

HM1232 POWER SUPPLY CONTROL CHIP WITH BUILT-IN WATCHDOG TIMER

J O 3454 is designed to monitor power supply within the system of reset signal generation for microprocessors. It is used in monitor systems for controlling various processes and entities.

Packaged in 8-pin plastic DIP/SOP.

Features:

- Rated supply voltage 5.0 B
- Accurate 5% or 10% microprocessor power supply monitoring
- Programming of watchdog timer overflow time
- Generation of reset signals at power on for correct microprocessor start

The chip contains reference voltage source, analog comparator, Watchdog timer, circuit for monitoring power supply deviation accuracy.

Functions:

- Reset signal generation after power failure/ error
- Reset signal generation from external "RESET" pushbutton
- Reset signal generation from watchdog timer

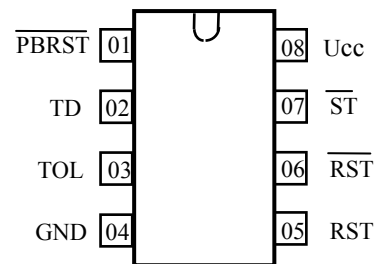
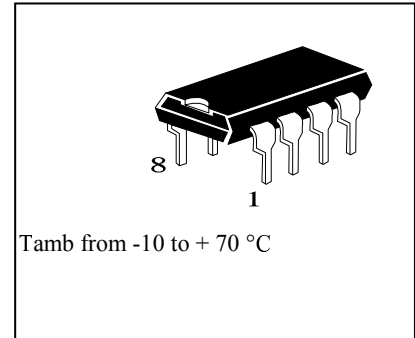


Fig 1 – PIN ASSIGNMENT

Operating temperature range: from - 10 to + 70°C

Table 1 – Recommended operating conditions

Symbol	Parameter	Typical		Units
		Min	Max	
V_{CC}	Supply voltage	4.5	5.5	V
V_{IH}	Input voltage, high level	2.0	$V_{CC}+0.3$	V
V_{IL}	Input voltage, low level	-0.3	0.8	V
T_A	Operating temperature range	-10	+70	°C

Table 2 – Absolute maximum ratings

Symbol	Parameter	Typical		Units
		Min	Max	
V_{CC}	Supply voltage	-	7.0	V
V_{IH}	Input voltage, high level	-	7.0	V
V_{IL}	Input voltage, low level	-1.0	-	V
T_{stg}	Storage temperature	-60	+125	°C

Table 3 DC electrical characteristics ($T_{Amb} = -10^{\circ}$ to $+70^{\circ}\text{C}$)

Symbol	Parameter	Test conditions	Typical		Units
			min	max	
I_{LIL1}	Input leakage current, low level, ST, TOL	$V_{CC}=5\text{ V}\pm 10\%$, $V_{IL}=0\text{ V}$	-	-1	μA
I_{LIL2}	Input leakage current, low level, TD	$V_{CC}=5\text{ V}\pm 10\%$, $V_{IL}=0\text{ V}$	-	-300	μA
I_{LIL3}	Input leakage current, low level, PBRST	$V_{CC}=5\text{ V}\pm 10\%$, $V_{IL}=0\text{ V}$	-	-1000	μA
I_{LIH1}	Input leakage current, high level, ST, TOL	$V_{CC}=5\text{ V}\pm 10\%$, $V_{IH}=V_{CC}$	-	1	μA
I_{LIH2}	Input leakage current, high level, TD	$V_{CC}=5\text{ V}\pm 10\%$, $V_{IH}=V_{CC}$	-	300	μA
I_{OH}	Output current, high level, RST	$V_{CC}=5\text{ V}\pm 10\%$, $V_{OH}=2.4\text{ V}$	-8	-	μA
I_{OL}	Output current, low level, RST, RST	$V_{CC}=5\text{ V}\pm 10\%$, $V_{OL}=0.4\text{ V}$	8	-	mA
V_{OH}	Output voltage, high level, RST	$V_{CC}=5\text{ V}\pm 10\%$, $I_{OH}=-500\text{ }\mu\text{A}$	$V_{CC}-0.5$	-	V
V_{OH1}	Output voltage, high level, - RST	$V_{CC}=2\text{ V}$, $I_{OH}=-500\text{ }\mu\text{A}$	$V_{CC}-0.5$	-	V
V_{OL}	Output voltage, low level, RST	$V_{CC}=2\text{ V}$, $I_{OL}=1\text{ mA}$	-	0.4	V
I_{CC}	Operating current	$V_{CC}=5\text{ V}\pm 10\%$	-	2	mA

