
A1	1.4	–	–
A2	–	4.0	–
b	0.4	0.5	0.6
b1	1.1	1.2	1.5
b2	0.75	0.85	1.15
c	0.22	0.27	0.34
D	11.5	11.7	11.9
E	1.77	1.97	2.17
E1	0.6	0.7	0.8
e	–	2.54	–
L	3.0	–	–

JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
P-SOP8-4.4x5-1.27	PRSP0008DA-A	8P2S-A	0.07g

NOTE)
1. DIMENSIONS "*1" AND "*2" DO NOT INCLUDE MOLD FLASH.
2. DIMENSION "*3" DOES NOT INCLUDE TRIM OFFSET.

Detail F

Reference Symbol	Dimension in Millimeters		
	Min	Nom	Max
D	4.8	5.0	5.2
E	4.2	4.4	4.6
A2	——	1.5	——
A1	0.05	——	——
A	——	——	1.9
bp	0.35	0.4	0.5
c	0.13	0.15	0.2
θ	0°	——	10°
HE	5.9	6.2	6.5
e	1.12	1.27	1.42
y	——	——	0.1
L	0.2	0.4	0.6

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