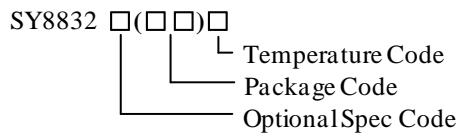


### General Description

The SY8832 is a dual-output, high efficiency 2MHz synchronous step down DC-DC regulator IC, capable of delivering up to 2A output current each output channel. The SY8832 operates over a wide input voltage range from 2.5V to 5.5V and integrates main switch and synchronous switch with very low  $R_{DS(ON)}$  to minimize the conduction loss.

### Ordering Information



Ordering Number	Package type	Note
SY8832AIC	TSOT23-8	--

### Features

- Input range: 2.5V to 5.5V input voltage
- 2MHz switching frequency
- 180° out of phase operation
- Output current: 2A per channel
- Low Quiescent Current: <45uA for both channels
- Low  $R_{DS(ON)}$  for internal switches (PFET/NFET): 125mΩ/100mΩ
- Internal soft-start
- 100% dropout operation
- RoHS Compliant and Halogen Free
- Compact package: TSOT23-8

### Applications

- SSD
- Cell Phones
- Digital Cameras
- PDAs
- Portable Media Players

### Typical Applications

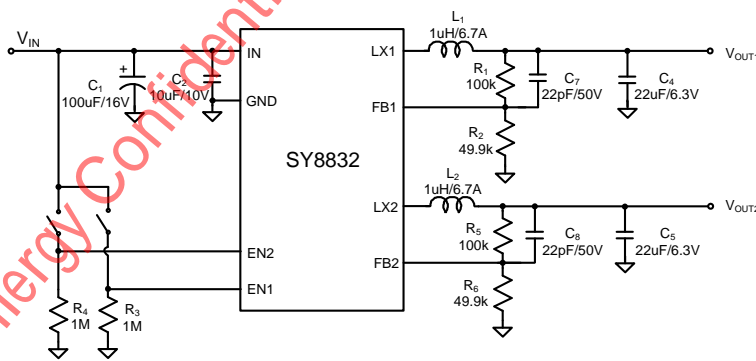


Figure 1. Schematic Diagram

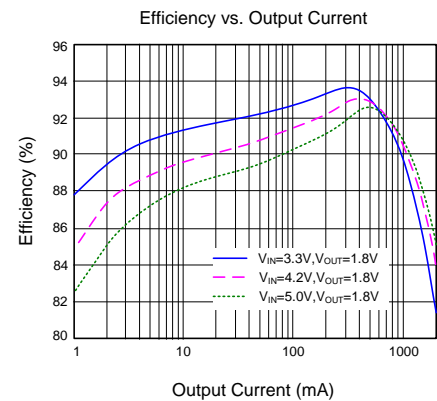
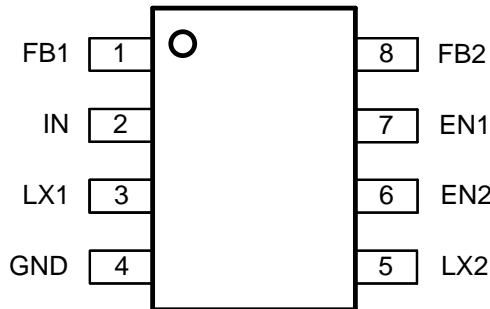


Figure 2. Efficiency vs. Output Current

**Pinout (top view)**


Top Mark: **Rtxyz** (Device code: Rt; *x=year code, y=week code, z=lot number code*)

Pin Name	Pin Number	Pin Description
FB1	1	Feedback pin for output1. Connect this pin to the center point of the output resistor divider (as shown in Figure 1) to program the output1 voltage: $V_{OUT1}=0.6V \times (1+R_{H1}/R_{L1})$
IN	2	Power input pin. Decouple this pin to ground pin at least 10uF ceramic cap
LX1	3	Inductor pin for output1. Connect this pin to the switching node of inductor.
GND	4	Ground pin.
LX2	5	Inductor pin for output2. Connect this pin to the switching node of inductor.
EN2	6	Enable pin for output2. Do not leave it floating.
EN1	7	Enable pin for output1. Do not leave it floating.
FB2	8	Feedback pin for output2. Connect this pin to the center point of the output resistor divider (as shown in Figure 1) to program the output2 voltage: $V_{OUT2}=0.6V \times (1+R_{H2}/R_{L2})$

**Absolute Maximum Ratings** (Note 1)

Input Supply Voltage	-0.3V to 6V
FB1, FB2, EN1, EN2 Voltage	-0.3V to $V_{IN}+0.6V$
LX1, LX2 Voltage	-0.3V <sup>(*1)</sup> to 6V <sup>(*2)</sup>
Power Dissipation, $P_D$ @ $T_A = 25^\circ C$ , TSOT23-8	1.8W
Package Thermal Resistance (Note 2)	
$\theta_{JA}$	55 $^\circ C/W$
$\theta_{JC}$	8 $^\circ C/W$
Junction Temperature Range	150 $^\circ C$
Lead Temperature (Soldering, 10 sec.)	260 $^\circ C$
Storage Temperature Range	-65 $^\circ C$ to 150 $^\circ C$

