



Voltage Detectors , ME2803 Series

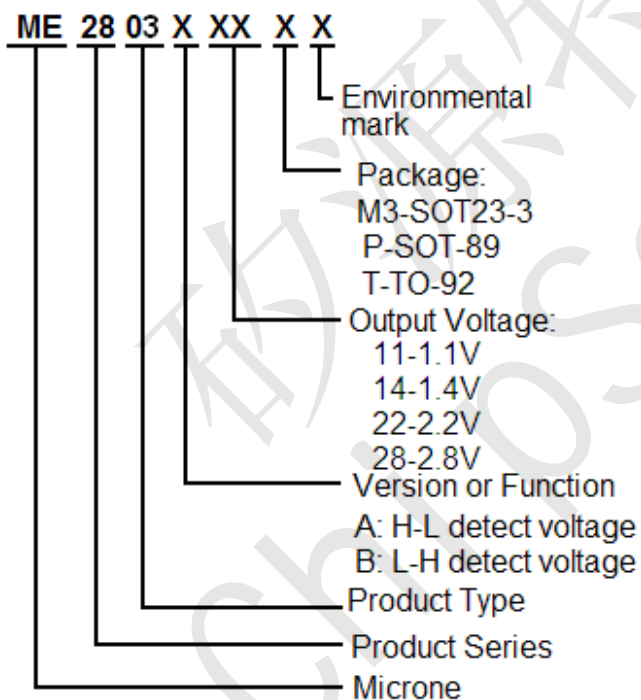
ME2803 General Description

ME2803 Series are highly precise, low power consumption voltage detectors, manufactured using CMOS technologies. Detect voltage is extremely accurate with minimal temperature drift. CMOS output configurations are available.

ME2803 Features

- Highly accuracy: $\pm 1\%$ ($-V_{DET}=2.2V$ 以上)
- Low power consumption:
TYP 0.7 μ A ($V_{IN}=3.5V, -V_{DET}=2.2V$)
- 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: CMOS
- Package: SOT-23-3, SOT-89-3, TO-92