Table 3 (cont)

Symbol	Parameter	Test conditions	Typical		Units
			min	max	
V _{CCTP1}	V _{CC} trip point	TOL = GND	4.5	4.74	V
V _{CCTP2}	V _{CC} trip point	TOL = V _{CC}	4.25	4.49	V

Table 4 – AC electrical characteristics (T_{amb} = from - 10 to + 70 °C)

Symbol	Parameter	Test conditions	Typical		Units
			min	max	
t _{TD1}	Watchdog timer overflow time	V _{CC} =5.0 V±10% t _{ST} ≥20 ns TD = GND	62.5	250	ms
t _{TD2}		TD disconnected	250	1000	ms
t _{TD3}		TD = V _{CC}	500	2000	ms
t _{PDLY}	PBRST stable low to RST and RST	V _{CC} =5.0 V±10% t _{PB} ≥20 ms	-	20	ms
t _{RST}	Reset active time	V _{CC} =5.0 V±10% t _{PB} ≥20 ms	250	1000	ms
t _{RPD}	V _{CC} fail detect to RST and RST	V _{CC} =from 5.0 to 4.0 V t _F ≥10 μs	-	175	μs
t _{RPU}	V _{CC} detect to RST and RST transition	V _{CC} = from 5.0 to 4.0 V t _R ≥1 μs	250	1000	ms

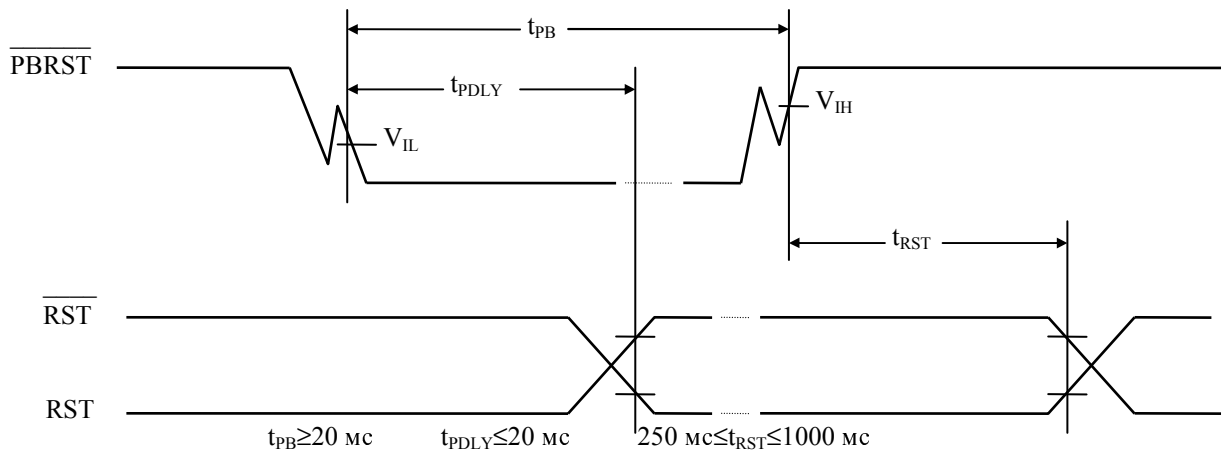


Fig. 2 – Timing diagram of forming reset signal from external PBRST control button

