

## Micropower Supply Voltage Supervisor (SVS)

### Features

- Precision voltage sensor
- Two threshold options: 2.93V or 4.63V
- Stable over temperature
- Valid output logic while  $V_{CC} = 0V$ .
- Power-on reset pulse width of 140ms (min.) to 460ms (max.)
- Low quiescent current (40 $\mu$ A typ.)
- No external components required
- 3-pin SOT23 package
- "809" compatible pinout
- Lead-free versions available

### Applications

- Critical  $\mu$ P and  $\mu$ C power monitoring
- PCI applications
- Memory integrity during "brownouts"

### Product Description

The CM3403 is a micropower low voltage supply supervisor designed to provide the necessary power-on reset control for microprocessors and memory applications. An internal pull-down resistor on the  $\overline{\text{RESET}}$  output ensures the output remains valid under all supply conditions.

During either a cold-start power-up or a complete power-down sequence, the  $\overline{\text{RESET}}$  output will remain at 0V while the  $V_{CC}$  input voltage is between the threshold level and ground.

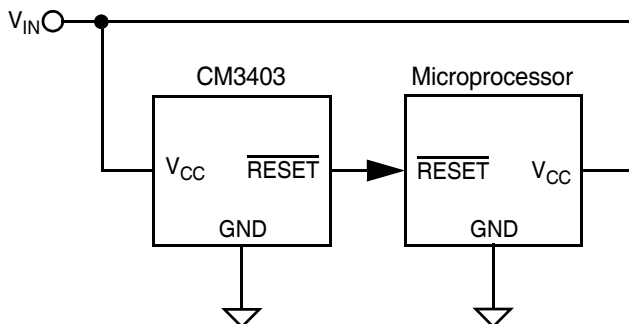
When the  $V_{CC}$  input exceeds the preset threshold voltage, an internal timer is triggered and the  $\overline{\text{RESET}}$  output remains active for a minimum of 140ms, at which point the output is taken inactive.

In the event of a "brown-out" condition and the  $V_{CC}$  voltage collapses below the threshold the  $\overline{\text{RESET}}$  output is immediately asserted.

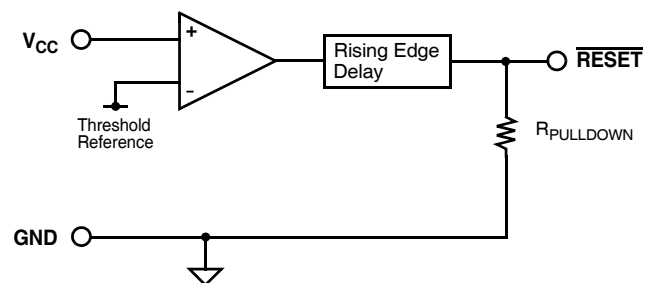
Both the trigger threshold and the precision delay pulse are internally controlled eliminating the requirement for external components.

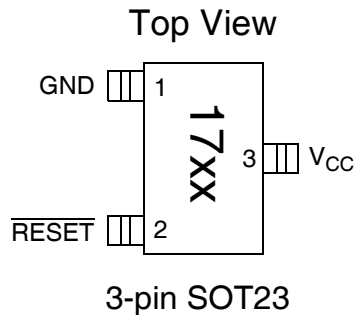
The CM3403 is housed in a 3-pin SOT23 package and is available with optional lead-free finishing.

### Typical Application Circuit



### Simplified Electrical Schematic



**PACKAGE / PINOUT DIAGRAM**


Note: This drawing is not to scale.

**PIN DESCRIPTIONS**

PIN(S)	NAME	DESCRIPTION
1	GND	Negative reference for all signals.
2	$\overline{\text{RESET}}$	Active low reset output. When the sense threshold has been exceeded, the $\overline{\text{RESET}}$ signal will remain active for an additional 140ms (min.) after which it becomes inactive. During a "brownout" condition, $\overline{\text{RESET}}$ will immediately become active. Internal circuitry ensures $\overline{\text{RESET}}$ will remain active even when the supply voltage is as low as 0V.
3	V <sub>CC</sub>	Supply input signal which is monitored by the sense comparator. This input is compared to the 2.93V (CM3403-29ST/SO) or 4.63V (CM3403-46ST/SO) reference to determine the state of the output.

