

**POWER MANAGEMENT****PRELIMINARY****Description**

The SC1105 is an asynchronous voltage mode PWM controller for applications that require an option of two voltages. An input is provided to select either the input voltage (VIN) or a user programmed voltage at the output.

When the PWM is enabled the 200kHz fixed frequency PWM regulates the output to either a fixed voltage of 1.5V (SC1105) or a user programmed voltage (SC1106). When the PWM is disabled the high side MOSFET gate is turned on to deliver the input voltage directly to the output.

The SC1105/6 internal architecture and functional blocks are based on the SC1101 integrated circuit, therefore, the layout guidelines and reference circuits can be readily applied.

**Features**

- ◆ Low cost / small size
- ◆ Switch mode efficiency  $\geq 85\%$
- ◆ 1% reference voltage accuracy
- ◆ 500mA output drive
- ◆ S0-8 package

**Applications**

- ◆ Switchable AGP supply 1.5V or 3.3V
- ◆ Peripheral card supplies (backward compatibility)
- ◆ User selectable edge connectors
- ◆ PCMCIA cards

## POWER MANAGEMENT

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## Absolute Maximum Ratings

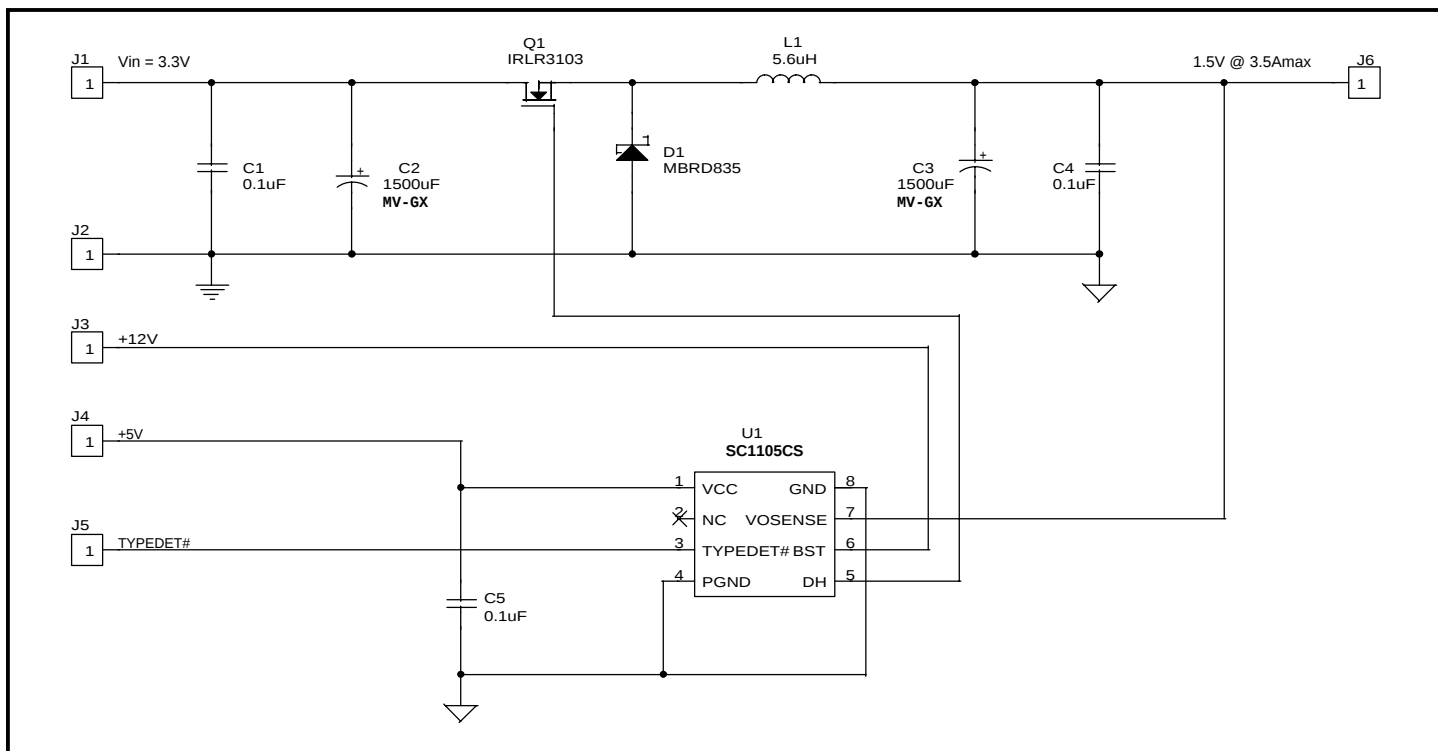
| Parameter                               | Symbol           | Maximum     | Units |
|-----------------------------------------|------------------|-------------|-------|
| Input Voltage                           | $V_{CC}$ to GND  | -0.3 to +7  | V     |
| Ground Differential                     | $P_{GND}$ to GND | +1          | V     |
| Boost Input Voltage                     | BST to GND       | -0.3 to +15 | V     |
| Operating Temperature                   | $T_A$            | 0 to +70    | °C    |
| Storage Temperature Range               | $T_{STG}$        | -45 to +125 | °C    |
| Lead Temperature (Soldering) 10 Sec.    | $T_L$            | 300         | °C    |
| Thermal Resistance, Junction to Ambient | $\theta_{JA}$    | 165         | °C/W  |
| Thermal Resistance, Junction to Case    | $\theta_{JC}$    | 40          | °C/W  |
| ESD Rating (Human Body Model)           | ESD              | 2           | kV    |

