



# 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

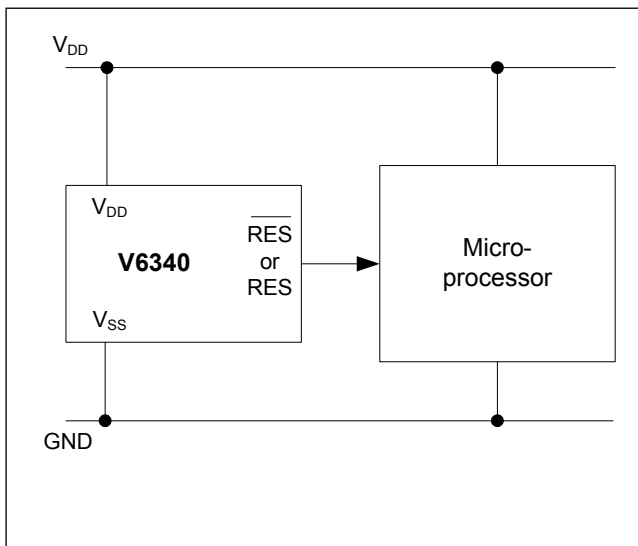


Fig. 1

## Pin Assignment

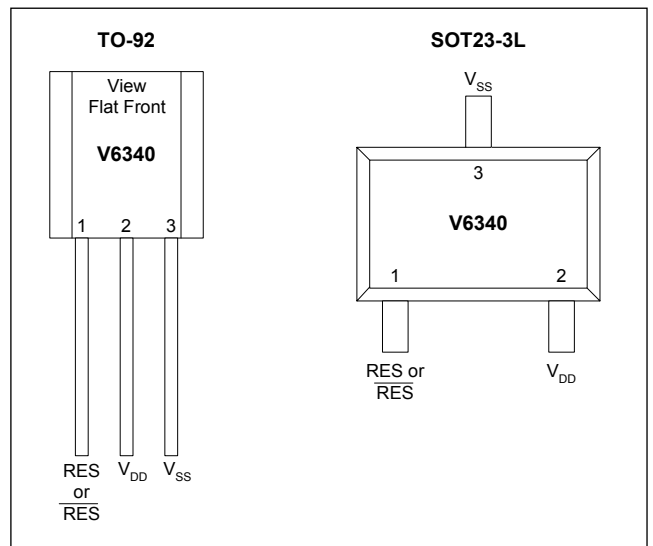


Fig. 2

## 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 <sup>1)</sup>	$T_A$	-40	+125	°C
Positive Supply Voltage <sup>2)</sup>	$V_{DD}$	1	5.5	V

Table 2

<sup>1)</sup>The maximum operating temperature is confirmed by sampling at initial device qualification. In production, all devices are tested at +25°C

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

## Electrical Characteristics

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

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Supply current	$I_{DD}$	$V_{DD} = 5V$ , output open		38	50	$\mu A$
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 <sup>1)</sup>	$I_{LEAK}$	$V_{DD} = 5V$		0.005	1	$\mu A$

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	$\mu A$
Threshold voltage	$V_{TH}$	B, H, N	2.56	2.65	2.74	V
Threshold hysteresis	$V_{HYS}$			32		mV

