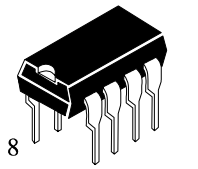
POWER SUPPLY CONTROL WITH BUILT-IN WATCHDOG TIMER

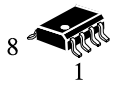
KK1232

KK1232 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 SOP or DIP.



N SUFFIX
PLASTIC



D SUFFIX
SOIC

ORDERING INFORMATION

KK1232N Plastic
KK1232D SOIC
T_A = -40° to 85° C for all packages.

Features:

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

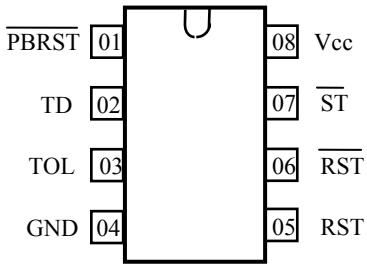


Fig 1 – PIN ASSIGNMENT

Table 1 – 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_A	Operating temperature range	-40	+85	°C
T_{stg}	Storage temperature	-60	+125	°C

Table 2 – 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	U_{CC}+0.3	V
V_{IL}	Input voltage, low level	-0.3	0.8	V
T_A	Operating temperature range	-20	+70	°C

Table 3 DC electrical characteristics (T_{Amb} = -40° to +85°C)

Symbol	Parameter	Test conditions	Typical		Units
			min	max	
I_{LIL1}	Input leakage current, low level, ST, TOL	V_{CC}=5 V±10%, V_{IL}=0 V	-	-1	µA
I_{LIL2}	Input leakage current, low level, TD	V_{CC}=5 V±10%, V_{IL}=0 V	-	-300	µA
I_{LIL3}	Input leakage current, low level, PBRST	V_{CC}=5 V±10%, V_{IL}=0 V	-	-1000	µA
I_{LIH1}	Input leakage current, high level, ST, TOL	V_{CC} =5 V±10%, V_{IH}=V_{CC}	-	1	µA
I_{LIH2}	Input leakage current, high level, TD	V_{CC} =5 V±10%, V_{IH}=V_{CC}	-	300	µA
I_{OH}	Output current, high level, RST	V_{CC} =5 V±10%, V_{OH}=2.4 V	-8	-	µA
I_{OL}	Output current, low level, RST, RST	V_{CC} =5 V±10%, V_{OL}=0.4 V	8	-	mA
V_{OH}	Output voltage, high level, RST	V_{CC} =5 V±10%, I_{OH}= -500 µA	V_{CC}-0.5	-	V
V_{OH1}	Output voltage, high level,- RST	V_{CC} =2 V, I_{OH}= -500 µA	V_{CC}-0.5	-	V
V_{OL}	Output voltage, low level, RST	V_{CC} =2 V, I_{OL}=1 mA	-	0.4	V
I_{CC}	Operating current	V_{CC} =5 V±10%	-	2	mA
$V_{CC\ TP1}$	V_{CC} trip point	TOL = GND	4.5	4.74	V
$V_{CC\ TP2}$	V_{CC} trip point	TOL = V_{CC}	4.25	4.49	V

Table 4 – AC electrical characteristics (Tamb = from -40 to +85 °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 $\overline{RST}$	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 $\overline{RST}$	V_{CC} =from 5.0 to 4.0 V t_F≥10 µs	-	175	µs
t_{RPU}	V_{CC} detect to RST and $\overline{RST}$ transition	V_{CC} = from 5.0 to 4.0 V t_R≥1 µs	250	1000	ms

Table 5 – Pin description

Pin	Symbol	Description
01	$\overline{PBRST}$	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	$\overline{RST}$	Reset output (Active Low, open drain)
07	$\overline{ST}$	Strobe Input
08	V_{CC}	Supply output from voltage source