## Electrical Characteristics

 $V_{CC} = 4.75V$  to  $5.25V$ ;  $GND = P_{GND} = 0V$ ;  $V_O = 1.5V$ ;  $T_A = 25^\circ C$ ;  $BST = 12V$ ;  $2A$ ;  $V_{IN} = 3.3V \pm 5\%$ .

Per test circuit, unless otherwise specified.

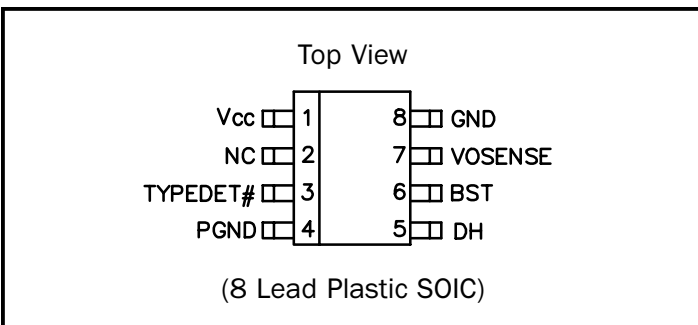
| Parameter              | Symbol       | Conditions                                            | Min   | Typ   | Max   | Units   |
|------------------------|--------------|-------------------------------------------------------|-------|-------|-------|---------|
| Reference              | $V_{REF}$    |                                                       | 1.238 | 1.250 | 1.263 | V       |
|                        |              | Over Temp                                             | 1.225 | 1.250 | 1.275 |         |
| VOSENSE Bias Current   | $I_B$        | SC1106                                                |       | 2.0   | 8.0   | $\mu A$ |
| Quiescent Current      | $I_Q$        | Current into $V_{CC}$ pin                             |       | 5.0   | 8.0   | mA      |
| Regulation Load        | $REG_{LOAD}$ | $I_O = 1A$ to $8A$                                    |       | 0.5   | 1.0   | %       |
| Regulation Line        | $REG_{LINE}$ |                                                       |       |       | 0.1   | %       |
| Oscillator Frequency   | OSC          |                                                       | 180   | 200   | 220   | kHz     |
| Max Duty Cycle         | d.c.         |                                                       | 90    | 95    |       | %       |
| DH Sink/Source Current | $I_O$        | $V_{BST} - DH = 4.5V$<br>( $V_{DH} - V_{PGND} = 2V$ ) | 500   |       |       | mA      |

