



Voltage Detectors , ME2804 Series

General Description

ME2804 Series are highly precise, low power consumption voltage detectors, manufactured using NMOS technologies. Detect voltage is extremely accurate with minimal temperature drift. NMOS output configurations are available.

Features

- Highly accuracy: $\pm 1\%$ ($-V_{DET}=2.2V$ 以上)
- Low power consumption:
TYP 0.7 μ A ($V_{IN}=3.5V, -V_{DET}=2.0V$)
- Detect voltage range:
1.0V~6.5V in 0.1V increments
- Operating voltage range: 0.7V~7V
- Detect voltage temperature characteristics:
TYP ± 100 ppm/ $^{\circ}$ C
- Output configuration: NMOS

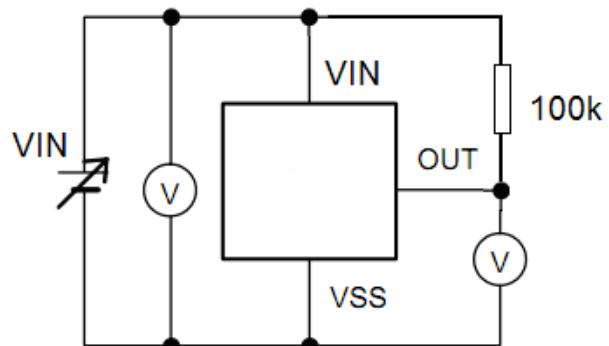
Typical Application

- Microprocessor reset circuitry
- Memory battery back-up circuits
- Power-on reset circuits
- Power failure detection

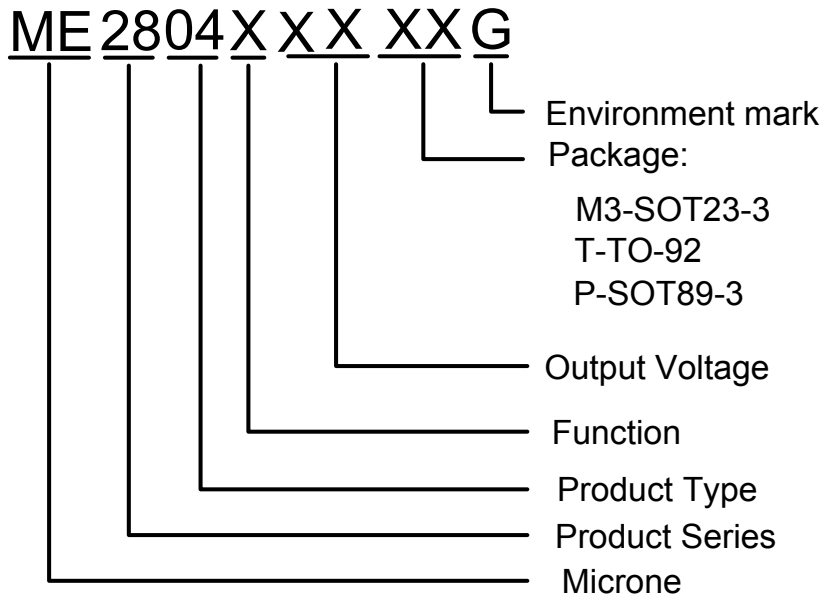
Package

- 3-pin SOT23-3、SOT89-3、TO-92

Typical Application Circuit



Selection Guide

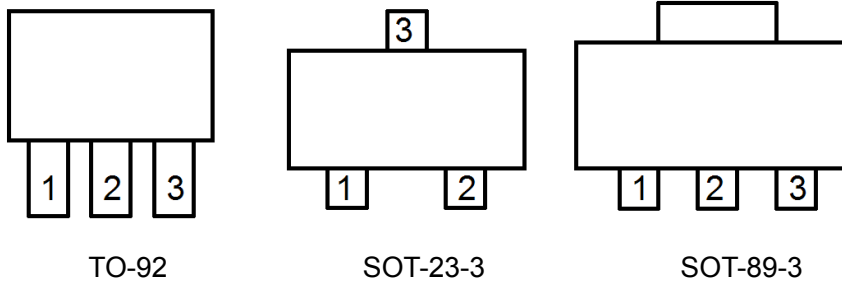


product series	product description
ME2804A10M3G	$V_{OUT} = 1.0V$; Rising edge detection; Package: SOT23-3
ME2804A A33M3G	$V_{OUT} = 3.3V$; Rising edge detection; Package: SOT23-3

NOTE:

1. At present ,there are seventeen kinds of voltage value:
1.0V、1.1V、1.2V、1.4V、1.8V、2.2V、2.7V、3.0V、3.3V。
2. If you need other voltage and package, please contact our sales staff.

