TAIWAN SEMICONDUCTOR

RoHS COMPLIANCE

TS803

Microprocessor Reset Circuit

SOT-23



Pin Definition:

TS803	TS803R
1. Ground	1. Reset
2. Reset	2. Ground
3. Vcc	3. Vcc

General Description

The TS803/TS803R are microprocessor (μP) supervisory circuit used to monitor the power supplies in μP and digital systems. They provide excellent circuit reliability and low cost by eliminating external components and adjustments when used with +5V, +3.3V, +3.0V powered circuits. These circuits perform a single function: they assert a reset signal whenever the VCC supply voltage declines below a preset threshold, keeping it asserted for at least 140ms after VCC has risen above the reset threshold. Reset thresholds suitable for operation with a variety of supply voltages are available. The TS803/TS803R are open –drain outputs. The TS803/TS803R have an active low RESET output, while the TS803/TS803R has an active high RESET output. The reset comparator is designed to ignore fast transients on VCC, and the output guaranteed to be in the correct logic state for VCC down to 1V. Low supply correct makes the TS803/TS803R ideal for use in portable equipment.

Features

- Precision monitoring of +3V, +3.3V & +5V power supply voltage
- Fully specified over temperature
- Available in three output configurations
- Open-Drain RESET low output
- 3uA supply current
- Guaranteed reset valid to Vcc = +1V
- Power supply transient immunity
- No external components

Applications

- Computers
- Controllers
- Intelligent Instruments
- Critical uP and uC power monitoring
- Portable / Battery Power Equipment
- Automotive

Ordering Information

Part No.	Package	Packing
TS803CX**x** RF	SOT-23	3Kpcs / 7” Reel
TS803RCX**x** RF	SOT-23	3Kpcs / 7” Reel

Note: **x** is the threshold voltage type, option as

TS803 Threshold Voltage

A : 4.63V **B** : 4.38V **C** : 4.00V **D** : 3.08V
E : 2.93V **F** : 2.63V **G** : 2.32V **H** : 2.1V
I : 2.0V **J** : 1.8V **K** :1.6V

TS803R Threshold Voltage

B : 4.20V **E** : 2.93V **F** : 2.70V

Contact factory for additional voltage options.

Absolute Maximum Rating

Parameter	Symbol	Value	Unit
Supply Voltage	V_{CC}	7	V
RESET & (RESET) Open Drain	V_{RESET}	- 0.3 ~ (V_{CC} +0.3)	V
Input Current, V_{CC}	I_{CC}	20	mA
Output Current, RESET	I_O	20	mA
Rate of Rise, V_{CC}	V_R	100	V/uS
ESD Classification		B	

Note: Stress above the listed absolute maximum rating may cause permanent damage to the device
HBM B: 2000V~3999V

Recommended Operating Conditions

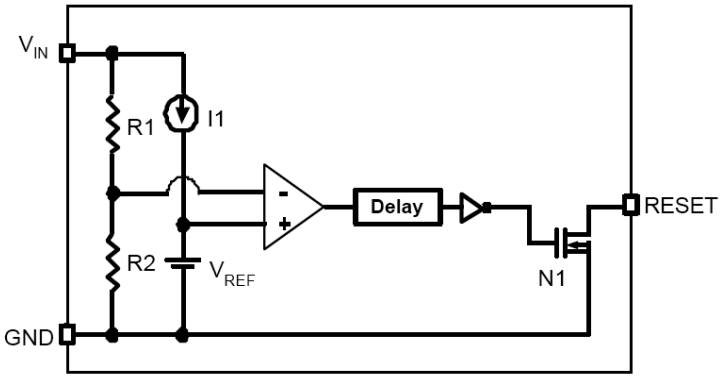
Parameter	Symbol	Value	Unit
Supply Voltage	V_{CC}	<5	V
Operating Ambient Temperature Range	T_A	-40 ~ +85	°C
Operating Junction Temperature Range	T_J	-40 ~ +125	°C
Storage Temperature Range	T_{STG}	-65 ~ +150	°C
Thermal Resistance	Θjc	325	°C/W
Power Dissipation	P_D	350	mW
Lead Soldering Temperature (260°C)	T_{LEAD}	10	S

Electrical Characteristics Ta=25°C, unless otherwise specified.

