



Microprocessor Reset circuits

General Description

This system reset IC, developed using the CMOS process, has a built-in delay function. Super low consumption current of $1.0\mu\text{A}$ typ. has been achieved through use of the CMOS process. Also, detection voltage is high precision detection of 2%.

Applications

- Monitoring processor, ASIC, or FPGA core and I/O voltages
- PDAs, hand-held PCs
- Embedded controllers
- Telecommunications systems
- Power supplies
- Wireless / Cellular systems
- Networking hardware

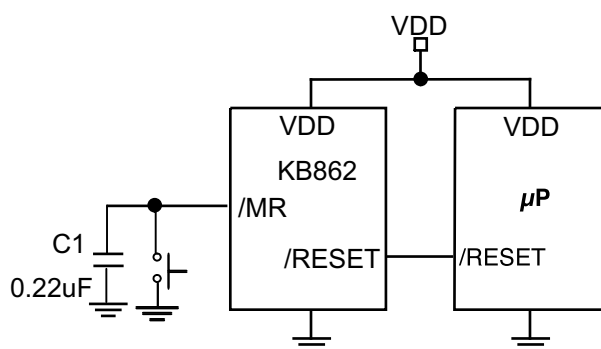
Features

- Under-voltage monitor
- Super low consumption current ($1.0\mu\text{A}$ typ)
- High precision detection voltage (2%)
- Operating range (0.7 - 10V)
- Wide operating temperature range (-30 to $+85^\circ\text{C}$)
- Power-on reset generation (150ms Typ)
- Choice of threshold voltages (contact Kingbor regarding availability)
- Active-low reset output
- Rejects brief input transients
- Industry standard package and pinout
- 4-pin SC-82AB package

Ordering Information

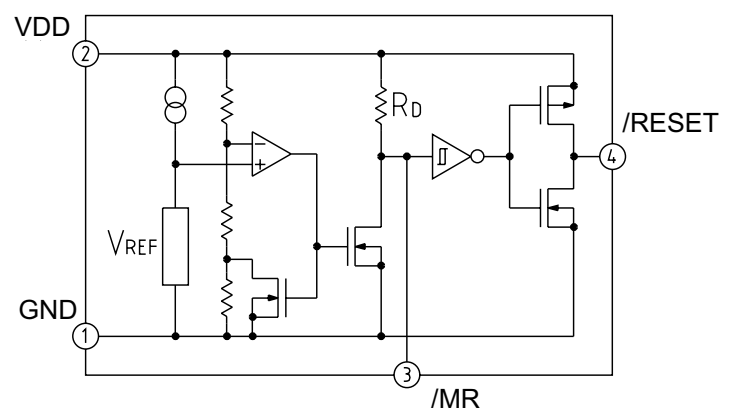
Part Number	Marking	Typical Application Voltage*	Nominal Threshold Voltage	T_{RST} (ms)	Junction Temperature Range	Package
KB862-280	6K	$3.3\text{V} \pm 5\%$	2.8V	150	-30°C to $+85^\circ\text{C}$	SC-82AB

Typical Application



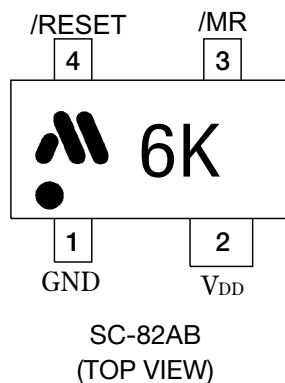
Typical Operating Circuit

Block Diagrams





Pin Configuration



Pin Description

Pin Number	Pin Name	Pin Function
1	GND	Ground return for all IC functions.
4	/RESET	Digital Output. Active-low. Asserted whenever V_{CC} falls below the threshold voltage. It will remain asserted for no less than 150ms and be de-asserted after V_{DD} returns above the threshold.
2	V_{DD}	Analog Input. Power supply input to the IC.
3	/MR	Manual Reset Input. A logic low on /MR asserts reset.