Pin Configuration

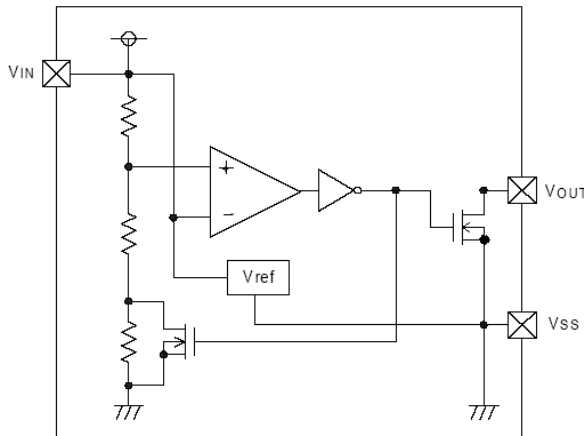


Pin Assignment

ME2804XX

Pin Number			Pin Name	Functions
SOT-23-3	SOT-89-3	TO-92		
2	3	3	GND	Ground
1	1	1	VOUT	Output Voltage
3	2	2	VIN	Input Voltage

Block Diagram



Absolute Maximum Ratings

PARAMETER	SYMBOL	RATINGS	UNITS
V_{IN} Input Voltage	V_{IN}	8	V
Output Current	I_{OUT}	50	mA
Output Voltage	NMOS V_{OUT}	GND-0.3~ $V_{IN}+0.3$	V
Continuous Total Power Dissipation	SOT-23-3	300	mW
	SOT-89-3	500	
	TO-92	500	
Operating Ambient Temperature	T_{Opr}	-40~+85	°C
Storage Temperature	T_{stg}	-40~+125	°C
Soldering temperature and time	T_{solder}	260°C, 10s	
ESD	MM	400	V
	HBM	4000	V

Electrical Characteristics

($-V_{DET}(S)=1.0V$ to $6.5V \pm 1\%$, $T_a=25^\circ C$, unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ	Max.	Units
Detect Voltage	-VDET	$-V_{DET}(S) \leq 1.5V$	$-V_{DET}(S) \times 0.98$	-VDET(S)	$-V_{DET}(S) \times 1.02$	V
		$-V_{DET}(S) > 1.5V$	$-V_{DET}(S) \times 0.99$	-VDET(S)	$-V_{DET}(S) \times 1.01$	
Hysteresis Range	VHYS	-	0.03	0.06	0.1	V
Supply Current	ISS	$V_{IN}=2V$ (1.0V-1.5V)	-	0.7	1	uA
		$V_{IN}=3.5V$ (1.6V-2.0V)	-	0.7	1	
		$V_{IN}=4.5V$ (2.1V-3.9V)	-	1.2	2	
		$V_{IN}=6V$ (4.0V-5.6V)	-	1.1	2	
		$V_{IN}=7V$ (5.7V-6.5V)	-	1.0	2	
Output Current	Iout N-ch	$V_{DS}=0.5V$ $V_{IN}=0.7V$	0.01	0.14	--	mA
Operating voltage	V_{IN}	-	0.7	-	7	V
Responding time	tpLH	-	-	-	60	us
Temperature characteristics	$\frac{\Delta -V_{DET}}{\Delta T_a \bullet -V_{DET}}$	$\Delta T_a = -40^\circ C \sim 85^\circ C$	-	± 100	± 350	ppm/ $^\circ C$

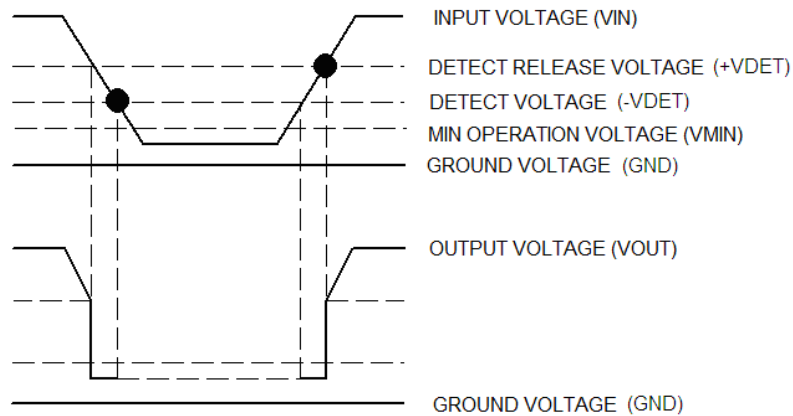
- Note:
- 1、-VDET(S) : Specified Detection Voltage value
 - 2、-VDET : Actual Detection Voltage value
 - 3、Release Voltage: $+V_{DET}=-V_{DET}+V_{HYS}$

