



# ***FM4201 Motorcycle Flashers Controller***

## **Specification**

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**Oct. 2007**

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# Product Overview

## Description

FM4201 is a two-wire contactless electrical flasher IC for motorcycle. It has the features of high reliability and convenience, less peripheral components, flash frequency stability and warning indication of lamp failure by means of frequency doubling.

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## Features

- ◆ Warning indication of lamp failure
- ◆ Short circuit protection
- ◆ Application for 6V and 12V power supply
- ◆ EMC design
- ◆ Stable duty cycle (50%)
- ◆ Stable flash frequency (85±10 times/minute)
- ◆ Flash frequency independent of power supply voltage
- ◆ Stable rate of the failure frequency and the normal frequency (2.2:1)
- ◆ Low power design
- ◆ Less peripheral components
- ◆ Convenient for adjustment

## Pin Assignments

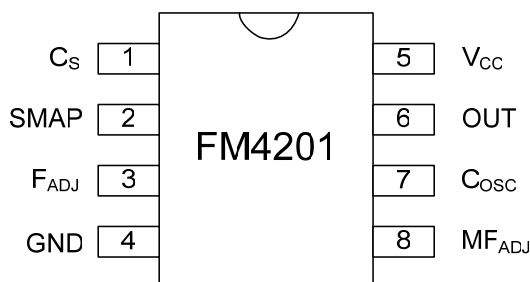


Figure 1-1 FM4201 Pin Assignments

## Pin Functions

Pin	Symbol	Value
1	C <sub>S</sub>	Short circuit protection filtering
2	SAMP	Current sampling
3	F <sub>ADJ</sub>	Frequency adjustment
4	GND	Ground
5	M <sub>FADJ</sub>	Frequency rate adjustment
6	C <sub>OSC</sub>	Oscillator capacitor
7	OUT	Output driving
8	V <sub>CC</sub>	Power supply

Table 1-1 FM4201 Pin Function

# Electrical Characteristics

$V_P = 11\sim 15V$  or  $5.5\sim 7.5V$ ;  $T_a = +25^\circ C$

Parameter	Test conditions	Min	Typ	Max	Unit	
Supply	12V	9	12.8	22	V	
	6V	4.5	6.4	—		
Supply current	$V_P = 5.1V$	—	1.1	2.3	mA	
Driving current	$V_{out} = 2.0V$	$I_{source}$	10	20	—	mA
		$I_{sink}$	10	20	—	
Normal flash frequency	—	75	85	95	times/min	
Failure flash frequency	—	140	187	—	times/min	
Flash frequency at the lowest power Supply voltage	12V: $V_P = 9V$	40	—	—	times/min	
	6V: $V_P = 4.5V$	40	—	—	times/min	
Duty cycle	—	35	50	65	%	
Start delay	—	—	1.0	1.5	sec	
Start threshold	$V_P = 12.8V, V_8 = 5.1V$ $V_P = 6.4V$	—	65	—	mV	
		—	75	—		
Short circuit detector threshold	—	—	$8 \times V_T$	—	mV	
Ambient temperature	—	-40	—	+125	$^\circ C$	

Table 2-1 FM4201 Electrical Characteristics

# Application Circuit

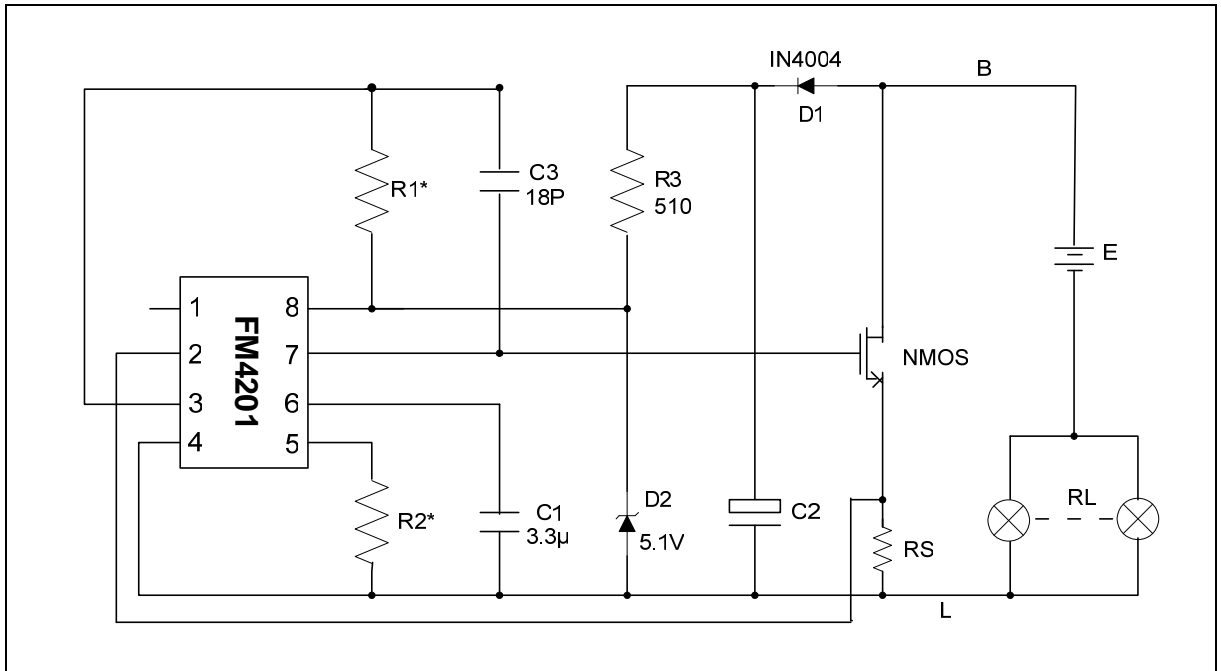


Figure 3-1 FM4201 Application Circuit

# Reference Data

$f_1 = 85$  times/min;  $f_2 = 170$  times/min

Component	Application condition	
	E = 12.8V RL = 2 × 10W + 2 × 2W	E = 6.4V RL = 2 × 8W + 3W
R1*	430K	470K
R2*	62K	24K
R3	510Ω	Shortened
D2	5.1V/0.5W	Not used
C2	100μ/16V	470μ/16V
RS	52mΩ	43mΩ

Table 4-1 FM4201 Reference Data

# Revision History

Version	Publication date	Pages	Paragraph or Illustration	Revise Description
1.0	Jun. 2001	2		Initial Release.
2.0	Oct. 2007	8		Updated Format.

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