

3-Pin, Low-Power, μ P Reset Circuits

FEATRES

- Tight Reset Voltage Tolerances $\pm 1.5\%$
- Low Supply CRrent: $< 3 \mu\text{A}$
- Precision Monitoring of 1.6 V and 2.5 V Power Supply Voltages
- Other Threshold Voltage Options Available From 1.5 V to 2.5 V In Approximately 100-mV Increments
- Three Reset Active Time-out Period Options: Typical 1.5 mS, 30 mS, 150 m
- $\overline{\text{RESET}}$ Output Guaranteed Down to 1.0 V
- V_{CC} Transient Immunity
- No External Components

APPLICATIONS

- Computers
- Critical $\mu\text{P}/\mu\text{C}$ Power Monitoring
- Battery Powered Equipment
- Automotive Electronics

DESCRIPTION

The SiP6332/SiP6333 are system supervisor circuits designed to monitor V_{CC} in digital systems and provide a reset signal to the host processor when necessary. No external components are required.

When the processor power supply voltage drops below the reset threshold, the reset output is driven active, in less than $40 \mu\text{s}$ (T_{D1}). Reset is maintained active for a time period (T_{D2}), after the V_{CC} rises above the threshold voltage.

To prevent jitter, the reset threshold voltage has a built-in hysteresis of 0.4% of V_{TH} .

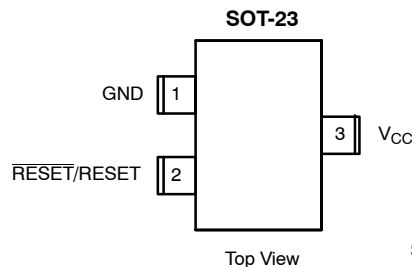
The SiP6333 has an active-low $\overline{\text{RESET}}$ output, while the SiP6332 has an active-high reset output. Both devices have push/pull output drives.

The reset signal is guaranteed valid, down to $V_{\text{CC}} = 1.0 \text{ V}$.

Low supply cRrent of $3 \mu\text{A}$ makes these devices well suited for battery powered applications. They are designed to reject fast transients from causing false resets.

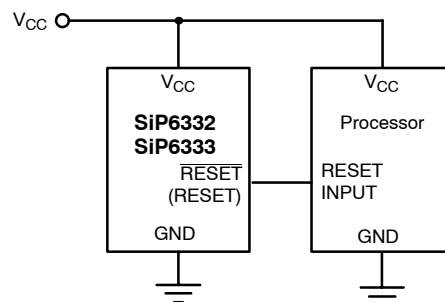
Both devices are available in a space-saving SOT-23 package.

PACKAGING AND PIN DEFINITION

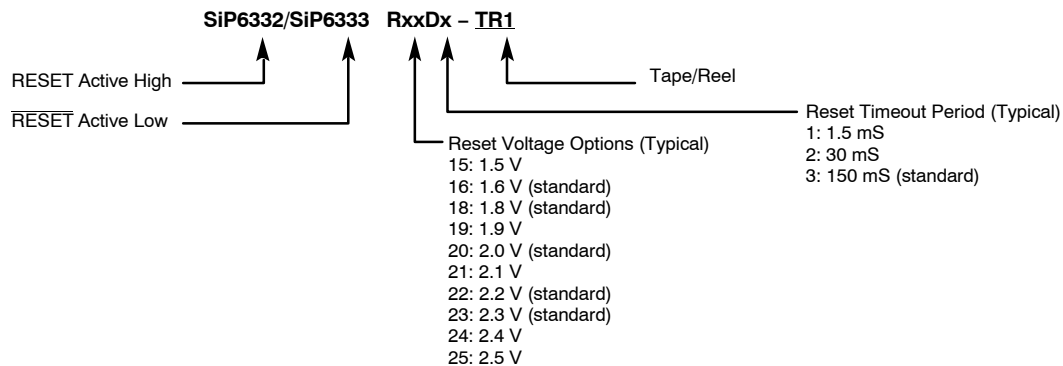


See page 2 for ordering and marking information.