**Ordering Information**
**PART NUMBERING INFORMATION**

Pins	Threshold Voltage	Package	Standard Finish		Lead-free Finish	
			Ordering Part Number <sup>1</sup>	Part Marking	Ordering Part Number <sup>1</sup>	Part Marking
3	2.93V	SOT23-3	CM3403-29ST	172Y	CM3403-29SO	172R
3	4.63V	SOT23-3	CM3403-46ST	174Y	CM3403-46SO	174R

Note 1: Parts are shipped in Tape & Reel form unless otherwise specified.

**Specifications**
**ABSOLUTE MAXIMUM RATINGS**

PARAMETER	RATING	UNITS
Pin Voltages	[GND - 0.5] to +6.5	V
$V_{CC}$	[GND - 0.5] to $[V_{CC} + 0.5]$	V
$\overline{RESET}$		
Storage Temperature Range	-40 to +150	°C
Operating Temperature Range Ambient	-40 to +125	°C

**STANDARD OPERATING CONDITIONS**

PARAMETER	VALUE	UNITS
$V_{CC}$	0 to 6.0	V
Ambient Operating Temperature Range	0 to +70	°C

**ELECTRICAL OPERATING CHARACTERISTICS (SEE NOTE 1)**

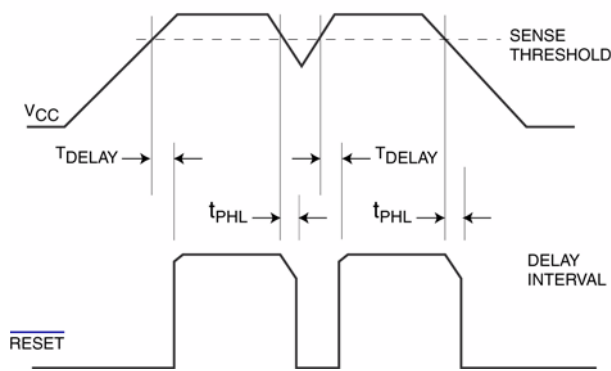
SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
$V_{TH}$	Sense Threshold	CM3403-29, $T_A=25^\circ\text{C}$	2.89	2.93	2.96	V
		CM3403-29	2.85	2.93	3.00	V
		CM3403-46, $T_A=25^\circ\text{C}$	4.56	4.63	4.7	V
		CM3403-46	4.5	4.63	4.75	V
$I_{CC}$	Supply Current	No load, $V_{CC}=5\text{V}$		40	80	$\mu\text{A}$
$T_{DELAY}$	Reset Release Delay		140		460	mS
$t_{PHL}$	Propagation Delay when asserting $\overline{RESET}$	$V_{CC} < (V_{TH} - 50\text{mV})$		0.2	5	$\mu\text{S}$
$R_{PULLDOWN}$	$\overline{RESET}$ Pull-Down Resistance	$V_{CC} > 1.5\text{V}$		0.5	3	$\text{k}\Omega$
$R_{PULLUP}$	$\overline{RESET}$ Pull-Up Resistance	$V_{CC} > V_{TH}$ and $t > T_{DELAY}$		0.5	3	$\text{k}\Omega$

Note 1: Electrical Operating Characteristics are specified over the Standard Operating Conditions unless specified otherwise.

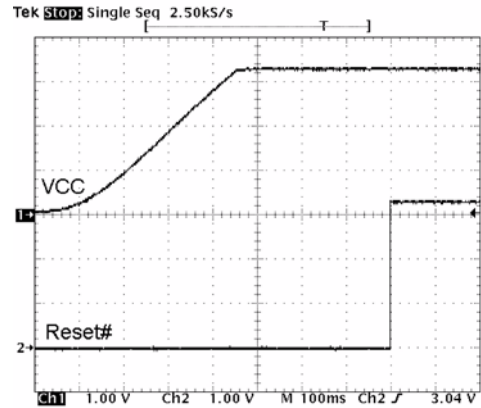
**Performance Information**

CM3403 Typical Characteristics (nominal conditions unless specified otherwise)