Table 3

<sup>1)</sup> Only for Open drain versions

## Timing Waveform

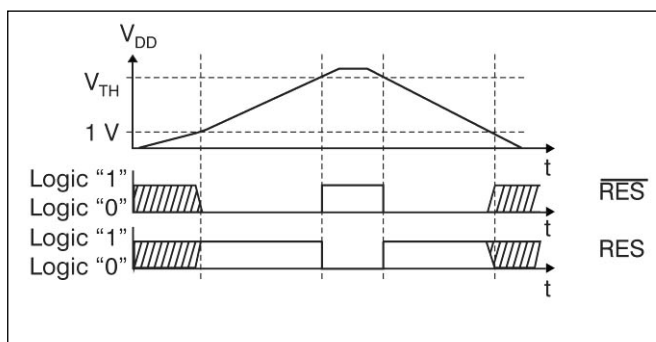


Fig.3

## Block Diagram

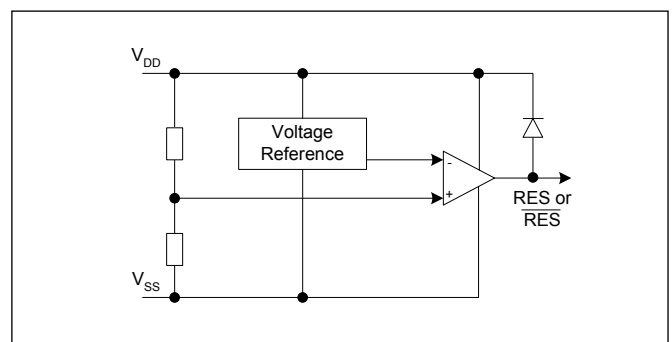
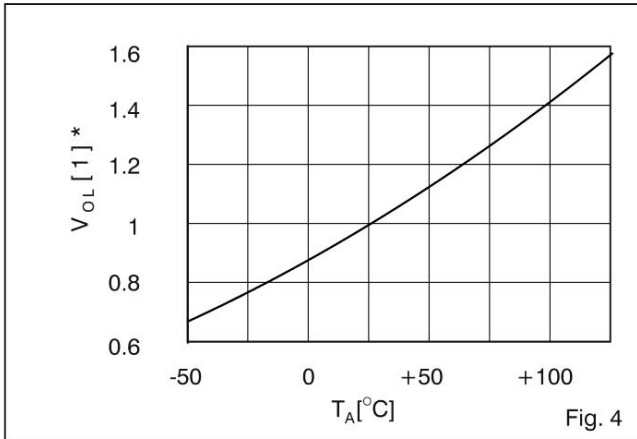


