



Ultra Low Cost 3-Pin Microprocessor Reset

Features

- SOT-23 and TO-92 package
- Reset output state guaranteed down to $V_{DD} = 1\text{ V}$ at $25\text{ }^\circ\text{C}$
- Low supply current: stays stable during switching
versions B, N, N: typ. $19\text{ }\mu\text{A}$ at $V_{DD} = 5\text{ V}$
other Versions: typ. 38 mA at $V_{DD} = 5\text{ V}$,
- $\pm 2.5\%$ voltage threshold accuracy
- High noise immunity
- No external components required
- Push-pull or Open drain output
- Pin compatible with MAX 809 in SOT-23, by appropriate layout on PCB
- Pin compatible with MC 33164 in TO-92 and SO8 ¹⁾
- TTL output compatibility

¹⁾ On request

Description

The V6340 monitors the supply voltage of any electronic system, and generates the appropriate Reset signal. The threshold must be chosen to the minimum allowed voltage which guarantees the good functionality of the system. As long as V_{DD} stays upside this voltage level, the output stays inactive. If V_{DD} drops below V_{TH} , the output gets active. The threshold voltage may be obtained in different versions: 2.6 V, 3.0 V, 3.7 V and 4.4 V.

Applications

Each applications needing a voltage detection :

- Computer electronics
- White / Brown goods
- Automotive electronics
- Industrial electronics
- Telecom systems
- Hand-held systems