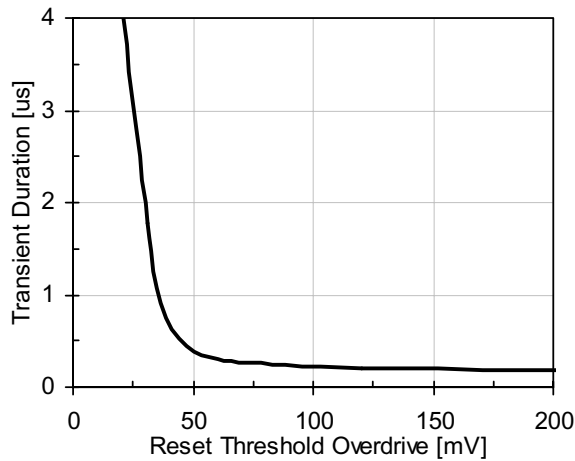
**Transient Operation Description**



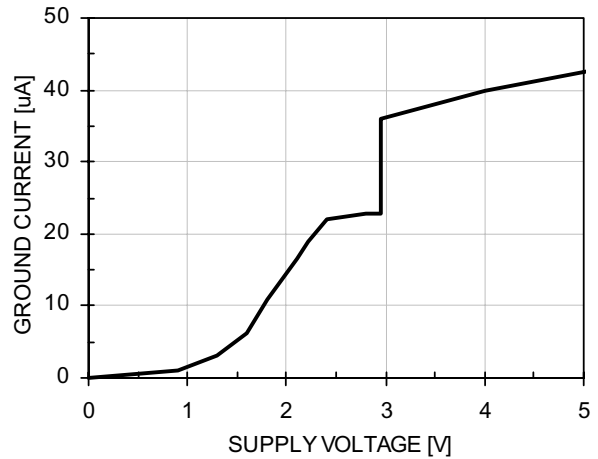
**Power-up Reset Response**



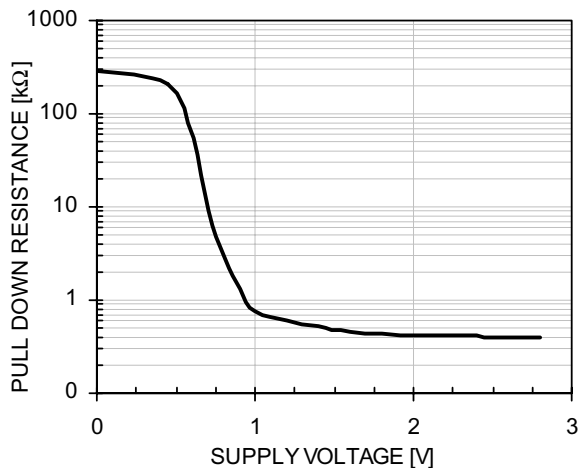
**Reset Response with Overdrive**



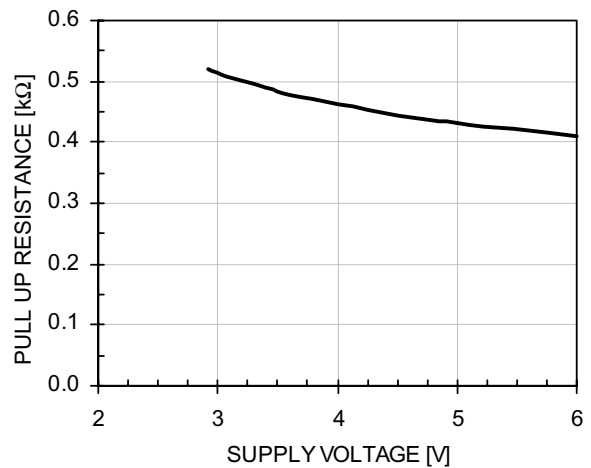
**Ground Current vs. Voltage**



**Below Trigger RESET\* Pull-down**



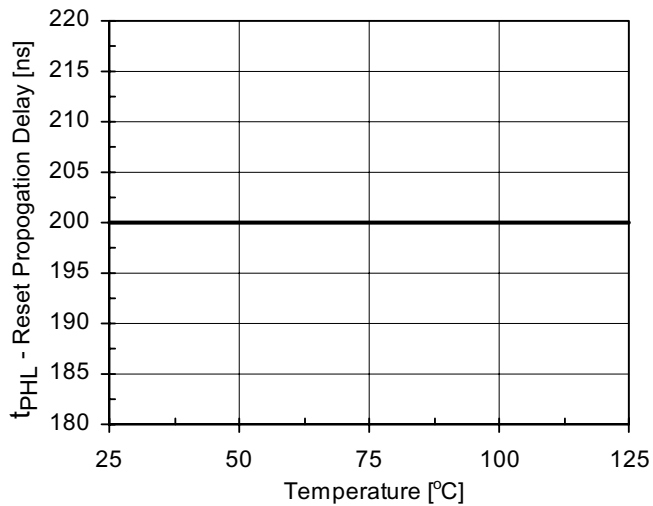