Absolute Maximum Ratings (Note 1)

Terminal Voltage (V_{CC}) -0.3V to 10V
Lead Temperature (soldering, 10 sec.) 260°C
Storage Temperature (T_S) -40°C to 125°C
Rate of Rise (V_{CC}) 100V/ μ s
ESD Rating, **Note 3**

Operating Ratings (Note 2)

Ambient Temperature (T_A) -30°C to +85°C
Power Dissipation ($T_A = +70^\circ\text{C}$) 320mW

Electrical Characteristics

$T_A = 25^\circ\text{C}$; $V_{CC} = 3.3\text{V}$ for KB809 unless otherwise noted. Values in **bold** are for -40°C to +85°C; unless otherwise noted

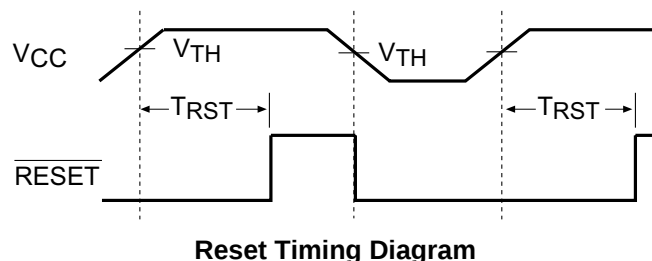
Symbol	Parameter	Condition	Min	Typ	Max	Units
V_{CC}	Operating Voltage Range	$T_A = 0^\circ\text{C}$ to 70°C	0.65		8	V
		$T_A = -30^\circ\text{C}$ to 85°C	0.70		8	V
I_{CC}	Supply Current	$V_{CC} = 3.3\text{V}$		1	4	μA
V_{TH}	Reset Voltage Threshold	S Voltage Options (KB862-280)	2.74	2.80	2.86	V
R_D	Delay circuit resistance	$T_A = -30^\circ\text{C}$ to 85°C	0.5	1.0	2.0	$\text{M}\Omega$
V_{HYST}	Typical hysteresis			5		mV
T_{RST}	Reset Timeout Period	MR=0.22 μF	50	150	500	ms
T_{PROP}	Propagation delay	/RESET < V_{OL} , 100mV Overdrive		9.3		μs
V_{OH}	/RESET Output Voltage High	$I_{SOURCE} = 500\mu\text{A}$	0.8 · V_{CC}			V
V_{OL}	/RESET Output Voltage Low	$V_{CC} = V_{TH}$ min., $I_{SINK} = 1.2\text{mA}$			0.3	V
		$V_{CC} > 1.4\text{V}$, $I_{SINK} = 50\mu\text{A}$, $T_A = 0^\circ\text{C}$ to $+70^\circ\text{C}$			0.3	V
		$V_{CC} > 1.6\text{V}$, $I_{SINK} = 50\mu\text{A}$, $T_A = -30^\circ$ to $+85^\circ\text{C}$			0.3	V

Note 1. Exceeding the absolute maximum rating may damage the device.

Note 2. The device is not guaranteed to function outside its operating rating.

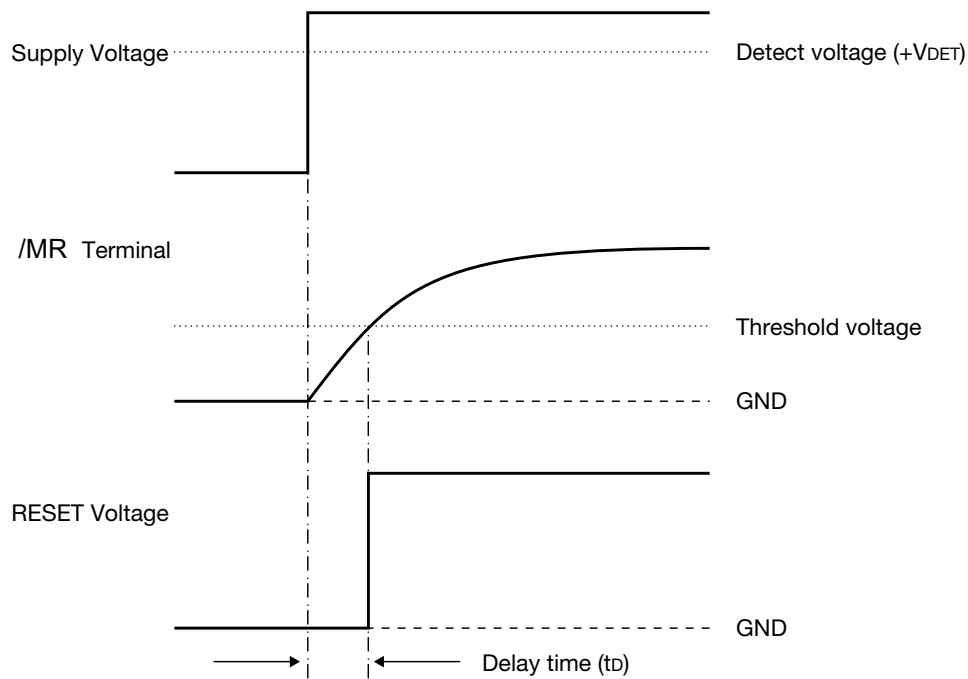
Note 3. Devices are ESD sensitive. Handling precautions recommended. Human body model, 1.5k in series with 100pF.