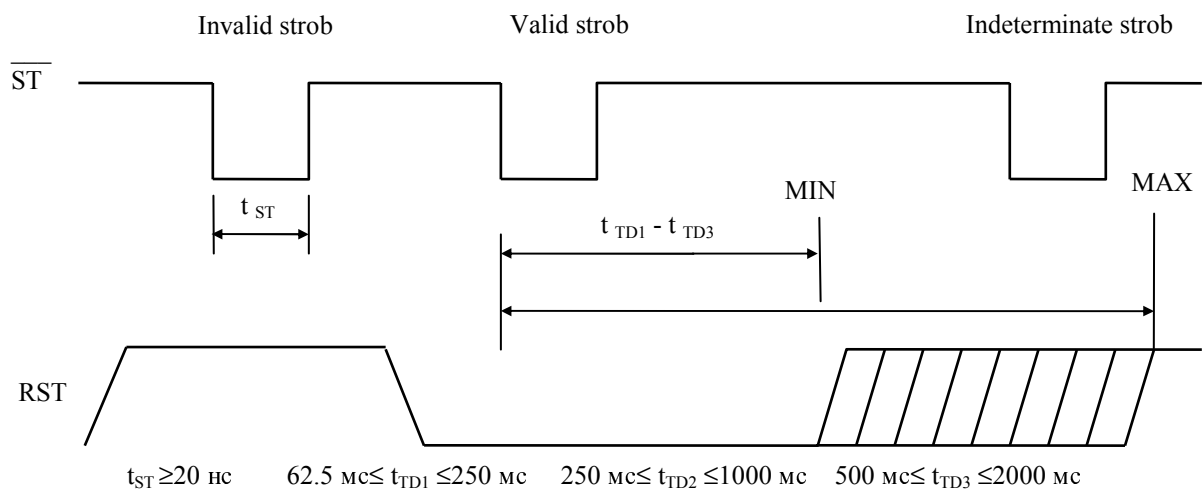


Fig. 3 – Timing diagram : Strobe input

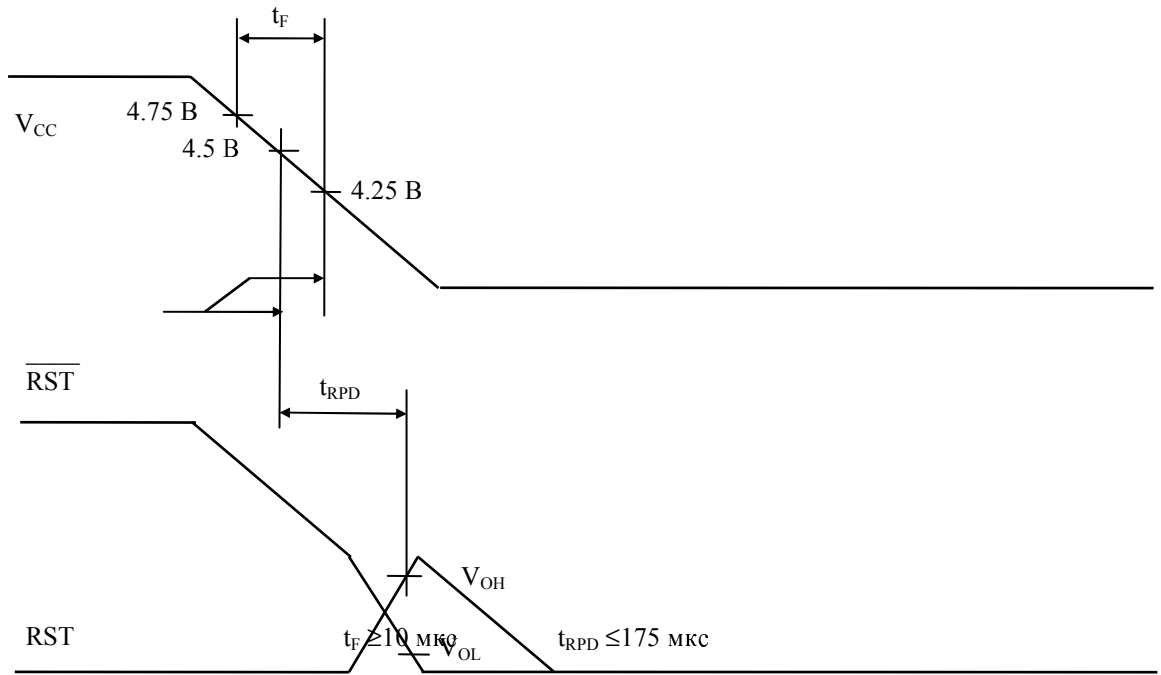


