

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: $\pm 1\%$ ($-V_{DET} > 1.5V$)
- 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

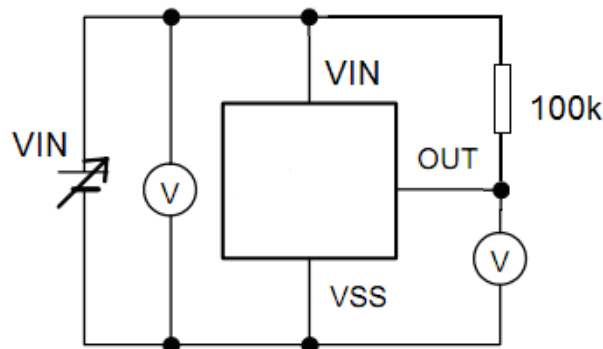
Typical Application

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

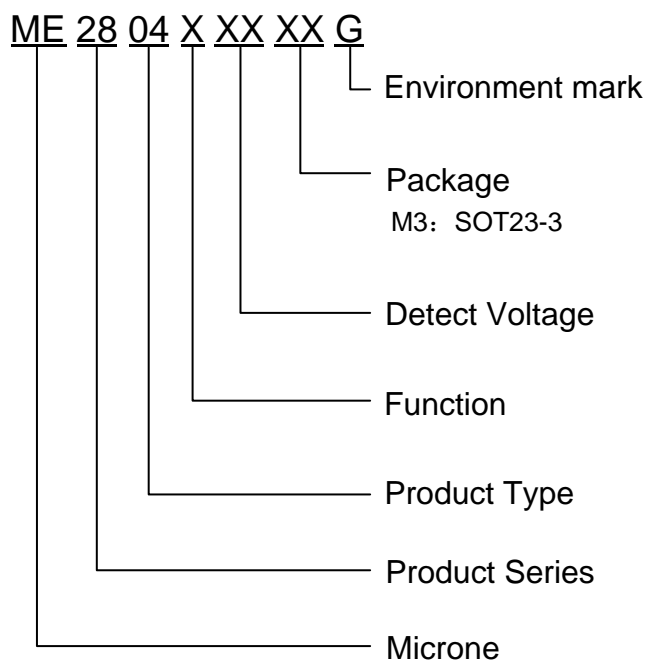
Package

- 3-pin SOT23-3

Typical Application Circuit



Selection Guide

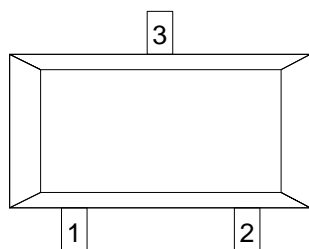


product series	product description
ME2804A10M3G	$V_{DET} = 1.0V$; Rising edge detection; Package: SOT23-3
ME2804A33M3G	$V_{DET} = 3.3V$; Rising edge detection; Package: SOT23-3

NOTE:

1. At present ,there are thirteen kinds of voltage value: 1.0V、1.1V、1.2V、1.3V、1.4V、1.45V、1.8V、2.2V、2.5V、2.7V、3.0V、3.3V、3.8V。
2. If you need other voltage or package, please contact our sales staff.