Parameter	Conditions	Symbol	Min	Typ	Max	Unit
Input Supply Voltage	Ta=-40°C~+85°C	V_{CC}	1.0	--	5.5	V
Supply Current	$V_{CC} \le V_{TH}$ * 1.1	I_{CC}	--	--	3	uA
	V_{IN} = 3V, Ta=-40°C~+85°C		--	--	5	
Reset Threshold		V_{TH}	0.985 $\lvert V_{TH}\rvert$	--	1.015 $\lvert V_{TH}\rvert$	V
Reset Threshold (Full temperature range)		V_{TH}	0.97 $\lvert V_{TH}\rvert$	--	1.02 $\lvert V_{TH}\rvert$	V
Reset Threshold Temperature Coefficient		V_{TH}	3-0	50	160	ppm/°C
V_{CC} to Reset Delay	V_{CC} = V_{TH} to (V_{TH} - 100mV)	T_{DELAY}	--	40	--	uS
Reset Active Timeout Period	Ta=-40°C~+85°C		0.5	1.5	5	mS
RESET Output Voltage Low	$V_{CC} < V_{TH(MIN)}$, I_{SINK} =1.2mA,	V_{OL}	--	--	0.5	V
RESET Output Voltage High	$V_{CC} > V_{TH(MAX)}$, I_{SOURCE} =500uA V_{CC} > 1.8V	V_{OH}	0.8 V_{CC}	--	--	V
	$V_{CC} > V_{TH(MAX)}$, I_{SOURCE} =150uA, 1.8V >= V_{CC} > 1V					

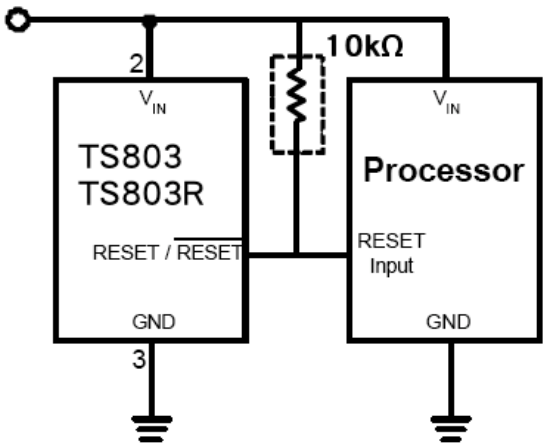
Note 1: The data based on V_{TH} = 2.7V part type.
Note 2: Guaranteed by Design

