

Features

- Lamp Outage Indication for Car and Trailer
- Temperature and Supply Voltage Compensated Flashing Frequency
- Relay Driver Output with High Current Carrying Capacity and Low Saturation Voltage
- Minimum Lamp Load for Flasher Operation > 10W

1. Description

The bipolar integrated circuit ATA2069 is designed for the use in relay-operated automotive flasher modules and makes it possible to detect the outage of flasher bulbs on the vehicle itself and also on a trailer.

Vehicles with a trailer hook are equipped with additional pilot lamps in the dashboard.

ATA2069 is off (i.e., the relay is deactivated) as long as the flasher switch (at contact +49a) is open. As soon as this switch is closed, the IC starts reliably with the bright phase.

There are two thresholds integrated: one threshold is defined to be $21 + 10W$ and is designed for the lamp outage detection of 1 of 2 lamps. If the current is below this threshold, the IC switches to frequency doubling, just like the standard flashers (e.g. U2043B).

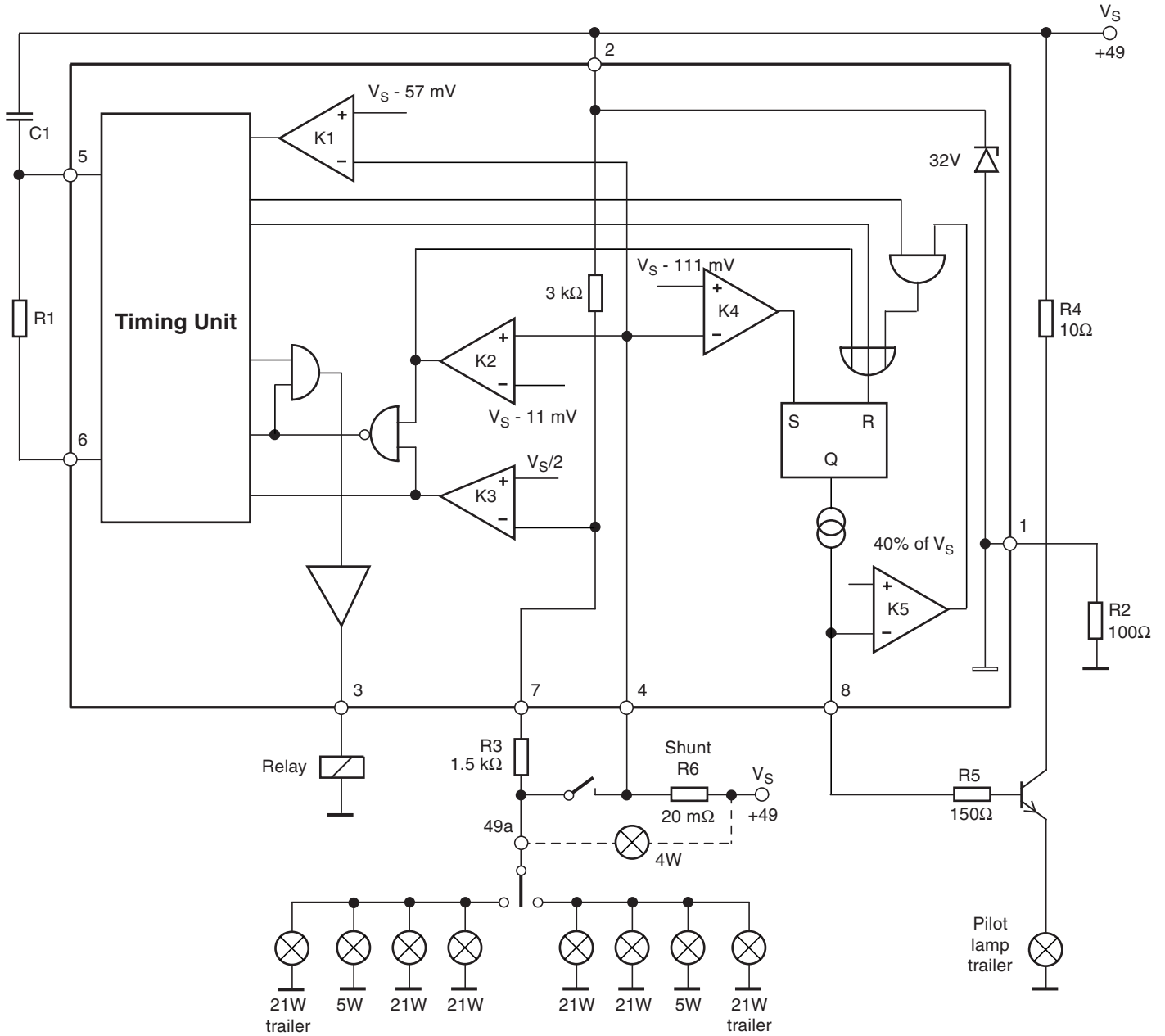
The other threshold is defined to be $42 + 10W$ and is designed for the outage detection of 1 of 3 lamps; if this happens, the additional trailer pilot lamp is switched off, but there is no frequency doubling. 50 ms after the start of the bright phase, the comparator measures the voltage drop at the shunt and latches this value for the rest of the bright phase. The output of this pilot lamp (pin 8) is short-circuit protected against GND. In case of a short circuit the external transistor is switched off after 52 ms for the rest of the current flasher cycle, but it is enabled again for the next cycle.