Pin Configuration

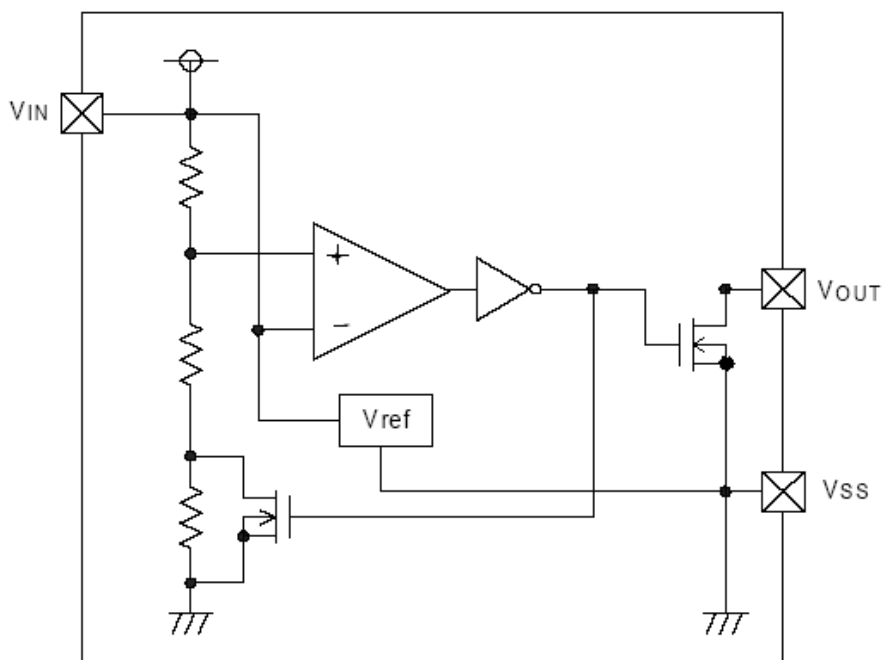


SOT23-3

Pin Assignment

Pin Number	Pin Name	Functions
SOT23-3		
2	GND	Ground
1	VOUT	Output Voltage
3	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
Internal Power Dissipation	SOT23-3	P _d	540	mW
Thermal resistance (Junction to air)	SOT23-3	θ _{JA}	230	°C/W
Operating Ambient Temperature		T _{Opr}	-40~+85	°C
Maximum junction temperature		T _J	-40~+150	°C
Storage Temperature		T _{stg}	-55~+150	°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±1% , Ta=25°C , unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ	Max.	Units
Detect Voltage	-VDET	-VDET (S) ≤ 1.5V	-VDET(S) ×0.98	-VDET(S)	-VDET(S) ×1.02	V
		-VDET (S) > 1.5V	-VDET(S) ×0.99	-VDET(S)	-VDET(S) ×1.01	
Hysteresis Range	VHYS	-	0.03	0.06	0.1	V
Supply Current	ISS	V _{IN} =2.0V (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} =6.0V (4.0V-5.6V)	-	1.1	2	
		V _{IN} =7.0V (5.7V-6.5V)	-	1.0	2	
Output Current	I _{out} 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	$\frac{\Delta - VDET}{\Delta Ta \times -VDET}$	ΔTa = -40°C~85°C	-	±100	±350	ppm/°C

Note: 1、-VDET(S) : Specified Detection Voltage value

2、-VDET : Actual Detection Voltage value

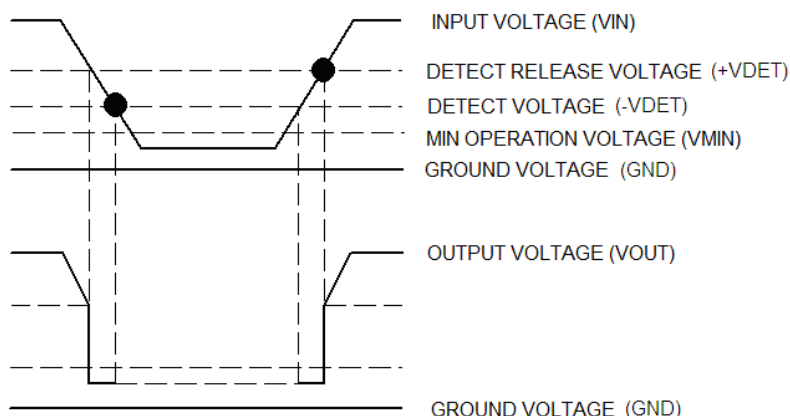
3、Release Voltage: +VDET=-VDET+VHYS

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:



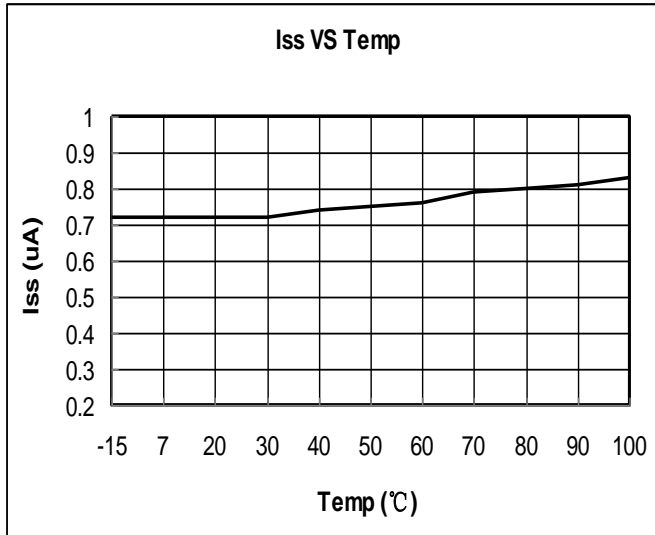
Directions for use:

- 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 $\mu\text{Sec/V}$.