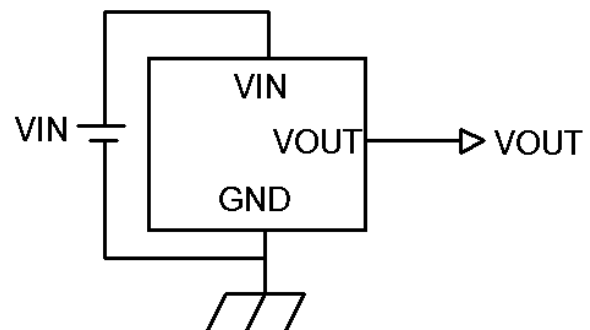
ME2803 Selection Guide



ME2803 Typical Application

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

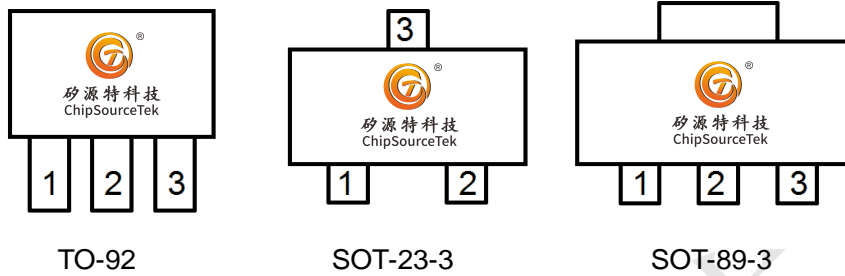
ME2803 Typical Application Circuit





Voltage Detectors , ME2803 Series

ME2803 Pin Configuration

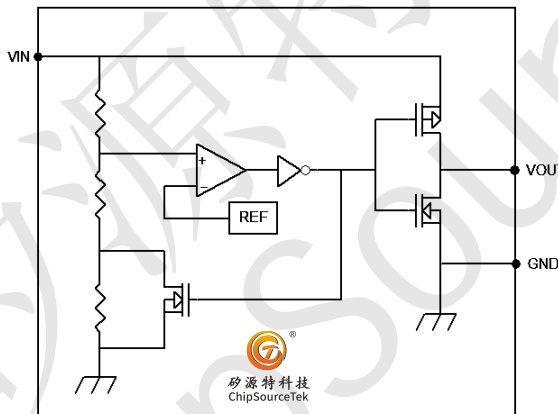


ME2803 Pin Assignment

ME2803XX

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

ME2803 Block Diagram



ME2803 Absolute Maximum Ratings

PARAMETER	SYMBOL	RATINGS	UNITS
V_{IN} Input Voltage	V_{IN}	8	V
Output Current	I_{OUT}	50	mA
Output Voltage	CMOS 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



Voltage Detectors , ME2803 Series

ME2803 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	$-V_{DET}(S) \leq 2.2V$	$-V_{DET}(S) \times 0.98$	-VDET(S)	$-V_{DET}(S) \times 1.02$	V
		$-V_{DET}(S) > 2.2V$	$-V_{DET}(S) \times 0.99$	-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-2.5V)	-	0.7	1	
		$V_{IN}=4.5V$ (2.6V-3.9V)	-	1.2	2	
		$V_{IN}=6V$ (4.0V-5.6V)	-	1.1	2	
		$V_{IN}=7V$ (5.7V-6.5V)	-	1	2	
Output Current	Iout N-ch	$V_{DS}=0.5V$ $V_{IN}=0.7V$	0.01	0.14	--	mA
	Iout P-ch	$V_{DS}=0.5V$ $V_{IN}=7V$	1.7	3.4	--	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: +VDET=-VDET+VHYS



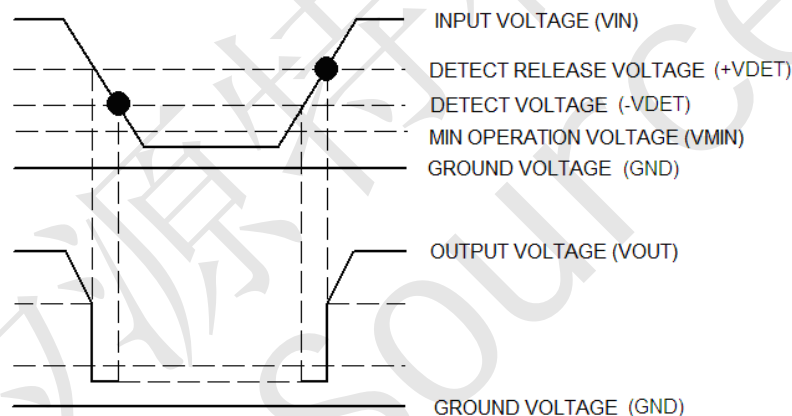
Voltage Detectors , ME2803 Series

ME2803 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.

ME2803 Timing Chart:

ME2803XX:



ME2803 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、 When a resistor is connected between the V_{IN} pin and the input with CMOS output configurations, oscillation may occur as a result of voltage drops at R_{IN} if load current (I_{OUT}) exists. (refer to the Oscillation Description(1) below)
- 3、 When a resistor is connected between the V_{IN} pin and the input with CMOS output configurations, oscillation may occur as a result of through current at the time of voltage release even if load current (I_{OUT}) does not exist. (refer to the Oscillation Description(2) below)
- 4、 With a resistor connected between the V_{IN} and the input, detect and release voltage will rise as a result of the IC's supply current flowing through the V_{IN} pin.
- 5、 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.