Fig. 4 – Timing diagram: power error / down to V_{CCTP}

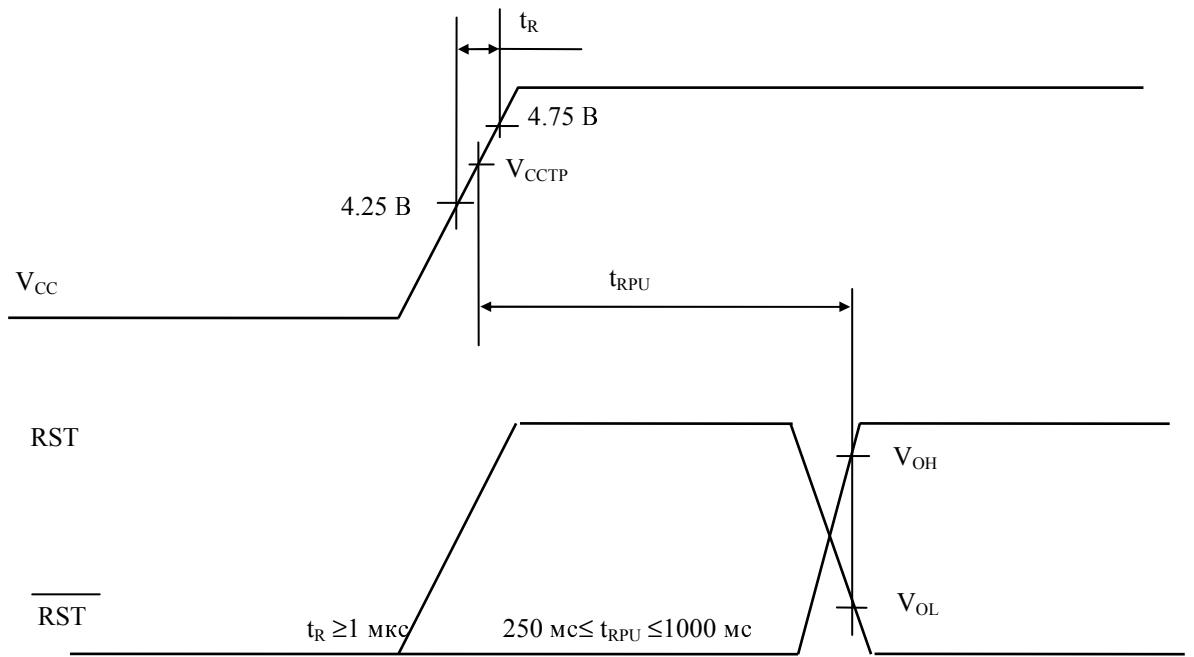