Functional Description:

- 1、 When input voltage (V_{IN}) rises above detect voltage ($-V_{DET}$), output voltage (V_{OUT}) will be equal to V_{IN} .
- 2、 When input voltage (V_{IN}) falls below detect voltage ($-V_{DET}$), output voltage (V_{OUT}) will be equal to the ground voltage (GND) level.
- 3、 When input voltage (V_{IN}) falls to a level below that of the minimum operating voltage (V_{MIN}), output will become unstable. In this condition, V_{IN} will equal the pulled-up output (should output be pulled-up.)
- 4、 When input voltage (V_{IN}) rises above the ground voltage (GND) level, output will be unstable at levels below the minimum operating voltage (V_{MIN}). Between the V_{MIN} and detect release voltage ($+V_{DET}$) levels, the ground voltage (GND) level will be maintained.
- 5、 When input voltage (V_{IN}) rises above detect release voltage ($+V_{DET}$), output voltage (V_{OUT}) will be equal to V_{IN} .
- 6、 The difference between $+V_{DET}$ and $-V_{DET}$ represents the hysteresis range.

Timing Chart:

ME2804XX:



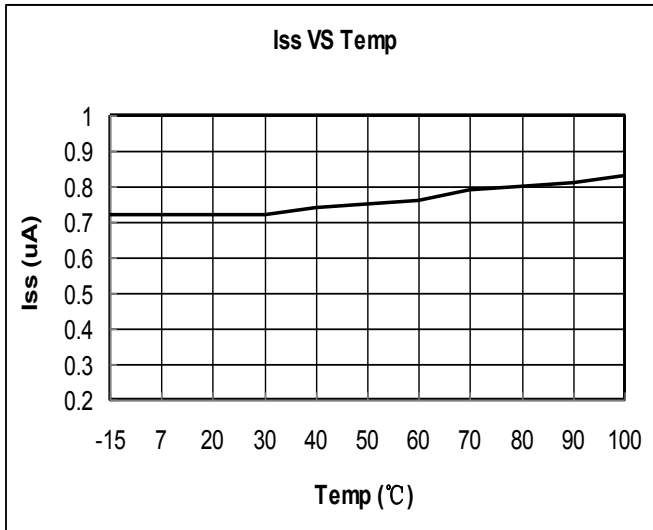
Directions for use:

- 1、 Please use this IC within the stated maximum ratings. Operation beyond these limits may cause degrading or permanent damage to the device.
- 2、 In order to stabilize the IC's operations, please ensure that V_{IN} pin's input frequency's rise and fall times are more than several μ Sec/V.

Type Characteristics

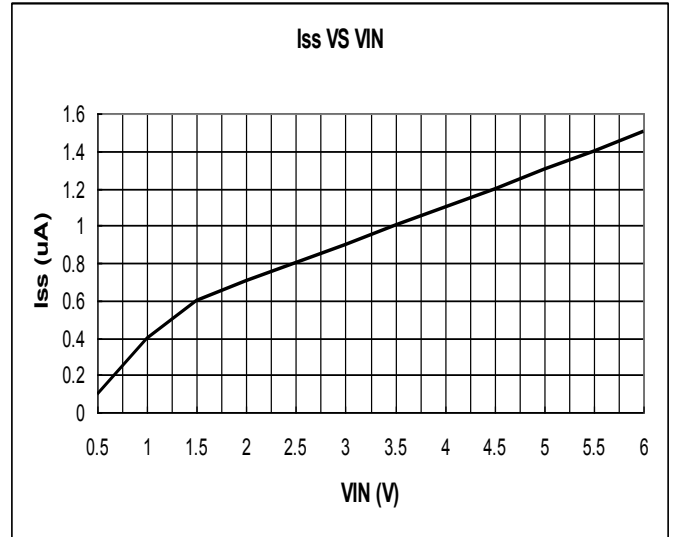
1、SUPPLY CURRENT VS. AMBIENT TEMPERATURE