Flasher with Trailer Control

ATA2069

Figure 1-1. Block Diagram



2. Pin Configuration

Figure 2-1. Pinning

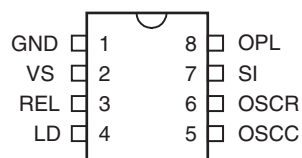


Table 2-1. Pin Description

Pin	Symbol	Function
1	GND	IC ground
2	VS	Supply Voltage
3	REL	Relay driver
4	LD	Lamp failure detection
5	OSCC	Cap. oscillator
6	OSCR	Res. oscillator
7	SI	Start input (49a)
8	OPL	Output pilot lamp



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	V_S	16.5	V
Junction temperature		T_J	150	°C
Ambient temperature range		T_{amb}	-40 to +95	°C
Storage temperature range		T_{stg}	-55 to +150	°C
Thermal resistance junction ambient DIP8		R_{thjc}	110	K/W
Thermal resistance junction ambient SO8		R_{thjc}	160	K/W

4. Electrical Characteristics

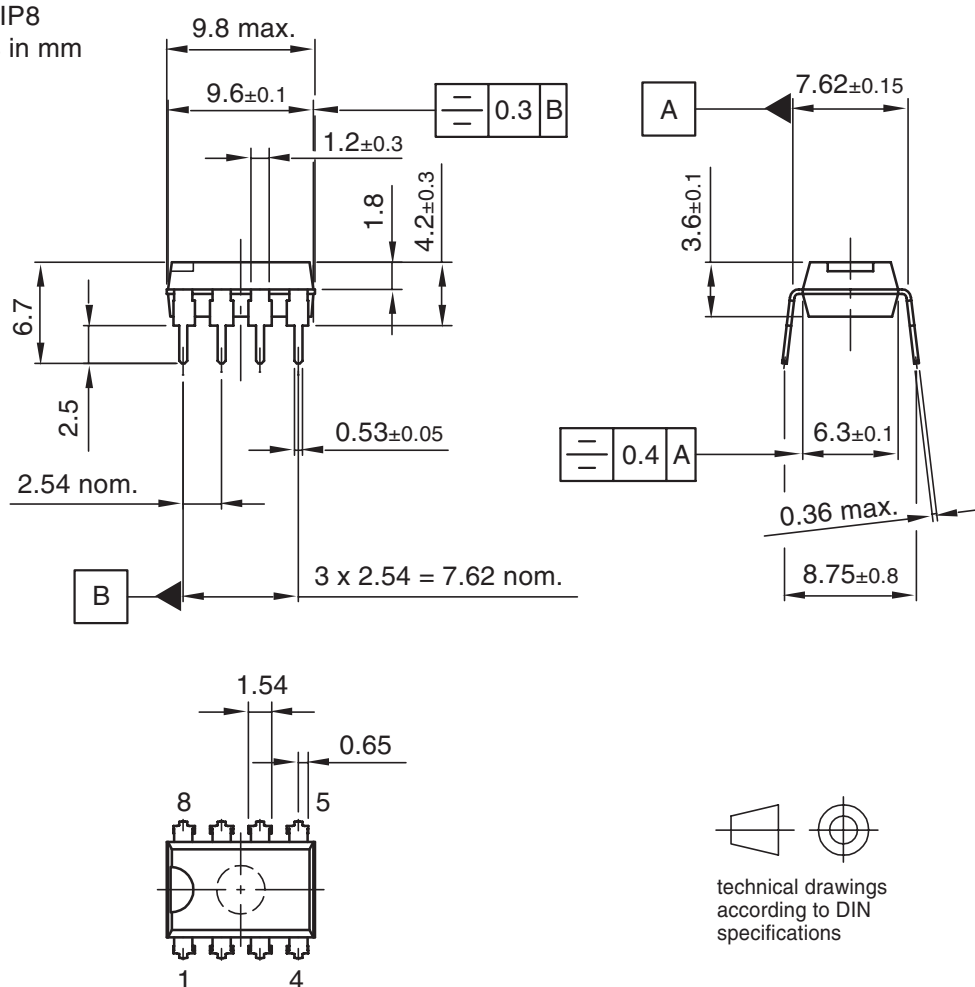
Parameters	Test Conditions	Pin	Symbol	Min.	Typ.	Max.	Unit
Supply voltage range		2	$V_S (+49a)$		9 to 15		V
Relay output current		3	I_{Rel}			300	mA
Relay saturation voltage	$I = 130\text{ mA}$ $I = 250\text{ mA}$	3	V_{Rel}			1	V
						1.5	V
Relay leakage current		3	I_{Relr}			100	µA
Values for $T = 25^\circ\text{C}$							
Start delay			t_{on}			10	ms
Delay time for output OPL		OPL	t_{Del}	45		55	ms
Switch off delay time output OPL in case of short circuit		OPL	t_{Del}	1.5		2.4	ms