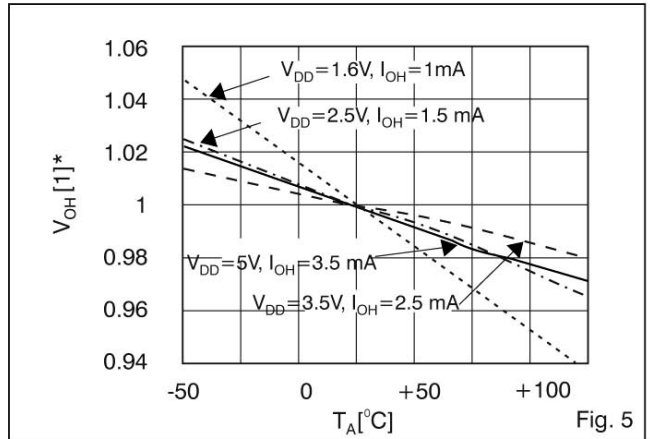
Fig.4

## Typical Characteristics

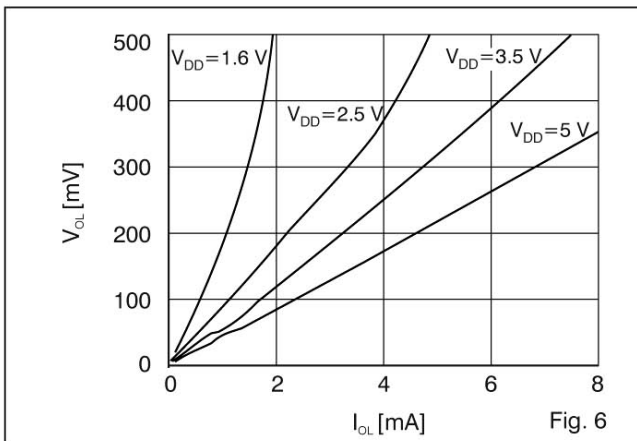
### Normalized $V_{OL}$ vs. Temperature



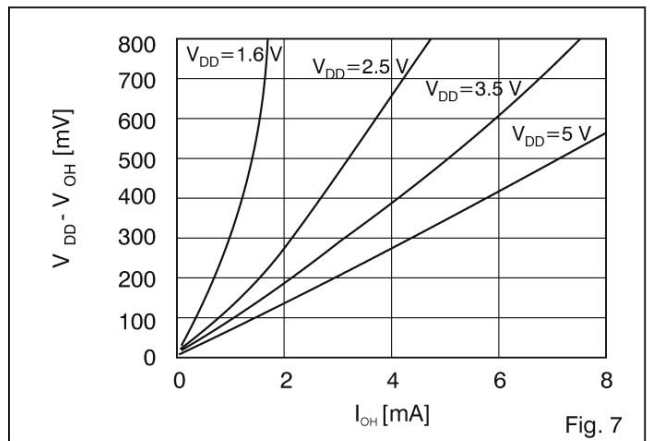
### Normalized $V_{OH}$ vs. Temperature



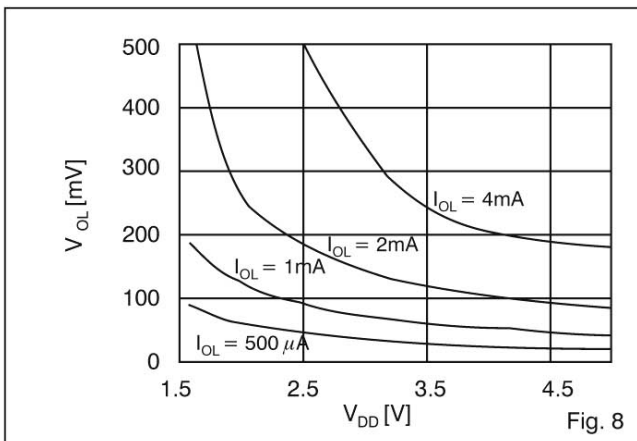
### $V_{OL}$ vs. Output Current



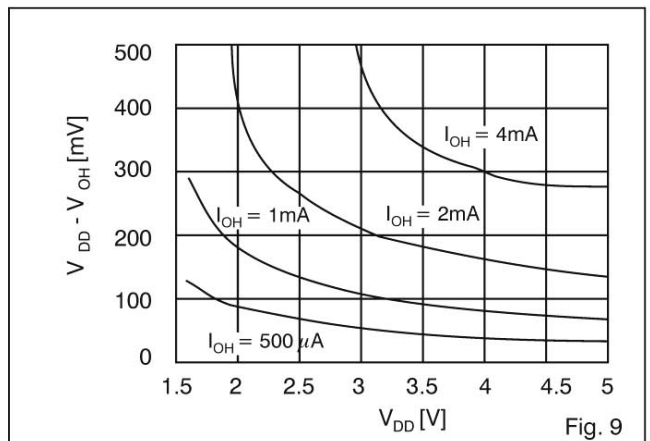
### $V_{DD} - V_{OH}$ vs. Output Current