(\*1) LX1, LX2 Voltage tested down to -5V <10ns

(\*2) LX1, LX2 Voltage tested up to +8V <50ns

**Recommended Operating Conditions** (Note 3)

Supply Input Voltage	2.5V to 5.5V
Enable, FB Voltage	$V_{IN}+0.3V$
Junction Temperature Range	-40 $^\circ C$ to 125 $^\circ C$
Ambient Temperature Range	-40 $^\circ C$ to 85 $^\circ C$

## Electrical Characteristics

( $V_{IN}=5V$ ,  $V_{OUT1}=V_{OUT2}=2.5V$ ,  $L_1=L_2=1.0\mu H$ ,  $C_{OUT1}=C_{OUT2}=22\mu F$ ,  $T_A=25^\circ C$  unless otherwise specified)

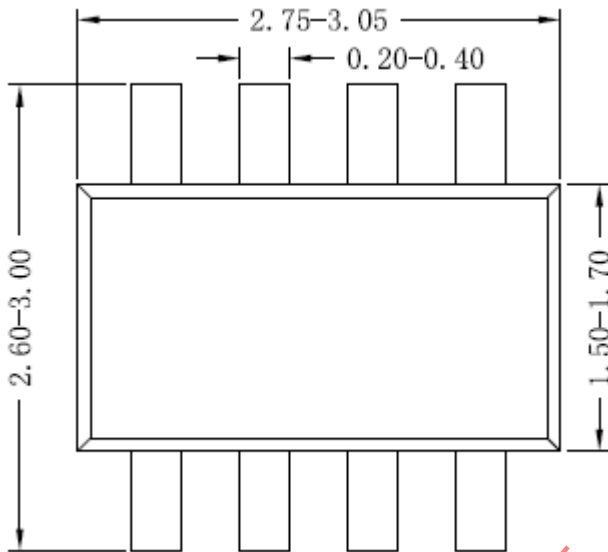
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Input Voltage Range	$V_{IN}$		2.5		5.5	V
Shutdown Current	$I_{SHDN}$	EN1=EN2=0		0.1	1	$\mu A$
Quiescent Current	$I_Q$	EN1=1 or EN2=1, $I_{OUT1}=I_{OUT2}=0$ , no switching		35		$\mu A$
		EN1=1 and EN2=1, $I_{OUT1}=I_{OUT2}=0$ , no switching		45		$\mu A$
Input UVLO Threshold	$V_{UVLO}$				2.5	V
UVLO Hysteresis	$V_{HYS1}$			0.2		V
Oscillator Frequency	fOSC	$I_{OUT1}=0.1A$ , $I_{OUT2}=0.1A$		2.0		MHz
Thermal Shutdown Temperature	$T_{SD}$			150		$^\circ C$
Thermal Shutdown Hysteresis	$T_{HYS}$			20		$^\circ C$
Feedback Reference Voltage	$V_{REF1}$ , $V_{REF2}$		0.588	0.600	0.612	V
PFET $R_{ON}$	$R_{DS(ON),P1}$ $R_{DS(ON),P2}$			125		m $\Omega$
NFET $R_{ON}$	$R_{DS(ON),N1}$ $R_{DS(ON),N2}$			100		m $\Omega$
PFET Current Limit	$I_{LIM1}$ , $I_{LIM2}$		2.7			A
EN Rising Threshold	$V_{ENH1}$ , $V_{ENH2}$		1.2			V
EN Falling Threshold	$V_{ENL1}$ , $V_{ENL2}$				0.4	V
Internal Soft Start Time	$t_{SS1}$ , $t_{SS2}$			0.5		ms

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

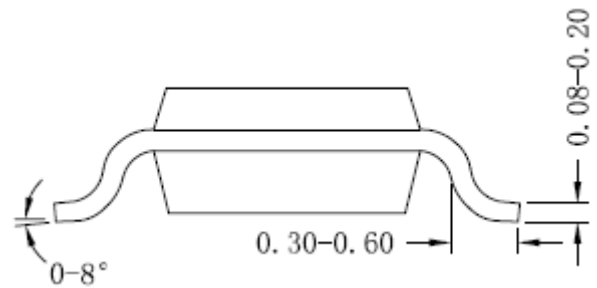
**Note2:**  $\theta_{JA}$  of SY8832AIC is measured in the natural convection at  $T_A=25^\circ C$  on 20Z four-layers silergy evaluation board of JEDEC 51-3 thermal measurement standard. Paddle of TSOT23-8 package is the case position for SY8832AIC.