TYPICAL APPLICATION CIRCUIT



ORDERING INFORMATION



Sample stock is generally available on standard parts. Contact oR local sales office for availability of non standard versions (minimum order quantity is 10,000 pcs).

MARKING CODES			
SiP6332		SiP6333	
Part Number	Marking	Part Number	Marking
SiP6332R15D1	BNxxx	SiP6333R15D1	ADxxx
SiP6332R15D2	BOxxx	SiP6333R15D2	AExxx
SiP6332R15D3	BPxxx	SiP6333R15D3	AGxxx
SiP6332R16D1	BRxxx	SiP6333R16D1	AHxxx
SiP6332R16D2	BSxxx	SiP6333R16D2	Alxxx
SiP6332R16D3	BTxxx	SiP6333R16D3	AKxxx
SiP6332R18D1	BVxxx	SiP6333R18D1	ALxxx
SiP6332R18D2	VWxxx	SiP6333R18D2	AMxxx
SiP6332R18D3	BXxxx	SiP6333R18D3	ANxxx
SiP6332R19D1	BYxxx	SiP6333R19D1	AOxxx
SiP6332R19D2	BZxxx	SiP6333R19D2	APxxx
SiP6332R19D3	CAxxx	SiP6333R19D3	ARxxx
SiP6332R20D1	CBxxx	SiP6333R20D1	ASxxx
SiP6332R20D2	CCxxx	SiP6333R20D2	ATxxx
SiP6332R20D3	CDxxx	SiP6333R20D3	AVxxx
SiP6332R21D1	CExxx	SiP6333R21D1	AWxxx
SiP6332R21D2	CGxxx	SiP6333R21D2	AXxxx
SiP6332R21D3	CHxxx	SiP6333R21D3	AYxxx
SiP6332R22D1	Clxxx	SiP6333R22D1	AZxxx
SiP6332R22D2	CKxxx	SiP6333R22D2	BAxxx
SiP6332R22D3	CLxxx	SiP6333R22D3	BBxxx
SiP6332R23D1	CMxxx	SiP6333R23D1	BCxxx
SiP6332R23D2	CNxxx	SiP6333R23D2	BDxxx
SiP6332R23D3	COxxx	SiP6333R23D3	BExxx
SiP6332R24D1	CPxxx	SiP6333R24D1	BGxxx
SiP6332R24D2	CRxxx	SiP6333R24D2	BHxxx
SiP6332R24D3	CSxxx	SiP6333R24D3	Blxxx
SiP6332R25D1	CTxxx	SiP6333R25D1	BKxxx
SiP6332R25D2	CVxxx	SiP6333R25D2	BLxxx
SiP6332R25D3	CWxxx	SiP6333R25D3	BMxxx