### $V_{OL}$ 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

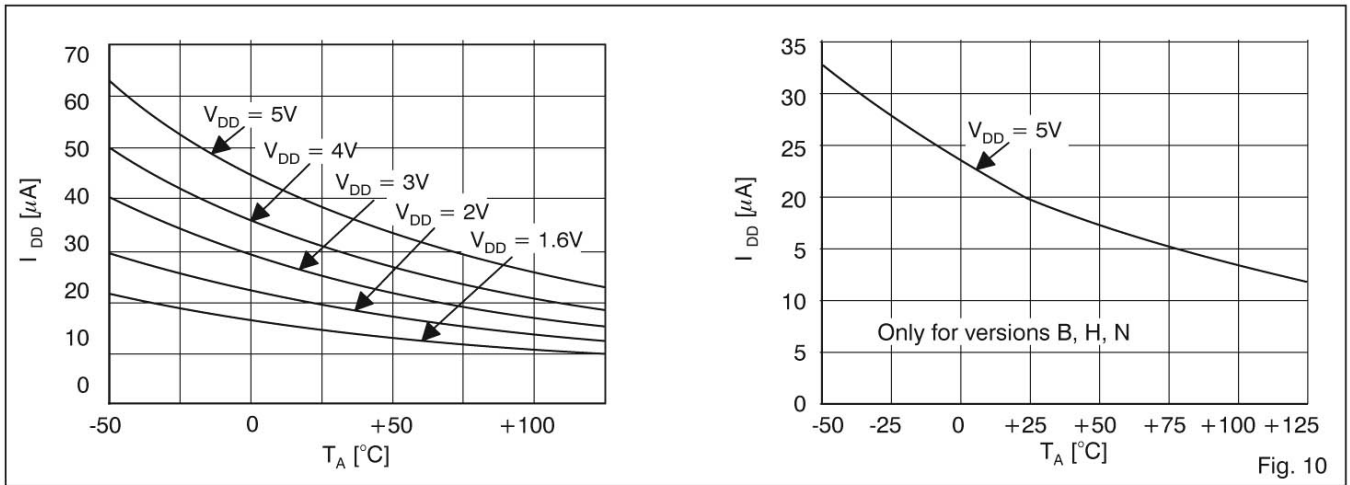


Fig. 10

## Normalized Threshold vs. Temperature

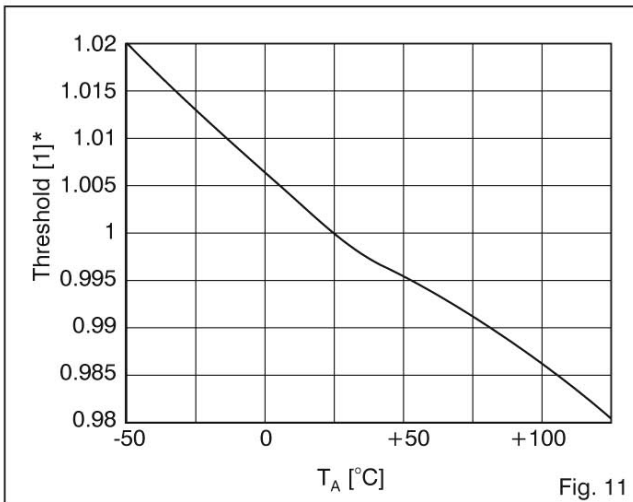


Fig. 11

## Typical Sensivity vs. Temperature

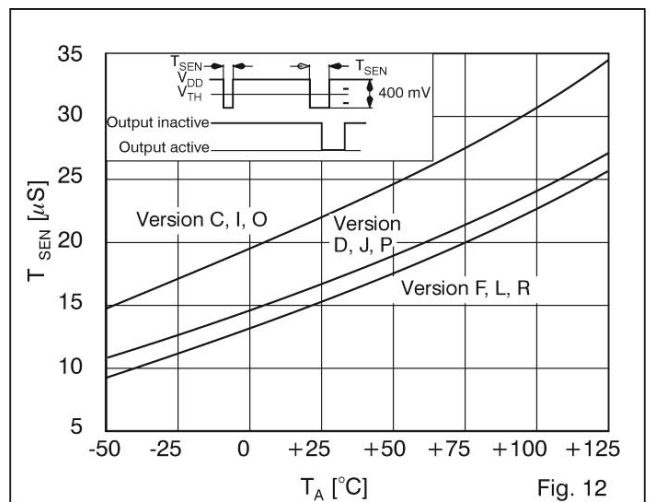


Fig. 12

