

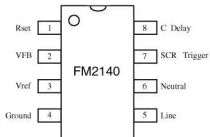


FM2140 is a low power controller for AC output appliance leakage current interrupters. This device detects hazardous current paths to ground, and trigger SCR to protect.

## 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   | Rset        | Leakage current first output |
| 2   | VFB         | Leakage current input        |
| 3   | Vref (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

$I_{line}=1.2mA$   $T_a=+25^{\circ}C$   $R_{set}=290k\Omega$

| Parameter          | Test conditions                      | Min  | Typ  | Max  | Unit       |
|--------------------|--------------------------------------|------|------|------|------------|
| Shunt regulator    |                                      |      |      |      |            |
| Regulated voltage  | $I_2=3=11\mu A$                      | 6.1  | 6.5  | 6.9  | V          |
| Regulated voltage  | $I_{line}=700\mu A$ , $I_2=3=9\mu A$ | 6.1  | 6.5  | 6.9  | V          |
| Sense amplifier    |                                      |      |      |      |            |
| 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        |                                      |      |      |      |            |
| Output resistance  | $V_5=6=open$ , $I_2=3=0\mu A$        | 4.2  | 4.7  | 5.2  | K $\Omega$ |
| Output voltage     | $I_2=3=9\mu A$                       | 0    | 0.1  | 10   | mV         |
| Output voltage     | $I_2=3=11\mu A$                      | 1.4  | 2.0  | 2.6  | V          |
| Output current     | $V_7=6=0V$ , $I_2=3=11\mu A$         | 300  | 420  | 600  | $\mu A$    |
| Reference voltage  |                                      |      |      |      |            |
| Reference voltage  | $I_{line}=700\mu A$                  | 2.6  | 2.9  | 3.2  | V          |
| Delay timer        |                                      |      |      |      |            |
| Delay time         | $C_8=4=20nF$                         | -    | 2.0  | -    | mS         |
| Delay current      | $I_2=3=11\mu A$                      | 25   | 30   | 36   | $\mu A$    |

## APPLICATION CIRCUIT