**Above Trigger RESET\* Pull-up**



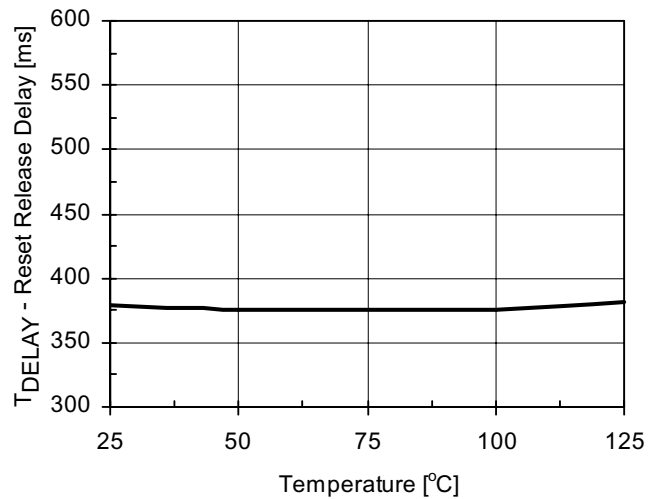
## Performance Information (cont'd)

CM3403 Typical Thermal Characteristics (nominal conditions unless specified otherwise)

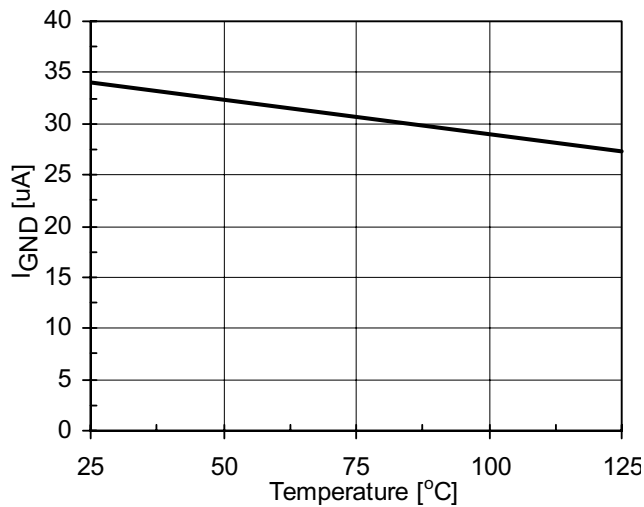
**RESET Propagation Delay vs. Temperature**



