



Ultra Low Cost 3-Pin Microprocessor Reset

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: 2.6V, 3.0V, 3.7V and 4.4V.

Features

- SOT-23 and TO-92 package
- Reset output state guaranteed down to $V_{DD} = 1V @ 25^{\circ}C$
- Low supply current: stays stable during switching
 - versions B, N, N: typ. $19\mu A$ at $V_{DD} = 5V$
 - other versions: typ. $38\mu A$ at $V_{DD} = 5V$
- $\pm 2.5\%$ 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
- TTL output compatibility

Applications

Applications needing a voltage detection:

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

Typical Operating Configuration

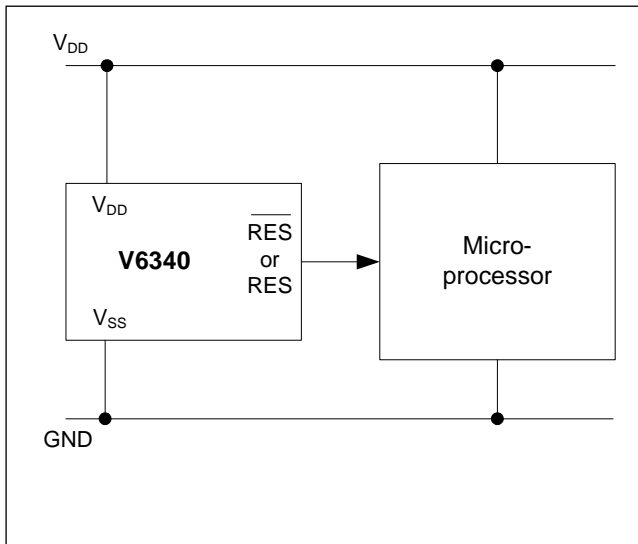


Fig. 1

Pin Assignment

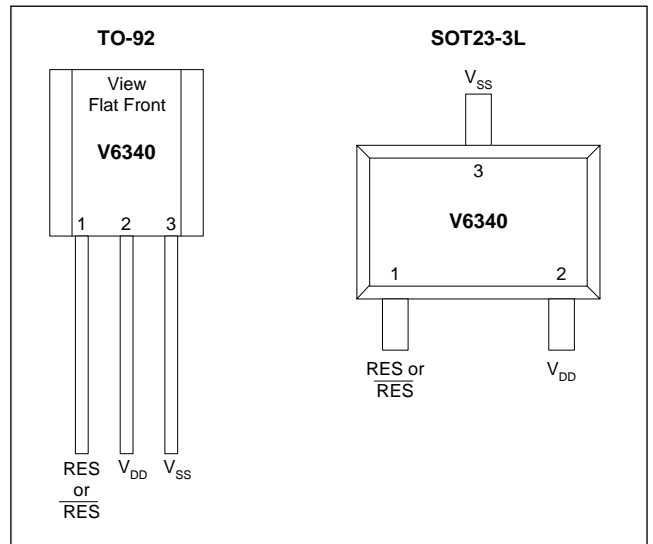


Fig. 2

Absolute Maximum Ratings

Parameter	Symbol	Conditions
Voltage at V_{DD} to V_{SS}	V_{DD}	-0.3V to +8V
Minimum voltage at RES or \overline{RES}	V_{min}	$V_{SS} - 0.3V$
Maximum voltage at RES or \overline{RES}	V_{max}	$V_{DD} + 0.3V$
Storage Temperature Range	T_{STO}	-65°C to +150°C

Table 1

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

Handling Procedures

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

Operating Conditions

Parameter	Symbol	Min	Max	Unit
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

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

Electrical Characteristics

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

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Supply current	I_{DD}	$V_{DD} = 5V$, output open		38	50	μA
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}	$V_{DD} = 1.6V, I_{OL} = 1mA$		200	270	mV
	V_{OL}	$V_{DD} = 2.5V, I_{OL} = 2mA$		195	250	mV
	V_{OL}	$V_{DD} = 3.5V, I_{OL} = 3mA$		198	250	mV
	V_{OL}	$V_{DD} = 5V, I_{OL} = 4mA$		185	250	mV
RES Output High Level	V_{OH}	$V_{DD} = 1.6V, I_{OH} = -1mA$	1.25	1.36		V
	V_{OH}	$V_{DD} = 2.5V, I_{OH} = -1.5mA$	2.2	2.3		V
	V_{OH}	$V_{DD} = 3.5V, I_{OH} = -2.5mA$	3.15	3.27		V
	V_{OH}	$V_{DD} = 5V, I_{OH} = -3.5mA$	4.65	4.76		V
Output leakage current ¹⁾	I_{LEAK}	$V_{DD} = 5V$		0.005	1	μA