**Test Circuit**


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### Pin Configuration



### Ordering Information

| Device <sup>(1)</sup> | Package | Temp Range (T <sub>J</sub> ) |
|-----------------------|---------|------------------------------|
| SC1105CS.TR           | SO-8    | 0° to 125°C                  |
| SC1106CS.TR           | SO-8    | 0° to 125°C                  |

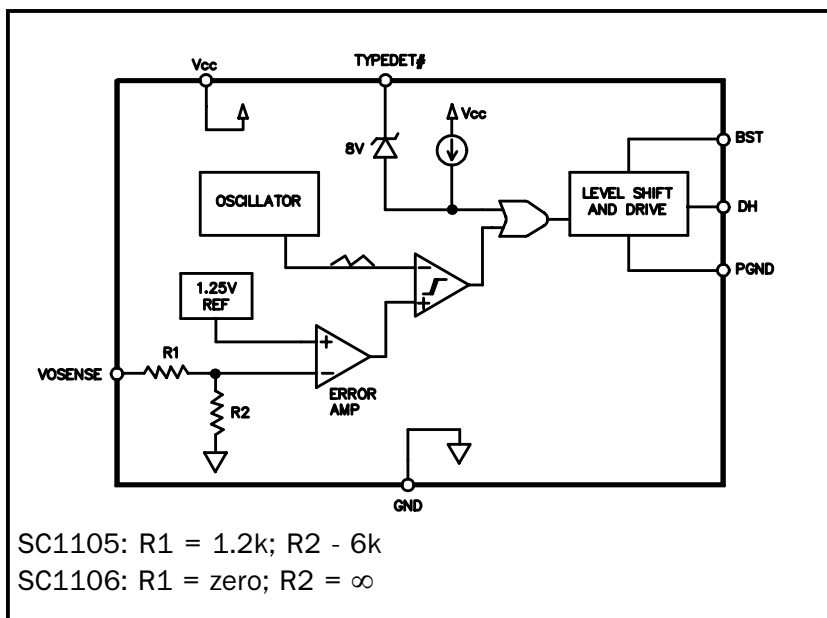
Note:

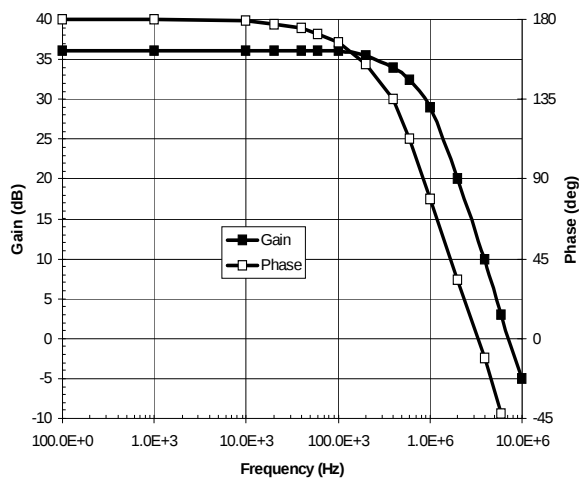
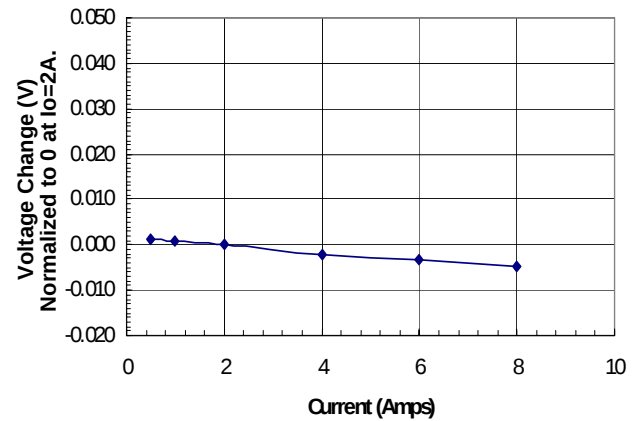
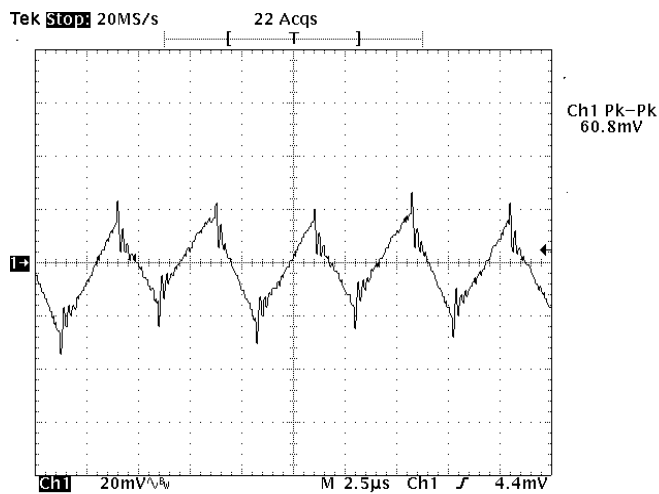
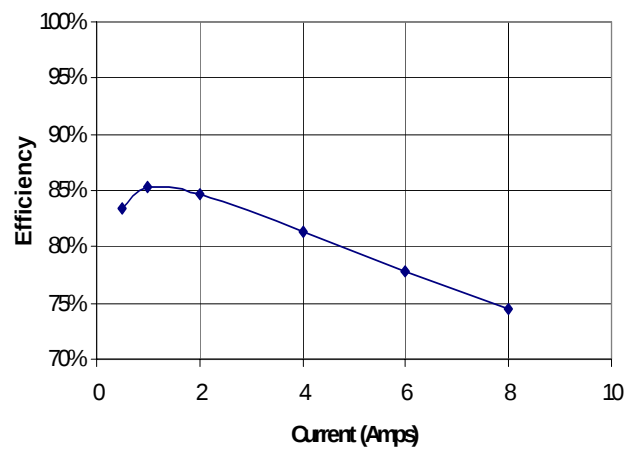
(1) Only available in tape and reel packaging. A reel contains 2500 devices.

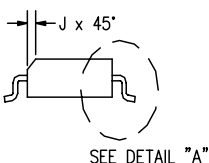
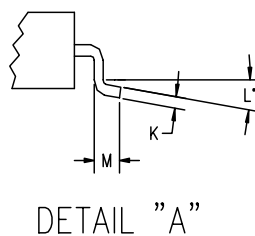
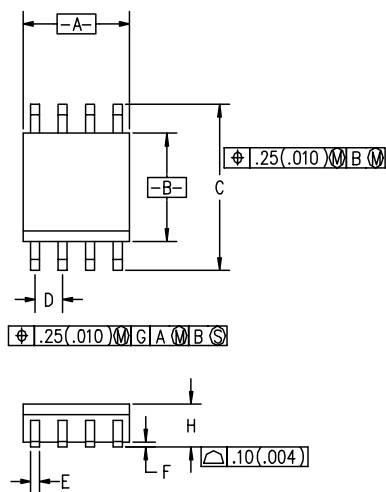
### Pin Descriptions

| Pin # | Pin Name        | Pin Function                                                                     |
|-------|-----------------|----------------------------------------------------------------------------------|
| 1     | V <sub>CC</sub> | Device supply voltage.                                                           |
| 2     | NC              | No connection.                                                                   |
| 3     | TYPEDET#        | Output voltage select, Hi = 3.3V; Lo = 1.5V. Logic level input - TTL compatible. |
| 4     | PGND            | Device power ground.                                                             |
| 5     | DH              | High side driver output.                                                         |
| 6     | BST             | 12V Supply for high side driver.                                                 |
| 7     | VOSENSE         | Top end of internal feedback chain.                                              |
| 8     | GND             | Small signal ground.                                                             |