Voltage Detectors , ME2803 Series

ME2803 Oscillation Description:

1、 Output current oscillation with the CMOS output configuration

When the voltage applied at IN rises, release operations commence and the detector's output voltage increase. Load current (I_{OUT}) will flow at R_L . Because a voltage drop ($R_{IN} \cdot I_{OUT}$) is produces at the R_{IN} resistor, located between the input (IN) and the V_{IN} pin. The load current will flow via the IC's pin. The voltage drop will also lead to a fall in the voltage level at the V_{IN} pin. When the V_{IN} pin voltage level falls below the detect voltage level, detect operations will commence. Flowing detect operations, load current flow will cease and since voltage drop at R_{IN} will disapper, the voltage level at the V_{IN} pin will rise and release operations will begin over again. Oscillation may occur with this "release-detect-release" repetition. Further, this condition will also appear via means of a similar mechanism during detect operations.

2、 Oscillation as a result of through current

Since the ME2803 series are CMOS IC's, through current will flow when the IC's internal circuit switching operates (during release and detect operations). Consequently, oscillation is liable to occur as a result of drops in voltage at the through current's resistor (R_{IN}) during release voltage operations.(refer to diagram 2) since hysteresis exists during detect operations, oscillation is unlikely to occur.

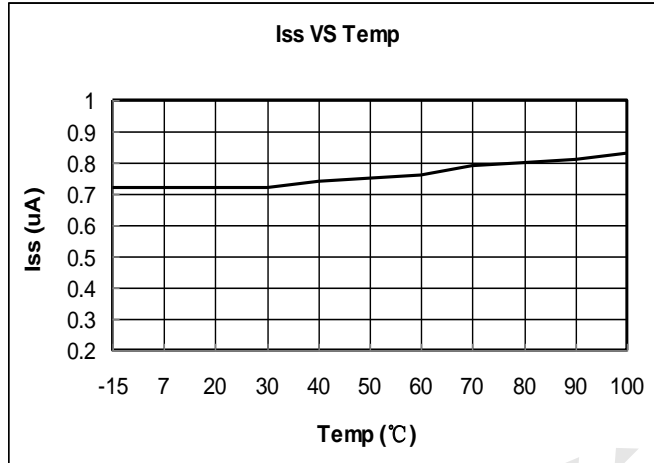


Voltage Detectors , ME2803 Series

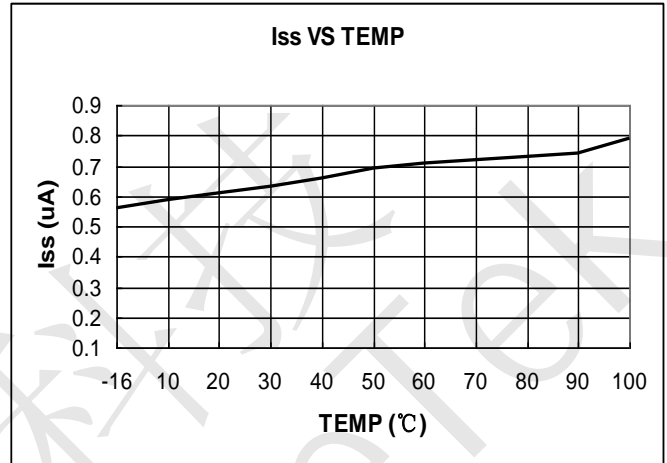
ME2803 Type Characteristics

1、 SUPPLY CURRENT VS. AMBIENT TEMPERATURE

VIN=2V,-VDET=1.1V

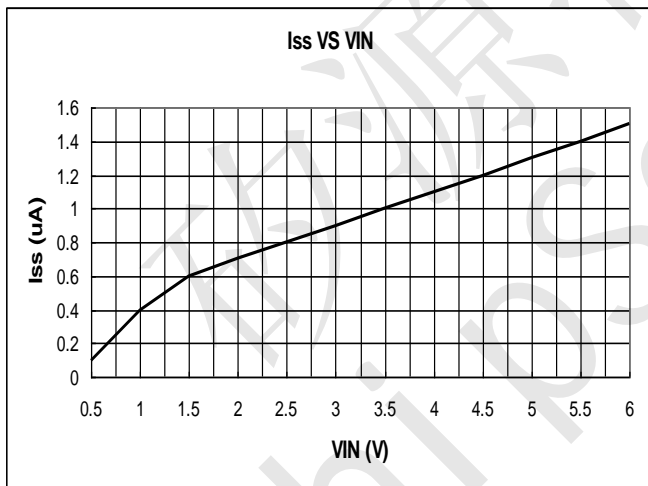


VIN=3V,-VDET=2.2V

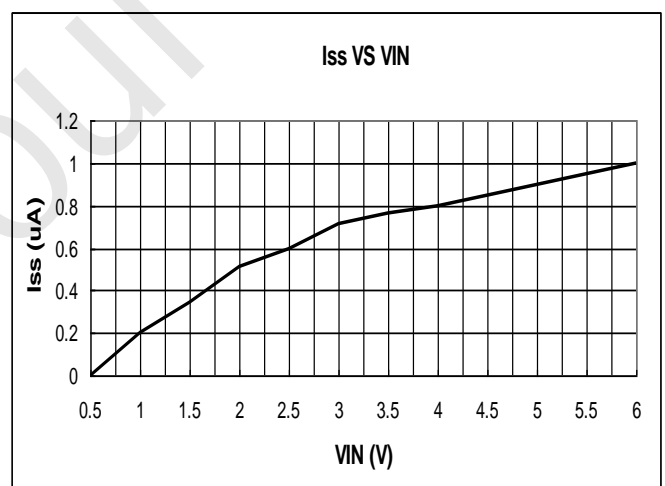


2、 SUPPLY CURRENT VS. INPUT VOLTAGE

-VDET=1.1V (T=25°C)



-VDET=2.2V (T=25°C)

