SY8876

High Efficiency 1.2MHz, 6A 6.5V Synchronous Step Down Regulator

General Description

The SY8876 is a high efficiency 1.2MHz synchronous step down DC/DC regulator capable of delivering up to 6A output current. It operates over a wide input voltage range from 2.7V to 6.5V. It integrates main switch and synchronous switch with very low $R_{DS(ON)}$ to minimize the conduction loss. High integrated solution and DFN2×2-8 package perform the optimized BOM cost and reduce external component part count. Low input and output voltage ripple, small external inductor and capacitor sizes, small PCB layout space are achieved.

Features

- Low $R_{DS(ON)}$ for Internal Switches (Top/Bottom): 38/15 mΩ
- 2.7-6.5V Input Voltage Range
- 1.2 MHz Switching Frequency Minimizes the External Components
- Internal Soft-start Limits the Inrush Current
- Up to 94% Efficiency
- 6A Continuous Output Current Capability
- Shutdown Mode Draws<0.1μA Supply Current
- 100% Dropout Operation
- Power Good Indicator
- OCP/UVLO/OTP Protections
- RoHS Compliant and Halogen Free
- Compact Package: DFN2×2-8

Ordering Information

SY8876 □(□□)□

- Temperature Code
- Package Code
- Optional Spec Code

Ordering Number	Package type	Note
SY8876DFC	DFN2×2-8	

Applications

- High Definition Set Top Box
- LCD TV
- Notebook PC

Typical Applications

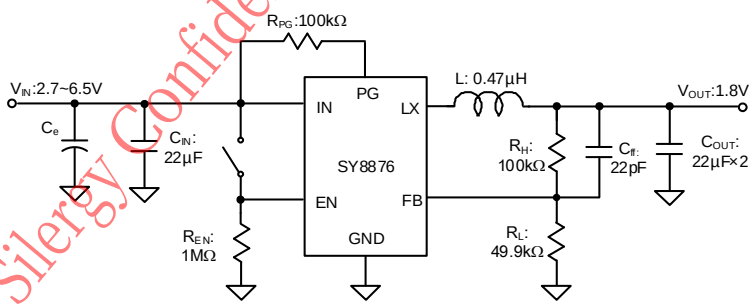


Figure 1. Schematic Diagram

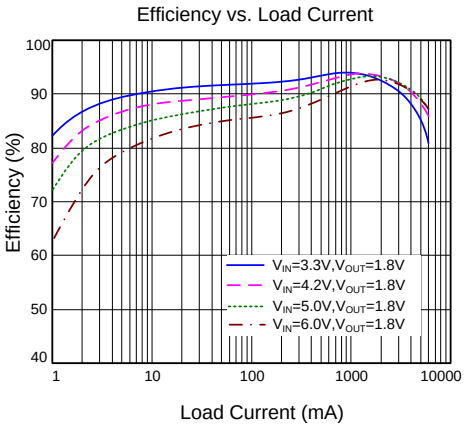
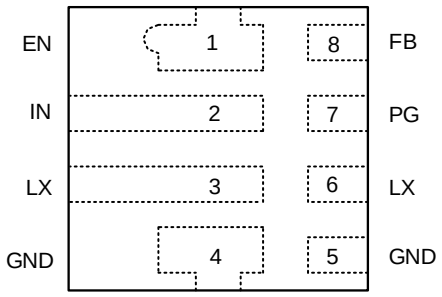


Figure 2. Efficiency vs. Load Current

Pinout (top view)

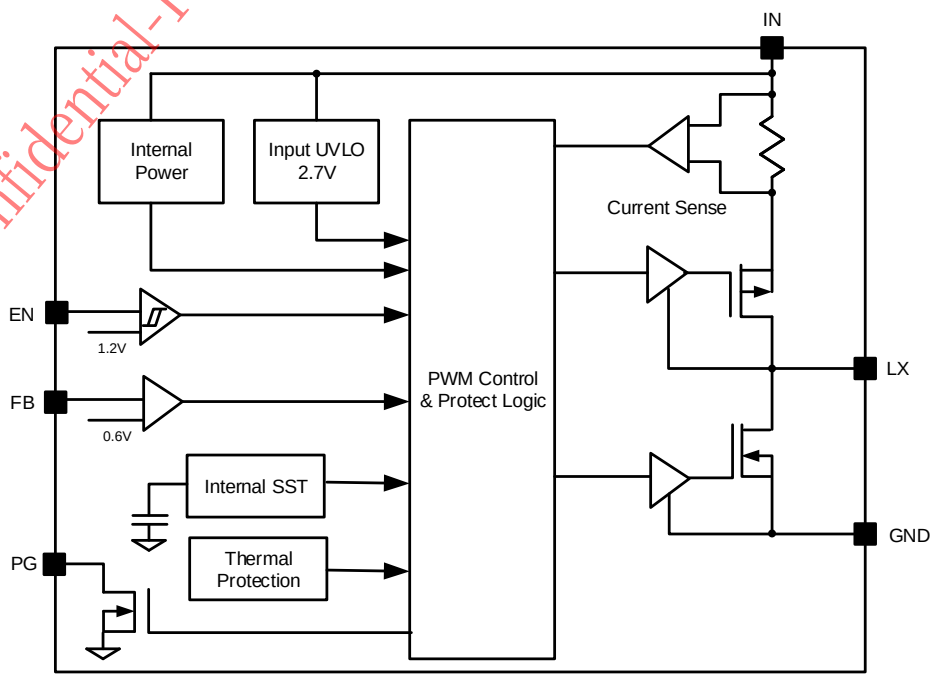


(DFN2×2-8)