Typical Operating Configuration

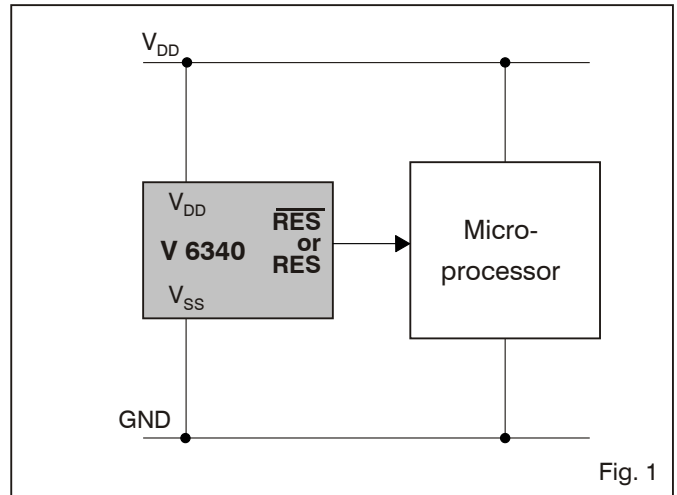


Fig. 1

Pin Assignment

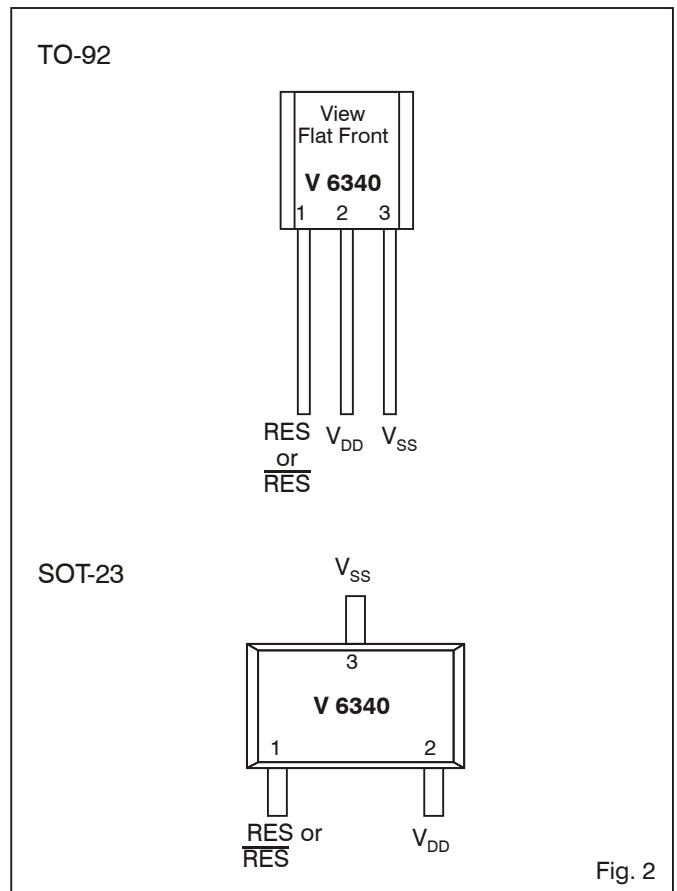


Fig. 2



Absolute Maximum Ratings

Parameter	Symbol	Conditions
Voltage at V_{DD} to V_{SS}	V_{DD}	-0.3V to +8V
Min. voltage at RES or \overline{RES}	V_{min}	$V_{SS} - 0.3V$
Mix. voltage at RES or \overline{RES}	V_{max}	$V_{DD} + 0.3V$
Storage temperature range	T_{STO}	-65° to + 150°C

Table 1

Stresses above these listed maximum ratings may cause permanent damage to the device. Exposure beyond specified operating conditions may affect device reliability or cause malfunction.

Electrical Characteristics

$T_A = +25^\circ\text{C}$, unless otherwise specified

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Supply current	I_{DD}	$V_{DD} = 5\text{ V}$, output open		38	50	mA
Threshold voltage	V_{TH}	C, I, O	2.94	3.02	3.10	V
	V_{TH}	D, J, P	3.62	3.72	3.82	V
	V_{TH}	F, L, R	4.27	4.39	4.51	V
Threshold hysteresis	V_{HYS}			5		mV
RES Output Low Level	V_{OL}	$V_{DD} = 1.6\text{ V}$, $I_{OL} = 1\text{ mA}$		200	270	mV
	V_{OL}	$V_{DD} = 2.5\text{ V}$, $I_{OL} = 2\text{ mA}$		195	250	mV
	V_{OL}	$V_{DD} = 3.5\text{ V}$, $I_{OL} = 3\text{ mA}$		198	250	mV
	V_{OL}	$V_{DD} = 5\text{ V}$, $I_{OL} = 4\text{ mA}$		185	250	mV
RES Output High Level	V_{OH}	$V_{DD} = 1.6\text{ V}$, $I_{OH} = -1\text{ mA}$	1.25	1.36		V
	V_{OH}	$V_{DD} = 2.5\text{ V}$, $I_{OH} = -1.5\text{ mA}$	2.2	2.3		V
	V_{OH}	$V_{DD} = 3.5\text{ V}$, $I_{OH} = -2.5\text{ mA}$	3.15	3.27		V
	V_{OH}	$V_{DD} = 5\text{ V}$, $I_{OH} = -3.5\text{ mA}$	4.65	4.76		V
Output leakage current ¹⁾	I_{LEAK}	$V_{DD} = 5\text{ V}$		0.005	1	mA

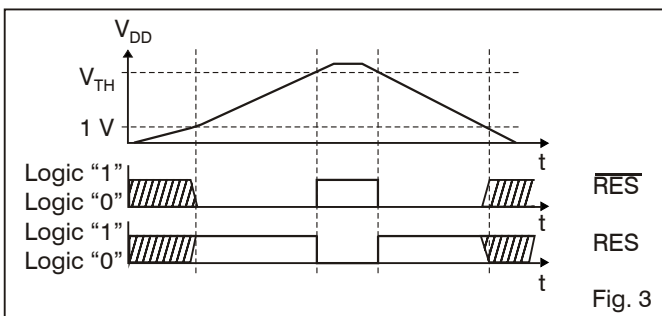
Only for version B, H and N

Supply current	I_{DD}	$V_{DD} = 5\text{ V}$, output open		19	31	mA
Threshold voltage	V_{TH}	B,H,N	2.56	2.65	2.74	V
Threshold hysteresis	V_{HYS}			32		mV

¹⁾ Only for Open drain versions

Table 3

Timing Waveform



Handling Procedures

This device has built-in protection against high static voltages or electric fields; however, anti-static precautions must be taken as for any other CMOS component. Unless otherwise specified, proper operation can only occur when all terminal voltages are kept within the supply voltage range.