Timing Diagrams

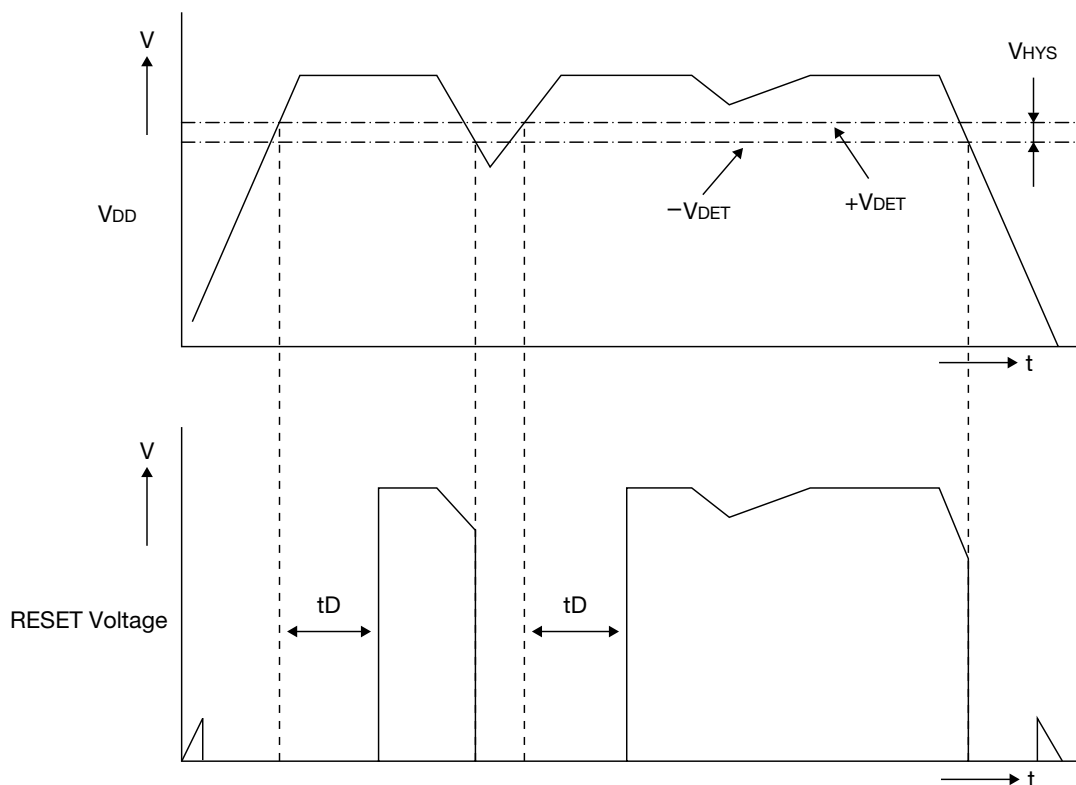




Timing Chart



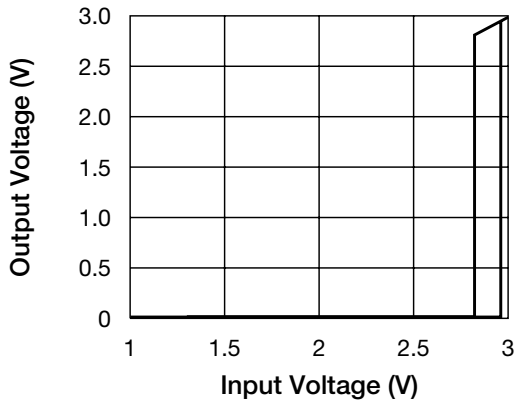
Delay Time (t_D) $t_D \approx 0.69 \times R_D \times C$ (F) (s) R_D : /MR Pin Resistance C : /MR Pin Capacitor



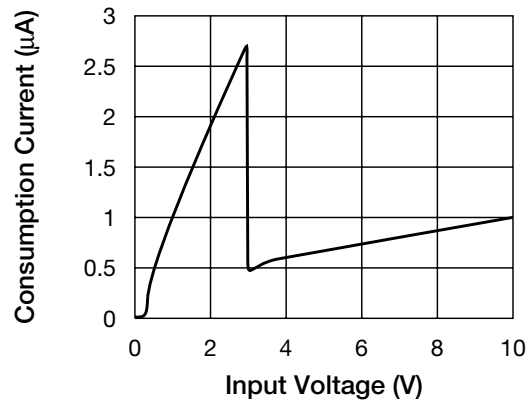


Characteristics (For products with KB862 detection voltage 2.8V typ. CMOS output)