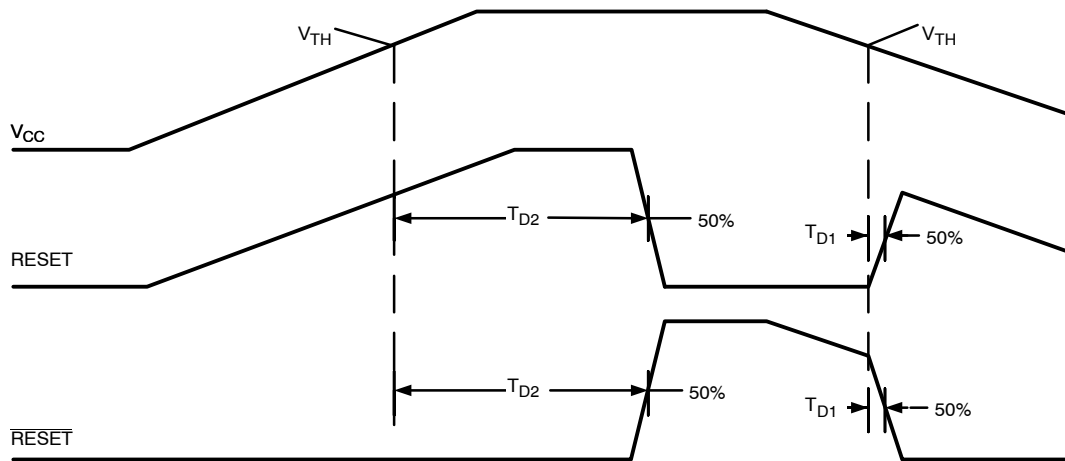
ABSOLUTE MAXIMUM RATINGS (T _A = 25°C UNLESS OTHERWISE NOTED)			
Parameter	Symbol	Limit	Unit
Supply Voltage	V _{CC}	6.0	V
RESET/ $\overline{\text{RESET}}$		-0.3 to (V _{CC} + 0.3)	
Input CRrent, V _{CC}	I _{CC}	20	mA
Output CRrent, RESET/ $\overline{\text{RESET}}$		20	
dv/dt (V _{CC})		100	V/ μ S
Operating TemperatRe Range	T _A	-40 to 125	°C
Storage TemperatRe Range	T _{stg}	-65 to 150	
Power Dissipation (T _A \leq 70°C) SOT-23 (Derate 4 mW/°C above 70°C)	P _D	260	mW

SPECIFICATIONS							
Parameter	Symbol	Test Conditions Unless Specified T _A = -40°C to 125°C	Limits			Unit	
			Min ^a	Typ ^b	Max ^a		
V _{CC} Range	V _{RANGE}	T _A = 25°C	1		5.5	V	
		T _A = -40°C to 85°C	1		5.5		
			1.2		5.5		
Supply CRrent (No Load)	I _{CC}	V _{CC} = 3.0 V			7.0	μ A	
		V _{CC} = 3.0 V, T _A = 25°C			3.0		
Reset Threshold	V _{TH}	T _A = 25°C	V _{TH} -1.5%	V _{TH}	V _{TH} +1.5%	V	
		T _A = -40°C to 125°C	V _{TH} -3%	V _{TH}	V _{TH} +3%		
Threshold Hysteresis	V _{TH(hys)}			0.7		%V _{TH}	
Reset Output Voltage Low	V _{OL}	SiP6332—V _{CC} > V _{TH} SiP6333—V _{CC} < V _{TH}	I _{SINK} = 50 μ A V _{CC} \geq 1.0 V			0.4	V
			I _{SINK} = 500 μ A V _{CC} \geq 1.8 V				
Reset Output Voltage High	V _{OH}	SiP6332—V _{CC} < V _{TH} SiP6333—V _{CC} > V _{TH}	I _{SORCE} = 200 μ A V _{CC} \geq 1.8 V	0.8 V _{CC}			V
			I _{SORCE} = 500 μ A V _{CC} \geq 2.7 V	0.8 V _{CC}			
V _{CC} to Reset Delay	T _{D1}	V _{CC} = V _{TH} - 100 mV		40		μ S	
Reset Timeout Period	T _{D2}	SiP633xR	D1	0.5	1.5	5	mS
			D2	15	30	50	
			D3	80	150	230	

