

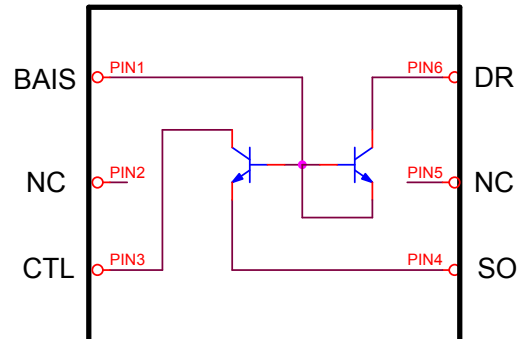
GENERAL DESCRIPTION

The N3869M is a current detector specifically designed for the synchronous rectification applications of the Flyback PWM mode switching power supply.

The N3869M composes of two symmetrical bipolar transistors by a special connection (patented). It detects the current variation of power MOSFET by voltage form and controls the output to be proportional to the detective voltage between source and drain. The N3869M provides a BAIS pin to adjust the sink current capability for generating a slope control at the CTL pin.

The N3869M in the Flyback synchronous rectification applications, it should be used with the synchronous rectification controller N3868V to control the synchronous rectification MOSFET off earlier, to avoid happening a large reverse current via the synchronous rectification MOSFET to damage the device.

BLOCK DIAGRAM



APPLICATION

- Flyback mode power supply

CONFIDENTIAL

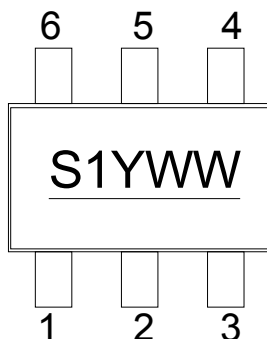
ABSOLUTE MAXIMUM RATING

| PARAMETERS | SYMBOL | LIMITS | UNITS |
|--------------------------------------|------------|-------------|-------|
| Vcc to GND | VCC | -0.3 to 30 | V |
| Vcc to GND | VCC(surge) | 45 | Vp-p |
| DR to Other Pin | | 160 | V |
| Power Dissipation at Ta = 25°C | PD | 200 | mW |
| Operating Junction Temperature Range | Tj | -40 to +150 | °C |
| Storage Temperature Range | TSTG | -65 to +150 | °C |

ELECTRICAL CHARACTERISTICS ($T_c = 25\text{ }^\circ\text{C}$, Unless Otherwise Noted)

| PARAMETERS | SYMBOL | TEST CONDITIONS | LIMITS | | | UNIT |
|--------------------------------------|----------------|---|--------|-----|------|------|
| | | | MIN | TYP | MAX | |
| Collector-Base Breakdown Voltage | $V_{(BR)CBO}$ | $I_c = 100\text{ }\mu\text{A}$, $I_E = 0$ | 180 | | | V |
| Collector-Emitter Breakdown Voltage | $V_{(BR)CEO}$ | $I_c = 1\text{ mA}$, $I_B = 0$ | 160 | | | V |
| Emitter-Base Breakdown Voltage | $V_{(BR)EBO}$ | $I_E = 10\text{ }\mu\text{A}$, $I_c = 0$ | 6 | | | V |
| Collector Cut-off Current | I_{CBO} | $V_{CB} = 120\text{ V}$, $I_E = 0$ | | | 50 | nA |
| Emitter Cut-off Current | I_{EBO} | $V_{EB} = 4\text{ V}$, $I_c = 0$ | | | 50 | nA |
| DC Current Gain | $H_{FE(1)}$ | $V_{CE} = 5\text{ V}$, $I_c = 1\text{ mA}$ | 80 | | | |
| | $H_{FE(2)}$ | $V_{CE} = 5\text{ V}$, $I_c = 10\text{ mA}$ | 80 | | 250 | |
| | $H_{FE(3)}$ | $V_{CE} = 5\text{ V}$, $I_c = 50\text{ mA}$ | 30 | | | |
| Collector-Emitter Saturation Voltage | $V_{CE(sat)1}$ | $I_c = 10\text{ mA}$, $I_B = 1\text{ mA}$ | | | 0.15 | V |
| | $V_{CE(sat)2}$ | $I_c = 50\text{ mA}$, $I_B = 5\text{ mA}$ | | | 0.2 | V |
| Base- Emitter Saturation Voltage | $V_{BE(sat)1}$ | $I_c = 10\text{ mA}$, $I_B = 1\text{ mA}$ | | | 1 | V |
| | $V_{BE(sat)2}$ | $I_c = 50\text{ mA}$, $I_B = 5\text{ mA}$ | | | 1 | V |
| Transition Frequency | f_T | $V_{CE} = 10\text{ V}$, $I_c = 10\text{ mA}$, $f = 100\text{ MHz}$ | 100 | | 300 | MHz |
| Collector Output Capacitive | C_{ob} | $V_{CB} = 10\text{ V}$, $I_E = 0$, $f = 1\text{ MHz}$ | | | 6 | pF |
| Noise Figure | NF | $V_{CE} = 5\text{ V}$, $I_c = 200\text{ }\mu\text{A}$, $f = 1\text{ KHz}$, $R_g = 1\text{ K}\Omega$ | | | 8 | dB |

MARKING



Marking Description:

S1 – N3869
 Y – Year (2008-8,2009-9,2010-A...)
 WW - Week

SOT-26 MECHANICAL DATA

| Dimension | mm | | | Dimension | mm | | |
|-----------|------|------|------|-----------|------|------|------|
| | Min. | Typ. | Max. | | Min. | Typ. | Max. |
| A | 1.0 | 1.1 | 1.3 | G | 0.37 | | |
| A1 | 0.0 | | 0.1 | H | 2.6 | 2.8 | 3.0 |
| B | 0.35 | 0.4 | 0.5 | | | | |
| C | 0.10 | 0.15 | 0.25 | | | | |
| D | 2.7 | 2.9 | 3.1 | | | | |
| E | 1.6 | 1.8 | 2.0 | | | | |
| F | | 1.9 | | | | | |