Only for version B, H and N

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Supply current	I_{DD}	$V_{DD} = 5V$, output open		19	31	μA
Threshold voltage	V_{TH}	B, H, N	2.56	2.65	2.74	V
Threshold hysteresis	V_{HYS}			32		mV

Table 3

¹⁾ Only for Open drain versions

Timing Waveform

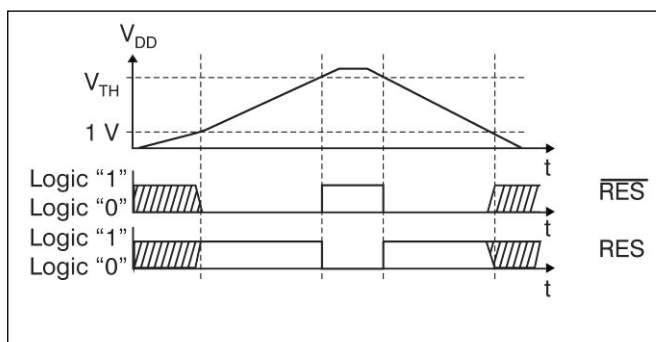


Fig.3

Block Diagram

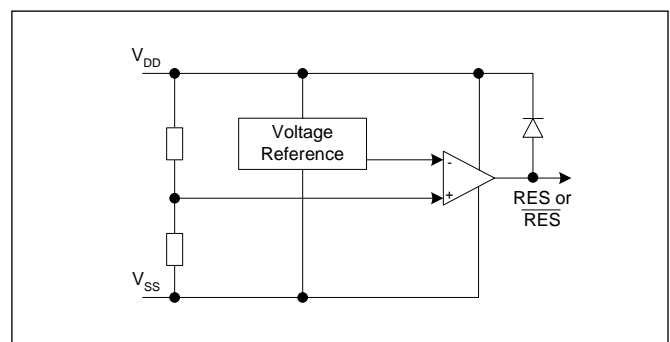
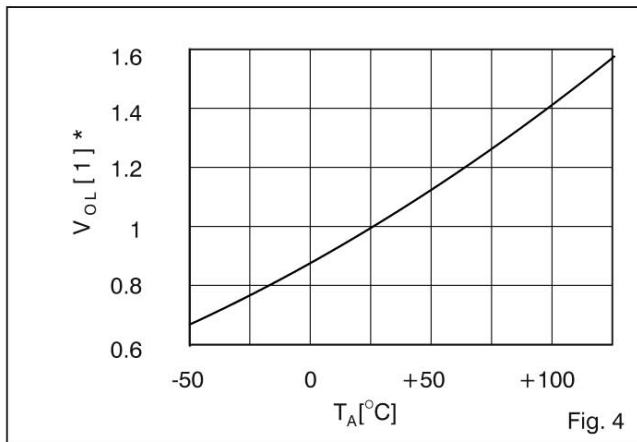


