



FM484 Magnetic Pickup Ignition Controller

Specification

May. 2008

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Product Overview

Description

The FM484 is an integrated circuit designed for use with an NPN darlington in breakerless ignition systems with magnetic pickup sensors and high energy ignition coils. For the special design which has two input pins from the pickup, it can be used with a wide variety of magnetic sensors. The device drives an NPN external darlington to control the coil current providing the required stored energy with low dissipation. This circuit has many advantages: low power dissipation, stable, high ignition energy, self-protection, widely application conditions, long using life, etc. It's compatible for overseas products of the same class.

Features

- ◆ Direct driving of the external darlington
- ◆ Operates with a wide range of magnetic pickup types
- ◆ Charging angle (dwell) control
- ◆ Coil current peak limitation
- ◆ Continuous coil current protection
- ◆ Tachometer signal output
- ◆ External darlington overvoltage protection
- ◆ Load dump and reverse battery protection
- ◆ Possibility of spark point delaying antiknock system
- ◆ High quality and stability for using advanced 3μm bipolar process

Pin Functions

| Pin | Functions | Pin | Functions |
|-----|--------------------------------------|-----|------------------------|
| 1 | Current Sensing | 9 | Power-on Input |
| 2 | Pickup Input | 10 | Signal GND |
| 3 | Permanent Conduct Protection Timer | 11 | Power Supply |
| 4 | Permanent Conduct Protection Inhibit | 12 | Dump Protection |
| 5 | RPM Output | 13 | GND |
| 6 | Dwell Time Adjust | 14 | Driver Collector Input |
| 7 | Dwell Timer | 15 | Overvoltage Limit |
| 8 | Zero Crossing Input | 16 | Driving Stage Output |

Table 1-1 FM484 Pin Functions

Characteristics

Absolute Maximum Ratings

| Symbol | Parameter | Value | Unit |
|-----------|---|----------|------|
| V_R | Reverse Battery Voltage | -14 | V |
| T_{stg} | Storage Temperature Range | -55~+150 | °C |
| P_{tot} | Power Dissipation ($T_{amb}=+90^{\circ}\text{C}$) | 0.75 | W |

Table 2-1 FM484 Absolute Maximum Ratings

Electrical Characteristics

| Symbol | Parameter | Test Conditions | Min | Typ | Max | Unit |
|-------------|---|------------------------------------|------|-----|-----|---------------|
| V_S | Operating Supply Voltage | - | 6 | - | 28 | V |
| V_{IS} | Input Stage Voltage (pin 2 with 10K Ω resistor) | - | 160 | 200 | 240 | mV |
| V_{ZC} | Zero Crossing Thresh. Voltage (pin 8) | - | 3 | 20 | 60 | mV |
| V_{CEsat} | Series Darlington Driver Saturation Voltage ($V_{pin\ 14-16}$) | $I_{14}=50\text{mA}$ | - | - | 0.6 | V |
| | | $I_{14}=180\text{mA}$ | - | 0.4 | 1.0 | V |
| I_{7C} | Cdwell Charge Current | At Low RPM $V_{in}=0.5\text{V}$ | 0.7 | - | 3 | μA |
| I_{7D} | Cdwell Discharge Current | At Low RPM $V_{in}=0.5\text{V}$ | 7 | - | 30 | μA |
| I_{7C} | Cdwell Charge Current | At High RPM $V_{in}=9\text{V}$ | 8 | - | 33 | μA |
| I_{7D} | Cdwell Discharge Current | At High RPM $V_{in}=9\text{V}$ | 13 | - | 44 | μA |
| V_{CH} | Tachometer Signal Output Low Voltage. (pin5) | ON: $I_{sink}=0.5\text{mA}$ | - | - | 0.7 | V |
| I_{CH} | Output Leakage (pin5) | OFF: $V_{pin5}=5\text{V}$ | - | - | 10 | μA |
| V_{OVZ} | External Darlington Overvoltage Protection Zener Voltage | $T_{amb}=+25^{\circ}\text{C}$ | 25 | - | 35 | V |
| | | $I_{pin15}=5\sim 15\text{mA}$ | - | - | - | |
| V_Z | Zener Volt. (pin 11) | $I_{pin11}=140\text{mA}$ | 6.5 | - | 8.8 | V |
| V_{pin3} | Threshold Voltage | $T_{amb}=+25^{\circ}\text{C}$ | 0.84 | - | 4 | V |
| I_3 | Output Current | - | - | - | 3 | μA |

