

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

PRELIMINARY

Absolute Maximum Ratings

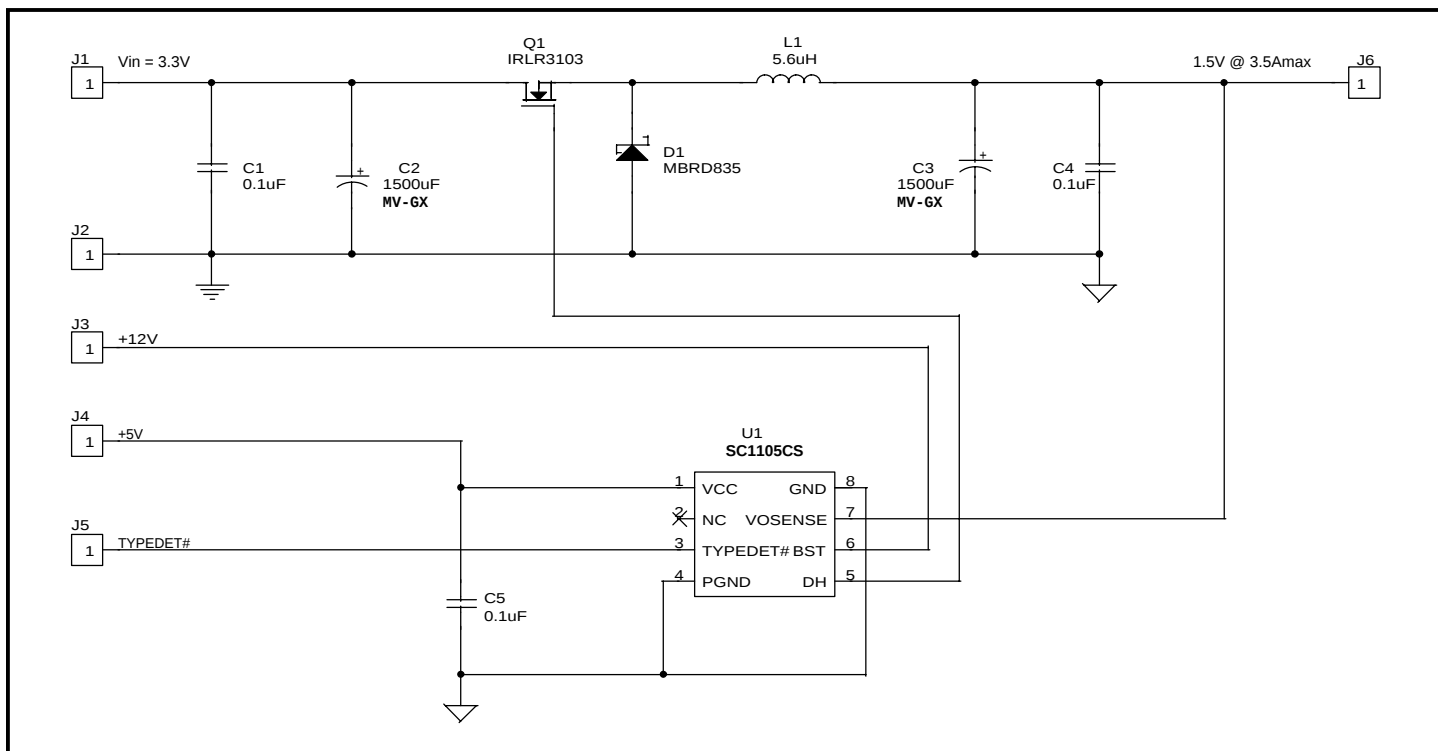
Parameter	Symbol	Maximum	Units
Input Voltage	V_{CC} to GND	-0.3 to +7	V
Ground Differential	P_{GND} to GND	+1	V
Boost Input Voltage	BST to GND	-0.3 to +15	V
Operating Temperature	T_A	0 to +70	°C
Storage Temperature Range	T_{STG}	-45 to +125	°C
Lead Temperature (Soldering) 10 Sec.	T_L	300	°C
Thermal Resistance,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

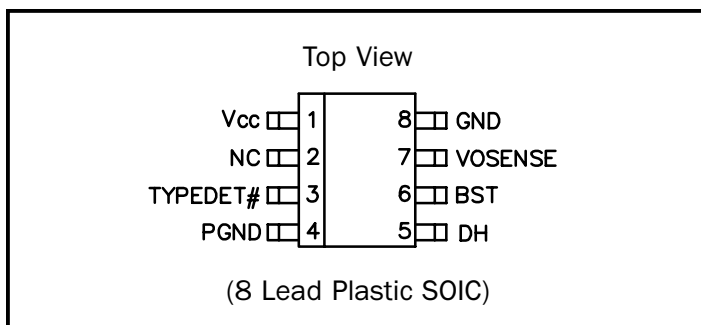
Electrical Characteristics

 $V_{CC} = 4.75V$ 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	μA
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	$V_{BST} - DH = 4.5V$ ($V_{DH} - V_{PGND} = 2V$)	500			mA