Operating Conditions

Parameter	Symbol	Min.	Typ.	Max.	Units
Operating temperature ¹⁾	T_A	-40		+125	°C
Positive supply voltage ²⁾	V_{DD}	1		5.5	V

Table 2

¹⁾ The maximum operating temperature is confirmed by sampling at initial device qualification. In production, all devices are tested at +25°C. On request devices tested at +125°C can be supplied.

²⁾ $V_{DD} = 1\text{ V}$ guaranteed at +25°C (see Fig. 14 for more information)

Block Diagram

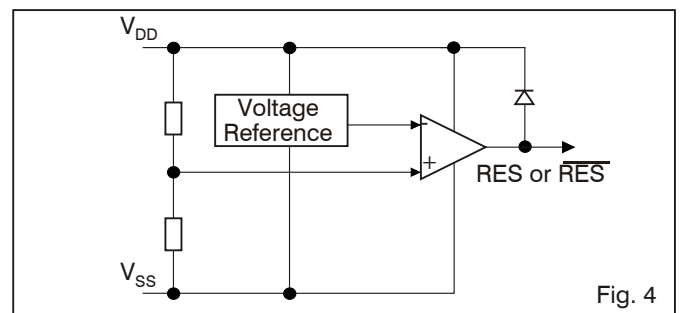
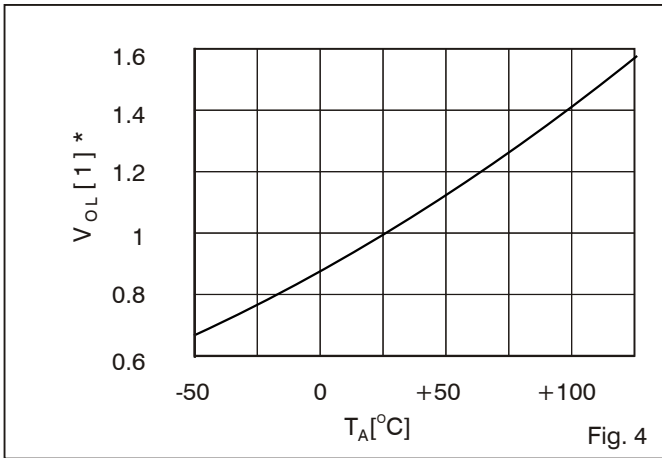