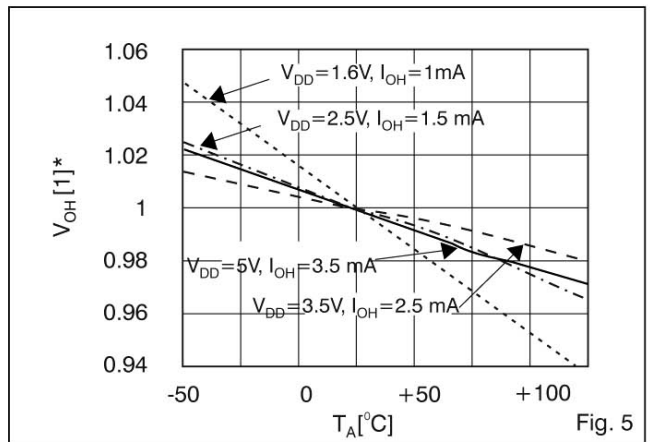
Fig.4

Typical Characteristics

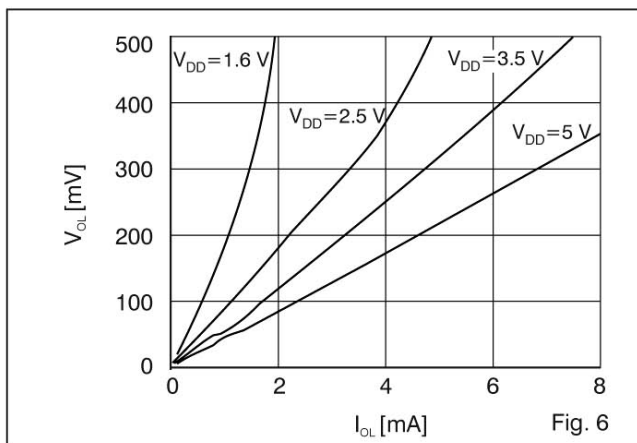
Normalized V_{OL} vs. Temperature



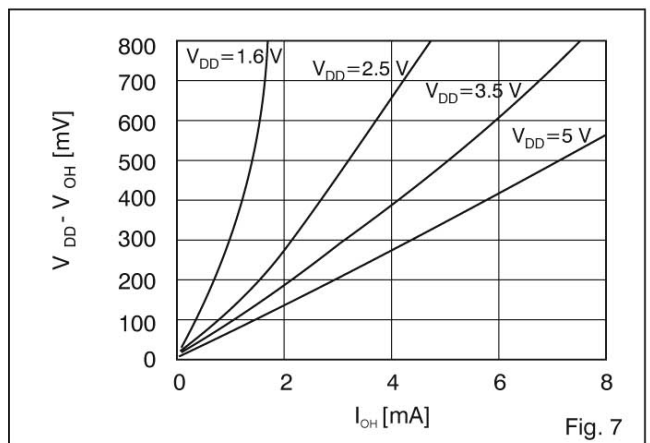
Normalized V_{OH} vs. Temperature



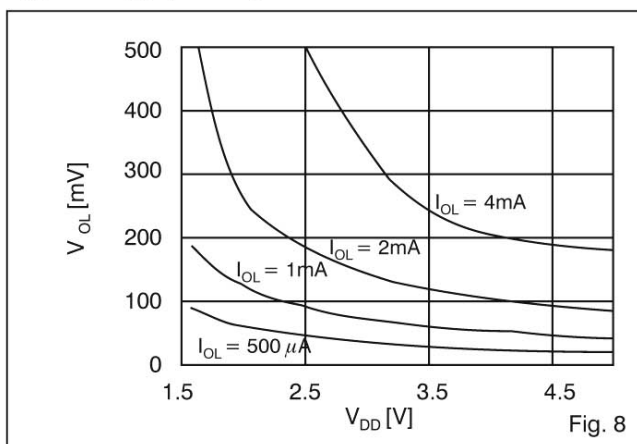
V_{OL} vs. Output Current