Test Circuit


POWER MANAGEMENT
PRELIMINARY
Pin Configuration
Ordering Information


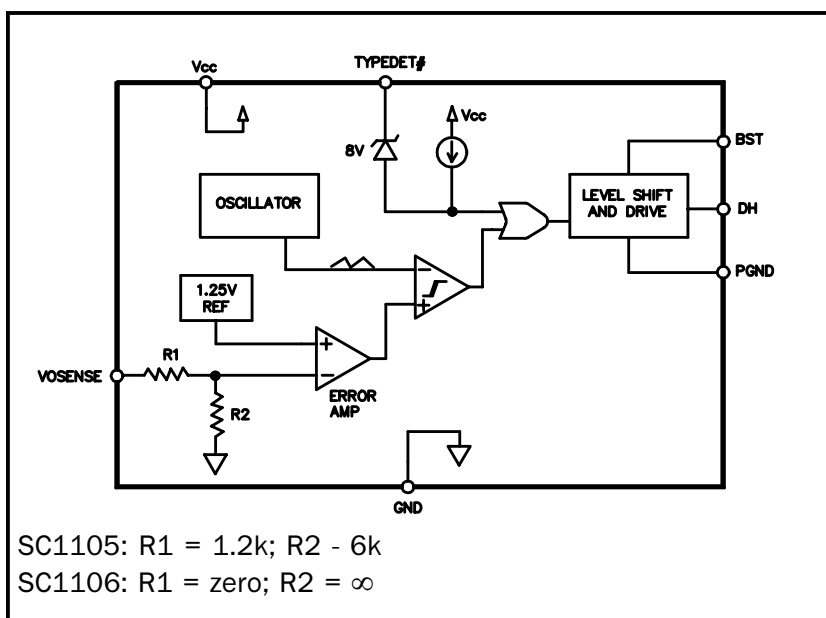
Device ⁽¹⁾	Package	Temp Range (T _J)
SC1105CS.TR	SO-8	0° to 125°C
SC1106CS.TR	SO-8	0° to 125°C

Note:

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

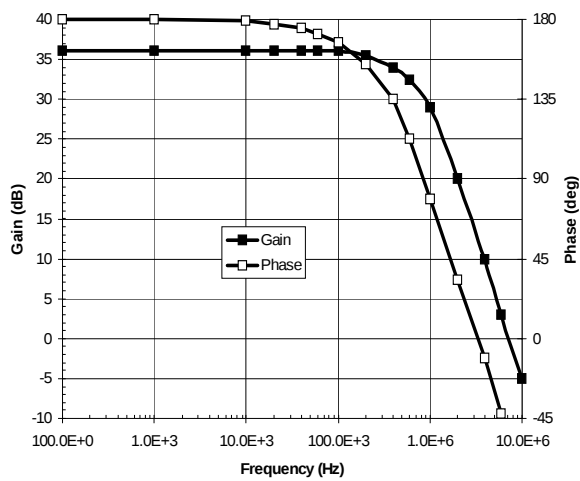
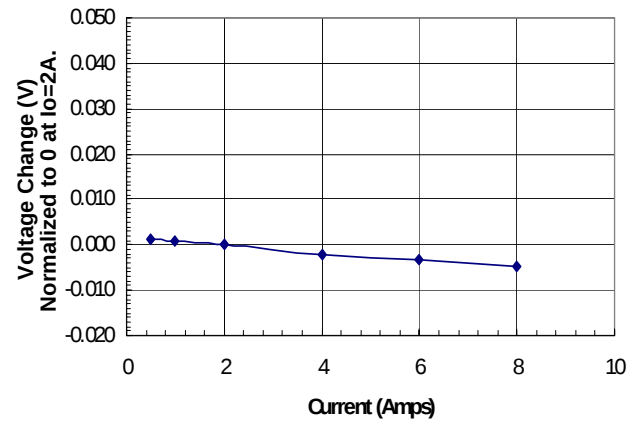
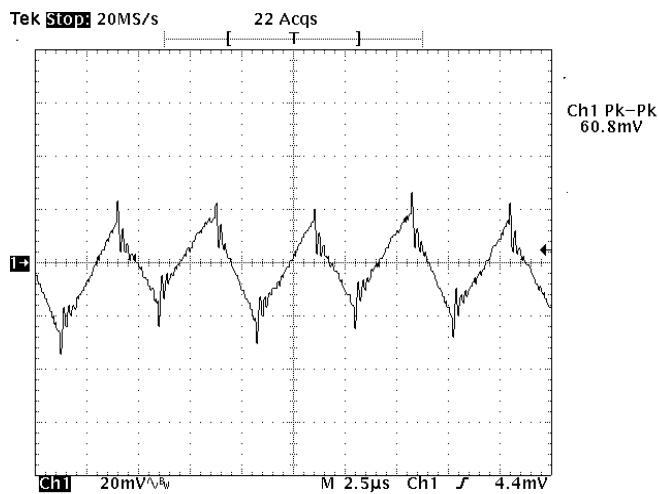
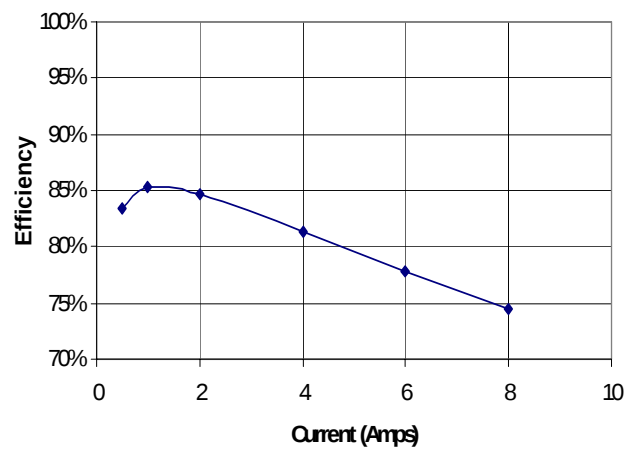
Pin Descriptions