Voltage threshold for short circuit detection at output OPL		OPL	V_{th}	36		44	% of U_S
Output current at OPL		OPL	I_O	10		25	mA
Saturation voltage at OPL		OPL	V_{SATO}			300	mV
Control signal threshold K1 for outage detection without trailer operation	$V_S = 9V$ $V_S = 13V$ $V_S = 15V$		V_{k1}	47.5	50	52.2	mV
				54.2	57	59.9	mV
				58	61	64.1	mV
Control signal threshold K4 for outage detection with trailer operation	$V_S = 9V$ $V_S = 13V$ $V_S = 15V$		V_{k4}	96	98	100	mV
				109	111	113	mV
				115	118	120	mV
Frequency tolerance			Delta f1	-5		+5	%
Bright period	Basic frequency		Delta f1	47		53	%
Bright period	Frequency doubling		Delta f2	37		45	%
Frequency increase	Lamp outage		f2	$2.15 \times f$		$2.3 \times f$	Hz
Leakage increase	49a to GND		RI			5	kΩ
Lamp load			PL	10			W

5. Ordering Information

Extended Type Number	Package	Remarks
ATA2069-3AY	DIP8	Tubed, Pb-free
ATA2069-TAY	SO8	Tubed, Pb-free
ATA2069-TAG3Y	SO8	Taped and reeled, Pb-free

6. Package Information

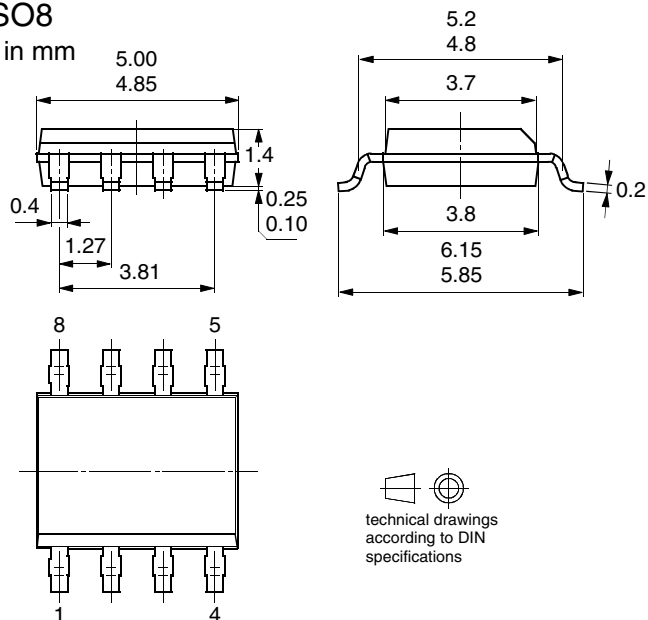
Package: DIP8
Dimensions in mm



Drawing-No.: 6.543-5040.01-4

Issue: 1; 16.01.02

Package SO8
Dimensions in mm



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
4917B-AUTO-03/06	• Table "Ordering Information" on page 5 changed.



