Advanced Monolithic Systems

AMS26

VOLTAGE DETECTOR

FEATURES

- **Very Low Supply Current**
- **Wide Operating Voltage Range**
- **2% Precision Voltage Detection**
- **Detection Threshold from 2V to 6V in 0.1V increments**
- **5mA Sink Current Capability**
- **5% Typical Hysteresis**

APPLICATIONS

- **CPU and Logic Circuit Reset**
- **Portable and Battery Powered Equipment**
- **Memory Battery Back-Up Circuit**
- **Window Comparator**
- **Cellular Phones**
- **Pagers**

GENERAL DESCRIPTION

The AMS26 series are voltage detector ICs featuring a high accuracy detector threshold of ±2.0% and ultra-low supply current. Internal circuit contains a precision voltage reference, a comparator, resistor network, and an output driver. The AMS26 has an N-channel open drain output.

The detector threshold is set from 2.0V to 6.0V in 0.1V increments, thus making it easy to use in a variety of supervisory applications including microprocessor reset circuits, memory battery back-up circuit, battery checker, power failure detector and portable and battery powered electronics.

AMS26 is available in TO-92 and the sub-miniature 3-pin SOT-23 surface mount package.

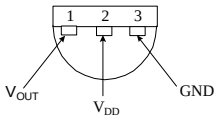
ORDERING INFORMATION

OUTPUT TYPE	PACKAGE TYPE		OPERATING TEMPERATURE RANGE
	TO-92	3 LEAD SOT-23	
OPEN DRAIN	AMS26N-XA	AMS26M-XA	-30 to +80° C

X= Detector Threshold Setting.

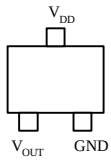
PIN CONNECTIONS

TO-92
Plastic Package (N)



Bottom View

3L SOT-23
(M)



Top View

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ABSOLUTE MAXIMUM RATINGS (Note 1)

Supply Voltage	16V	Power Dissipation : TO-92 package	300mW
Output Voltage	V_{SS} - 0.3V to V_{DD}+0.3V	SOT-23 package	150mW
Output Current	70mA	Storage Temperature	-40°C to +125°C
Operating Temperature Range	-30°C to +80°C	Lead Temperature (Soldering 10 sec)	230°C

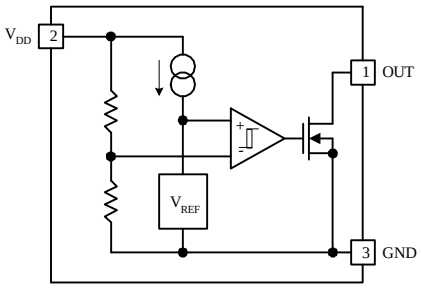
ELECTRICAL CHARACTERISTICS

Electrical Characteristics at T_A=25°C, unless otherwise noted.

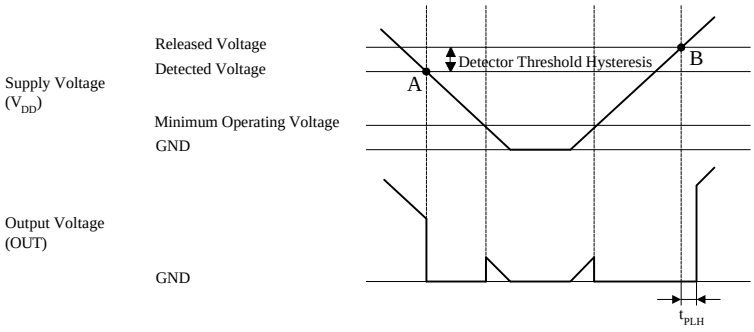
PARAMETER	CONDITIONS (Note 2)	AMS26-X Min.	AMS26-X Typ.	AMS26-X Max.	Units
Detector Threshold (V_{DET})		-2.0		+2.0	%
Detector Threshold Hysteresis		(V_{DET}) * 3%		(V_{DET}) * 7%	V
Supply Current	V_{IN} = 2.0V		1.0	3.0	µA
	V_{IN} = 3.0V		1.3	3.4	
	V_{IN} = 4.0V		1.6	3.8	
	V_{IN} = 5.0V		2.0	4.2	
Operating Voltage		1.50		10.00	V
Output Current	V_{IN} = 2.0V	1.5	7.7		mA
	V_{IN} = 3.0V	3.0	10.1		
	V_{IN} = 4.0V	4.0	11.5		
	V_{IN} = 5.0V	5.0	13.0		
Output Delay Time				100	µs
Detector Threshold Temperature Coefficient	-30°C≤T_A≤+80°C		± 100		ppm/°C

