

## 3-Pin Reset Monitors for 5V Systems

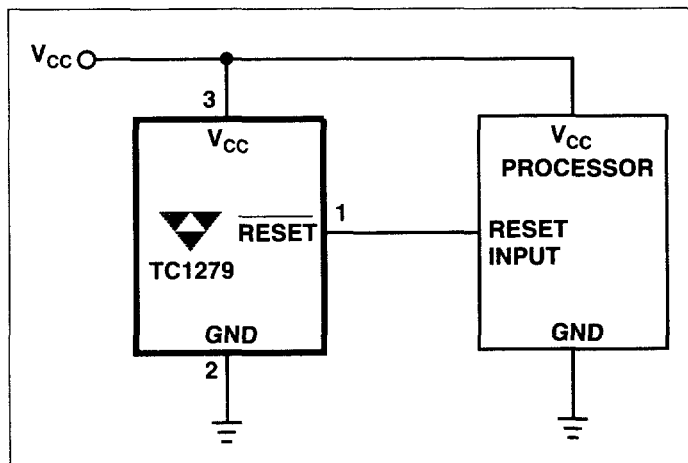
### FEATURES

- Precision  $V_{CC}$  Monitor for 5.0V Systems
- 250 msec Guaranteed Minimum RESET Output Duration
- Output Guaranteed to  $V_{CC} = 1.2V$
- $V_{CC}$  Transient Immunity
- 3-Pin SOT-23B Package
- No External Components

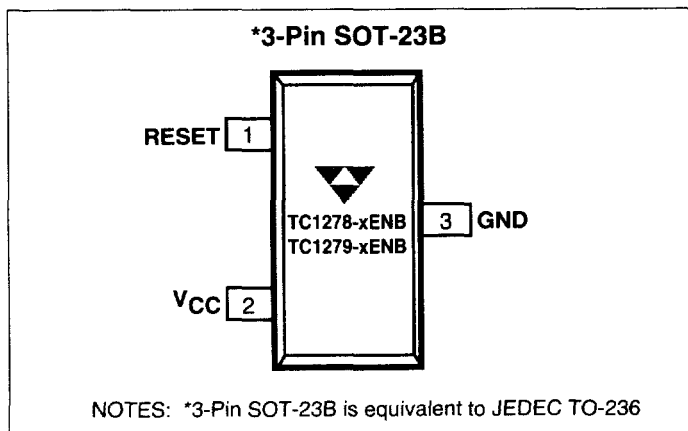
### TYPICAL APPLICATIONS

- Computers
- Embedded Systems
- Battery Powered Equipment
- Critical  $\mu P$  Power Supply Monitoring

### TYPICAL OPERATING CIRCUIT



### PIN CONFIGURATION



### GENERAL DESCRIPTION

The TC1278 and TC1279 are cost-effective system supervisor circuits designed to monitor  $V_{CC}$  in digital systems and provide a reset signal to the host processor when necessary. No external components are required.

The reset output is driven active within 5  $\mu$ sec of  $V_{CC}$  falling through the reset voltage threshold. Reset is maintained active for a minimum of 250msec after  $V_{CC}$  rises above the reset threshold. The TC1278 has an active-high RESET output while the TC1279 has an active-low RESET output, and both devices have an open drain output stage. The output is guaranteed valid down to  $V_{CC} = 1.2V$ . Both devices are available in a 3-Pin SOT-23 package.

### ORDERING INFORMATION

Part No.	Order	Package	Temp. Range
TC1278-xENB	Open Drain	3-Pin SOT-23B	-40°C to +85°C
TC1279-xENB	Open Drain	3-Pin SOT-23B	-40°C to +85°C

NOTE: The "x" denotes a suffix for  $V_{CC}$  threshold - see table below.