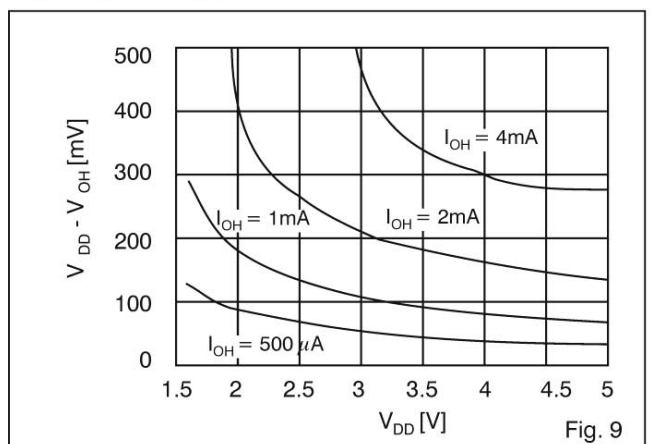
$V_{DD} - V_{OH}$ vs. Output Current



V_{OL} vs. Supply Voltage

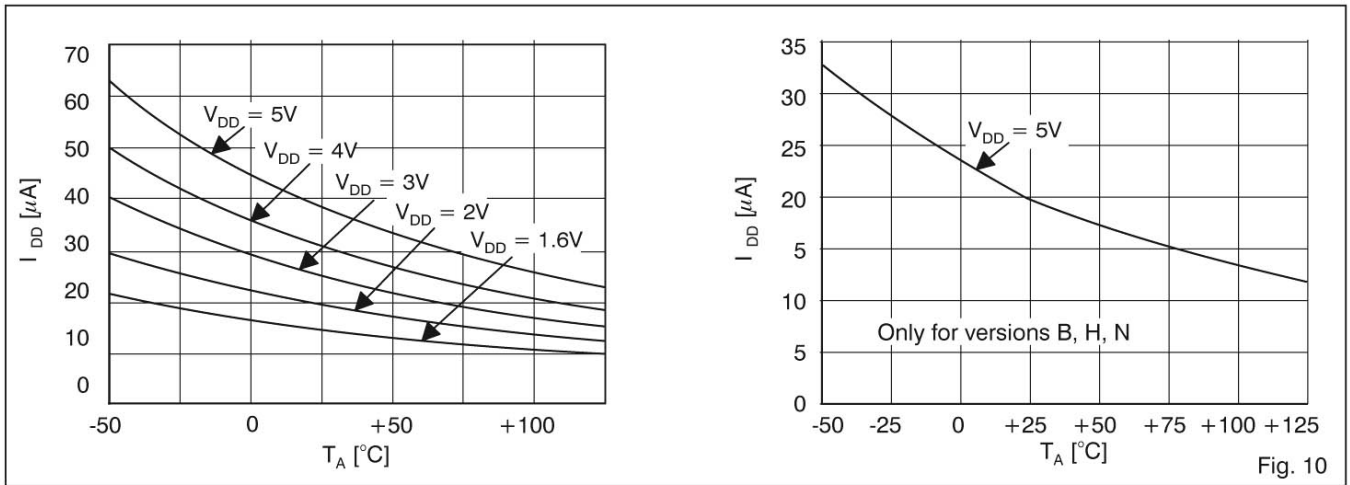


$V_{DD} - V_{OH}$ vs. Supply Voltage

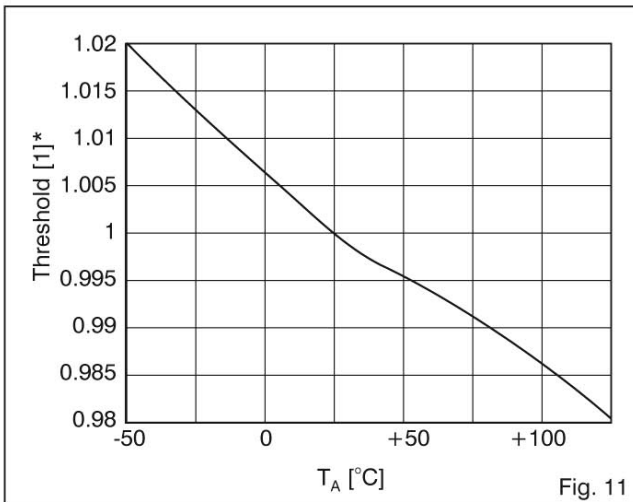


[1]* Multiply value at +25°C by this factor to determine the value at temperature

