



VG2043

Automotive Flashers Controller

Specification

May. 2008

INFORMATION IN THIS DOCUMENT IS INTENDED AS A REFERENCE TO ASSIST OUR CUSTOMERS IN THE SELECTION OF SHANGHAI FUDAN MICROELECTRONICS CO., LTD PRODUCT BEST SUITED TO THE CUSTOMER'S APPLICATION; THEY DO NOT CONVEY ANY LICENSE UNDER ANY INTELLECTUAL PROPERTY RIGHTS, OR ANY OTHER RIGHTS, BELONGING TO SHANGHAI FUDAN MICROELECTRONICS CO., LTD OR A THIRD PARTY. WHEN USING THE INFORMATION CONTAINED IN THIS DOCUMENTS, PLEASE BE SURE TO EVALUATE ALL INFORMATION AS A TOTAL SYSTEM BEFORE MAKING A FINAL DECISION ON THE APPLICABILITY OF THE INFORMATION AND PRODUCTS. SHANGHAI FUDAN MICROELECTRONICS CO., LTD ASSUMES NO RESPONSIBILITY FOR ANY DAMAGE, LIABILITY OR OTHER LOSS RESULTING FROM THE INFORMATION CONTAINED HEREIN. SHANGHAI FUDAN MICROELECTRONICS CO., LTD PRODUCTS ARE NOT INTENDED FOR USE IN MEDICAL, LIFE SAVING, OR LIFE SUSTAINING APPLICATIONS. THE PRIOR WRITTEN APPROVAL OF SHANGHAI FUDAN MICROELECTRONICS CO., LTD IS NECESSARY TO REPRINT OR REPRODUCE IN WHOLE OR IN PART THESE DOCUMENTS.

Future routine revisions will occur when appropriate, without notice. Contact Shanghai Fudan Microelectronics Co., Ltd sales office to obtain the latest specifications and before placing your product order. Please also pay attention to information published by Shanghai Fudan Microelectronics Co., Ltd by various means, including Shanghai Fudan Microelectronics Co., Ltd home page (<http://www.fmsh.com/>).

Please contact Shanghai Fudan Microelectronics Co., Ltd local sales office for the specification regarding the information in this documents or Shanghai Fudan Microelectronics Co., Ltd products.

Trademarks

Shanghai Fudan Microelectronics Co., Ltd name and logo, the “复旦” logo are trademarks or registered trademarks of Shanghai Fudan Microelectronics Co., Ltd or its subsidiaries in China.

Shanghai Fudan Microelectronics Co., Ltd, Printed in the China, All Rights Reserved.

Product Overview

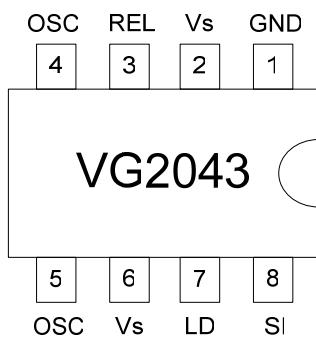
Instruction

The integrated circuit VG2043 is used in relay-controlled automotive flashers where a high EMC level is required. A lamp outage is indicated by frequency doubling during hazard mode as well as direction mode. The pilot lamp can be connected either to V_{Balt} or GND.

Feature

- ◆ Temperature and voltage compensated frequency
- ◆ Warning indication of lamp failure by means of frequency doubling
- ◆ Minimum lamp load for flasher operation $\geq 10W$
- ◆ Relay output with high current carrying capacity and low saturation voltage
- ◆ DIP8 or Sop8 package
- ◆ Two type supply voltage for selection: 12V and 24V (2043B is for 12V, 2043C is for 24V)

Pin Configurations



Pin Function

Pin	Symbol	Function
1	GND	IC ground
2	Vs	Supply voltage
3	REL	Relay driver
4	OSC	Oscillator C_1
5	OSC	Oscillator R_1
6	Vs	Supply voltage Vs
7	LD	Lamp failure detection
8	SI	Start input (49a)