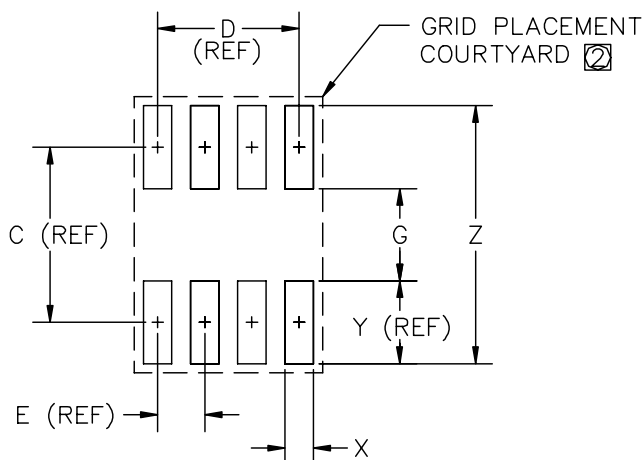
### Block Diagram



**Typical Characteristics**
**Fig.1: Error Amplifier, Gain and Phase**

**Fig.2: Load Regulation @  $V_{IN} = 3.3V$ ,  $V_O = 1.5V$** 

**Fig.3: Ripple @  $V_O = 1.5V$ ,  $I_O = 8A$** 

**Fig.4: Efficiency @  $V_{IN} = 3.3V$ ,  $V_O = 1.5V$** 


**POWER MANAGEMENT**
**PRELIMINARY**
**Outline Drawing**


| DIM <sup>N</sup> | INCHES |      | MM   |      | NOTE |
|------------------|--------|------|------|------|------|
|                  | MIN    | MAX  | MIN  | MAX  |      |
| A                | .188   | .197 | 4.80 | 5.00 |      |
| B                | .149   | .158 | 3.80 | 4.00 |      |
| C                | .228   | .244 | 5.80 | 6.20 |      |
| D                | .050   | BSC  | 1.27 | BSC  |      |
| E                | .013   | .020 | 0.33 | 0.51 |      |
| F                | .004   | .010 | 0.10 | 0.25 |      |
| H                | .053   | .069 | 1.35 | 1.75 |      |
| J                | .011   | .019 | 0.28 | 0.48 |      |
| K                | .007   | .010 | .19  | .25  |      |
| L                | 0°     | 8°   | 0°   | 8°   |      |
| M                | .016   | .050 | 0.40 | 1.27 |      |

**Land Pattern - SO-8**


| DIM <sup>N</sup> | INCHES |     | MM   |      | NOTE |
|------------------|--------|-----|------|------|------|
|                  | MIN    | MAX | MIN  | MAX  |      |
| C                | —      | .19 | —    | 5.00 | —    |
| D                | —      | .15 | —    | 3.81 | —    |
| E                | —      | .05 | —    | 1.27 | —    |
| G                | .10    | .11 | 2.60 | 2.80 | —    |
| X                | .02    | .03 | .60  | .80  | —    |
| Y                | —      | .09 | —    | 2.40 | —    |
| Z                | —      | .29 | 7.20 | 7.40 | —    |

② GRID PLACEMENT COURTYARD IS 12x16 ELEMENTS (6 mm X 8mm) IN ACCORDANCE WITH THE INTERNATIONAL GRID DETAILED IN IEC PUBLICATION 97.

① CONTROLLING DIMENSION: MILLIMETERS

**Contact Information**

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