Fig. 4

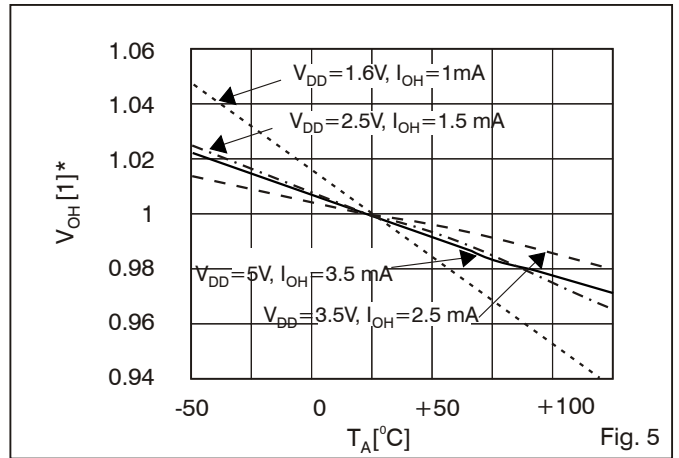


Typical Characteristics

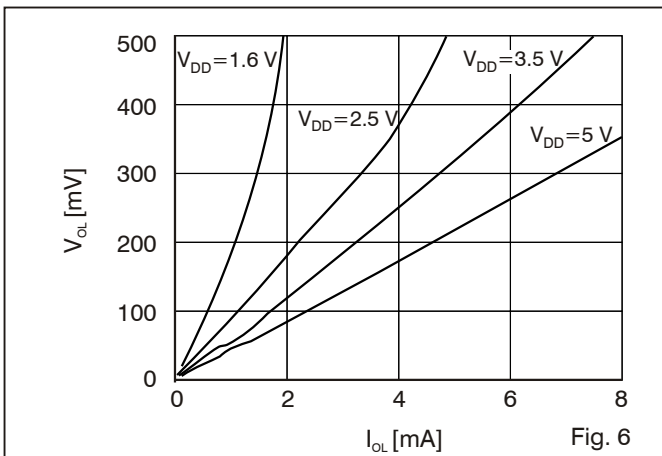
Normalized V_{OL} vs. Temperature



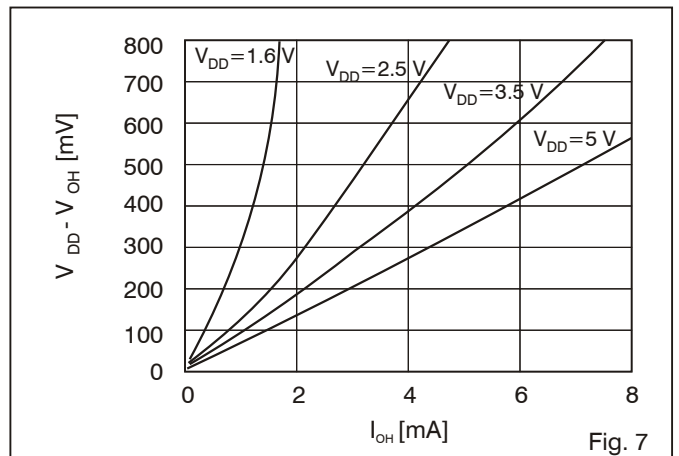
Normalized V_{OH} vs. Temperature



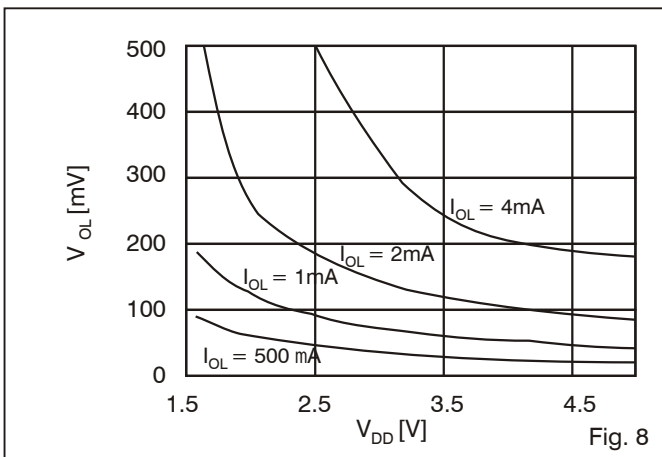
V_{OL} vs. Output Current



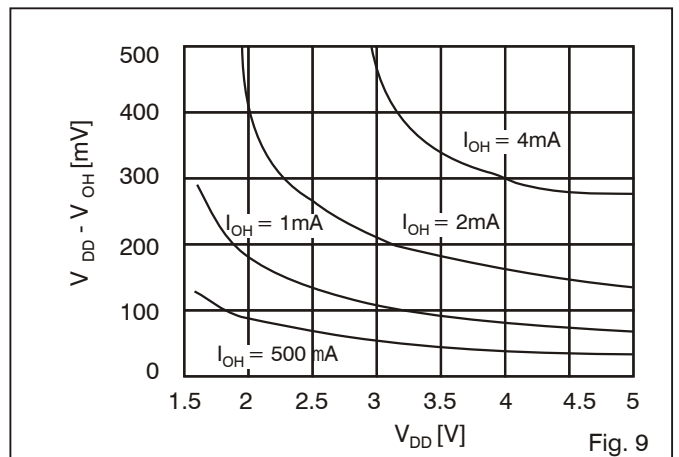
$V_{DD} - V_{OH}$ vs. Output Current



V_{OL} vs. Supply Voltage



$V_{DD} - V_{OH}$ vs. Supply Voltage



[1]* Multiply value at +25°C by this factor to determine the value at temperature