Top Mark: Gb*xyz* (device code: Gb, ***x=year code, y=week code, z= lot number code***)

Pin Name	Pin Number	Description
EN	1	Enable control. Pull high to turn on. Do not leave it floating.
IN	2	Power input pin. Decouple this pin to GND with at least a 22μF ceramic capacitor.
LX	3,6	Inductor pin. Connect this pin to the switching node of inductor.
GND	4,5	Ground pins.
PG	7	Power good indicator, open drain. When the output voltage exceeds 90% of regulation point, it becomes high, low otherwise.
FB	8	Output feedback pin. Connect this pin to the center point of the output resistor divider(as shown in Figure.1) to program the output voltage: $V_{OUT}=0.6\times(1+R_H/R_L)$

Block Diagram



Absolute Maximum Ratings (Note 1)

IN, LX ---------- 7V
All Other Pins---------- V_{IN} + 0.5V
Power Dissipation, P_D @ T_A = 25℃ DFN2×2 ---------- 2W
Package Thermal Resistance (Note 2)
θ_{JA} ---------- 62.5℃/W
θ_{JC} ---------- 10℃/W
Junction Temperature Range ---------- -40℃ 150℃
Lead Temperature (Soldering, 10 sec.) ---------- 260℃
Storage Temperature Range ---------- -65℃ to 150℃

Recommended Operating Conditions (Note 3)

Supply Input Voltage ---------- 2.7V to 6.5V
Output Voltage ---------- 0.6V to 6V
Junction Temperature Range ---------- -40℃ to 125℃
Ambient Temperature Range ---------- -40℃ to 85℃

Electrical Characteristics

(V_{IN} = 5V, V_{OUT} = 2.5V, L =0.47μH, C_{OUT} = 22μF×2, T_A = 25℃, I_{OUT} = 1A unless otherwise specified)

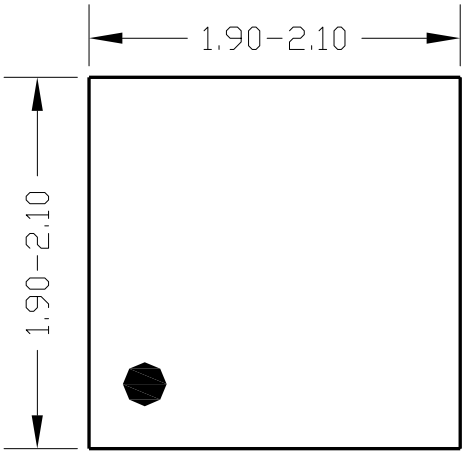
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Input Voltage Range	V_{IN}		2.7		6.5	V
Quiescent Current	I_Q	I_{OUT}=0, EN=1, V_{FB}=105%×V_{REF}		60		μA
Shutdown Current	I_{SHDN}	EN=0		0.1	1	μA
Feedback Reference Voltage	V_{REF}		0.591	0.6	0.609	V
NFET $R_{DS(ON)}$	$R_{DS(ON)N}$			15		mΩ
PFET $R_{DS(ON)}$	$R_{DS(ON)P}$			38		mΩ
Input Peak Current Limit	I_{LIM}		7.5			A
Internal Soft-start Time	t_{SS}			0.8		ms
PGOOD Under-voltage Threshold	$V_{FB,LV}$			0.54		V
Short Circuit Protection Threshold	V_{SCP}			0.25		V
Min On Time	$t_{ON, MIN}$			60		ns
Max Duty Cycle	D_{MAX}		100			%
EN Rising Threshold	V_{ENH}		1.2			V
EN Falling Threshold	V_{ENL}				0.4	V
Input UVLO Threshold	V_{UVLO}				2.7	V
UVLO Hysteresis	V_{HYS}			0.3		V
Oscillator Frequency	f_{OSC}			1.2		MHz
Thermal Shutdown Temperature	T_{SD}			150		℃
Thermal Shutdown Hysteresis	T_{HYS}			15		℃
LX Node Discharge Resistor	R_{DSH}			50		Ω

Note 1: Stresses beyond the "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only. Functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

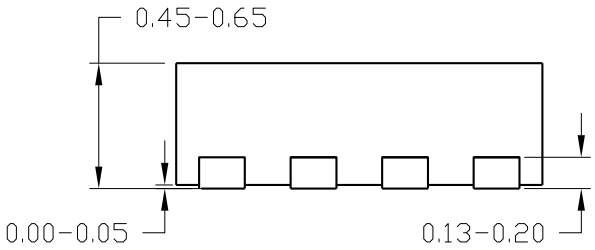
Note 2: θ_{JA} is measured in the natural convection at T_A = 25℃ on 2OZ four-layers Silergy evaluation board of JEDEC 51-3 thermal measurement standard. Paddle of DFN2×2-8 package is the case position for θ_{JC} measurement.

