



FM2140 ***Low Power Two-Wire*** ***Ground Fault Interrupter***

Specification

Oct. 2007

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Product Description

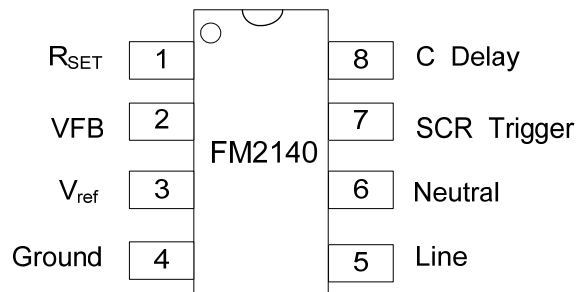
Description

FM2140 is a low power controller for AC output appliance leakage current interrupters. This device detects hazardous current paths to ground, and trigger SCR to protect.

Features

- ◆ Powered from the AC line
- ◆ Build-in bridge rectifier
- ◆ Direct interface to SCR
- ◆ Adjustable trip current
- ◆ Adjustable time delay
- ◆ Minimum external components
- ◆ Meets UL 943 requirements
- ◆ Specifically for two-wire system
- ◆ For use with 110V or 220V system
- ◆ Dip8 or SOP8 Package

Pin Assignments



Pin Functions

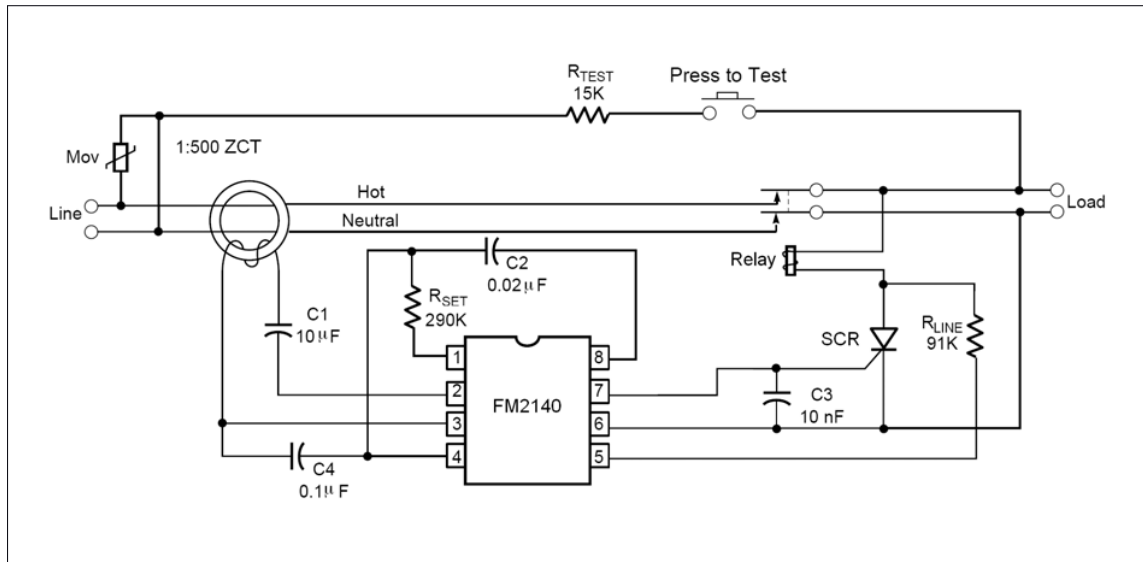
Pin	Symbol	Functions
1	R _{SET}	Leakage current first output
2	VFB	Leakage current input
3	V _{ref} (2.9V)	Reference voltage
4	Ground	Ground
5	Line	Line input
6	Neutral	Neutral input
7	SCR Trigger	SCR trigger
8	C Delay	Delay time

Electrical Characteristics

$I_{LINE} = 1.2\text{mA}$; $T_a = +25^\circ\text{C}$; $R_{SET} = 290\text{k}\Omega$

Parameter	Test conditions	Min	Typ	Max	Unit
Shunt regulator (PIN5 to 4)					
Regulated voltage	$I_{2-3} = 11\mu\text{A}$	6.1	6.5	7.5	V
Regulated voltage	$I_{LINE} = 700\mu\text{A}$, $I_{2-3} = 9\mu\text{A}$	6.1	6.5	7.5	V
Sense amplifier (PIN2 to 3)					
Offset voltage	Design value	-3.0	0	+3.0	mV
Gain bandwidth	Design value	---	3.44	---	MHz
Input bias current	Design value	---	15	30	nA
SCR Trigger (PIN7 to 6)					
Output resistance	$V_{5-6} = \text{open}$, $I_{2-3} = 0\mu\text{A}$	4.0	4.7	5.4	K Ω
Output voltage	$I_{2-3} = 9\mu\text{A}$	0	0.1	10	mV
Output voltage	$I_{2-3} = 11\mu\text{A}$	1.4	2.0	2.6	V
Output current	$V_{7-6} = 0\text{V}$, $I_{2-3} = 11\mu\text{A}$	300	420	600	μA
Reference voltage (PIN3 to 4)					
Reference voltage	$I_{LINE} = 700\mu\text{A}$	2.6	2.9	3.4	V
Delay timer (PIN8 to 4)					
Delay time	$C_{8-4} = 20\text{nF}$	---	2.0	---	mS
Delay current	$I_{2-3} = 11\mu\text{A}$	23	30	43	μA

Application Circuit



Revision History

Version	Publication date	Pages	Paragraph or Illustration	Revise Description
1.0	Jun. 2001	2		Initial Release.
2.0	Oct. 2007	7		Updated Format.

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