Atmel Corporation

2325 Orchard Parkway
San Jose, CA 95131, USA
Tel: 1(408) 441-0311
Fax: 1(408) 487-2600

Regional Headquarters

Europe

Atmel Sarl
Route des Arsenalux 41
Case Postale 80
CH-1705 Fribourg
Switzerland
Tel: (41) 26-426-5555
Fax: (41) 26-426-5500

Asia

Room 1219
Chinachem Golden Plaza
77 Mody Road Tsimshatsui
East Kowloon
Hong Kong
Tel: (852) 2721-9778
Fax: (852) 2722-1369

Japan

9F, Tonetsu Shinkawa Bldg.
1-24-8 Shinkawa
Chuo-ku, Tokyo 104-0033
Japan
Tel: (81) 3-3523-3551
Fax: (81) 3-3523-7581

Atmel Operations

Memory

2325 Orchard Parkway
San Jose, CA 95131, USA
Tel: 1(408) 441-0311
Fax: 1(408) 436-4314

Microcontrollers

2325 Orchard Parkway
San Jose, CA 95131, USA
Tel: 1(408) 441-0311
Fax: 1(408) 436-4314

La Chantrerie
BP 70602
44306 Nantes Cedex 3, France
Tel: (33) 2-40-18-18-18
Fax: (33) 2-40-18-19-60

ASIC/ASSP/Smart Cards

Zone Industrielle
13106 Rousset Cedex, France
Tel: (33) 4-42-53-60-00
Fax: (33) 4-42-53-60-01

1150 East Cheyenne Mtn. Blvd.
Colorado Springs, CO 80906, USA
Tel: 1(719) 576-3300
Fax: 1(719) 540-1759

Scottish Enterprise Technology Park
Maxwell Building
East Kilbride G75 0QR, Scotland
Tel: (44) 1355-803-000
Fax: (44) 1355-242-743

RF/Automotive

Theresienstrasse 2
Postfach 3535
74025 Heilbronn, Germany
Tel: (49) 71-31-67-0
Fax: (49) 71-31-67-2340

1150 East Cheyenne Mtn. Blvd.
Colorado Springs, CO 80906, USA
Tel: 1(719) 576-3300
Fax: 1(719) 540-1759

Biometrics/Imaging/Hi-Rel MPU/ High Speed Converters/RF Datacom

Avenue de Rochepleine
BP 123
38521 Saint-Egreve Cedex, France
Tel: (33) 4-76-58-30-00
Fax: (33) 4-76-58-34-80

Literature Requests

www.atmel.com/literature

Disclaimer: The information in this document is provided in connection with Atmel products. No license, express or implied, by estoppel or otherwise, to any intellectual property right is granted by this document or in connection with the sale of Atmel products. **EXCEPT AS SET FORTH IN ATMEL'S TERMS AND CONDITIONS OF SALE LOCATED ON ATMEL'S WEB SITE, ATMEL ASSUMES NO LIABILITY WHATSOEVER AND DISCLAIMS ANY EXPRESS, IMPLIED OR STATUTORY WARRANTY RELATING TO ITS PRODUCTS INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR NON-INFRINGEMENT. IN NO EVENT SHALL ATMEL BE LIABLE FOR ANY DIRECT, INDIRECT, CONSEQUENTIAL, PUNITIVE, SPECIAL OR INCIDENTAL DAMAGES (INCLUDING, WITHOUT LIMITATION, DAMAGES FOR LOSS OF PROFITS, BUSINESS INTERRUPTION, OR LOSS OF INFORMATION) ARISING OUT OF THE USE OR INABILITY TO USE THIS DOCUMENT, EVEN IF ATMEL HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.** Atmel makes no representations or warranties with respect to the accuracy or completeness of the contents of this document and reserves the right to make changes to specifications and product descriptions at any time without notice. Atmel does not make any commitment to update the information contained herein. Unless specifically provided otherwise, Atmel products are not suitable for, and shall not be used in, automotive applications. Atmel's products are not intended, authorized, or warranted for use as components in applications intended to support or sustain life.

© Atmel Corporation 2006. All rights reserved. Atmel®, logo and combinations thereof, Everywhere You Are® and others, are registered trademarks or trademarks of Atmel Corporation or its subsidiaries. Other terms and product names may be trademarks of others.



Printed on recycled paper.