## Typical Sensivity vs. Temperature

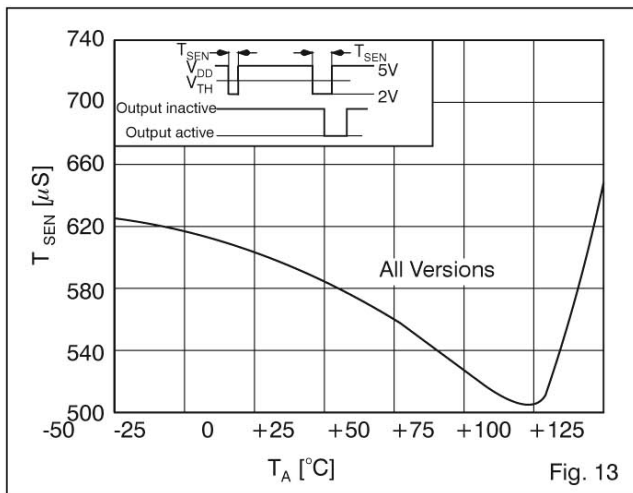


Fig. 13

## Typical Minimum Operating Supply Voltage (V<sub>DD</sub>)

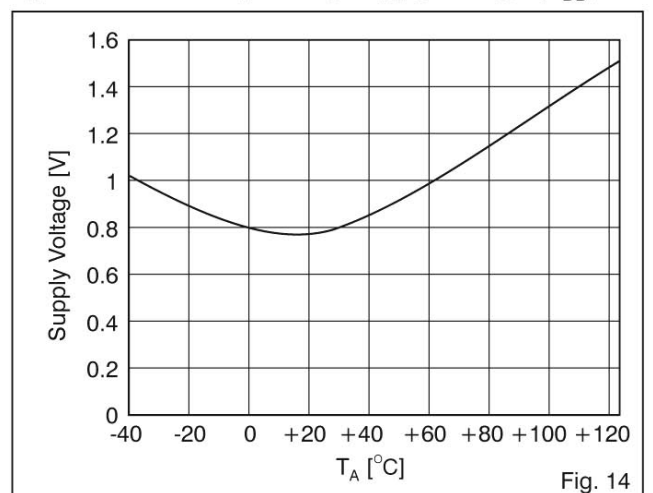
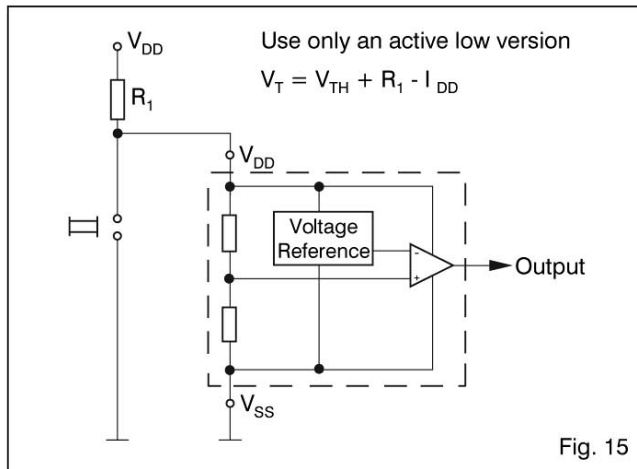


Fig. 14

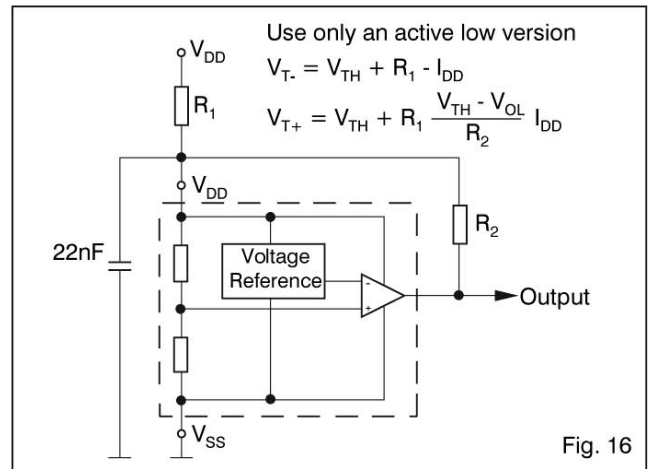
[1]\* Multiply value at  $+25^{\circ}C$  by this factor to determine the value at temperature