Fig. 5 – Timing diagram: Power-Up/ Stable

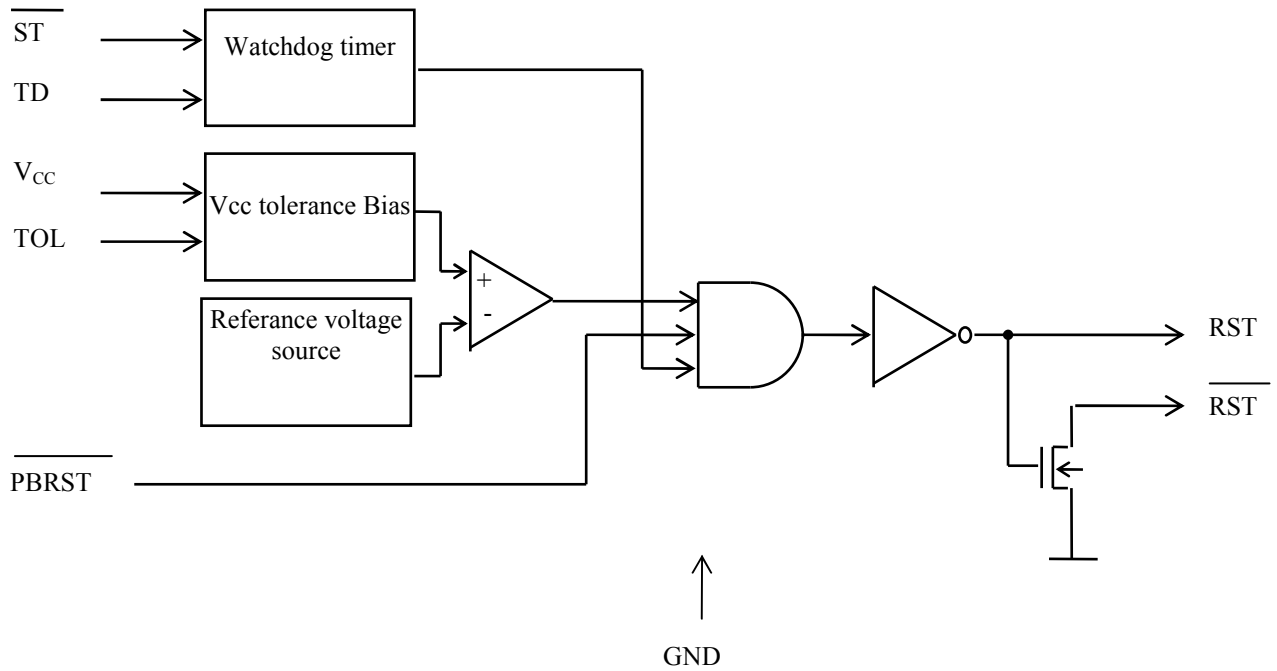
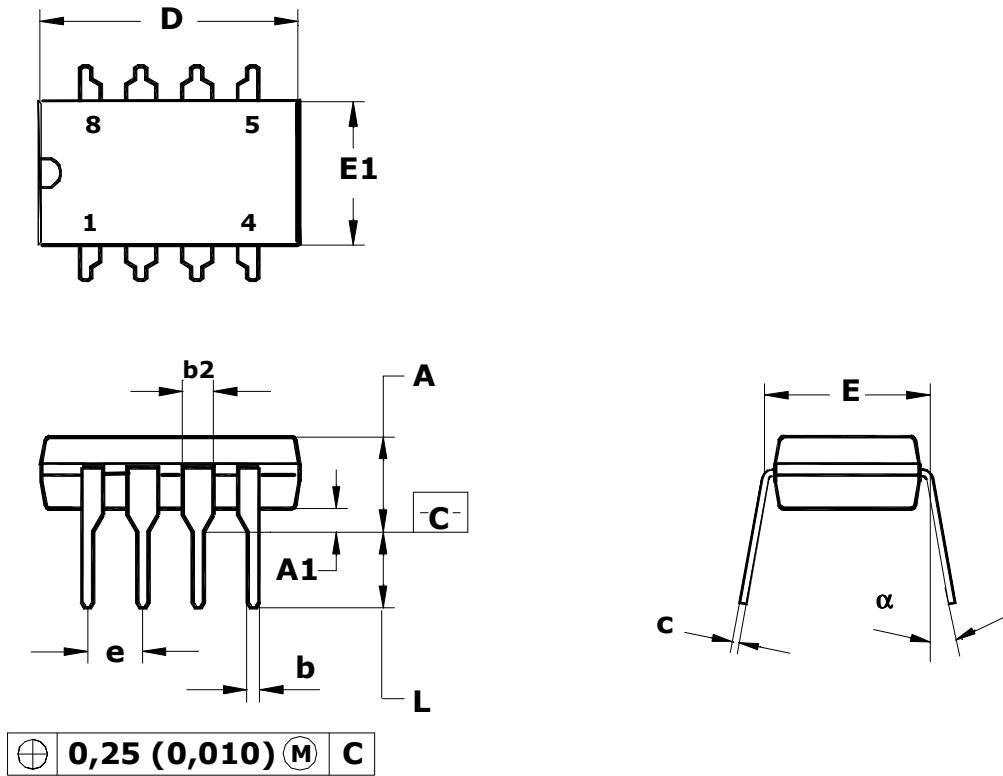


