

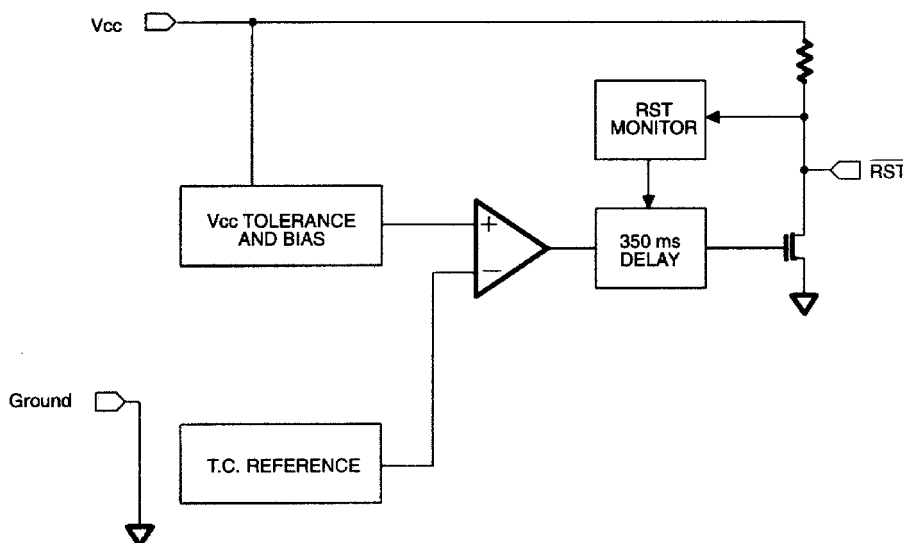
## OPERATION — PUSHBUTTON RESET

The DS1233 provides for a pushbutton switch to be connected to the  $\overline{\text{RST}}$  output pin. When the DS1233 is not in a reset cycle, it continuously monitors the  $\overline{\text{RST}}$  signal for a low going edge. If an edge is detected, the DS1233 will debounce the switch by pulling the  $\overline{\text{RST}}$  line low. After the internal timer has expired, the DS1233 will continue to monitor the  $\overline{\text{RST}}$  line. If the line is still low, the DS1233 will continue to monitor the line looking for a rising edge. Upon detecting a release, the DS1233 will force the  $\overline{\text{RST}}$  line low and hold it low for 350ms.

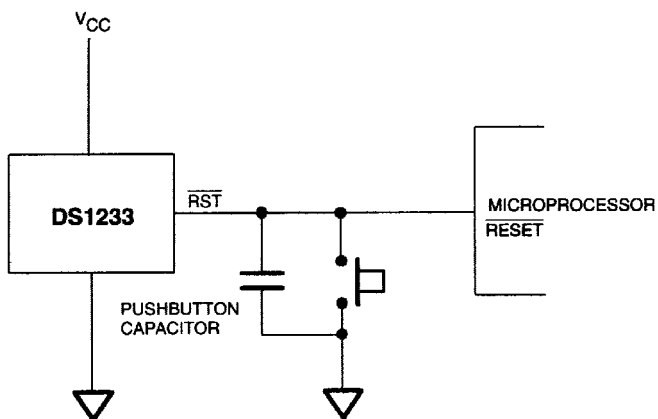
### NOTE:

For proper operation with an external pushbutton, a capacitor between 100pF and 0.01 $\mu$ F must be connected between  $\overline{\text{RST}}$  and ground. In applications where additional reset current is required, a minimum capacitance of 500pF should be used, along with a parallel external pull-up resistor of 1k $\Omega$  minimum.