Supply Current vs. Temperature

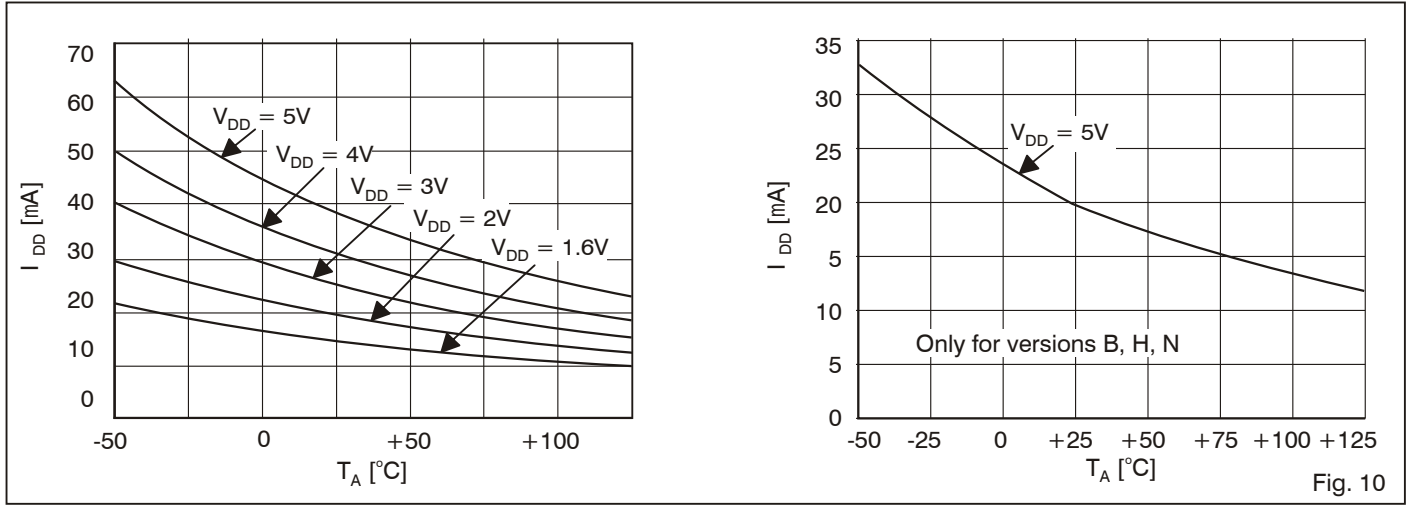


Fig. 10

Normalized Threshold vs. Temperature

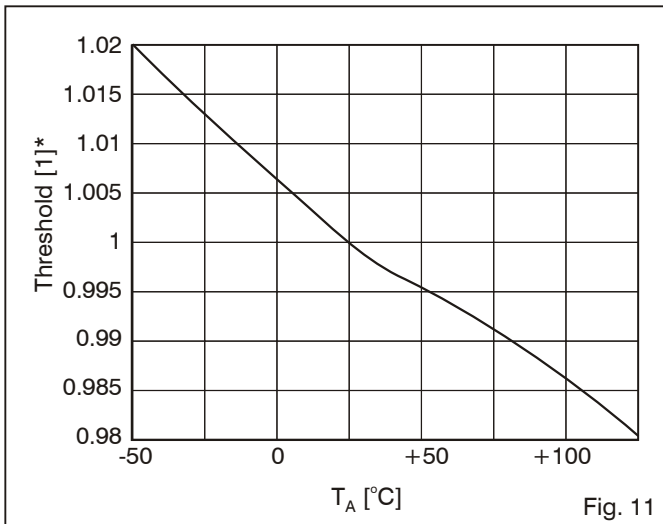


Fig. 11

Typical Sensivity vs. Temperature

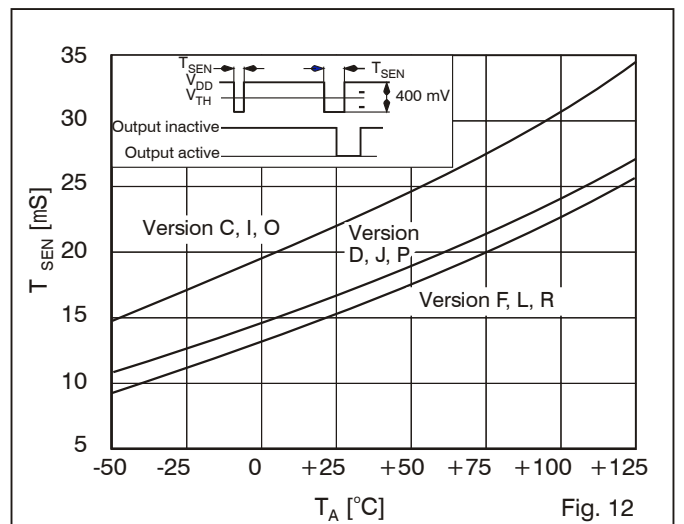


Fig. 12

Typical Sensivity vs. Temperature