$V_{IN}=2V, -V_{DET}=1.1V$



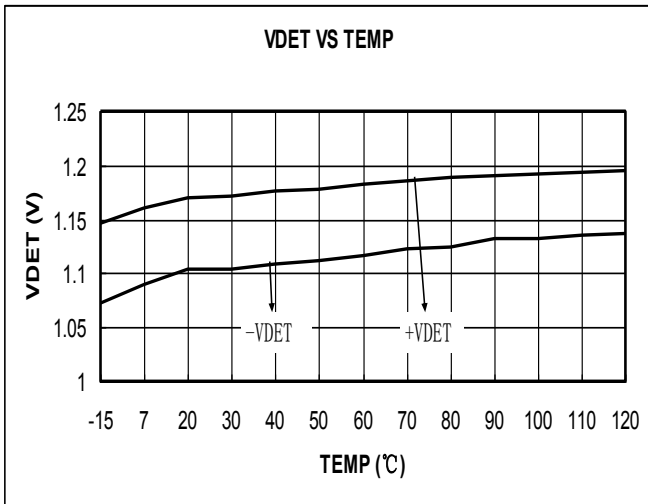
2、SUPPLY CURRENT VS. INPUT VOLTAGE

$-V_{DET}=1.1V (T=25^{\circ}C)$



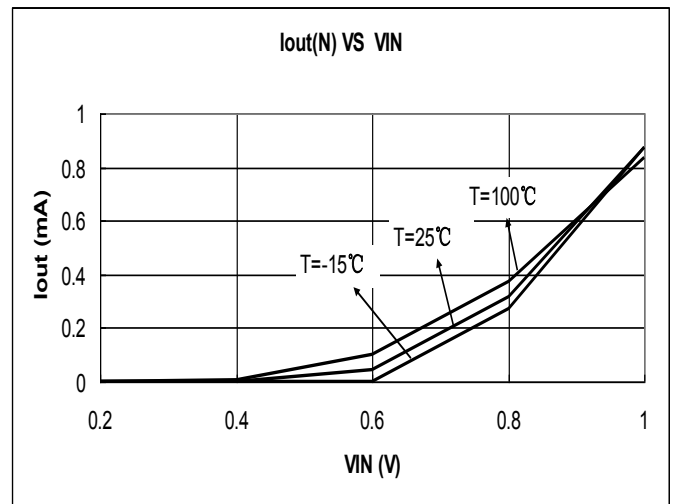
3、DETECT, RELEASE VOLTAGE VS. AMBIENT TEMPERATURE