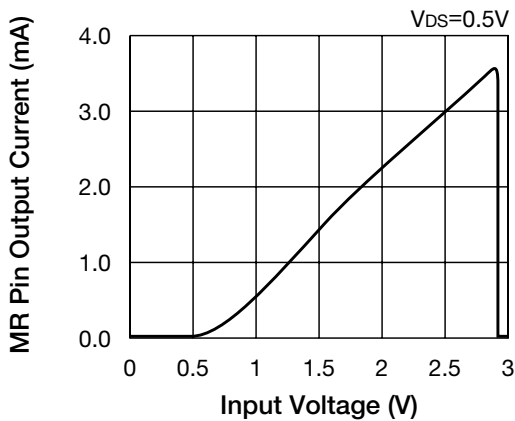
Output voltage



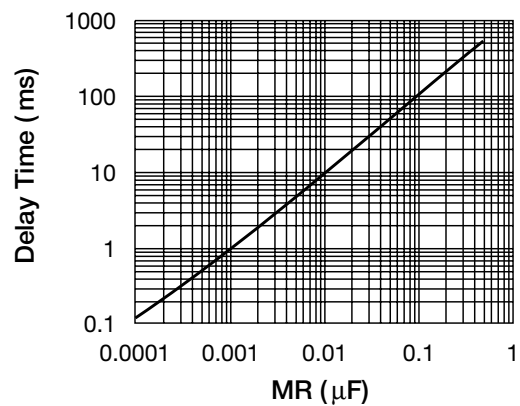
Consumption current



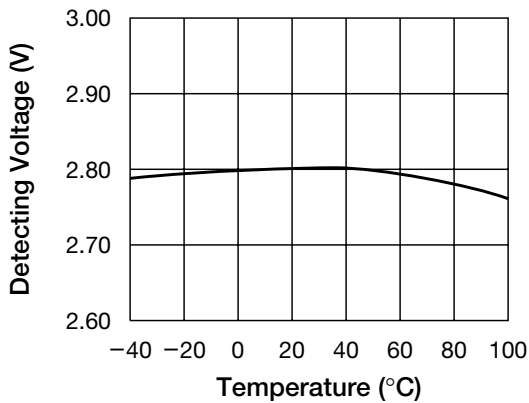
MR pin output current



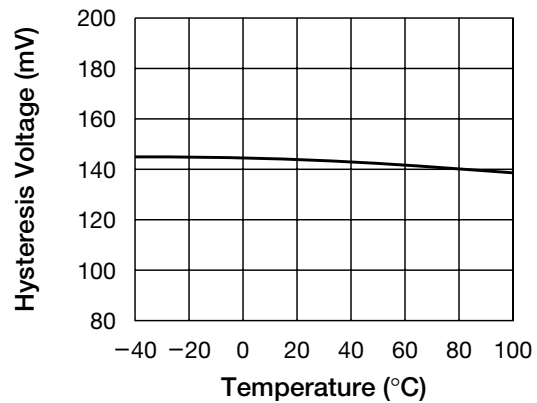
Delay time vs MR



Detecting voltage vs temperature



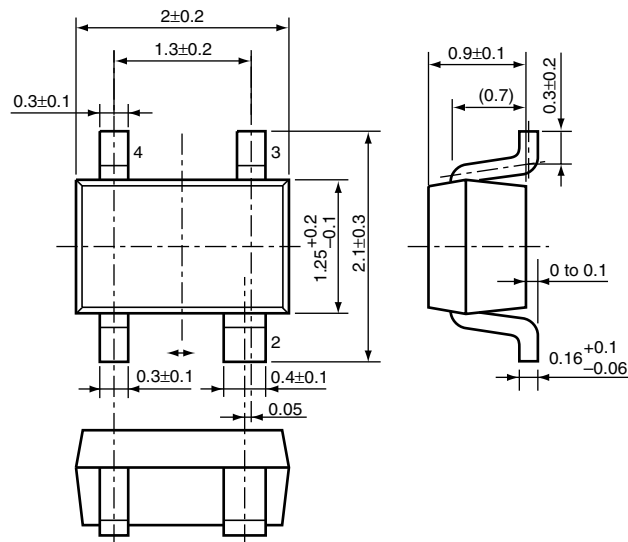
Hysteresis voltage vs temperature



Note: These are typical characteristics.



PACAGE DESCRIPTION



SC-82AB
PACKAGE DIMENSIONS