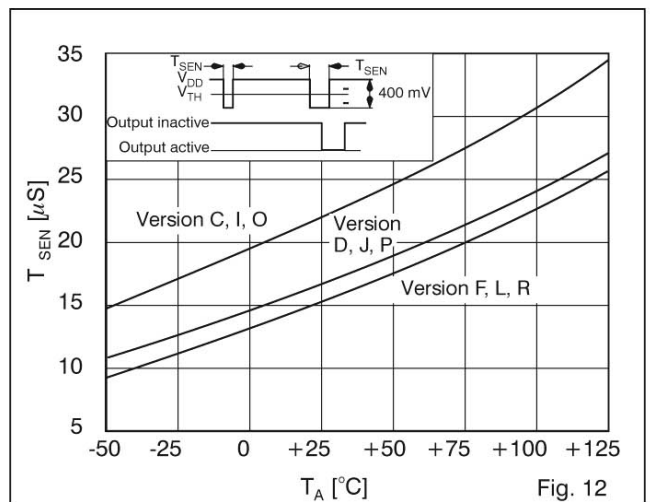
Supply Current vs. Temperature



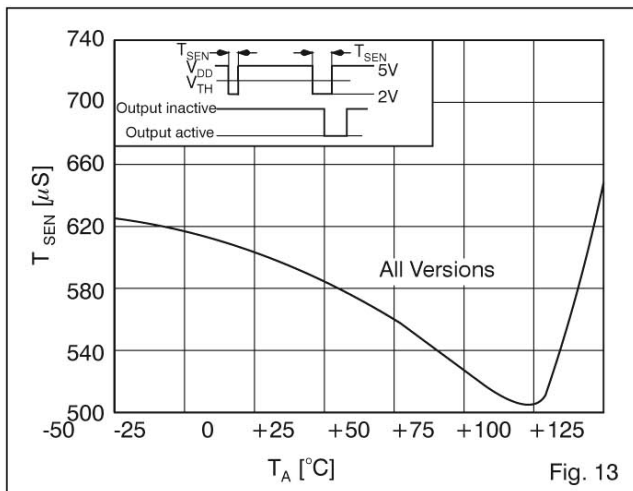
Normalized Threshold vs. Temperature



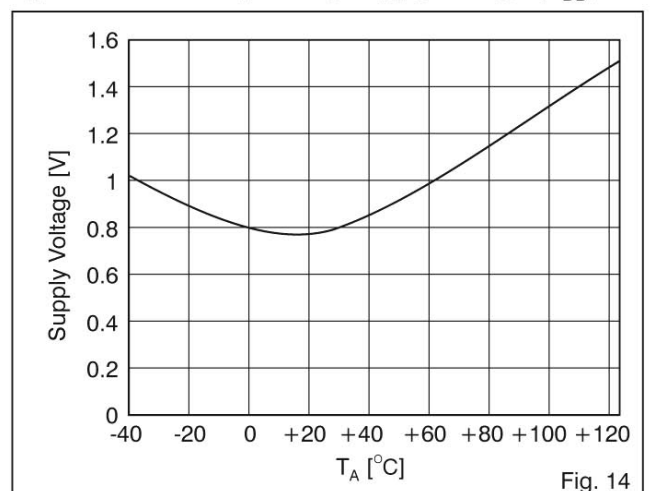
Typical Sensivity vs. Temperature



Typical Sensivity vs. Temperature



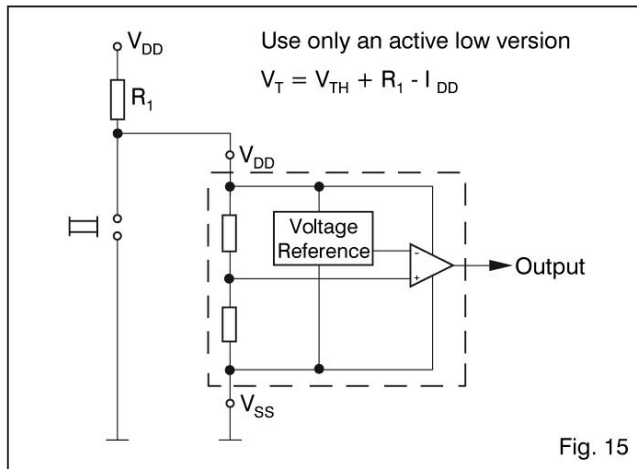
Typical Minimum Operating Supply Voltage (V_{DD})