$-V_{DET}=1.1V$



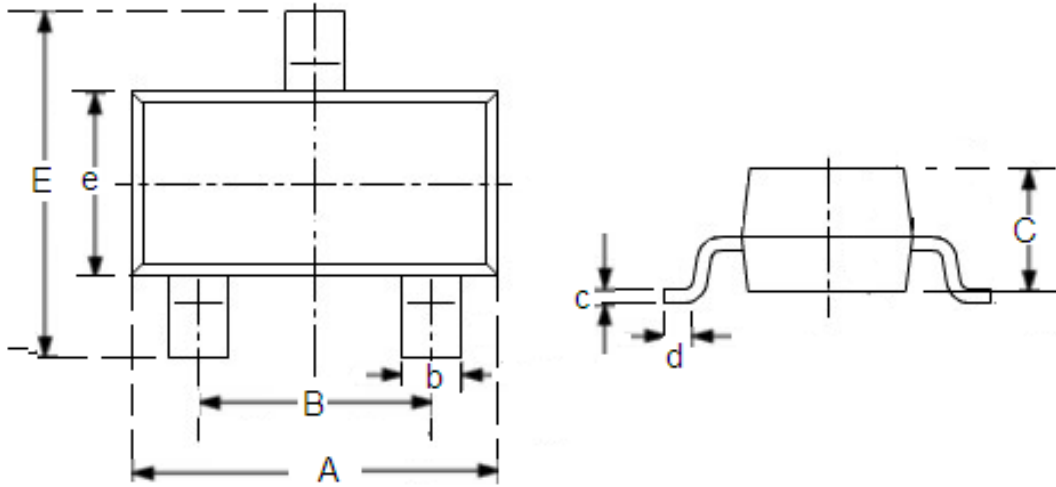
4、N-ch OUTPUT CURRENT VS. INPUT VOLTAGE

$V_{DS}=0.5V -V_{DET}=1.1V$



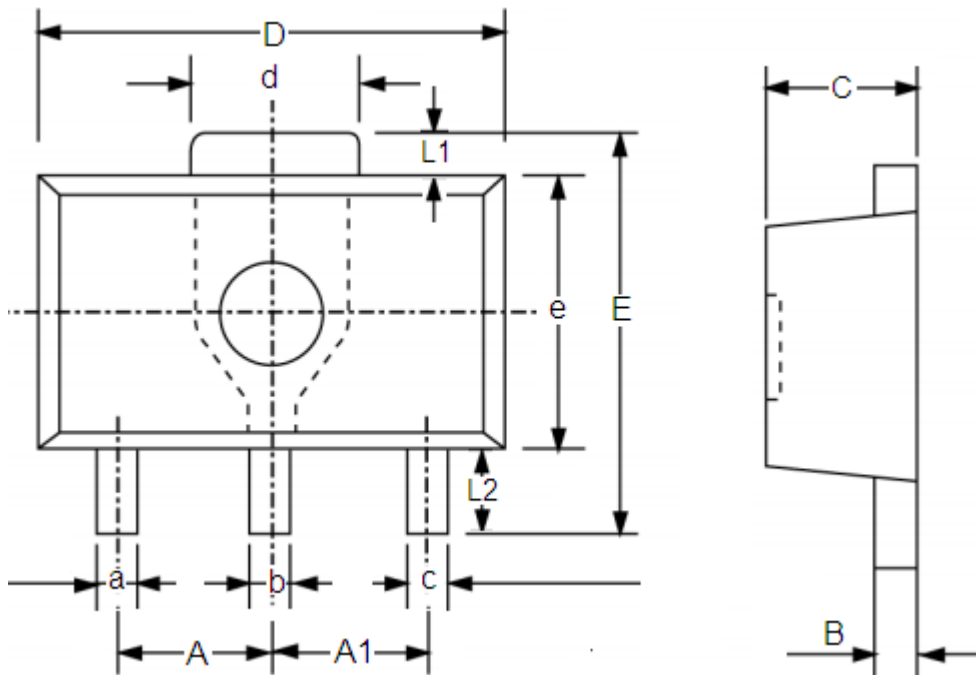
Packaging Information

● SOT23-3



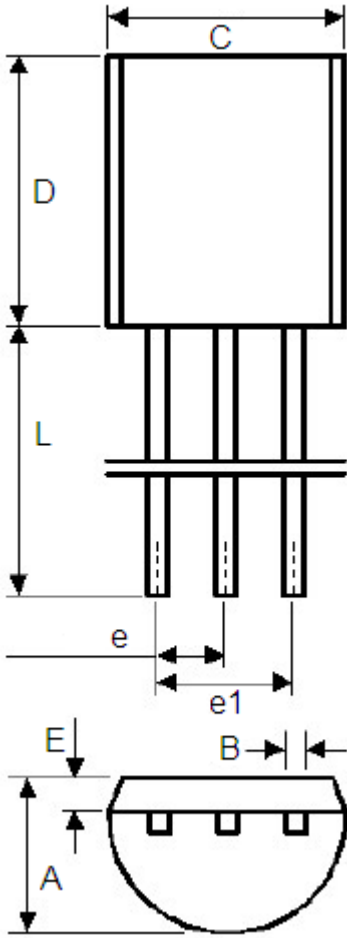
DIM	Millimeters		Inches	
	Min	Max	Min	Max
A	2.7	3.1	0.1063	0.122
B	1.7	2.1	0.0669	0.0827
b	0.35	0.5	0.0138	0.0197
C	1.0	1.2	0.0394	0.0472
c	0.1	0.25	0.0039	0.0098
d	0.2	-	0.0079	-
E	2.6	3.0	0.1023	0.1181
e	1.5	1.8	0.059	0.0708

● SOT89-3



DIM	Millimeters		Inches	
	Min	Max	Min	Max
A	1.4	1.6	0.0551	0.0630
A1	1.4	1.6	0.0551	0.0630
a	0.36	0.48	0.0142	0.0189
b	0.41	0.53	0.0161	0.0209
c	0.36	0.48	0.0142	0.0189
d	1.4	1.75	0.0551	0.0689
B	0.38	0.43	0.015	0.0169
C	1.4	1.6	0.0551	0.0630
D	4.4	4.6	0.1732	0.181
E	-	4.25	-	0.1673
e	2.4	2.6	0.0945	0.1023
L1	0.4	-	0.0157	-
L2	0.8	-	0.0315	-

● TO-92



DIM	Millimeters		Inches	
	Min	Max	Min	Max
A	3.4	3.8	0.13386	0.1496
B	0.3	0.5	0.0118	0.0197
C	4.4	4.8	0.1732	0.189
D	4.4	4.8	0.1732	0.189
E	0.9	1.5	0.0354	0.059
e	1.17	1.37	0.046	0.0539
e1	2.39	2.69	0.094	0.1059
L	12	16	0.4724	0.6299

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