Note 3: The device is not guaranteed to function outside its operating conditions.

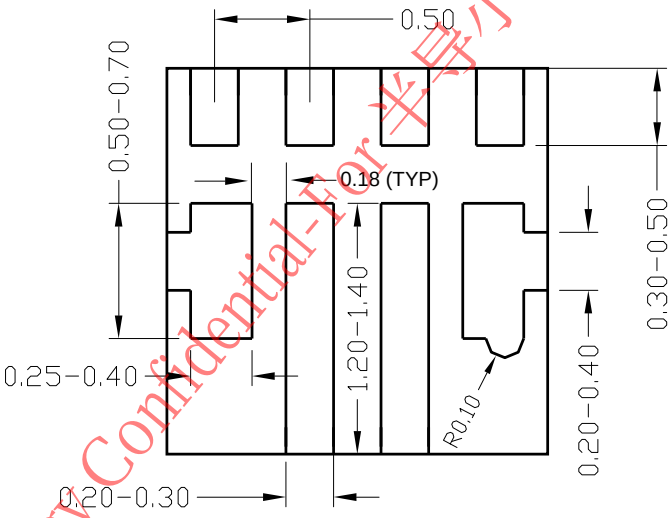
DFN2×2-8 Package Outline



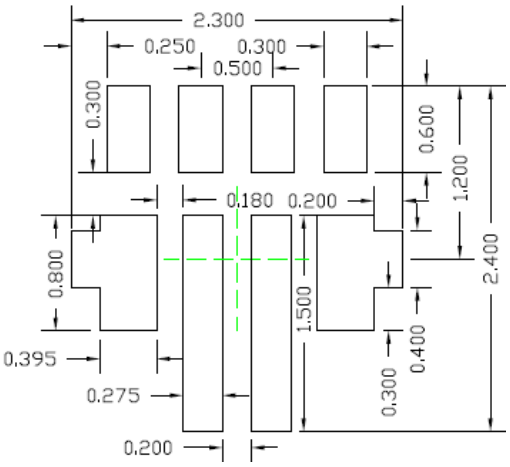
Top View



Side View



Bottom View

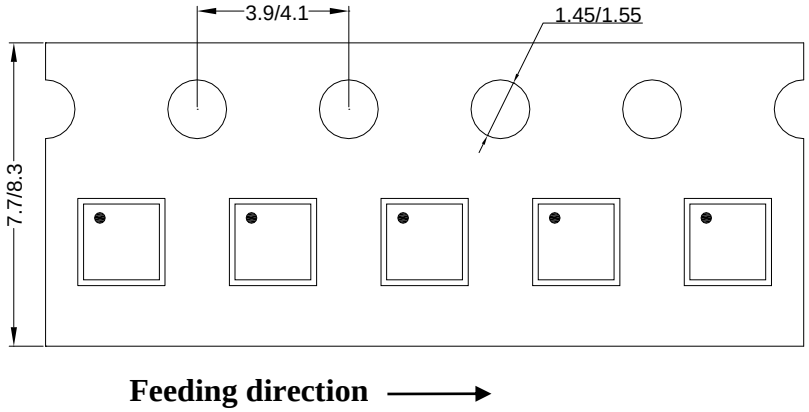


Recommended PCB

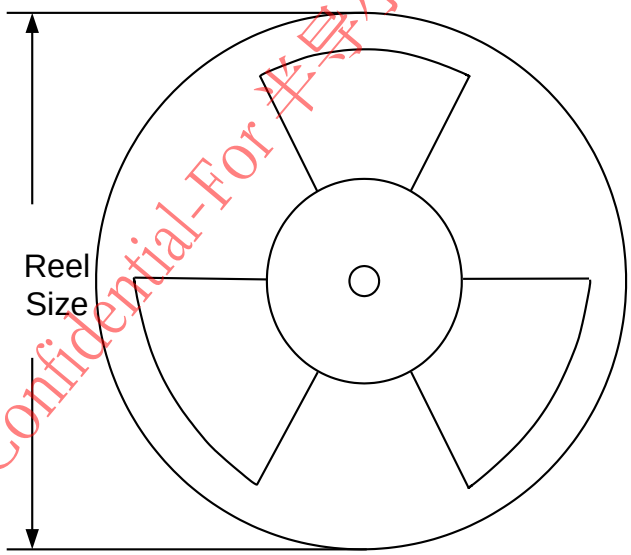
Notes: **All dimension in millimeter**
All dimension do not include mold flash & metal burr

Taping & Reel Specification

1. DFN2×2



2. Carrier Tape & Reel specification for packages



Package types	Tape width (mm)	Pocket pitch(mm)	Reel size (Inch)	Trailer length(mm)	Leader length (mm)	Qty per reel
DFN2×2	8	4	7"	400	160	3000

3. Others: NA

单击下面可查看定价，库存，交付和生命周期等信息

>>SILERGY(矽力杰)