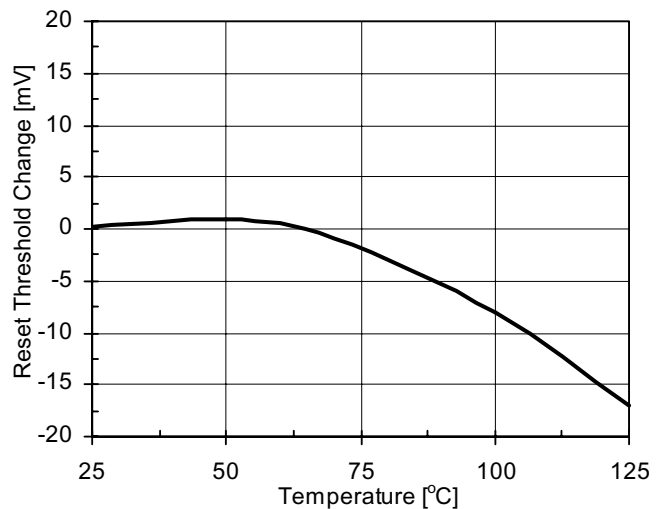
**RESET Release Delay vs. Temperature**



**Ground Current vs. Temperature**



**Threshold variation vs. Temperature**



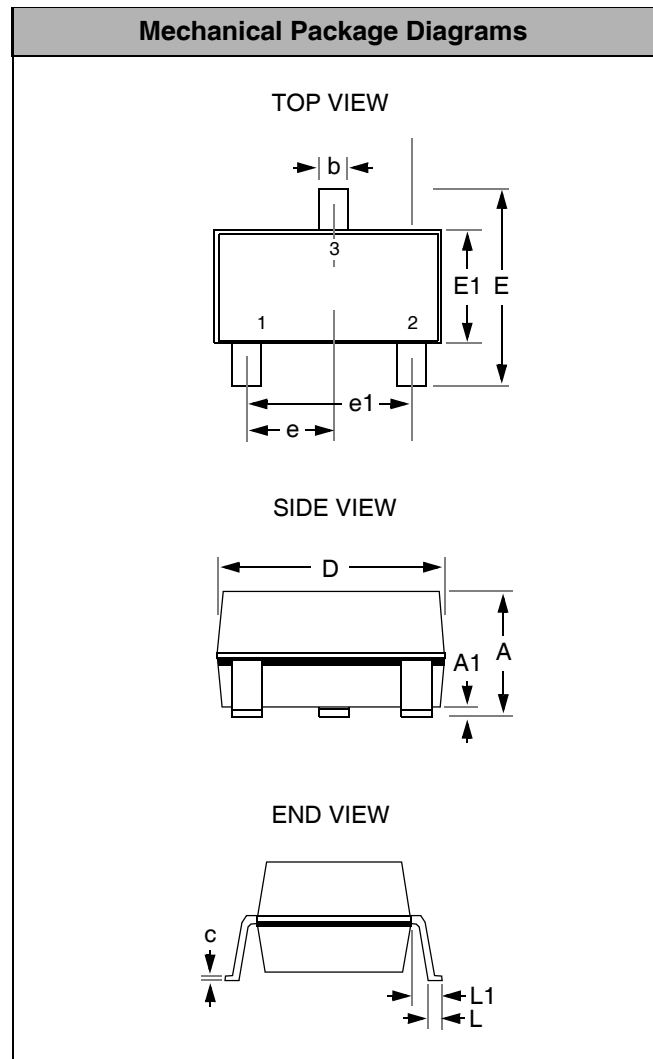
## Mechanical Details

### SOT23-3 Mechanical Specifications

Dimensions for CM3403 devices packaged in 3-lead SOT23 packages are presented below.

For complete information on the SOT23-3 package, see the California Micro Devices SOT23 Package Information document.

PACKAGE DIMENSIONS				
Package	SOT23-3			
JEDEC No.	TO-236 (Var. AB)			
Pins/Leads	3			
Dimensions	Millimeters		Inches	
	Min	Max	Min	Max
A	0.89	1.12	0.0350	0.0441
A1	0.01	0.10	0.0004	0.0039
b	0.30	0.50	0.0118	0.0197
c	0.08	0.20	0.0031	0.0079
D	2.80	3.04	0.1102	0.1197
E	2.10	2.64	0.0827	0.1039
E1	1.20	1.40	0.0472	0.0551
e	0.95 BSC		0.0374 BSC	
e1	1.90 BSC		0.0748 BSC	
L	0.40	0.60	0.0157	0.0236
L1	0.54 REF		0.0213 REF	
# per tape and reel	3000 pieces			
Controlling dimension: millimeters				



**Package Dimensions for SOT23-3.**