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## Automotive Lamp-outage Monitor IC

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### DATASHEET

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### 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

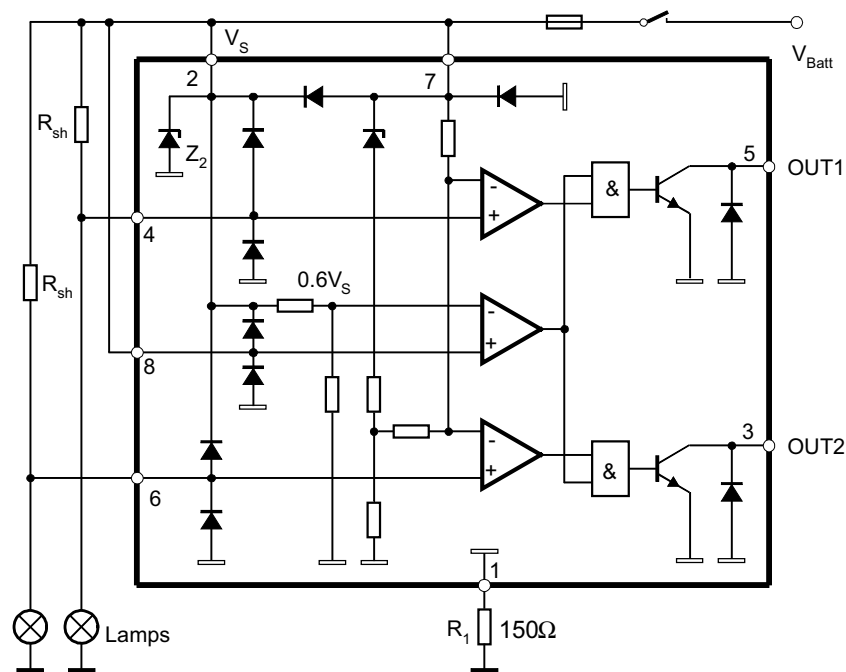
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### Description

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  $V_T = 8\text{mV}$ .

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

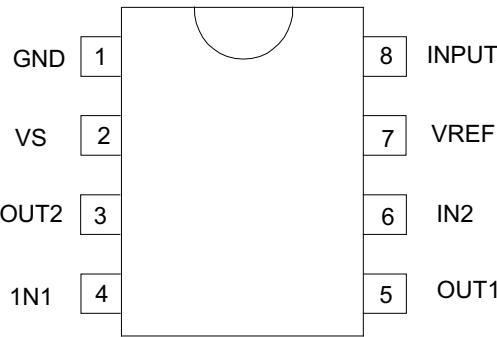


Table 1-1. Pin Description

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, $t = 2 \text{ ms}$	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 $T_{amb} = 95^\circ\text{C}$ $T_{amb} = 60^\circ\text{C}$		$P_{tot}$ $P_{tot}$	360 560	mW mW
Ambient temperature range		$T_{amb}$	-40 to +95	$^\circ\text{C}$
Storage temperature range		$T_{stg}$	-55 to +125	$^\circ\text{C}$
Junction temperature		$T_j$	150	$^\circ\text{C}$

## 3. Thermal Resistance

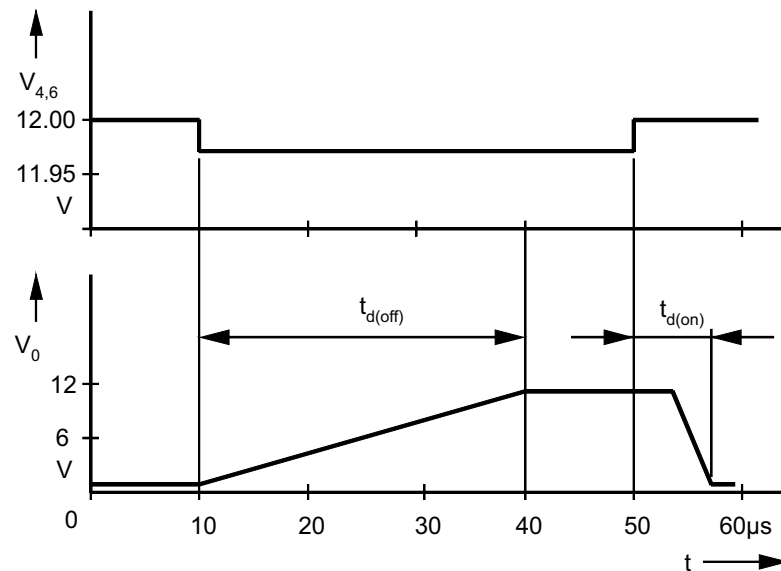
Parameters	Symbol	Value	Unit
Junction ambient SO8	$R_{thJA}$	160	K/W