Type Characteristics

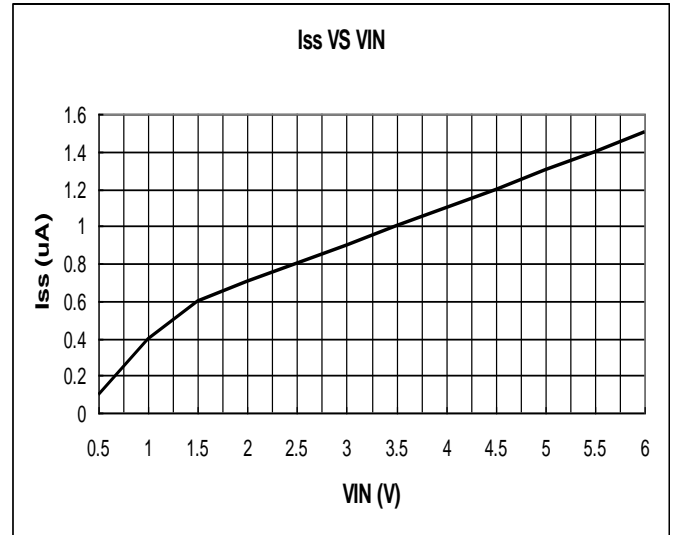
1、Supply Current VS. Ambient Temperature

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



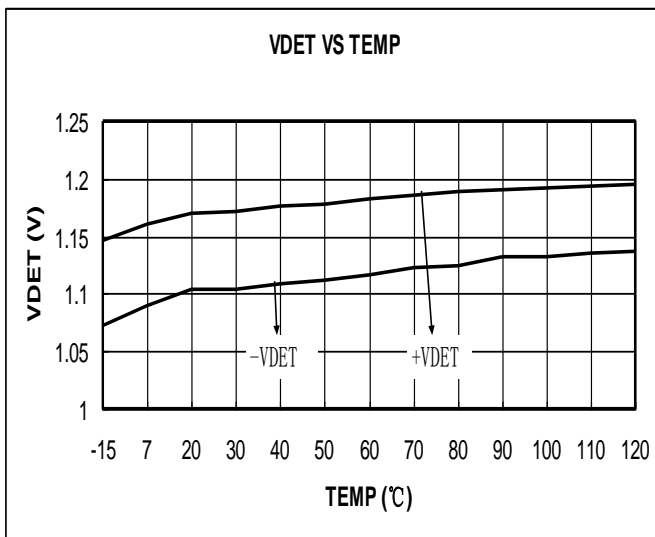
2、Supply Current VS. Input Voltage

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



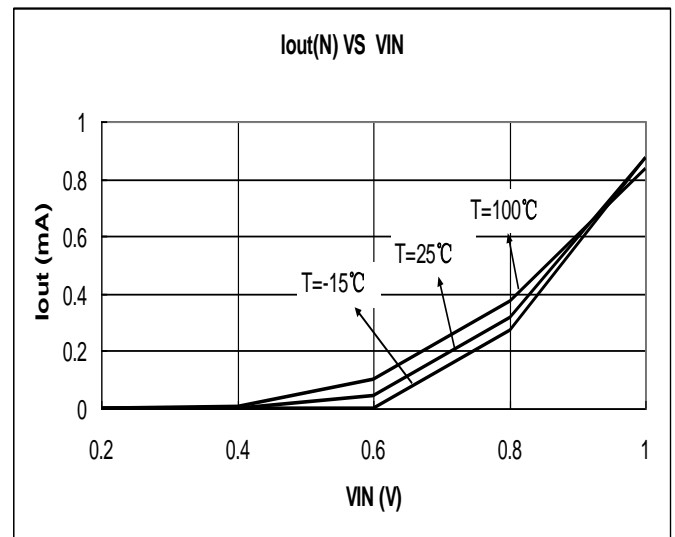
3、Detect, Release Voltage VS. Ambient Temperature