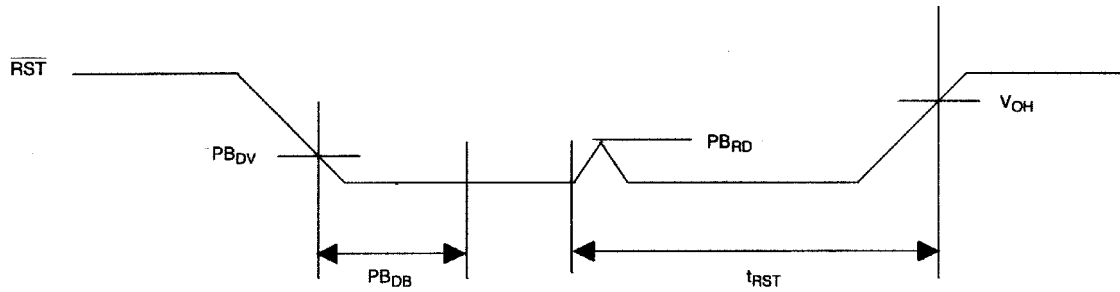
### BLOCK DIAGRAM Figure 1



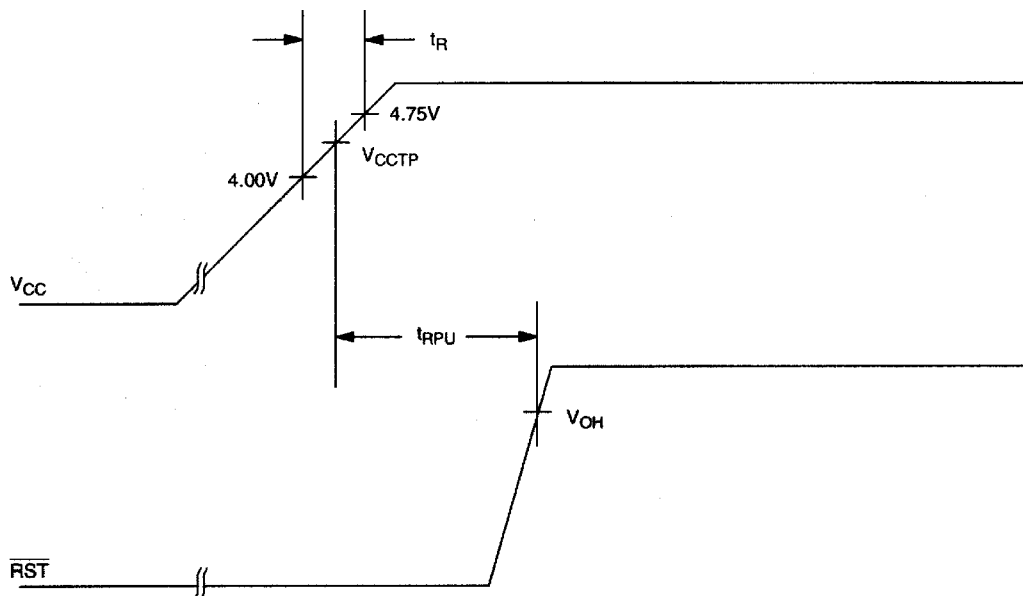
### APPLICATION EXAMPLE Figure 2



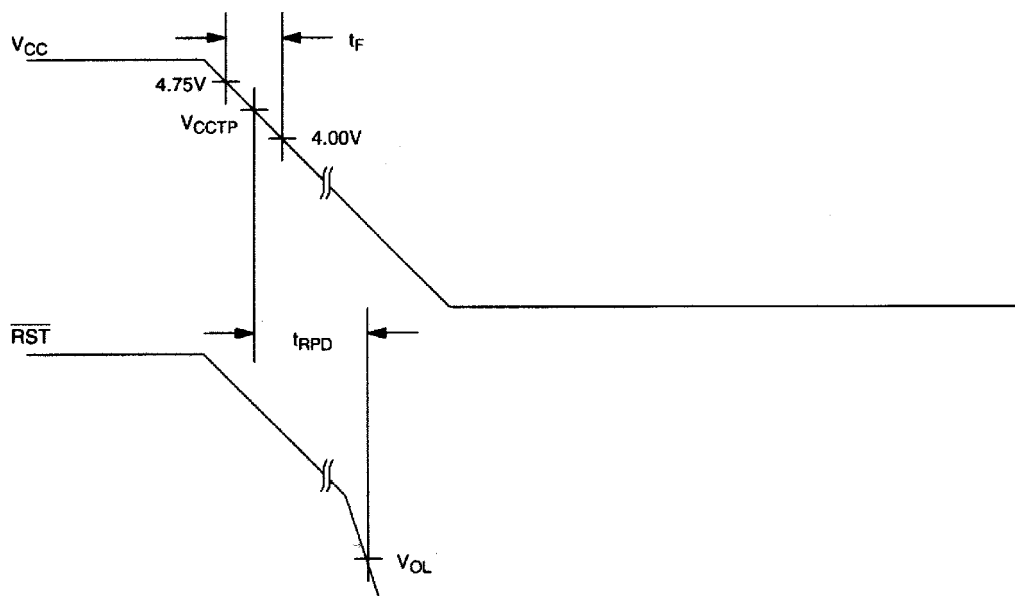
## PUSHBUTTON RESET Figure 3



## POWER UP Figure 4



## POWER DOWN Figure 5



**ABSOLUTE MAXIMUM RATINGS\***

Voltage on V <sub>CC</sub> Pin Relative to Ground	-0.5V to +7.0V
Voltage on I/O Relative to Ground	-0.5V to V <sub>CC</sub> +0.5V
Operating Temperature Range	-40°C to +85°C
Storage Temperature Range	-55°C to +125°C
Soldering Temperature	260°C for 10 seconds

\* This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operation sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods of time may affect reliability.

**RECOMMENDED DC OPERATING CONDITIONS** (-40°C to +85°C)

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	NOTES
Supply Voltage	V <sub>CC</sub>	1.2	5.0	5.5	V	1

**DC ELECTRICAL CHARACTERISTICS** (-40°C to +85°C; V<sub>DD</sub> = 5V ± 10%)

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	NOTES
Low Level @ $\overline{\text{RST}}$	V <sub>OL</sub>			0.4	V	1
Output Current @ 0.4V	I <sub>OL</sub>	+8			mA	
Operating Current	I <sub>CC</sub>			50	μA	
V <sub>CC</sub> Trip Point 5%	V <sub>CC</sub> TP0	4.50	4.625	4.75	V	1
V <sub>CC</sub> Trip Point 10%	V <sub>CC</sub> TP1	4.25	4.375	4.49	V	1
V <sub>CC</sub> Trip Point 15%	V <sub>CC</sub> TP2	4.0	4.125	4.24	V	1
Output Capacitance	C <sub>OUT</sub>			10	pF	