Notes

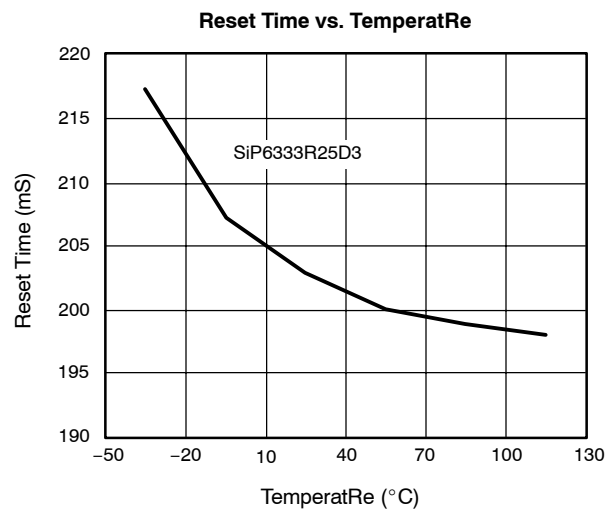
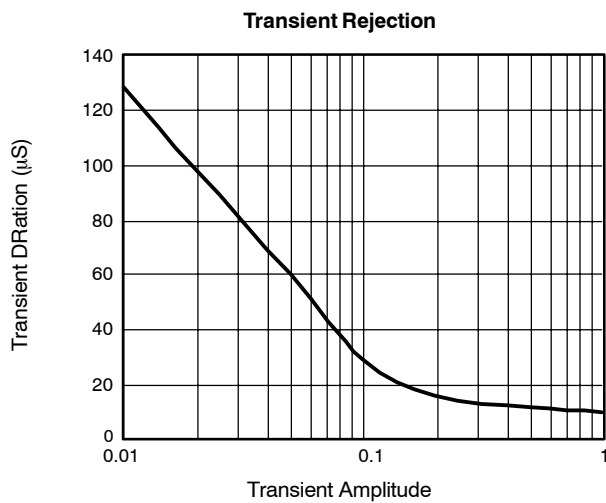
- a. The algebraic convention whereby the most negative value is a minimum and the most positive a maximum, is used in this data sheet.
- b. T_A = 25°C. Typical values are for DESIGN AID ONLY, not guaranteed or subject to production testing.

TYPICAL CHARACTERISTICS (T_A = 25°C Unless Otherwise Noted)