Electronics Characteristics

Absolute Maximum Ratings

Reference point ground Pin1, voltage: 12V/24V

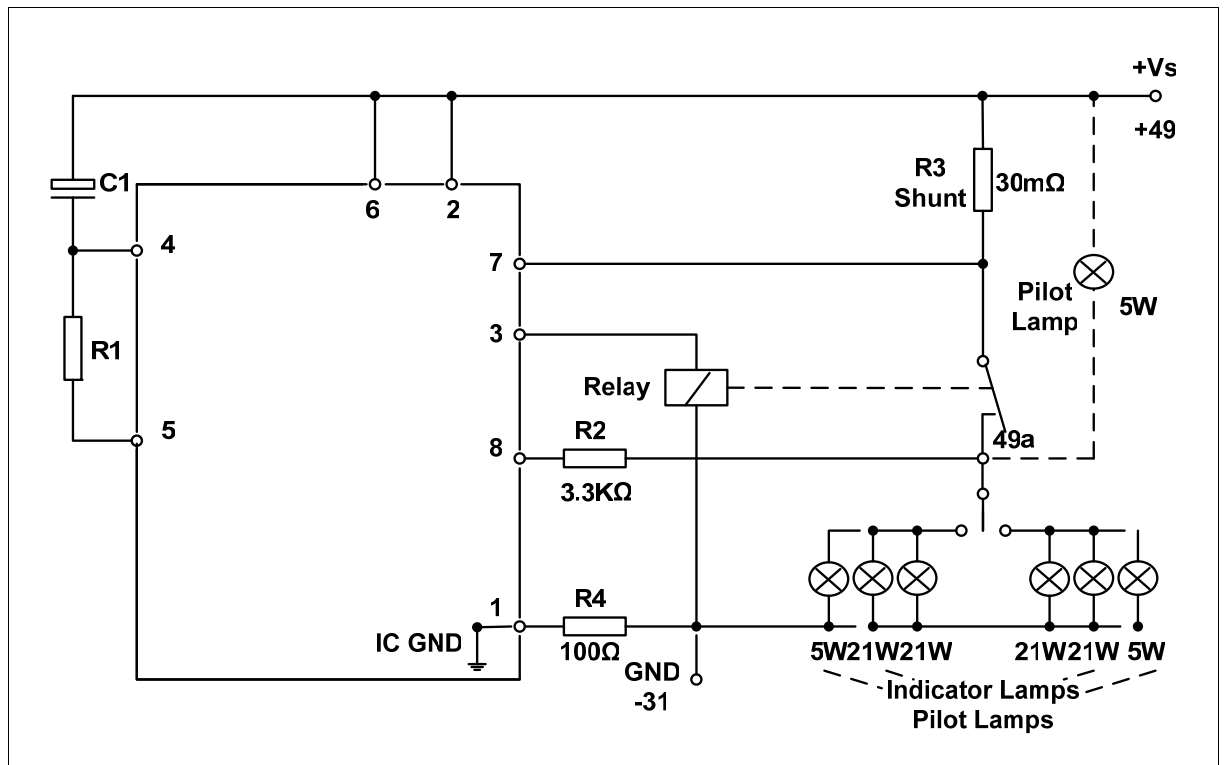
Symbol	Parameter		Value	Unit
V_S	Supply voltage	Pins2, 6	30	V
I_{FSM}	Surge current forward	$t_p = 0.1ms$ Pins2, 6	1.5	A
		$t_p = 2.0ms$ Pins2, 6	1.0	A
		$t_p = 2.0ms$ Pin8	50	mA
I_O	Output current	Pin3	0.3	A
P_{tot}	Power dissipation	$T_{amb} = 95^{\circ}C$ DIP8	420	mW
		$T_{amb} = 95^{\circ}C$ SOP8	340	mW
		$T_{amb} = 60^{\circ}C$ DIP8	690	mW
		$T_{amb} = 60^{\circ}C$ SOP8	560	mW
T_j	Junction temperature		150	$^{\circ}C$
T_{amb}	Ambient temperature range		-40 ~ +95	$^{\circ}C$
T_{stq}	Storage temperature range		-55 ~ +150	$^{\circ}C$

Electronics Characteristics

Typical values under normal operation in application circuit figure, V_S (+49, Pins2 and 6) = 12V, Reference point ground (-31), $T_{amb} = +25^{\circ}C$, unless otherwise specified.

Symbol	Parameters	Test Conditions/Pins	MIN	Typ	Max	unit
V_S	Supply voltage range	Pins2, 6	–	9~28	–	V
I_S	Supply current	Dark phase or stand by Pins2, 6	–	4.5	8	mA
I_S	Supply current	Bright phase Pins2, 6	–	7.0	11	mA
V_O	Relay output	Saturation voltage $I_O = 150mA$, $V_S = 9V$ Pin3	–	–	1.0	V
I_O	Relay output reverse current	Pin3	–	–	0.1	mA
R_L	Relay coil resistance	–	60	–	–	Ω
t_{on}	Start delay	First bright phase	–	–	10	ms
R_1	Frequency determining resistor	–	6.8	–	510	K Ω
C_1	Frequency determining capacitor	–	–	–	47	μF
Δf_1	Frequency tolerance	Normal flashing	-5	–	+5	%
Δf_1	Bright period	Basic frequency f_1	47	–	53	%
Δf_2	Bright period	Control frequency f_2	37	–	45	%
f_2	Frequency increase	Lamp outage	$2.15 \times f_1$	–	$2.3 \times f_1$	Hz
V_{R3}	Control signal threshold	$V_S = 15V$ Pin7	85	91	97	mV
		$V_S = 9V$	66	71	76	
		$V_S = 15V$	76	81	87	
R_P	Leakage resistance	49a to GND	–	2	5	K Ω
P_L	Lamp load	–	10	–	–	W

Application Circuit





Revision History

Version	Publication date	Pages	Paragraph or Illustration	Revise Description
1.0	Mar. 2001	2		Initial Release.
2.0	Oct. 2007	7		Updated format.
2.1	May. 2008	7	Sales and service	Updated the address of HK office.

Sales and Service

Shanghai Fudan Microelectronics Co., Ltd.

Address: Bldg No. 4, 127 Guotai Rd, Shanghai City China.

Postcode: 200433

Tel: (86-21) 6565 5050

Fax: (86-21) 6565 9115

Shanghai Fudan Microelectronics (HK) Co., Ltd.

Address: Unit 506, 5/F., East Ocean Centre, 98 Granville Road,
Tsimshatsui East, Kowloon, Hong Kong

Tel: (852) 2116 3288 2116 3338

Fax: (852) 2116 0882

Beijing Office

Address: Room.1208, Bldg C,
Zhongguancun Science and Technology Development Edifice,
34 zhongguancun Street (South), Haidian District, Beijing City,
China.

Tel: (86-10) 6212 0682 6213 9558

Fax: (86-10) 6212 0681

Shenzhen Office

Address: Room.1301, Century Bldg, Shengtingyuan Hotel,
Huaqiang Rd (North), Shenzhen City, China.

Postcode: 518028

Tel: (86-755) 8335 3211 8335 6511

Fax: (86-755) 8335 9011

Web Site: <http://www.fmsb.com/>