Pushbutton Detect	PB <sub>DV</sub>	1.8		3.3	V	1
Pushbutton Release	PB <sub>RD</sub>		0.3	0.8	V	1, 2
Internal Pull-Up Resistor	R <sub>P</sub>	3.75	5	6.25	kΩ	

**AC ELECTRICAL CHARACTERISTICS** (-40°C to +85°C; V<sub>CC</sub> = 5V ± 10%)

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	NOTES
RESET Active Time	t <sub>RST</sub>	250	350	450	ms	
V <sub>CC</sub> Detect to $\overline{\text{RST}}$	t <sub>RPD</sub>			100	ns	
V <sub>CC</sub> Slew Rate (4.75V - 4.00V)	t <sub>F</sub>	300			μs	
V <sub>CC</sub> Slew Rate (4.00V - 4.75V)	t <sub>R</sub>	0			ns	
Pushbutton Debounce	PB <sub>DB</sub>	250	350	450	ms	
V <sub>CC</sub> Detect to RST	t <sub>RPU</sub>	250	350	450	ms	

**NOTES:**

- 1) All voltages are referenced to ground.
- 2) With a 100pF to 0.01μF capacitor connected from  $\overline{\text{RST}}$  to ground.

**ECONORESET SELECTION GUIDE**

		<b>V<sub>CC</sub> TRIP POINT</b>			<b>PUSHBUTTON DETECT</b>		
		<b>MIN</b>	<b>TYP</b>	<b>MAX</b>	<b>MIN</b>	<b>TYP</b>	<b>MAX</b>
<b>5V</b>	DS1233-15	4.0	4.125	4.24	1.8	-	3.3
	DS1233-10	4.25	4.375	4.49	1.8	-	3.3
	DS1233-5	4.5	4.625	4.75	1.8	-	3.3
	DS1233D-15	4.0	4.125	4.24	N/A		N/A
	DS1233D-10	4.25	4.375	4.49	N/A		N/A
	DS1233D-5	4.5	4.625	4.75	N/A		N/A
	DS1833-15	4.0	4.125	4.24	N/A		N/A
	DS1833-10	4.25	4.375	4.49	N/A		N/A
	DS1833-5	4.5	4.625	4.75	N/A		N/A
<b>3.3V</b>	DS1233A-15	2.64	2.72	2.80	0.8	-	2.0
	DS1233A-10	2.8	2.88	2.97	0.8	-	2.0

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