Atmel U479B

Automotive Lamp-outage Monitor IC

DATASHEET

Features

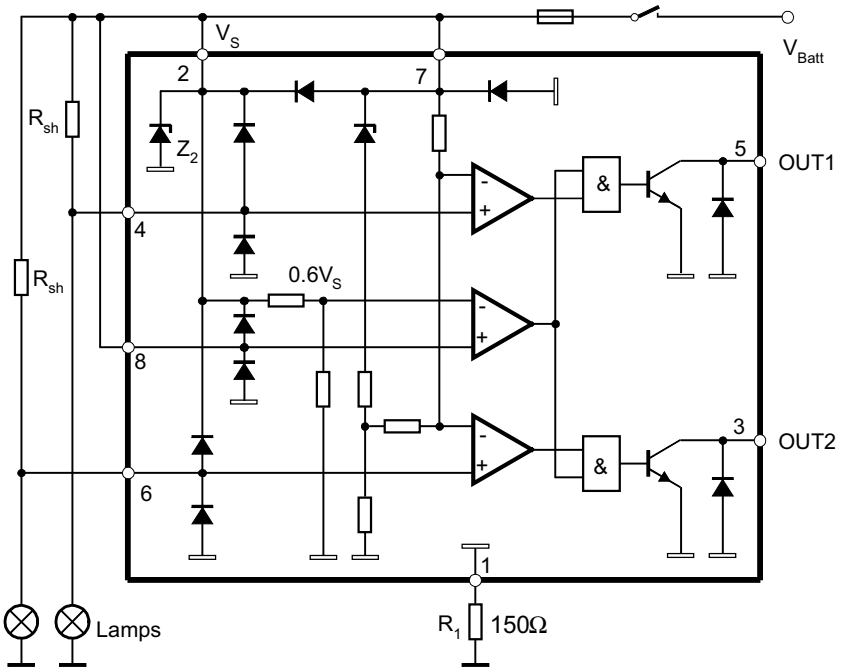
- 2-kV ESD protection
- Two comparators with common reference
- Tight threshold tolerance
- Threshold matched to PTC characteristic of incandescent lamps
- Temperature compensated
- NPN output
- Interference and damage-protection according to VDE 0839
- EMI protection
- Reversal polarity protection
- Load-dump protection

Description

The Atmel® monolithic integrated bipolar circuit, U479B, is designed as a monitor for lamp failure in automobiles. The comparator threshold is matched to the PTC characteristic of incandescent lamps. The threshold is tied to $V_{4,6} = V_S - V_T$ where $V_T = 8mV$.

If the voltage drop across the shunt resistor, R_{sh}, exceeds 8mV, the output is turned off, otherwise, the output is turned on. Without supply voltage or open input pin 8, the output is turned off. A comparator input, which is not used, must be connected to pin 7.

Figure 1. Schematic and Application Circuit



1. Pin Configuration

Figure 1-1. Pinning SO8

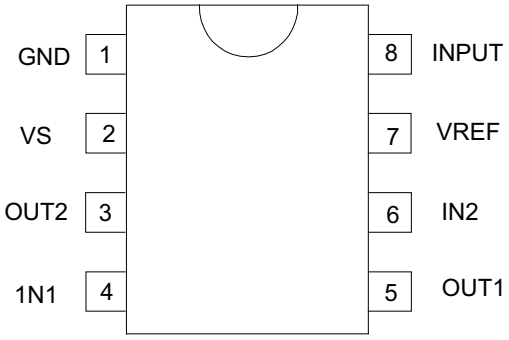


Table 1-1. Pin Description

Pin	Symbol	Function
1	GND	Reference point, ground
2	VS	Supply voltage
3	OUT2	Output 2
4	IN1	Input 1
5	OUT1	Output 1
6	IN2	Input 2
7	VREF	Reference voltage
8	INPUT	Input switch

2. Absolute Maximum Ratings

Stresses beyond those listed under “Absolute Maximum Ratings” may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

Parameters	Pin	Symbol	Value	Unit
Supply voltage	2, 7	V_S	16.5	V
Current consumption, t = 2 ms	1	I_1	1.5	A
Output current	3, 5	$I_{3,5}$	20	mA
Input voltage Reference point pin 7	4, 6	$-V_{4,6}$	6	V
Power dissipation SO8 T_{amb} = 95°C T_{amb} = 60°C		 P_{tot} P_{tot}	 360 560	 mW mW
Ambient temperature range		T_{amb}	–40 to +95	°C
Storage temperature range		T_{stg}	–55 to +125	°C
Junction temperature		T_j	150	°C

3. Thermal Resistance

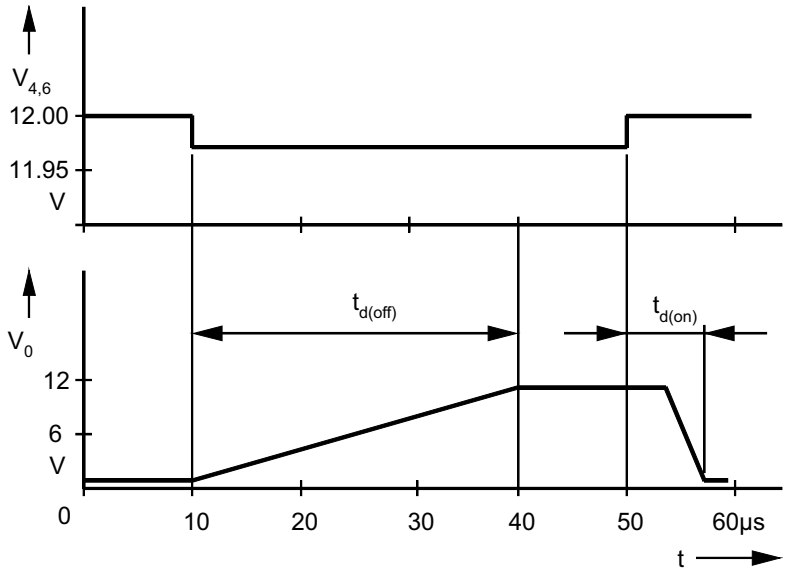
Parameters	Symbol	Value	Unit
Junction ambient SO8	R_{thJA}	160	K/W