Suffix	Reset $V_{CC}$ Threshold (V)
5	4.625
10	4.375
15	4.125

# PART III

## New Product Data Sheets

### 3-Pin Reset Monitors for 5V Systems

#### TC1278/1279

##### ABSOLUTE MAXIMUM RATINGS\*

Supply Voltage ( $V_{CC}$ to GND) .....	+6.0V
RESET, RESET .....	- 0.3V to ( $V_{CC} + 0.3V$ )
Input Current, $V_{CC}$ .....	20mA
Output Current, RESET .....	20mA
Operating Temperature Range .....	- 40°C to +85°C

Power Dissipation ( $T_A \leq 70^\circ\text{C}$ )

3-Pin SOT-23B(derate 4mW/°C above+70°C) .... 230mW

Storage Temperature Range ..... - 65°C to +150°C

Lead Temperature (Soldering, 10 sec) ..... +260°C

\*This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operational sections of the specifications is not implied. Exposure to Absolute Maximum Rating Conditions for extended periods may affect device reliability.

##### RECOMMENDED DC OPERATING CONDITIONS: $T_A = -40^\circ\text{C}$ to +85°C unless otherwise specified. Typical values apply at $T_A = +25^\circ\text{C}$ .

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
$V_{CC}$	Supply Voltage	(Note 1)	1.2	—	5.5	

##### DC ELECTRICAL CHARACTERISTICS: $T_A = -40^\circ\text{C}$ to +85°C unless otherwise specified. Typical values apply at $T_A = +25^\circ\text{C}$ .

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
$V_{OL}$	Low Level@RESET(TC1278) RESET(TC1279)	(Note 1)	—	—	0.4	V
$I_{OL}$	Output Current @0.4 volts	(Note 2)	+8	—	—	mA
$I_{CC1}$	Operating Current (TC1278)	$V_{CC} > V_{CCTP} \text{ (MAX)}$	—	0.9	2.0	mA
	(TC1279)	$V_{CC} > V_{CCTP} \text{ (MAX)}$	—	—	40	μA
$I_{CC2}$	Operating Current (TC1278)	$V_{CC} < V_{CCTP} \text{ (MIN)}$	—	—	40	μA
	(TC1279)	$V_{CC} < V_{CCTP} \text{ (MIN)}$	—	0.9	2.0	mA
$V_{CCTP-5}$	$V_{CC}$ Trip Point (TC1278/9-5)	(Note 1)	4.50	4.625	4.74	V
$V_{CCTP-10}$	$V_{CC}$ Trip Point (TC1278/9-10)	(Note 1)	4.25	4.375	4.49	V
$V_{CCTP-15}$	$V_{CC}$ Trip Point (TC1278/9-15)	(Note 1)	4.00	4.125	4.24	V
$C_{OUT}$	Output Capacitance		—	9	—	pF
$R_P$	Internal Pull-Up Resistor		3	6	9	k

##### AC ELECTRICAL CHARACTERISTICS: $T_A = -40^\circ\text{C}$ to +85°C unless otherwise specified. Typical values apply at $T_A = +25^\circ\text{C}$ .

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
$t_{RST}$	RESET Active Time		250	350	450	msec
$t_{RPD1}$	$V_{CC}$ Detect to RESET (TC1279)	(Figure 2)	—	2	5	μsec
$t_{RPD2}$	$V_{CC}$ Detect to RESET (TC1278)	(Figure 4)	—	2	5	μsec
$t_F$	$V_{CC}$ Slew Rate (4.75V-4.00V)	(Figures 2, 4)	300	—	—	μsec
$t_R$	$V_{CC}$ Slew Rate (4.00V-4.75V)	(Figures 1, 3)	0	—	—	nsec
$t_{RPU1}$	$V_{CC}$ Detect to RESET (TC1279)	(Figure1)	250	350	450	msec
$t_{RPU2}$	$V_{CC}$ Detect to RESET (TC1278)	(Figure 3)	250	350	450	msec

- NOTES:**
1. All voltages are referenced to ground.
  2. A 1k external resistor may be required in some applications for proper operation of the microprocessor reset control circuit when using the TC1279.  $V_{CC} = 1.8V$