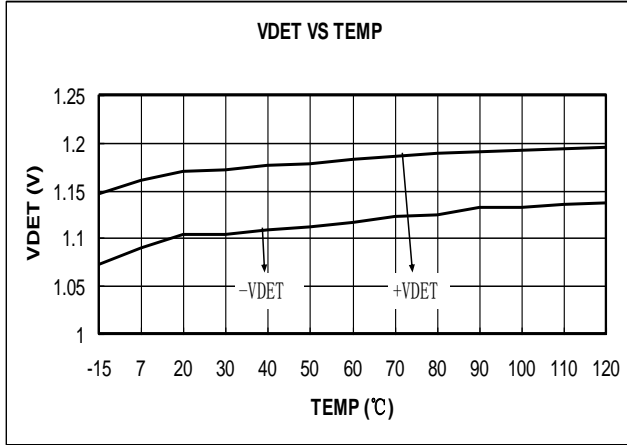




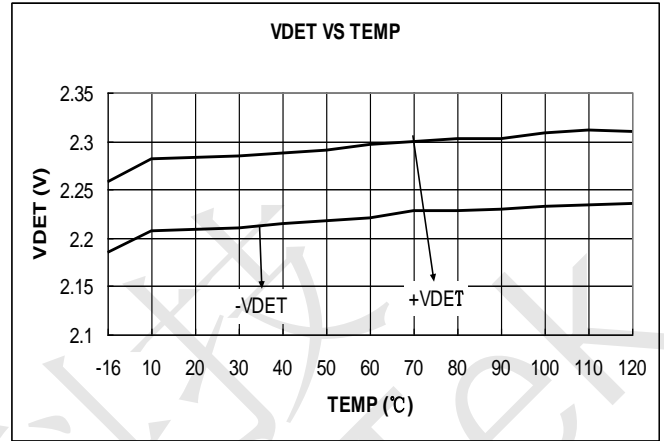
Voltage Detectors , ME2803 Series

3、DETECT,RELEASE VOLTAGE VS. AMBIENT TEMPERATURE

-VDET=1.1V

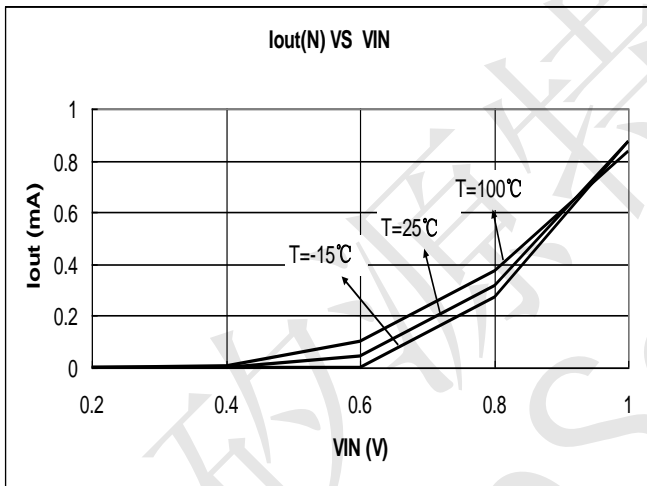


-VDET=2.2V

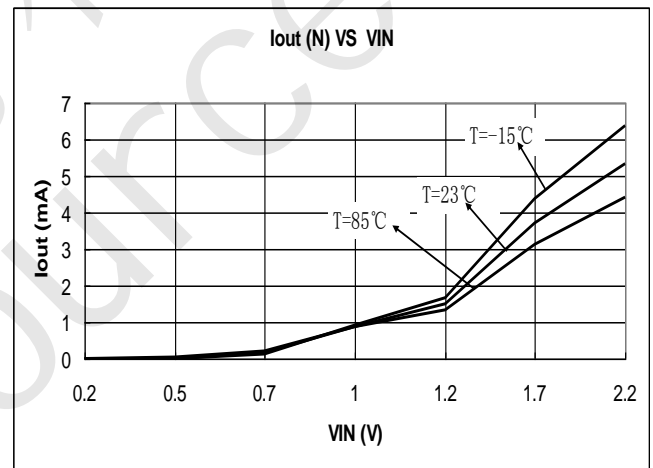


4、N-ch OUTPUT CURRENT VS. INPUT VOLTAGE

VDS=0.5V -VDET=1.1V

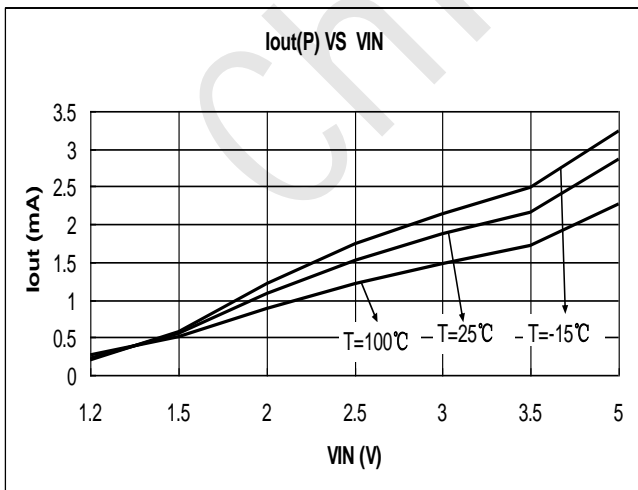


VDS=0.5V -VDET=2.2V

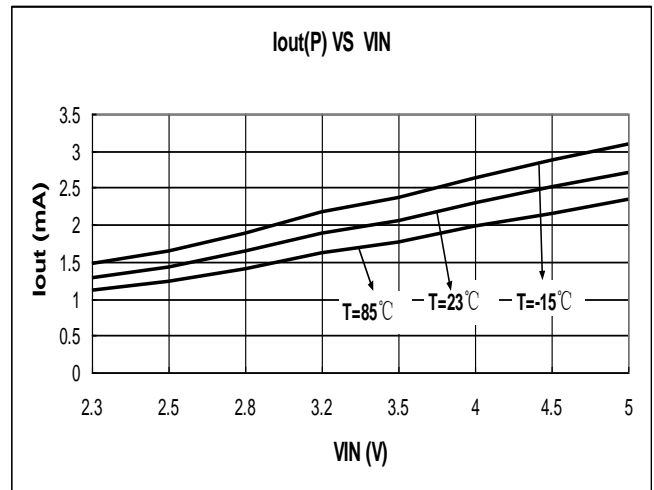


5、P-ch OUTPUT CURRENT VS. INPUT VOLTAGE

VDS=0.5V -VDET=1.1V



VDS=0.5V -VDET=2.2V

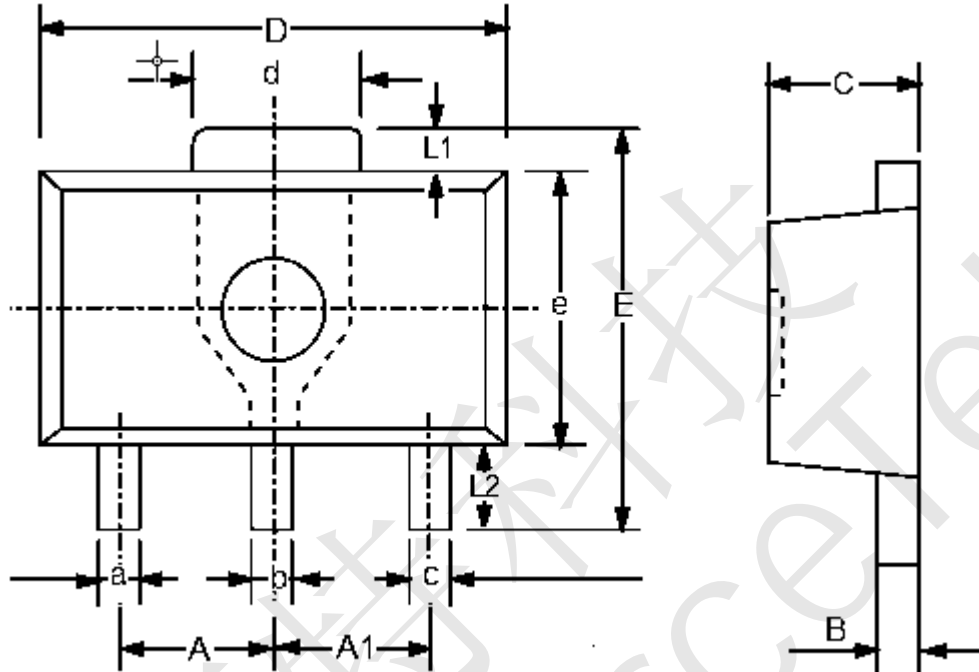




Voltage Detectors , ME2803 Series

ME2803 Package Information

·SOT-89-3

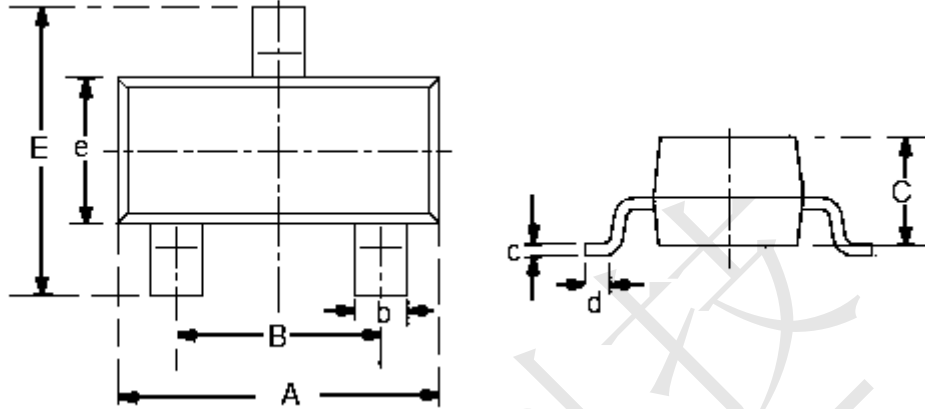


DIM	Millimeters		Inches	
	Min	Max	Min	Max
A	1.4	1.6	0.0551	0.0630
A1	1.4	1.6	0.0551	0.0630
a	0.36	0.48	0.0142	0.0189
b	0.41	0.53	0.0161	0.0209
c	0.36	0.48	0.0142	0.0189
d	1.4	1.75	0.0551	0.0689
B	0.38	0.43	0.015	0.0169
C	1.4	1.6	0.0551	0.0630
D	4.4	4.6	0.1732	0.181
