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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



## Automotive Lamp-outage Monitor IC

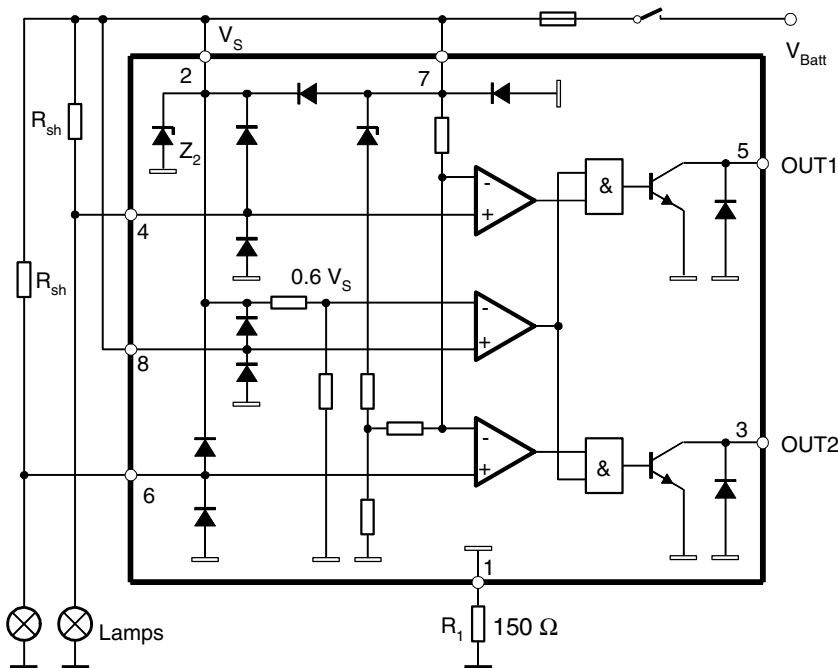
### U479B

## 1. Description

The 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  $V_T = 8$  mV.

If the voltage drop across the shunt resistor,  $R_{sh}$ , exceeds 8 mV, 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 1-1. Schematic and Application Circuit



## 2. Pin Configuration

Figure 2-1. Pinning DIP8/SO8

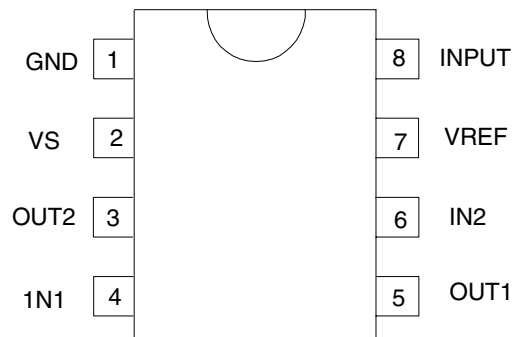


Table 2-1. Pin Description

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

### 3. 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 $T_{amb} = 95^\circ\text{C}$	DIP8	$P_{tot}$	420	mW
	SO8	$P_{tot}$	360	mW
$T_{amb} = 60^\circ\text{C}$	DIP8	$P_{tot}$	690	mW
	SO8	$P_{tot}$	560	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	$^\circ\text{C}$

### 4. Thermal Resistance

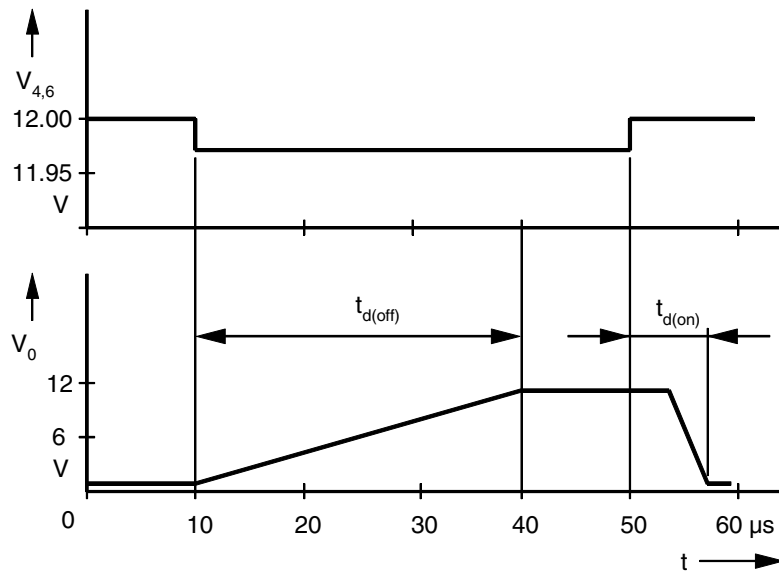
Parameters		Symbol	Value	Unit
Junction ambient	DIP8	$R_{thJA}$	110	K/W
	SO8	$R_{thJA}$	160	K/W