$-V_{DET}=1.1V$



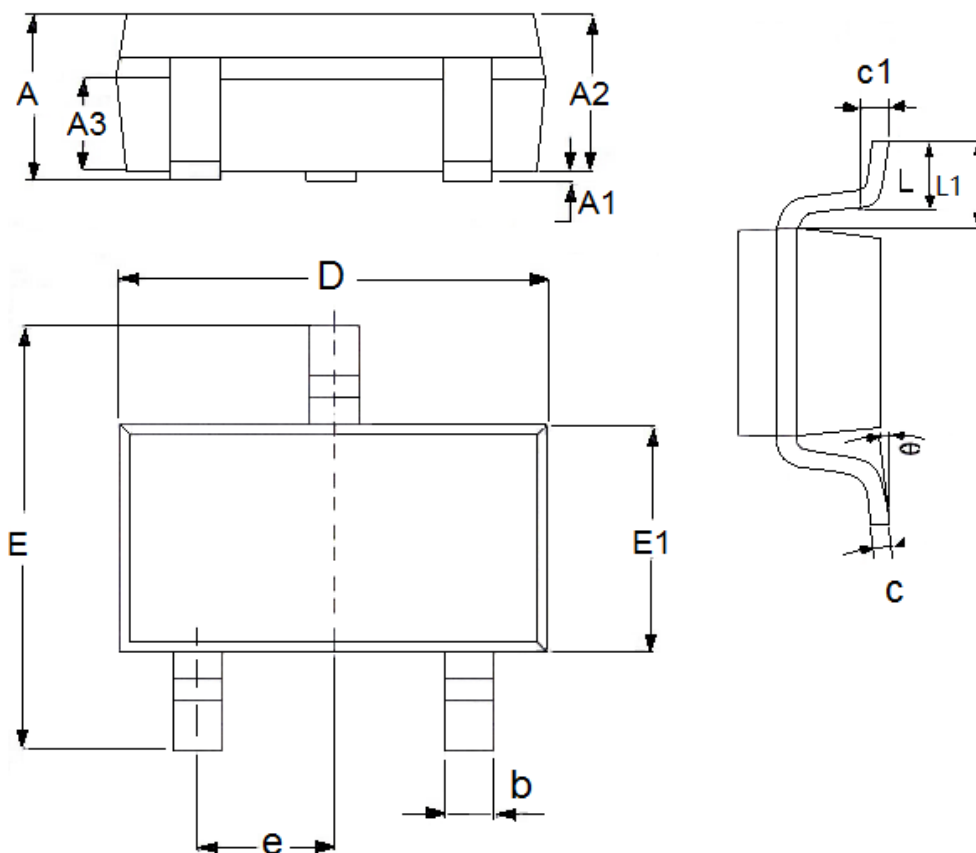
4、N-ch OUTPUT CURRENT VS. INPUT VOLTAGE

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



Packaging Information

- Package Type:SOT23-3



DIM	Millimeters		Inches	
	Min	Max	Min	Max
A	1.05	1.45	0.0413	0.0571
A1	0	0.15	0.0000	0.0059
A2	0.9	1.3	0.0354	0.0512
A3	0.6	0.7	0.0236	0.0276
b	0.25	0.5	0.0098	0.0197
c	0.1	0.25	0.0039	0.0098
D	2.8	3.1	0.1102	0.1220
E	2.6	3.1	0.1023	0.1220
E1	1.5	1.8	0.0591	0.0709
e	0.95(TYP)		0.0374(TYP)	
L	0.25	0.6	0.0098	0.0236
L1	0.59(TYP)		0.0232(TYP)	
θ	0	8°	0.0000	8°
c1	0.2(TYP)		0.0079(TYP)	

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- The application circuit examples described in this document are only used to indicate the representative use of the product and do not guarantee the design of mass production.
- Please use this product within the limits stated in this document. We will not be responsible for any damage caused by improper use.
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