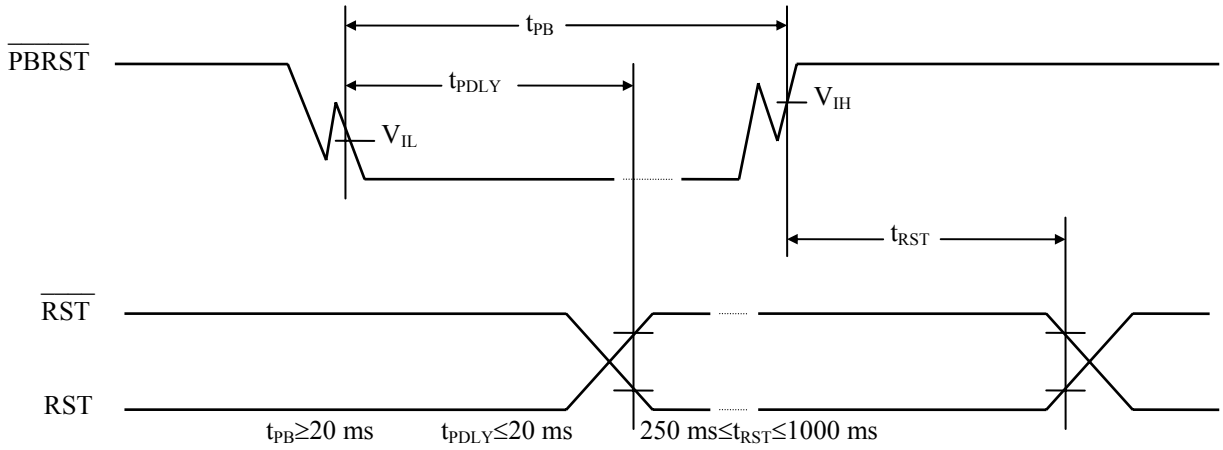


Fig. 2 – Timing diagram of forming reset signal from external PBRST control button