Function Block

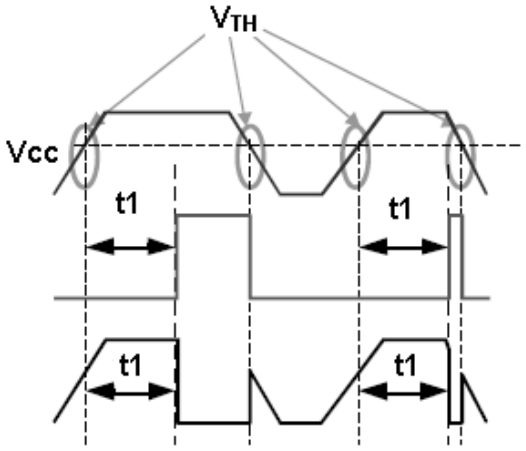


Function Description

Typical Application Circuit



Timing Diagram



Electrical Characteristics Curve

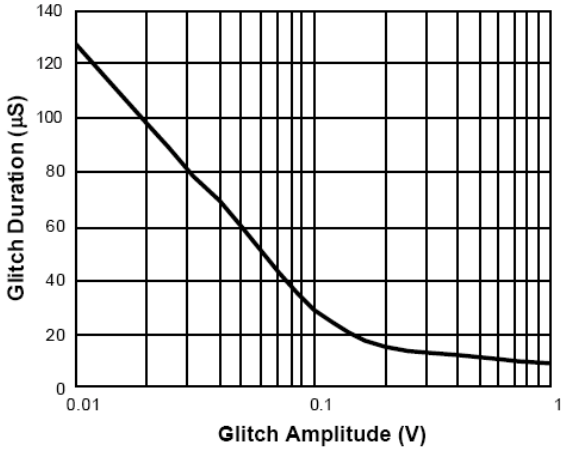


Figure 1. Glitch Rejection

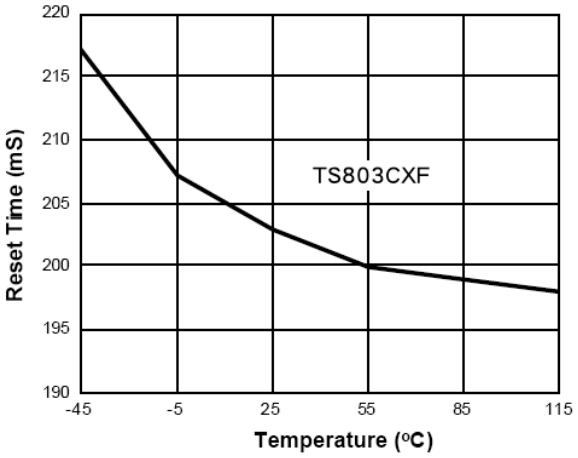


Figure 2. Reset Time vs. Temperature

Electrical Characteristics Curve (Continue)