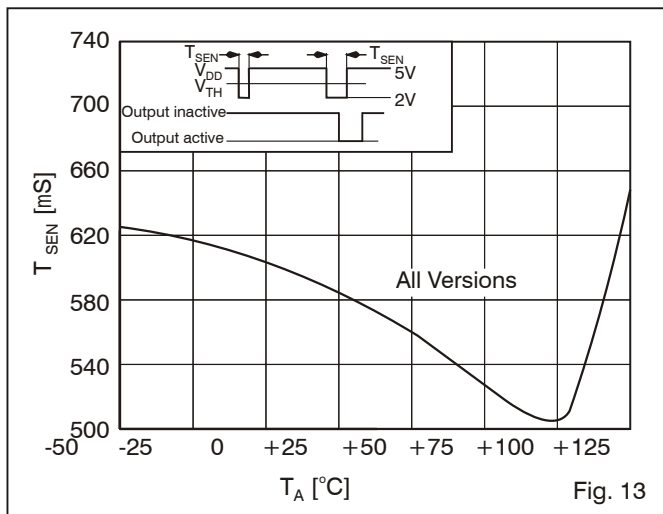


Fig. 13

Typical Minimum Operating Supply Voltage (V_{DD})

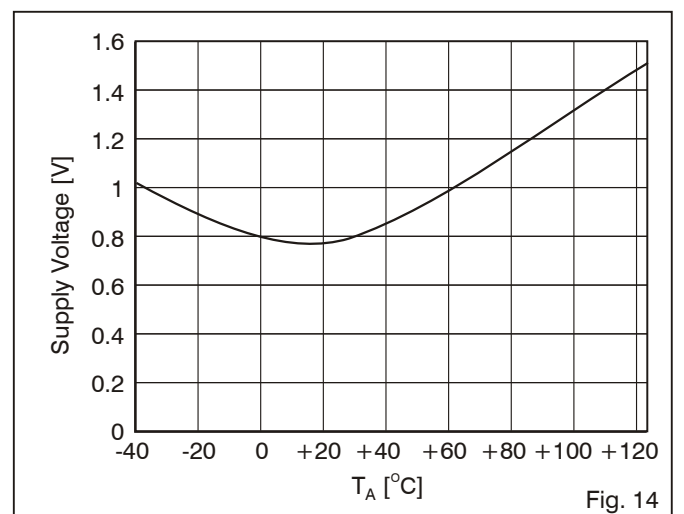


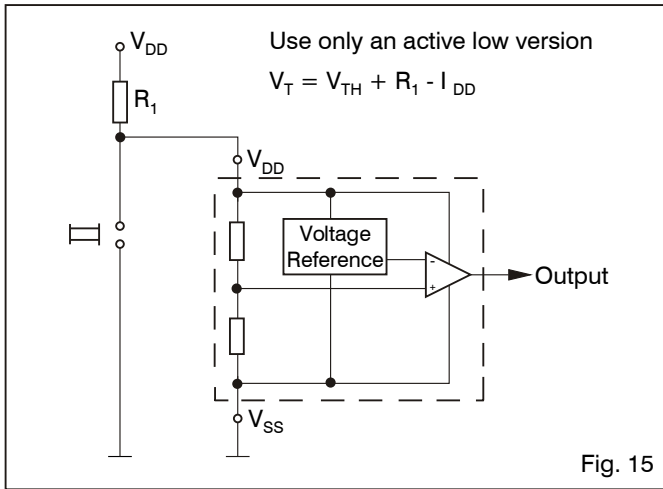
Fig. 14

[1]* Multiply value at +25°C by this factor to determine the value at temperature