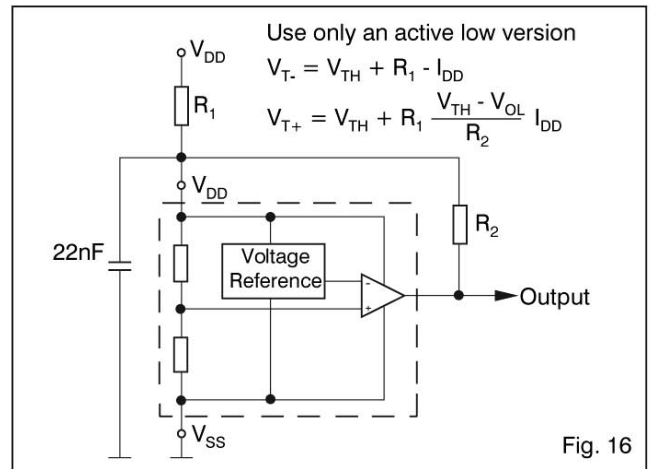
[1]* Multiply value at +25°C by this factor to determine the value at temperature

Typical Applications

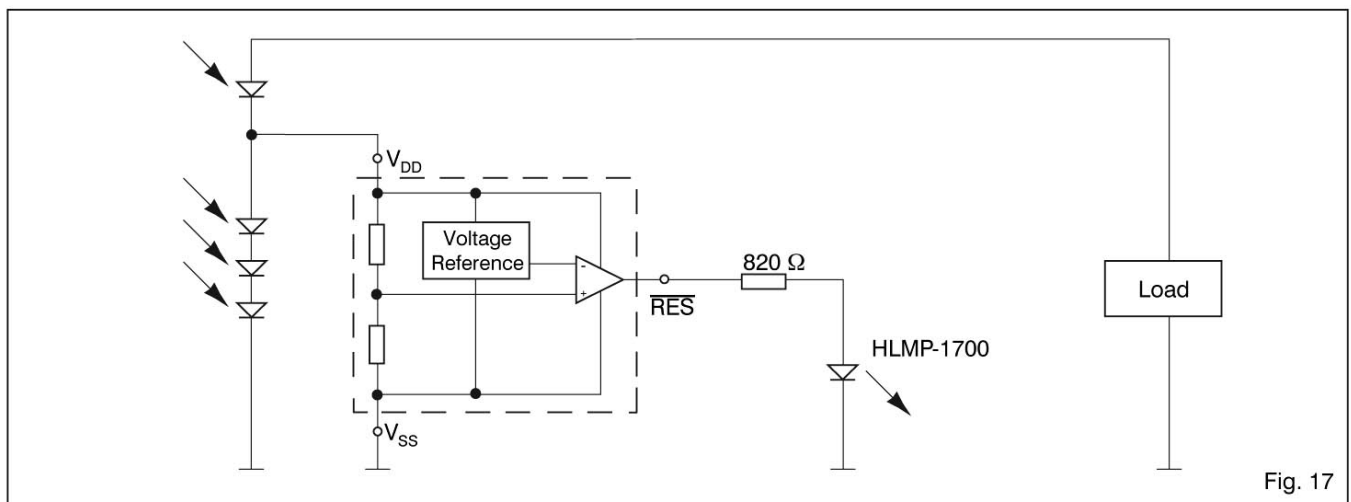
Voltage Monitor with Manual Reset



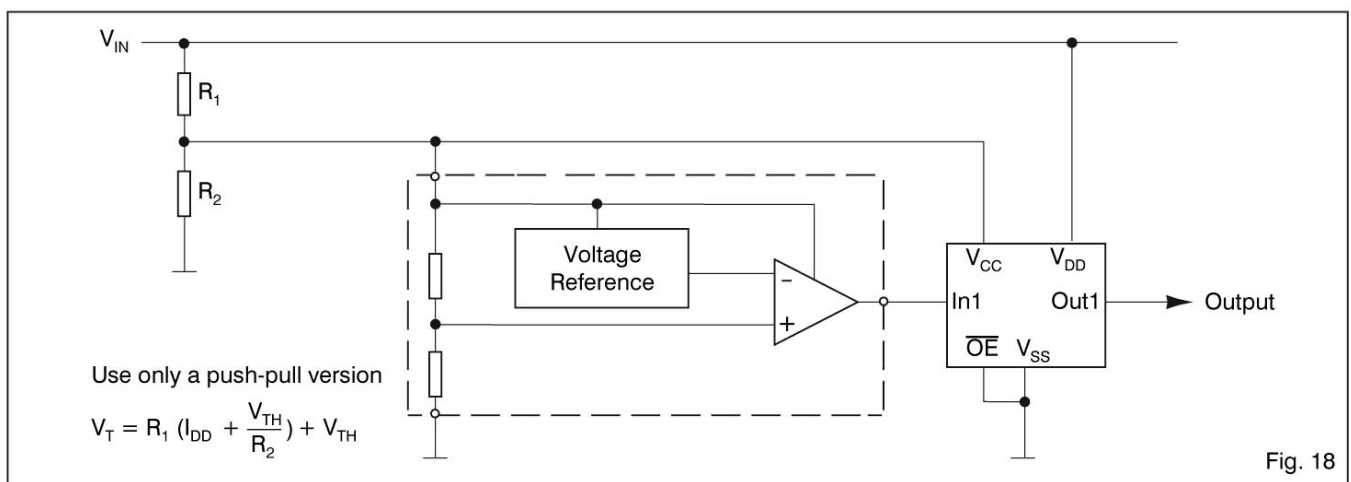
Reset Circuit with Hysteresis



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

SOT23-3L

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

Dimensions of SOT23-3L Package

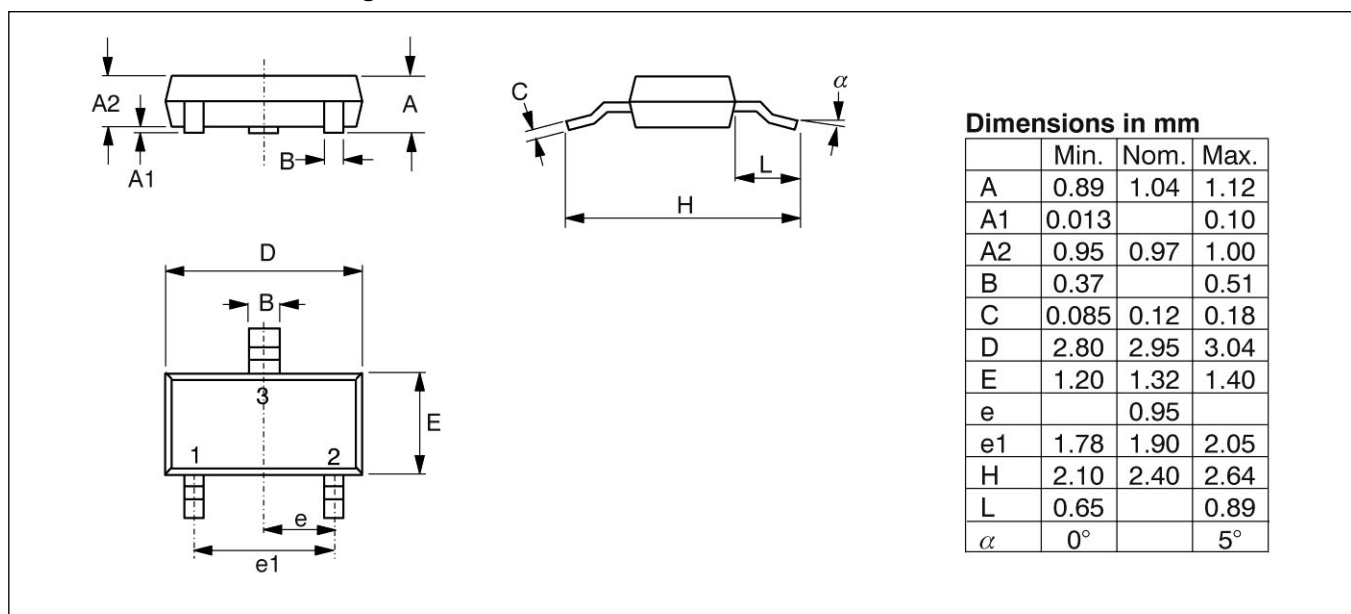


Fig. 5

Dimensions of TO-92 Package

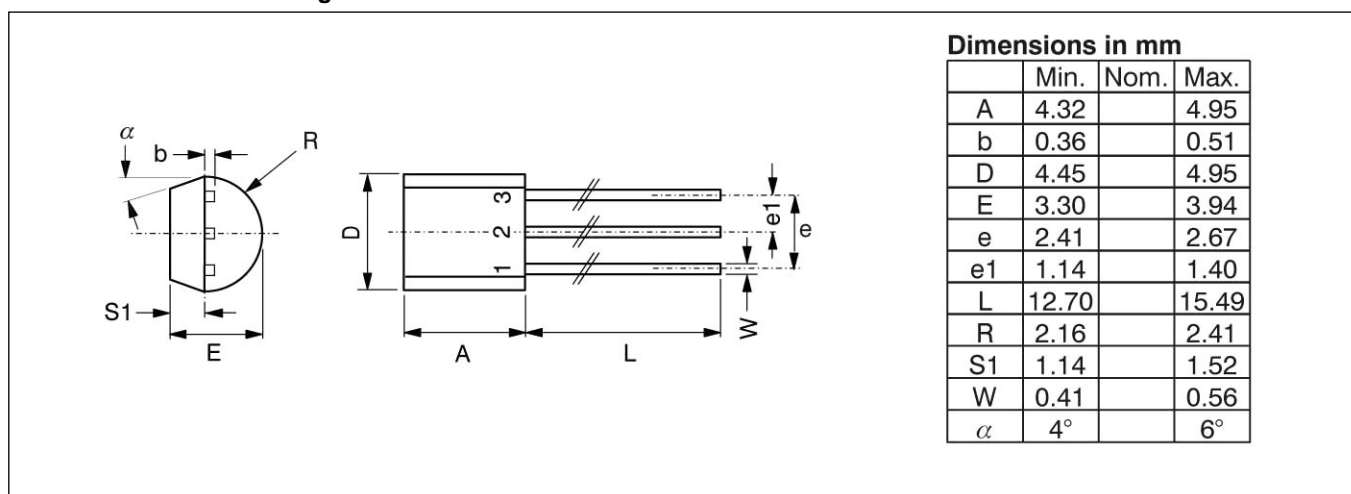
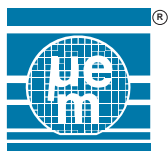


Fig. 6



Ordering Information

Part Number: V6340 R SP3B

Threshold Voltage and Output Type

	2.6V	3.0V	3.7V	4.4V
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

Table 7

Package and Delivery Form

SP3B = SOT23-3, Tape & Reel