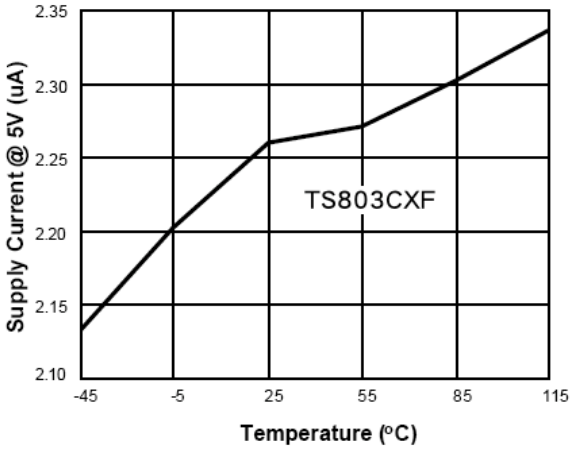


Figure 3. Iin vs. Temperature

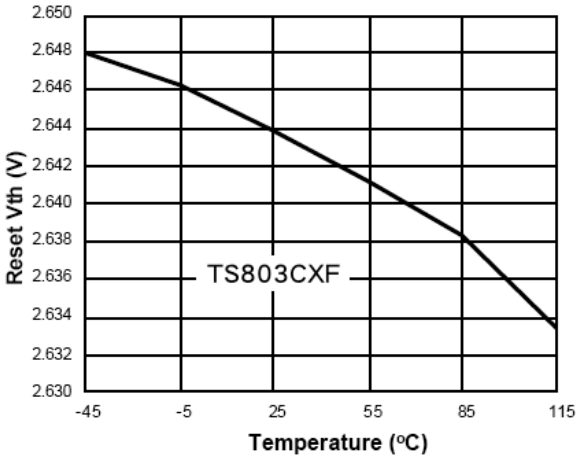


Figure 4. Reset Vth vs. Temperature

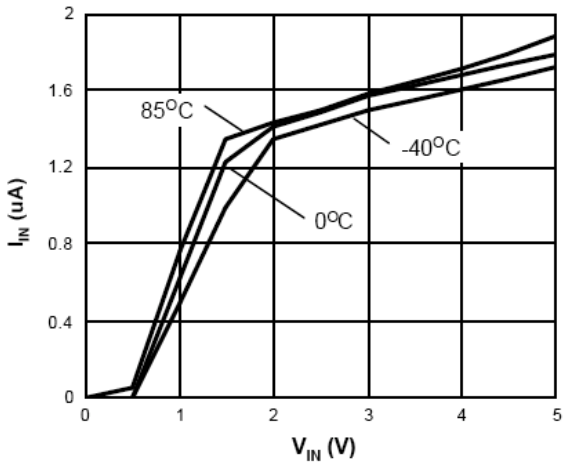


Figure 5. Iin vs. Vin

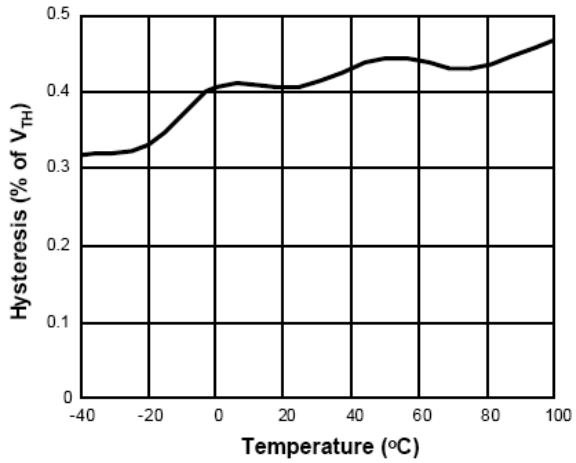


Figure 6. Threshold Hysteresis vs. Temperature

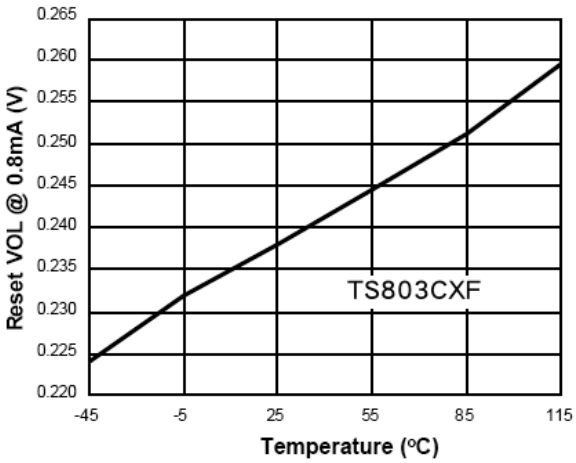
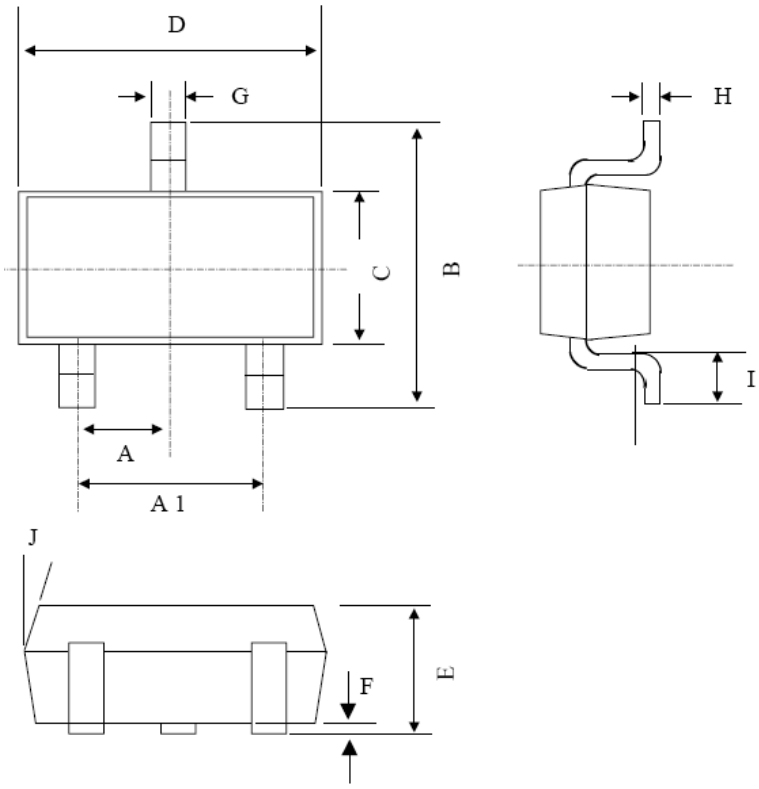


Figure 7. Reset VOL vs. Temperature

SOT-23 Mechanical Drawing



SOT-23 DIMENSION				
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX.
A	0.95 BSC		0.037 BSC	
A1	1.9 BSC		0.074 BSC	
B	2.60	3.00	0.102	0.118
C	1.40	1.70	0.055	0.067
D	2.80	3.10	0.110	0.122
E	1.00	1.30	0.039	0.051
F	0.00	0.10	0.000	0.004
G	0.35	0.50	0.014	0.020
H	0.10	0.20	0.004	0.008
I	0.30	0.60	0.012	0.024
J	5°	10°	5°	10°

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