E	-	4.25	-	0.1673
e	2.4	2.6	0.0945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



Voltage Detectors , ME2803 Series

• SOT-23-3

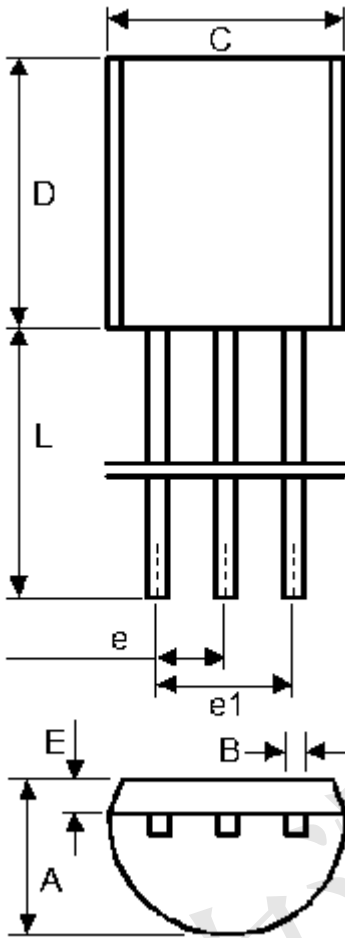


DIM	Millimeters		Inches	
	Min	Max	Min	Max
A	2.7	3.1	0.1063	0.122
B	1.7	2.1	0.0669	0.0827
b	0.35	0.5	0.0138	0.0197
C	1.0	1.2	0.0394	0.0472
c	0.1	0.25	0.0039	0.0098
d	0.2	-	0.0079	-
E	2.6	3.0	0.1023	0.1181
e	1.5	1.8	0.059	0.0708



Voltage Detectors , ME2803 Series

• TO-92



	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



Voltage Detectors , ME2803 Series

- The information described herein is subject to change without notice.
- ShenZhen ChipSourceTek Technology Co.,Ltd. is not responsible for any problems caused by circuits or diagrams described herein whose related industrial properties, patents, or other rights belong to third parties. The application circuit examples explain typical applications of the products, and do not guarantee the success of any specific mass-production design.
- Use of the information described herein for other purposes and/or reproduction or copying without the express permission of ShenZhen ChipSourceTek Technology Co.,Ltd. is strictly prohibited.
- The products described herein cannot be used as part of any device or equipment affecting the human body, such as exercise equipment, medical equipment, security systems, gas equipment, or any apparatus installed in airplanes and other vehicles, without prior written permission of ShenZhen ChipSourceTek Technology Co.,Ltd..
- Although ShenZhen ChipSourceTek Technology Co.,Ltd. exerts the greatest possible effort to ensure high quality and reliability, the failure or malfunction of semiconductor products may occur. The user of these products should therefore give thorough consideration to safety design, including redundancy, fire-prevention measures, and malfunction prevention, to prevent any accidents, fires, or community damage that may ensue.