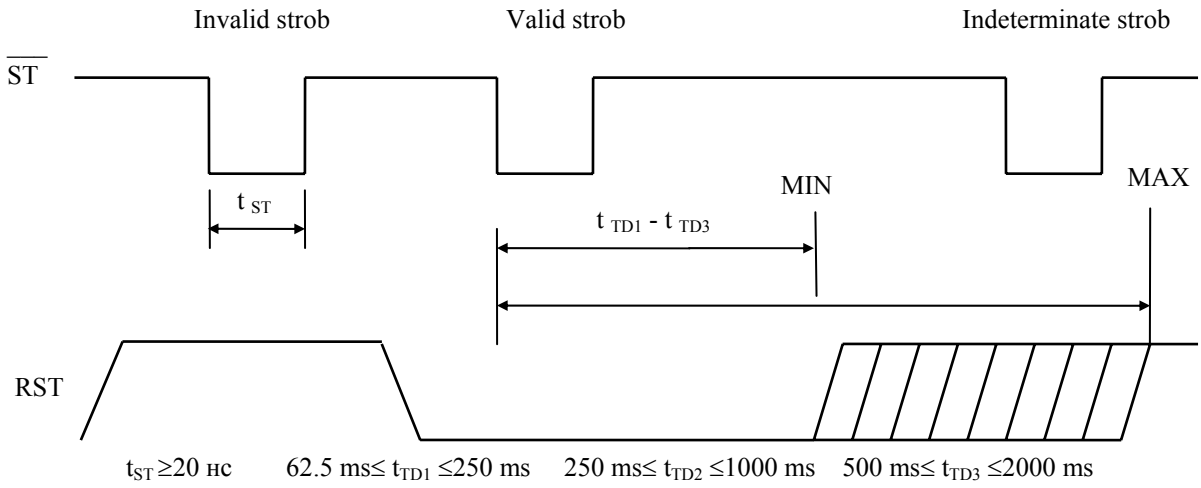


Fig. 3 – Timing diagram : Strobe input

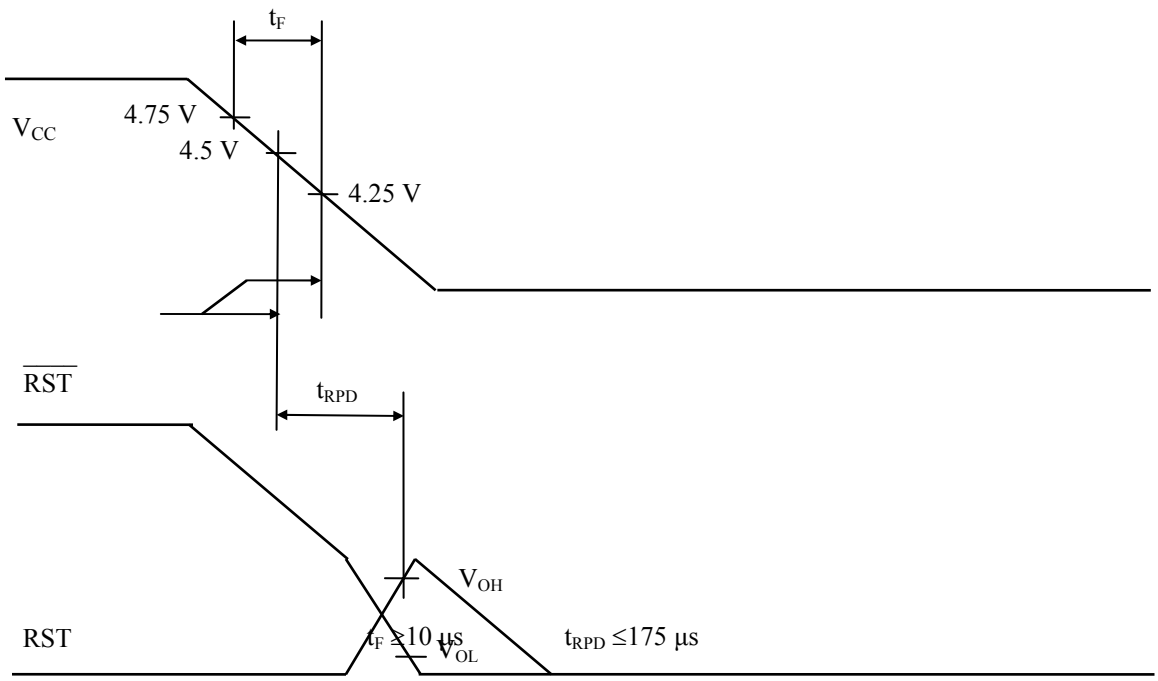


Fig. 4 – Timing diagram: power error / down to V_{CCTP}

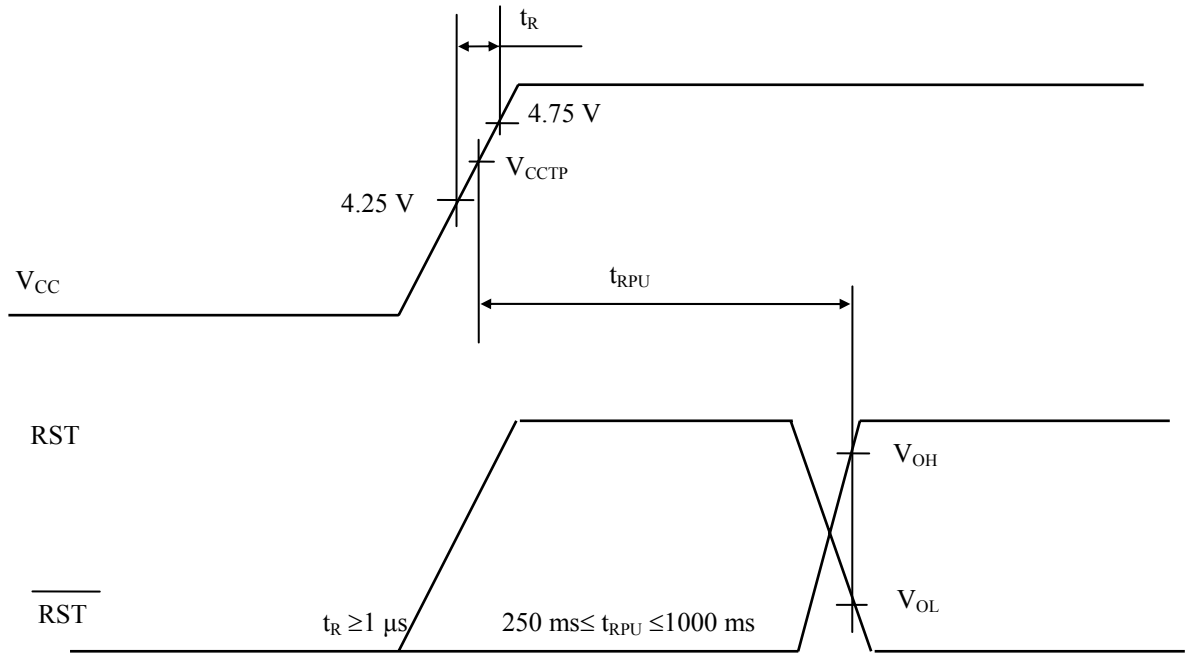


Fig. 5 – Timing diagram: Power-Up/ Stable

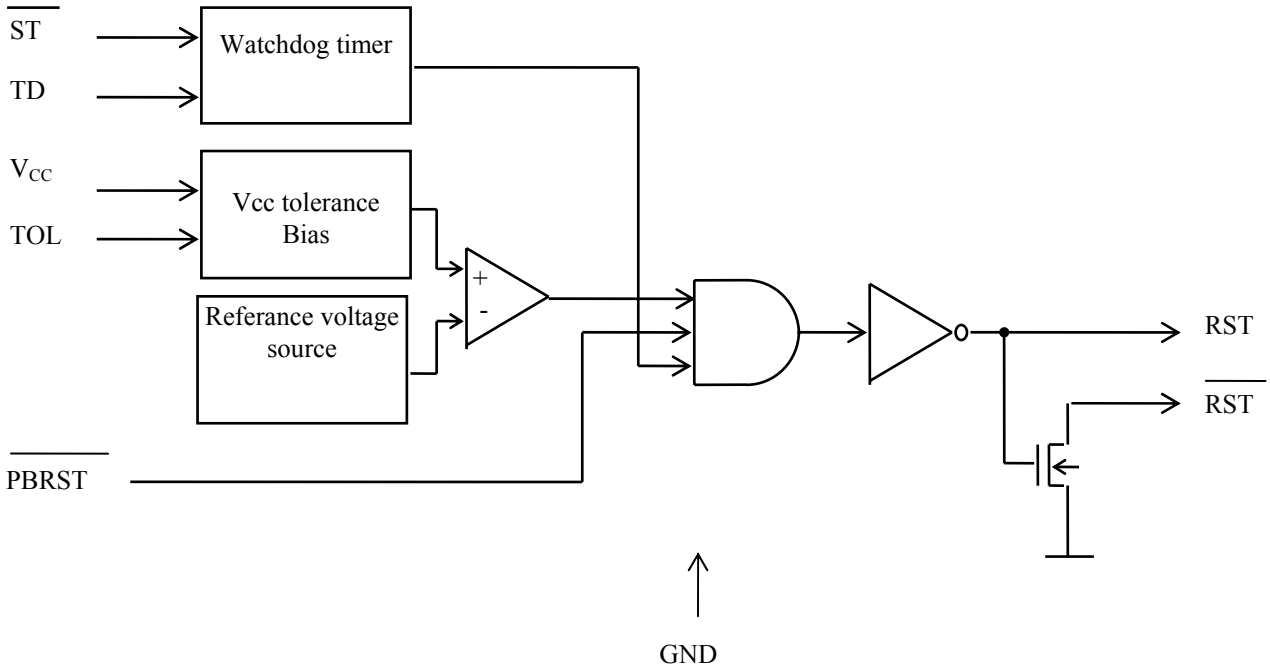


Fig.6 Block diagram

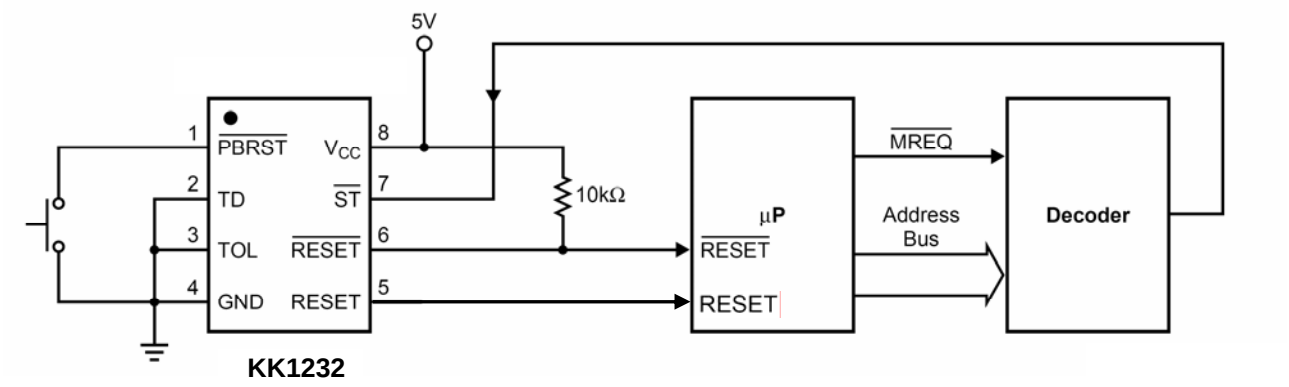
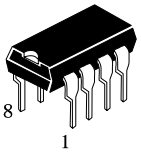