## Typical Applications

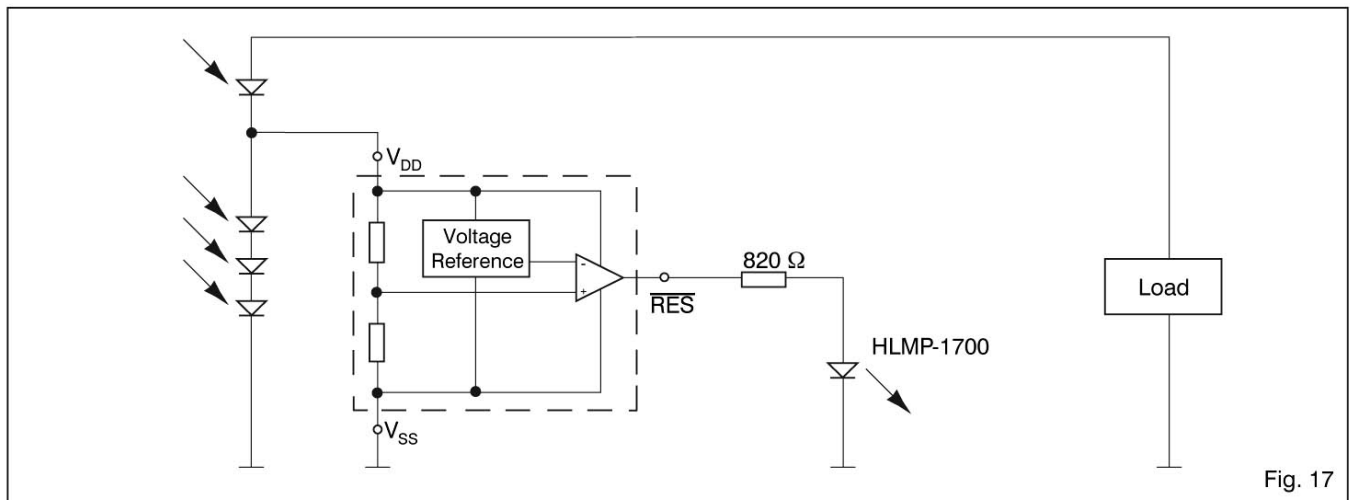
### Voltage Monitor with Manual Reset



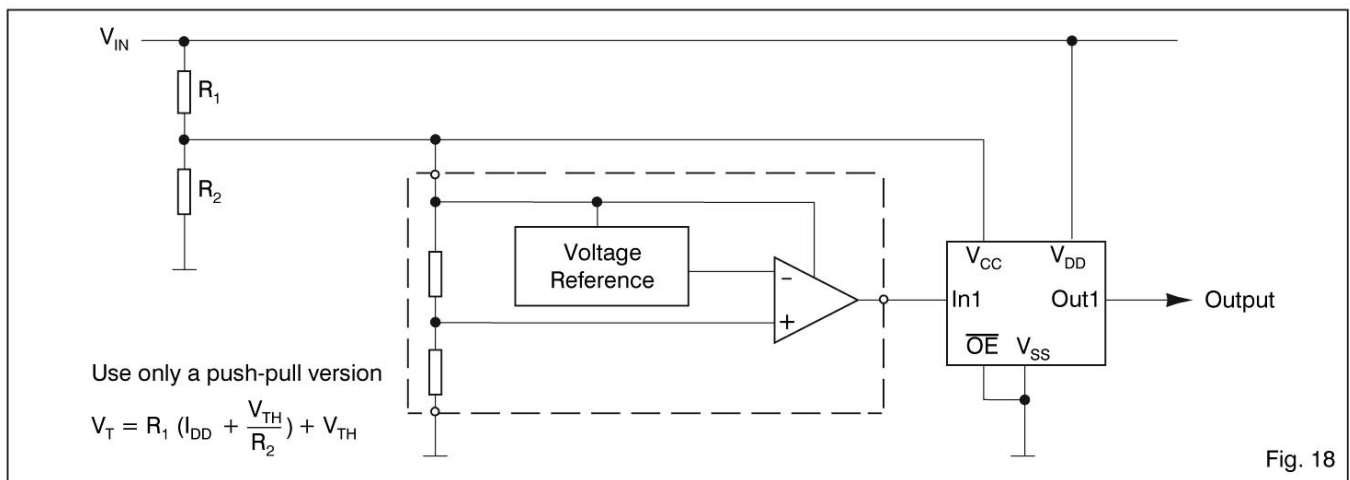
### Reset Circuit with Hysteresis



### 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

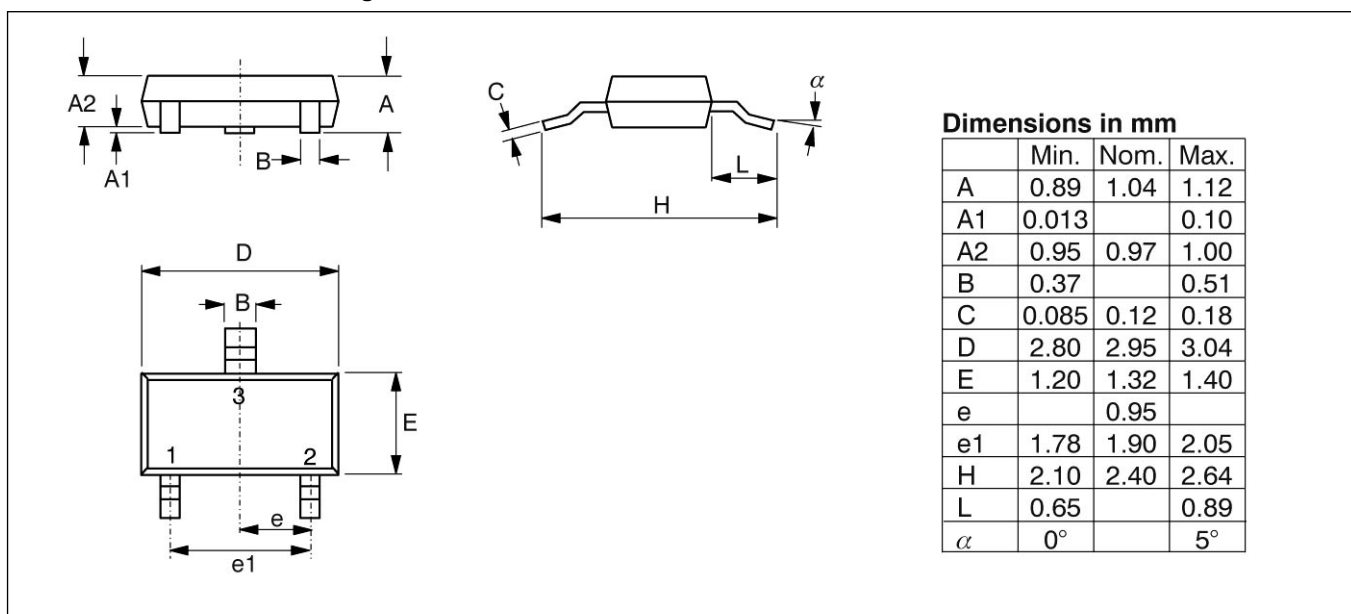


Fig. 5

### Dimensions of TO-92 Package

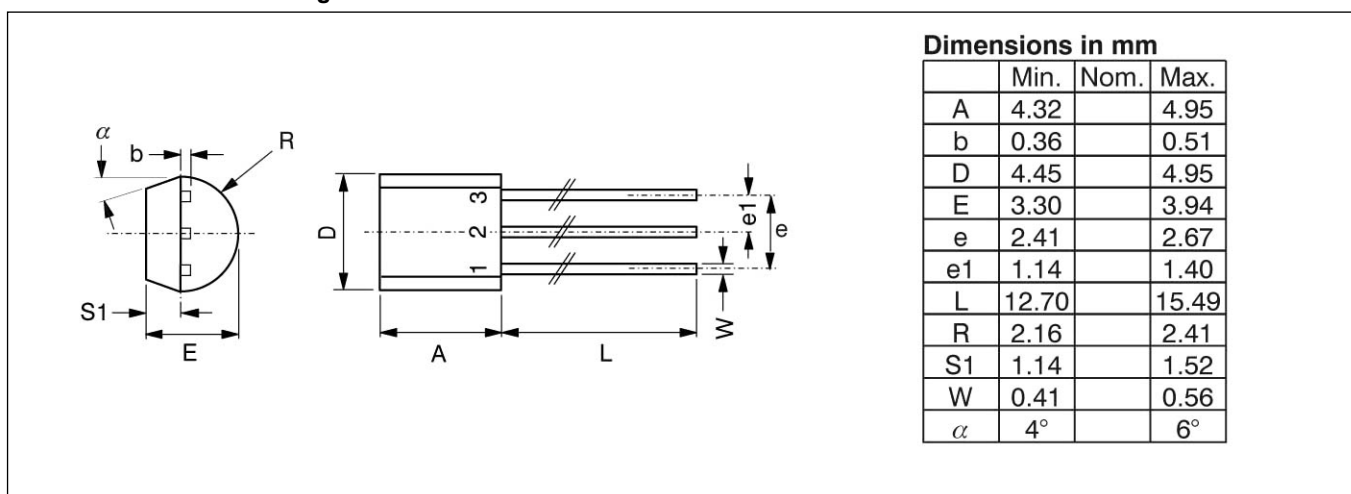


Fig. 6



## 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

**RoHS**  
+ = lead-free & green mold  
[blank] = leaded

**Package and Delivery Form**  
SP3B = SOT23-3, Tape & Reel  
TO3E = TO92, Ammopack

Table 7

**Note:** Subject to availability (see standard versions list below). When ordering, please give complete Part Number without space between letters: eg. V6340RSP3B, etc.

### Standard Versions (Top Marking)

#### Marking for TO-92 package

Part Number	Package Marking
V6340FTO3E+	V6340F
V6340NTO3E	V6340N