Table 2-2 FM484 Electrical Characteristics

Application Circuit

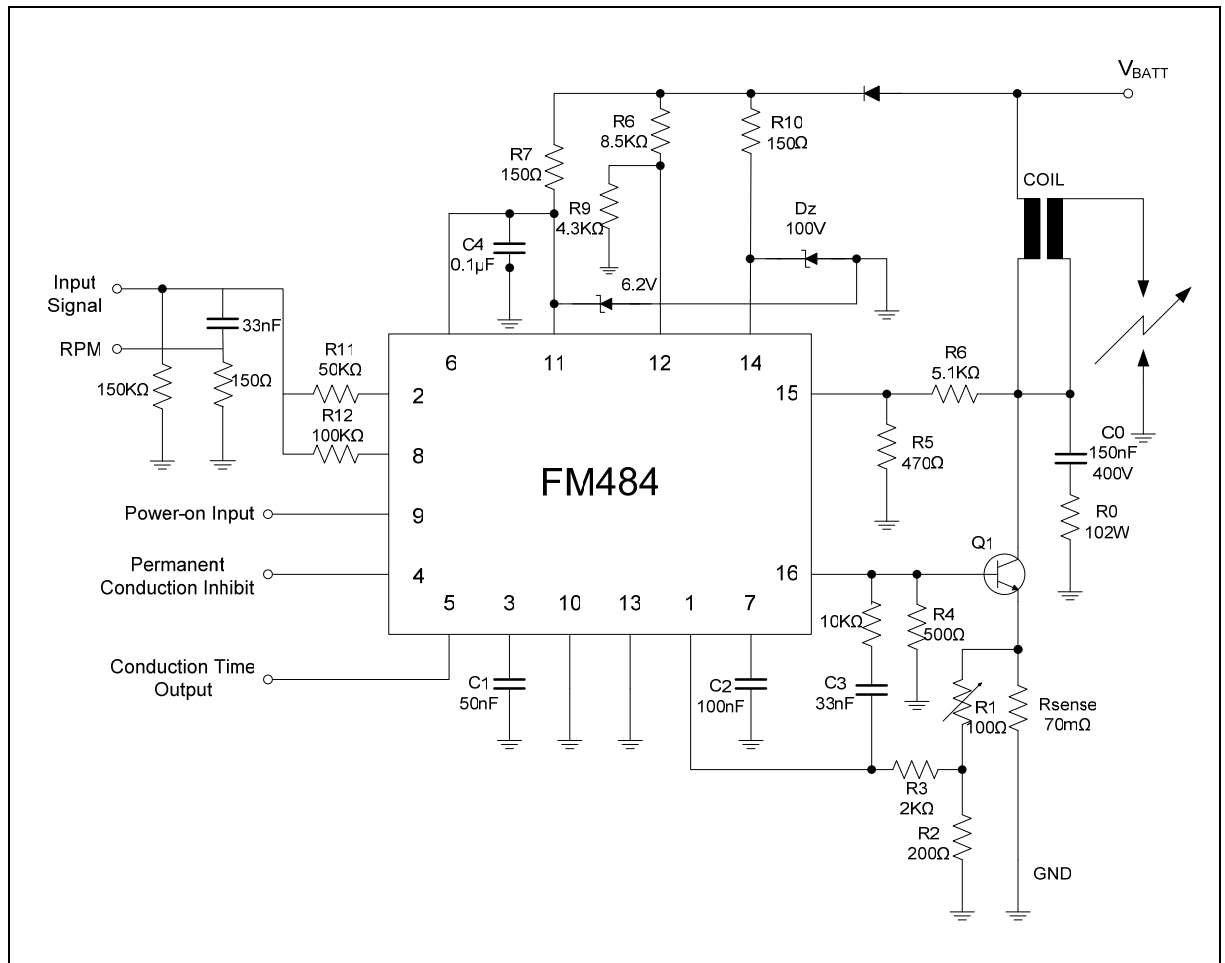


Figure 3-1 FM484 Application Circuit

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. |

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