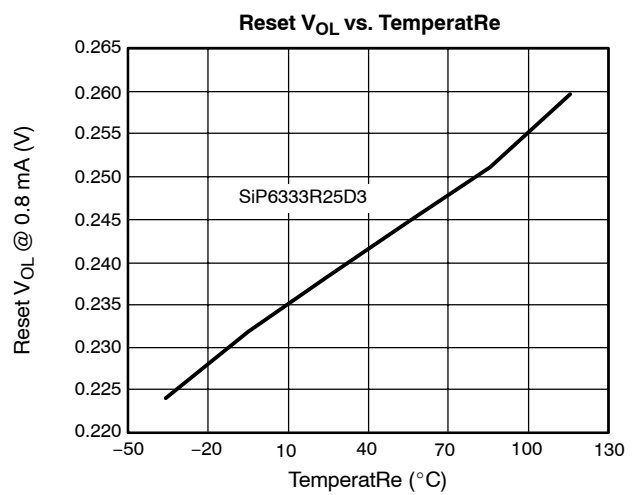
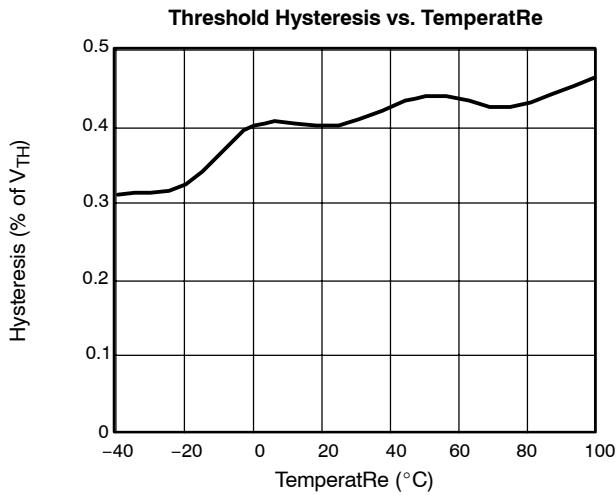
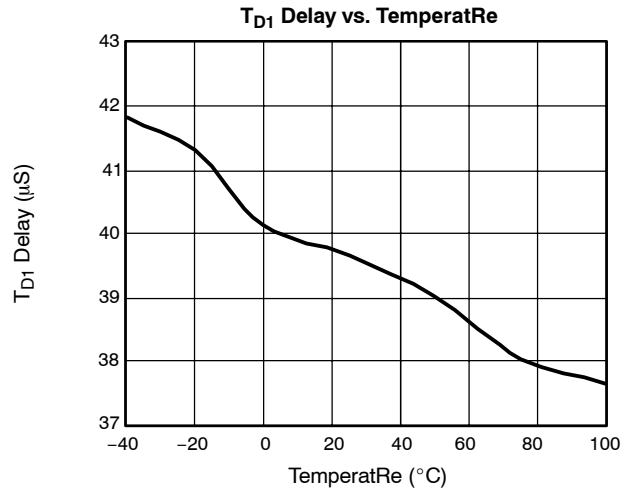
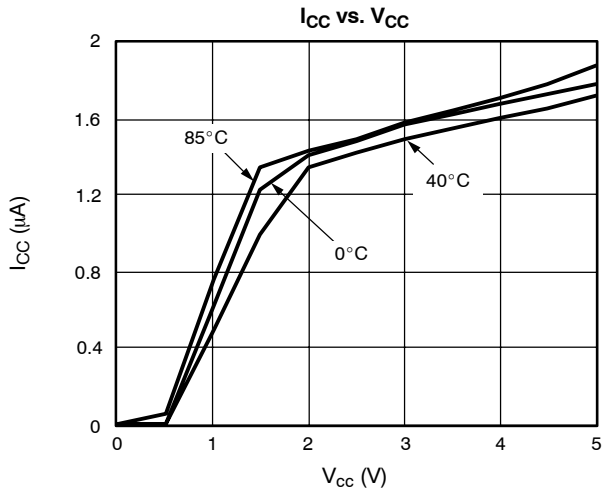
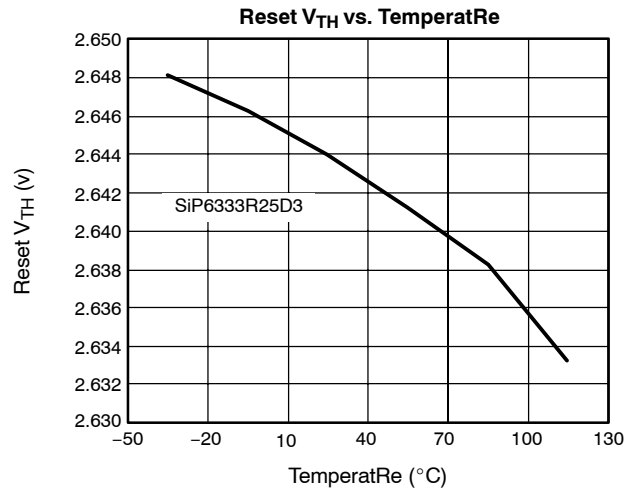
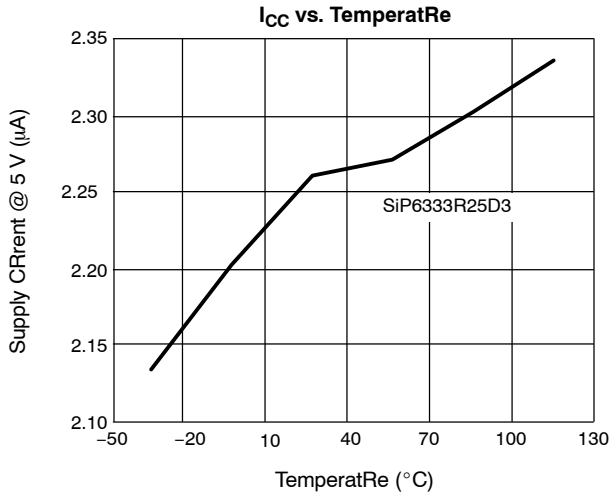
These devices have a certain immunity to fast negative going transients. The graph titled "Transient Rejection" shows the maximum allowable transient amplitude and dRation to avoid

triggering an unintended reset. As shown in the graph shorter transients can have larger amplitudes without triggering resets.





TYPICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ Unless Otherwise Noted)





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