Note 1: Absolute Maximum Ratings are limits beyond which damage to the device may occur. For guaranteed performance limits and associated test conditions, see the Electrical Characteristics tables.

BLOCK DIAGRAM

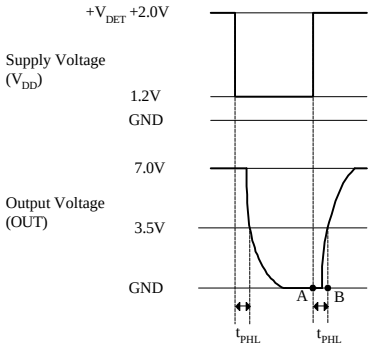


TIME CHART



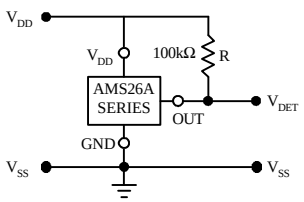
OUTPUT DELAY TIME

Output Delay Time t_{PHL} is defined as the time period from Time A through Time B, when the time at which a pulse voltage that increases from 1.2V to $+V_{DET}$+2.0V is applied to V_{DD} is Time A, and the time at which the output reaches 3.5V under the conditions that the output pin (OUT) is pulled up to 7V by a resistor of 100kΩ is Time B.

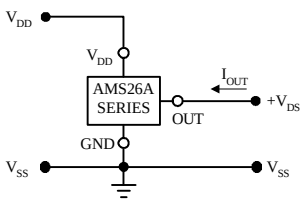


TEST CIRCUITS

Detector Threshold Test Circuit

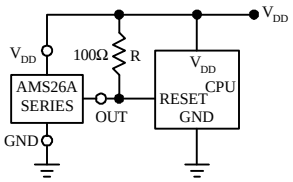


Output Current Test Circuit

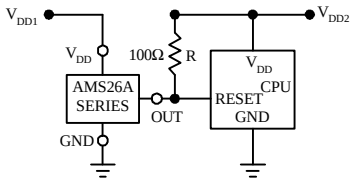


TYPICAL APPLICATIONS

CPU Reset Circuit

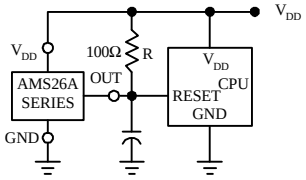


Input Voltage to AMS26 is the same as the input voltage to CPU.

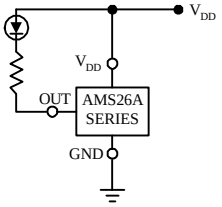


Input Voltage to AMS26 is different from the input voltage to CPU.

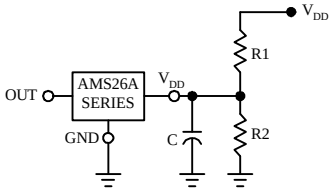
Output Delay Time Circuit



Voltage Level Indicator Circuit (lighted when the power runs out)



Detector Threshold Changing Circuit



$$\text{Changed Detector Threshold} = \frac{R1+R2}{R2}(-V_{DET})$$

$$\text{Hysteresis Voltage} = \frac{R1+R2}{R2}(-V_{HYS})$$

When the value of R1 becomes excessively large, the detector threshold detected may differ from the value calculated using above formula.

Window Comparator Circuit