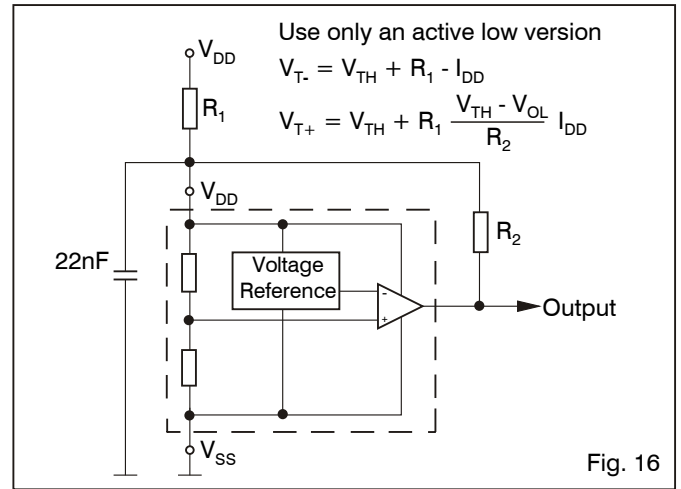


Typical Applications

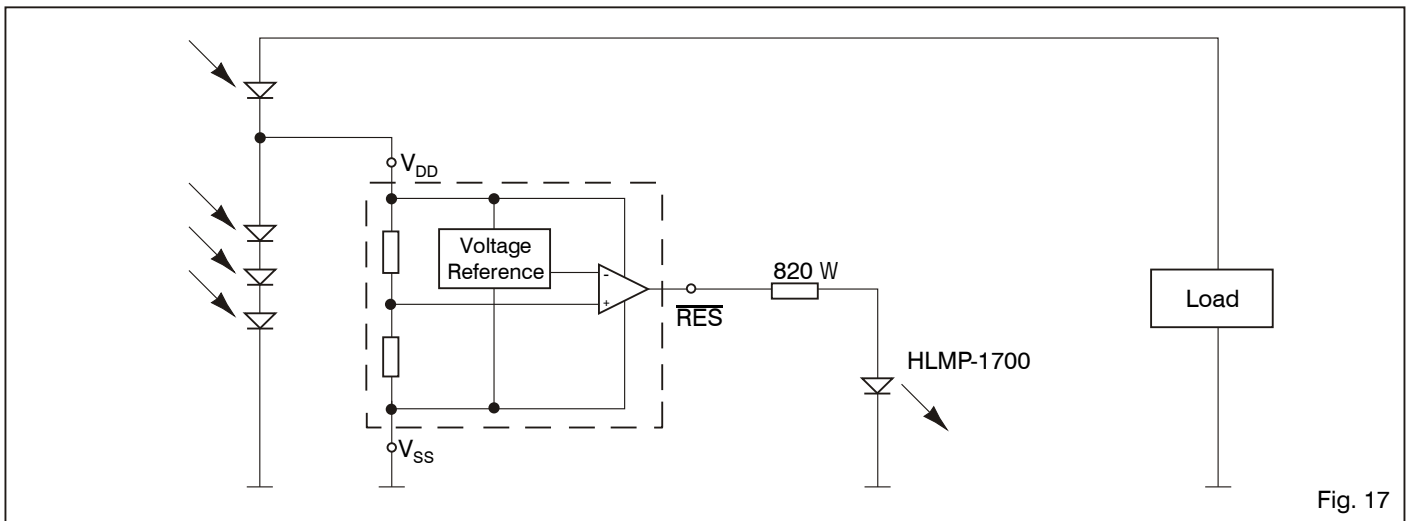
Voltage Monitor with Manual Reset



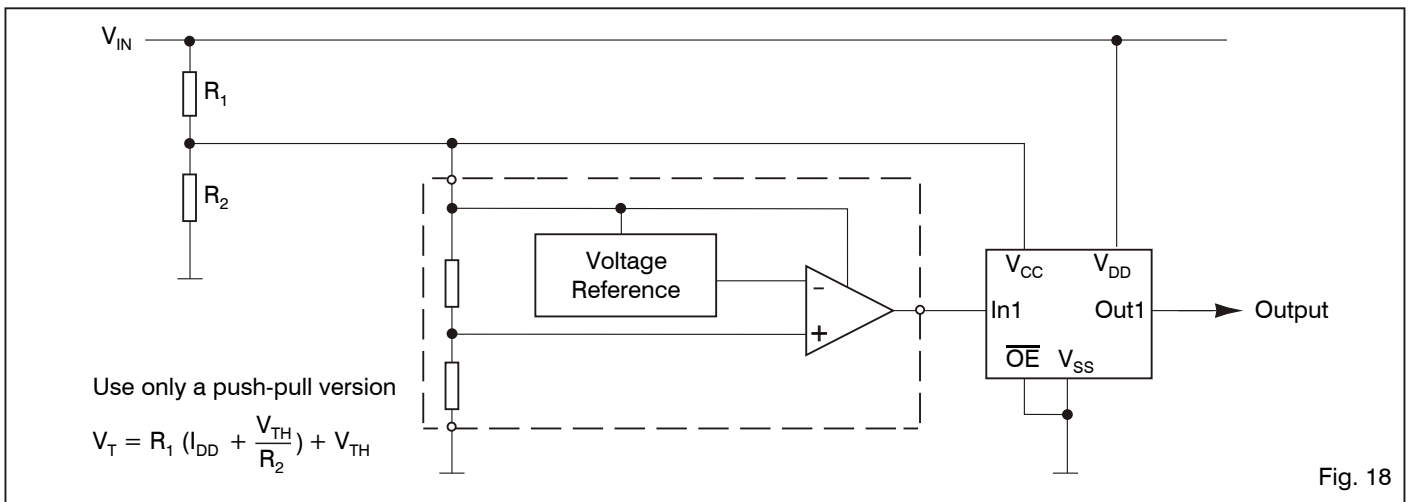
Reset Circuit with Hysteresis



Solar Cell Power O.K. Indicator



Accurate High Voltage Monitoring





Pin Description

TO-92

Pin	Name	Function
1	RES or $\overline{\text{RES}}$	Reset output
2	V_{DD}	Positive Supply
3	V_{SS}	Supply ground

Table 5

SOT-23

Pin	Name	Function
1	RES or $\overline{\text{RES}}$	Reset output
2	V_{DD}	Positive Supply
3	V_{SS}	Supply ground

Table 6

Packaging and Ordering Information

Ordering Information

The V6340 is available with Push-pull or Open drain output stage and Reset active low or high.

Ordering form: V6340 <version letter> < packaging >

Example: Comparator with: - Output active low
- Open drain output
- 3.7 V threshold
- TO-92 package

V6340 P TO-92

When ordering, please specify the complete part number.

Version letter definition

Output stage	Threshold Voltage [V]			
	2.6 ¹⁾	3.0	3.7	4.4
Push-pull, Reset active low	B	C	D	F
Push-pull, Reset active high	H	I	J	L
Open drain, Reset active low	N	O	P	R

Chip form on request

Table 7

EM Microelectronic-Marín SA cannot assume responsibility for use of any circuitry described other than circuitry entirely embodied in an EM Microelectronic-Marín product. EM Microelectronic-Marín reserves the right to change circuitry and specifications without notice at any time. You are strongly urged to ensure that the information given has not been superseded by a more up-to-date version.

© 2000 EM Microelectronic-Marín SA, 10/00, Rev. E/336