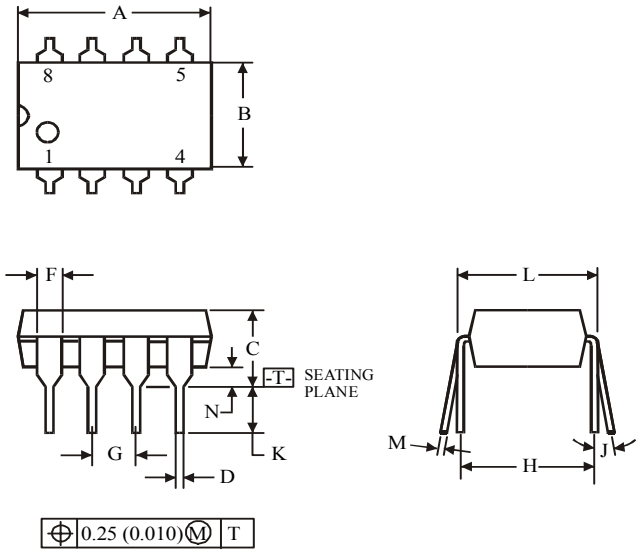


Fig.7 Application Circuit : Watchdog Timer

N SUFFIX PLASTIC DIP
(MS – 001BA)



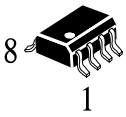


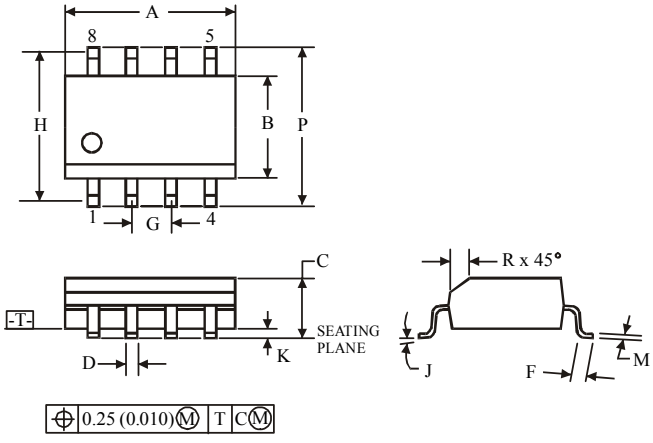
	Dimension, mm	
Symbol	**MIN**	**MAX**
A	8.51	10.16
B	6.1	7.11
C		5.33
D	0.36	0.56
F	1.14	1.78
G	2.54	
H	7.62	
J	0°	10°
K	2.92	3.81
L	7.62	8.26
M	0.2	0.36
N	0.38	

NOTES:

1. Dimensions “A”, “B” do not include mold flash or
   Maximum mold flash or protrusions 0.25 mm (0.010) per side.

D SUFFIX SOIC
(MS - 012AA)





	Dimension, mm	
Symbol	**MIN**	**MAX**
A	4.8	5
B	3.8	4
C	1.35	1.75
D	0.33	0.51
F	0.4	1.27
G	1.27	
H	5.72	
J	0°	8°
K	0.1	0.25
M	0.19	0.25
P	5.8	6.2
R	0.25	0.5

NOTES:

1. Dimensions A and B do not include mold flash or protrusion.
2. Maximum mold flash or protrusion 0.15 mm (0.006) per side
   for A; for B – 0.25 mm (0.010) per side.