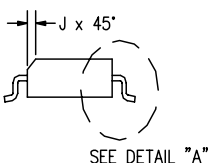
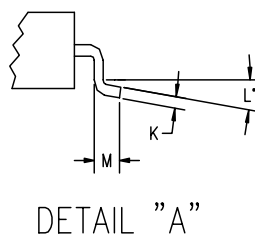
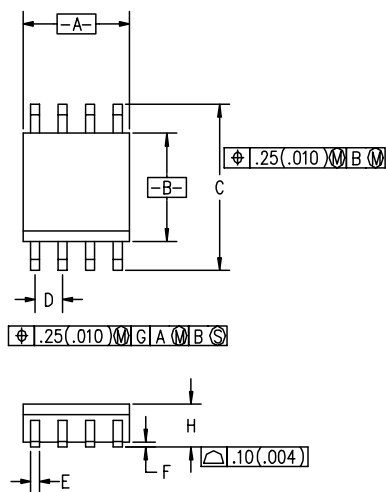
Pin #	Pin Name	Pin Function
1	V _{CC}	Device supply voltage.
2	NC	No connection.
3	TYPEDET#	Output voltage select, Hi = 3.3V; Lo = 1.5V. Logic level input - TTL compatible.
4	PGND	Device power ground.
5	DH	High side driver output.
6	BST	12V Supply for high side driver.
7	VOSENSE	Top end of internal feedback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

Block Diagram


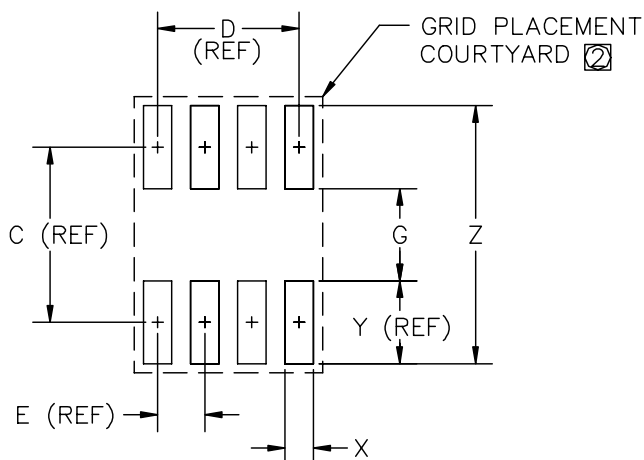
Typical Characteristics

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 ^N	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 ^N	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

Semtech Corporation
 Power Management Products Division
 652 Mitchell Rd., Newbury Park, CA 91320
 Phone: (805)498-2111 FAX (805)498-3804