## 5. Electrical Characteristics

$V_S = 9V$  to  $15V$ ,  $T_{amb} = -40$  to  $+95^\circ C$ , [Figure 1-1 on page 1](#), 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	$V_S = 9V$ , $I_{3,5} = 10$ mA $T_{amb} = 25^\circ C$	3, 5	$V_{sat}$			0.5	V
Control signal threshold	Reference point $V_{Pin 7}$	4, 6					
	$I_{3,5} = 3$ mA		$-V_T$	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	$I_I$		100		nA
	Input switch	8	$I_I$		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 5-1.** Delay Times

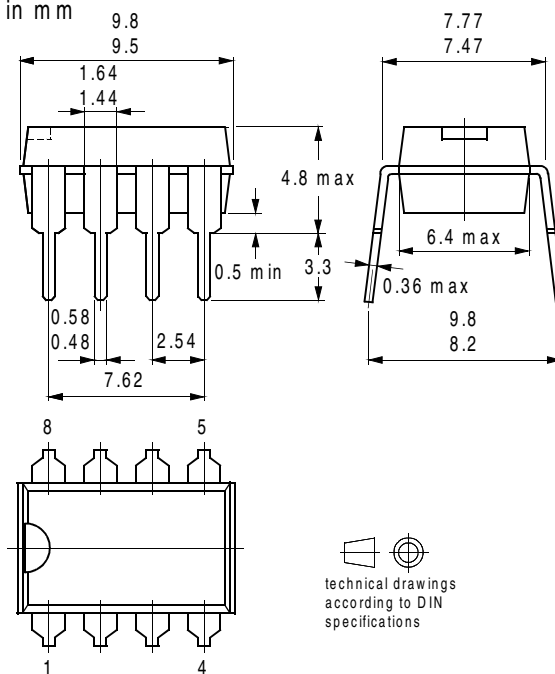


## 6. Ordering Information

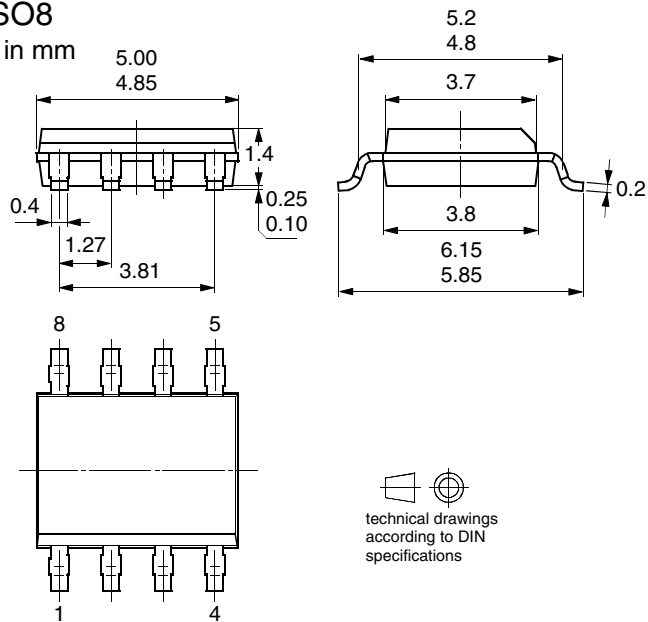
Extended Type Number	Package	Remarks
U479B-MY	DIP8	Pb-free
U479B-MFPY	SO8	Tubed, Pb-free
U479B-MFPG3Y	SO8	Taped and reeled, Pb-free

## 7. Package Information

Package DIP8  
Dimensions in mm



Package SO8  
Dimensions in mm



## 8. 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
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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