Fig.6 Block diagram

Table 5 – Pin description

Pin	Symbol	Description
01	$\overline{\text{PBRST}}$	Pushbutton reset input
02	TD	Time Delay Set
03	TOL	Selects 5% or 10% V_{CC} Detect
04	GND	Ground
05	RST	Reset output (Active High)
06	$\overline{\text{RST}}$	Reset output (Active Low, open drain)
07	$\overline{\text{ST}}$	Strobe Input
08	V_{CC}	Supply output from voltage source

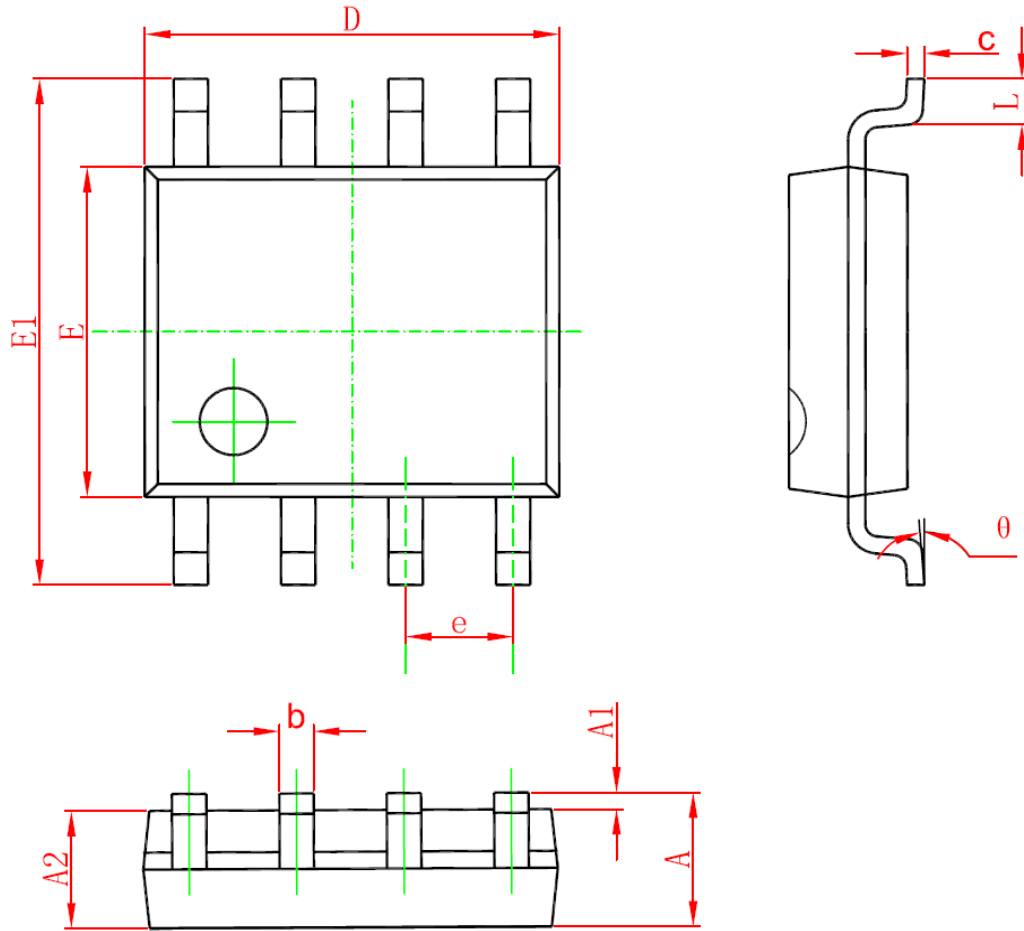


Note: D, E1 Dimensions do not include flash which shall not be more than 0.25 (0.010) per one side

	D	E1	A	b	b2	e	α	L	E	c	A1
Mm											
min	9.02	6.07	—	0.36	1.14	2.54	0°	2.93	7.62	0.20	0.38
max	10.16	7.11	5.33	0.56	1.78		15°	3.81	8.26	0.36	—
Inch											
min	0.355	0.240	—	0.014	0.045	0.1	0°	0.115	0.300	0.008	0.015
max	0.400	0.280	0.210	0.022	0.070		15°	0.150	0.325	0.014	—

Table 7 – Package overall dimensions

SOP8 PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270 (BSC)		0.050 (BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°