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

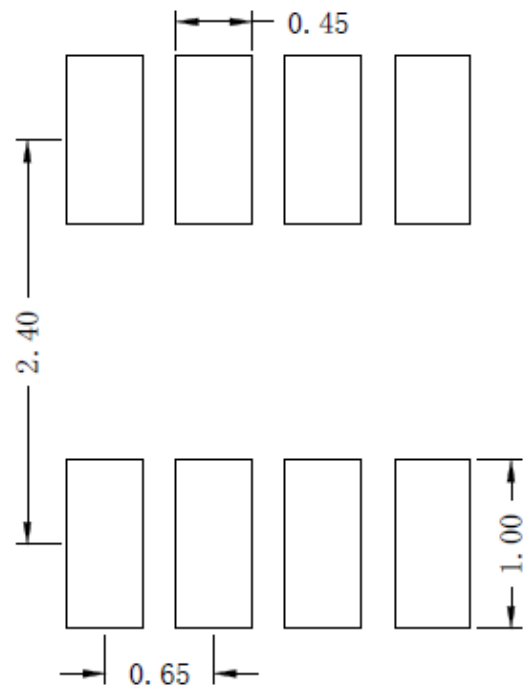
**TSOT23-8 Package Outline Drawing**



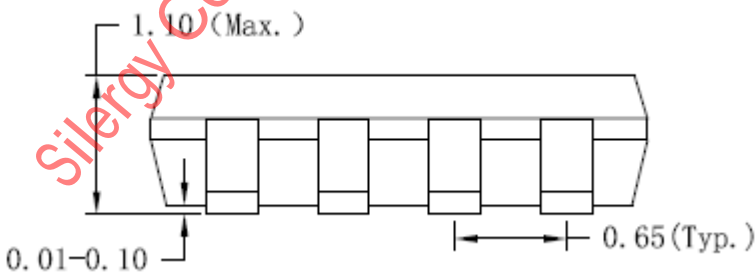
**Top view**



**Side view A**



**Recommended PCB layout  
(Reference only)**

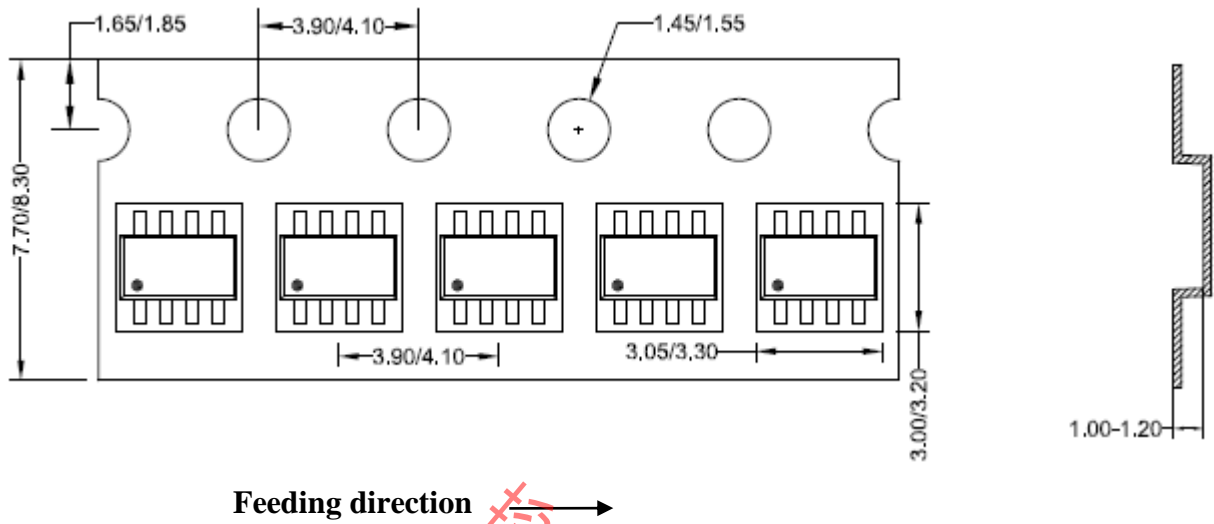


**Side view B**

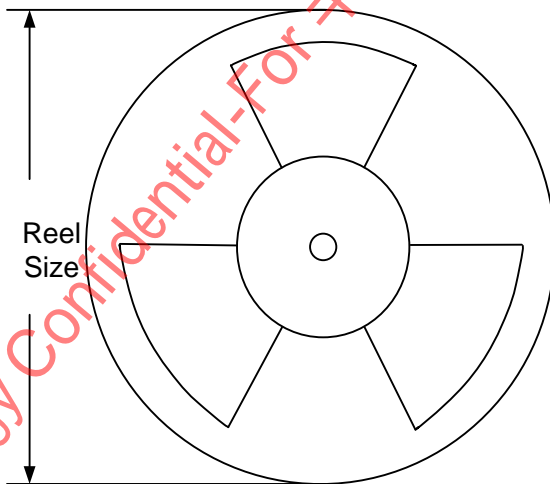
**Notes: All dimension in millimeter and exclude mold flash & metal burr**

**Taping & Reel Specification**

**1. TSOT23-8 taping orientation**



**2. Carrier Tape & Reel specification for packages**



Package type	Tape width (mm)	Pocket pitch (mm)	Reel size (Inch)	Trailer length (mm)	Leader length (mm)	Qty per reel
TSOT23-8	8	4	7	400	160	3000

**3. Others: NA**