4. Electrical Characteristics

V_S = 9V to 15V, T_{amb} = –40 to +95°C, Figure 1 on page 2, unless otherwise specified.

Parameters	Test Conditions	Pin	Symbol	Min.	Typ.	Max.	Unit
Supply voltage		2, 7	V_S	9		15	V
Internal Z-diode Z_2		2	V_Z	20			V
Current consumption	V_S = 12V	1	I_1		4.5	6	mA
Output saturation voltage	V_S = 9V, $I_{3,5}$ = 10mA T_{amb} = 25°C	3, 5	V_{sat}			0.5	V
Control signal threshold	Reference point $V_{Pin\ 7}$ $I_{3,5}$ = 3mA V_S = 12V V_S = 15V	4, 6	 $-V_T$ $-V_T$	 6.5 7.8	 8 9.3	 9.5 10.8	 mV mV
Voltage drift	$\Delta V = \frac{V_{T(15\ V)} - V_{T(12\ V)}}{15\ V - 12\ V}$		ΔV		0.45		mV/V
Threshold voltage	Switch identification	8	V_8		0.6 V_S		V
Input currents	Input 1/input 2	4, 6	I_I		100		nA
	Input switch	8	I_I		5		µA
Delay time	Switch-on, high to low	3, 5	$t_{d(on)}$		6		µs
	Switch-off, low to high		$t_{d(off)}$		30		µs

Figure 4-1. Delay Times



5. Ordering Information

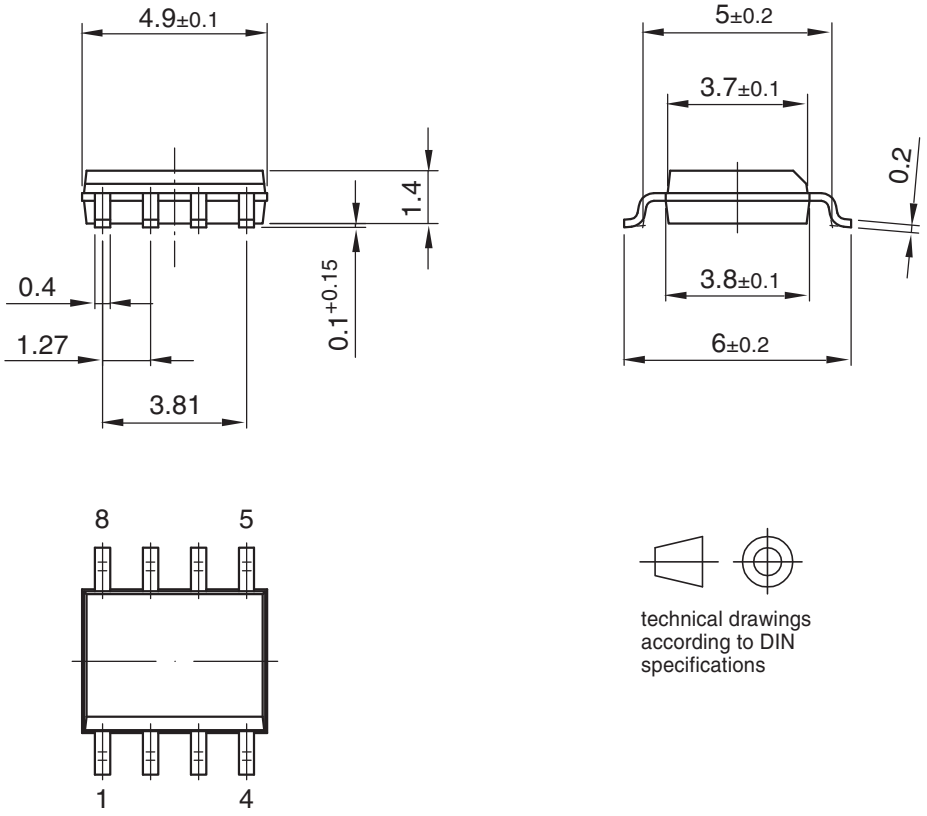
Extended Type Number	Package	Remarks
U479B-MFPY	SO8	Tubed, Pb-free
U479B-MFPG3Y	SO8	Taped and reeled, Pb-free

6. Package Information

Figure 6-1. SO8

Package: SO 8

Dimensions in mm



Drawing-No.: 6.541-5031.01-4

Issue: 1; 15.08.06

7. Revision History

Please note that the following page numbers referred to in this section refer to the specific revision mentioned, not to this document.

Revision No.	History
4775C-AUTO-06/12	• Section 2 “Absolute Maximum Ratings” on page 4 changed • Section 3 “Thermal Resistance” on page 4 changed • Section 5 “Ordering Information” on page 6 changed • Section 6 “Package Information” on page 6 changed
4775B-AUTO-09/05	• Put datasheet in a new template • Pb-free logo on page 1 added • Ordering Information on page 5 changed

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