V6340OTO3E	V6340O

Part Number	Package Marking
V6340RTO3E+	V6340R
V6340TO3E	V6340R

Table 8

#### Marking for SOT23-3 package

Part Number	Threshold Voltage	Output type	Package and Delivery Form	Top Marking <sup>1)</sup>	Top Marking with 4 Characters <sup>2)</sup>	Top Marking with 3 Characters <sup>3)</sup>
V6340BSP3B	2.6V	Active low push-pull	SOT23-3L, Tape & Reel 3000 pcs	E1##	AAAB	AB#
V6340BSP3B+	2.6V			BAAB	AC#	
V6340CSP3B	3.0V			AAAC		
V6340CSP3B+	3.0V			BAAC	AD#	
V6340DSP3B	3.7V			AAAD		
V6340DSP3B+	3.7V			BAAD	AF#	
V6340FSP3B	4.4V			AAAF		
V6340FSP3B+	4.4V	BAAF		AH#		
V6340HSP3B	2.6V	AAAH				
V6340ISP3B	3.0V	AAAI			AJ#	
V6340JSP3B	3.7V	AAAJ				
V6340LSP3B	4.4V	AAAL		AL#		
V6340LSP3B+	4.4V	BAAL			AN#	
V6340NSP3B	2.6V	AAAN				
V6340OSP3B	3.0V	AAAO	AO#			
V6340OSP3B+	3.0V	BAAO				
V6340PSP3B	3.7V	AAAP	AP#			
V6340PSP3B+	3.7V	BAAP		AR#		
V6340RSP3B	4.4V	AAAR				
V6340RSP3B+	4.4V	BAAR				

Table 9

- Top marking is standard from 2006. No bottom marking exists. Where ## refers to the lot number (EM internal reference only)
- Top marking with 4 characters is standard from 2003. For lead-free/green mold (RoHS) parts, the first letter of top marking with 4 characters begins with letter "B" instead of letter "A". Bottom marking indicates the lot number.
- 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.

## Standards Version (Samples)

Part Number
V6340BSP3B+
V6340CSP3B+
V6340DSP3B+
V6340FSP3B+
V6340LSP3B
V6340OSP3B+

Part Number
V6340PSP3B+
V6340RSP3B+
V6340FTO3E+
V6340NTO3E
V6340OTO3E
V6340RTO3E+

Sample stock is generally held on **standard versions** only. Non standard versions have a 30,000 pieces minimum order quantity. Please contact factory for other versions not shown here and for availability of non standard versions.

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