## 4. Electrical Characteristics

$V_S = 9V$  to  $15V$ ,  $T_{amb} = -40$  to  $+95^\circ C$ , [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	$V_S = 9V$ , $I_{3,5} = 10mA$ $T_{amb} = 25^\circ C$	3, 5	$V_{sat}$			0.5	V
Control signal threshold	Reference point $V_{Pin\ 7}$	4, 6					
	$I_{3,5} = 3mA$		$-V_T$	6.5	8	9.5	mV
	$V_S = 12V$ $V_S = 15V$		$-V_T$	7.8	9.3	10.8	mV
Voltage drift	$\Delta V = \frac{V_{T(15V)} - V_{T(12V)}}{15V - 12V}$		$\Delta V$		0.45		mV/V
Threshold voltage	Switch identification	8	$V_8$		$0.6 V_S$		V
Input currents	Input 1/input 2	4, 6	$I_1$		100		nA
	Input switch	8	$I_1$		5		$\mu A$
Delay time	Switch-on, high to low	3, 5	$t_{d(on)}$		6		$\mu s$
	Switch-off, low to high		$t_{d(off)}$		30		$\mu s$

Figure 4-1. Delay Times



## 5. Ordering Information

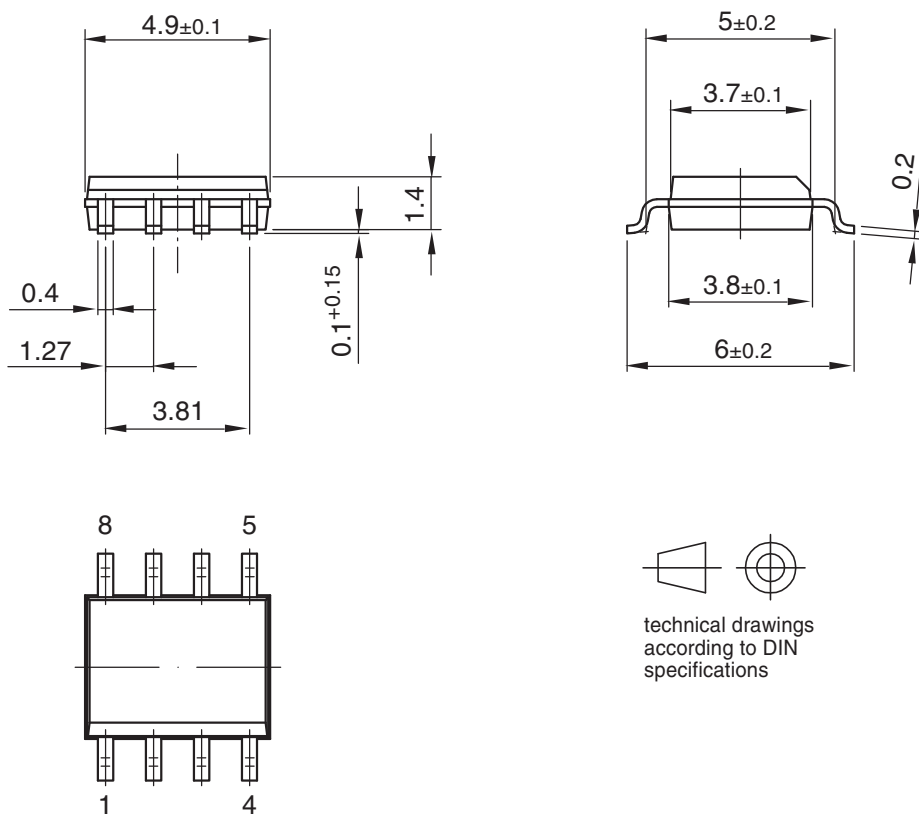
Extended Type Number	Package	Remarks
U479B-MFPY	SO8	Tubed, Pb-free
U479B-MFPG3Y	SO8	Taped and reeled, Pb-free

## 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	<ul style="list-style-type: none"><li>• Section 2 “Absolute Maximum Ratings” on page 4 changed</li><li>• Section 3 “Thermal Resistance” on page 4 changed</li><li>• Section 5 “Ordering Information” on page 6 changed</li><li>• Section 6 “Package Information” on page 6 changed</li></ul>
4775B-AUTO-09/05	<ul style="list-style-type: none"><li>• Put datasheet in a new template</li><li>• Pb-free logo on page 1 added</li><li>• Ordering Information on page 5 changed</li></ul>



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**Atmel Corporation**

2325 Orchard Parkway  
San Jose, CA 95131  
USA

**Tel:** (+1) (408) 441-0311

**Fax:** (+1) (408) 487-2600

[www.atmel.com](http://www.atmel.com)

**Atmel Asia Limited**

Unit 01-5 & 16, 19F  
BEA Tower, Millennium City 5  
418 Kwun Tong Roa  
Kwun Tong, Kowloon

HONG KONG

**Tel:** (+852) 2245-6100

**Fax:** (+852) 2722-1369

**Atmel Munich GmbH**

Business Campus  
Parking 4  
D-85748 Garching b. Munich  
GERMANY

**Tel:** (+49) 89-31970-0

**Fax:** (+49) 89-3194621

**Atmel Japan G.K.**

16F Shin-Osaki Kangyo Building  
1-6-4 Osaki  
Shinagawa-ku, Tokyo 141-0032  
JAPAN

**Tel:** (+81) (3) 6417-0300

**Fax:** (+81) (3) 6417-0370

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