TO3E = TO92, Ammopack

Subject to minimum order quantity.
Please contact EM Microelectronic for availability.

When ordering, please specify the complete Part Number without space between letters: eg. V6340RSP3B, etc.

Marking for TO-92 package

Part Number	Package Marking
V6340%TO3E	V6340%

Table 8

Where % refers to the letter for the threshold voltage in Table 7 (B, C, D, etc).

Marking for SOT23-3 packages

Part Number	Threshold Voltage	Output type	Package and Delivery Form	Top Marking ¹⁾ with 4 Characters	Top Marking ²⁾ with 3 Characters
V6340BSP3B	2.6V	Active low push-pull	SOT23-3L, Tape & Reel 3000 pcs	AAAB	AB#
V6340CSP3B	3.0V			AAAC	AC#
V6340DSP3B	3.7V			AAAD	AD#
V6340FSP3B	4.4V			AAAF	AF#
V6340HSP3B	2.6V	Active high push-pull		AAAH	AH#
V6340ISP3B	3.0V			AAAI	AI#
V6340JSP3B	3.7V			AAAJ	AJ#
V6340LSP3B	4.4V			AAAL	AL#
V6340NSP3B	2.6V	Active low open-drain		AAAN	AN#
V6340OSP3B	3.0V			AAAO	AO#
V6340PSP3B	3.7V			AAAP	AP#
V6340RSP3B	4.4V			AAAR	AR#

Table 9

- 1) Top marking with 4 characters is standard from 2003.
- 2) Top marking with 3 characters is kept as information since it was used until 2002. Where # refers to the lot number (EM internal reference only)

Traceability for small packages

Due to the limited space on the package surface, the bottom marking contains a limited number of characters that provide only partial information for lot traceability. Full information for complete traceability is however provided on the packing labels of the product at delivery from EM: It is highly recommended that the customer insures full lot traceability of EM product in his final product.

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