



Synchronous Step-Up DC-DC Converter With PFM Control

CYH8116

General Description

The CYH8116 Series is a Synchronous step-up DC/DC Converter with PFM Control. With the CYH8116 Series, a step-up switching DC/DC converter can be configured by using an external coil, capacitor. The built-in MOSFET is turned off by a protection circuit when the voltage at the LX pin exceeds the limit to prevent it from being damaged



Features

- External parts: Coil, capacitor
- Output voltage: 2.1V to 5.5V
- Maximum Oscillation frequency : 300KHz
- Accuracy of $\pm 2\%$
- High efficiency : 95%
- Package: SOT23 and TO92

Applications

- Digital cameras
- Electronic notebooks and PDAS
- Portable CD/MD players
- Cameras , video equipment
- Communications equipment
- Power supply for microcomputers

Order information

Product model	Package	Manner of packing	Minimum packing quantity
CYH8116AxxNx	SOT23	reel	3000
CYH8116AxxTx	TO92	pocket	1000

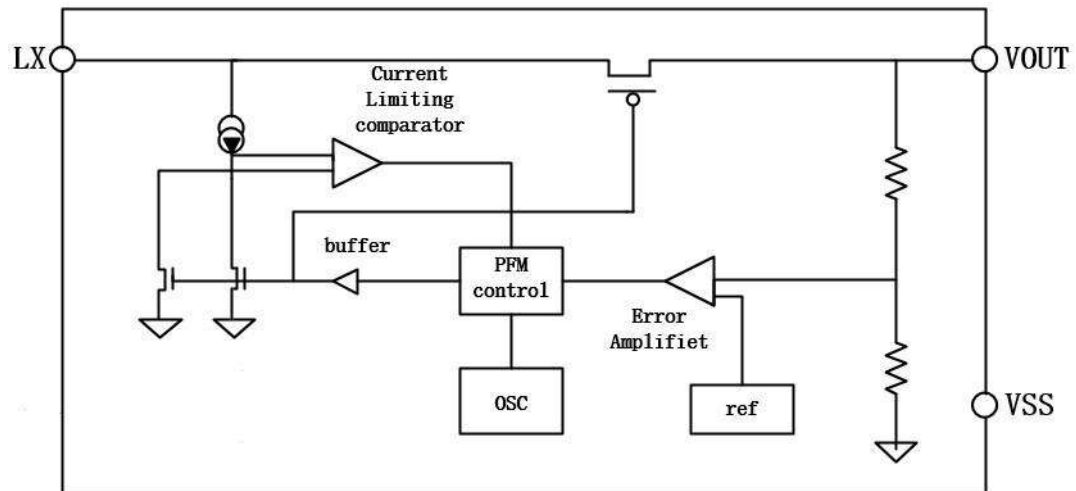
Selection Guide Table

CYH8116①②③④⑤

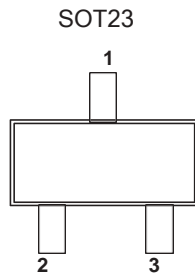
Designator	Symbol	Description
①	A	Standard
②③	Integer	Output Voltage (2.1V~5.5V) e.g:3.0V=②: 3; ③: 0
④	T	Package:TO-92
	N	Package:SOT23
⑤	R	RoHS / Pb Free
	G	Halogen Free

Note: Settable to between 2.1V to 5.5V in 0.1V steps.

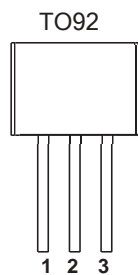
Functional Block Diagram



Pin Assignment


Table1 CYH8116A series (SOT23 PKG)

PIN NO.	PIN NAME	FUNCTION
1	VOUT	Output voltage pin
2	Vss	GND pin
3	LX	External inductor connection pin


Table2 CYH8116A series (TO92 PKG)

PIN NO.	PIN NAME	FUNCTION
1	Vss	GND pin
2	VOUT	Output voltage pin
3	LX	External inductor connection pin

Absolute Maximum Ratings

(Unless otherwise specified, Ta=25°C)

PARAMETER		SYMBOL	RATINGS	UNITS
VOUT Pin Voltage		VOUT	VSS-0.3~VSS+8	V
LX Pin Voltage		VLX	VSS-0.3~VSS+8	V
LX Pin Current		ILX	1000	mA
Power Dissipation	SOT23	PD	250	mW
	TO-92		500	mW
Operating Temperature		TOPR	-40~+85	°C
Storage Temperature		TSTG	-40~+125	°C
Soldering Temperature & Time		TSOLDE, R	260°C, 10s	

Note: These are stress ratings only. Stresses exceeding the range specified under “Absolute Maximum Ratings” may cause substantial damage to the device. Functional operation of this device at other conditions beyond those listed in the specification is not implied and prolonged exposure to extreme conditions may affect device reliability.

Electrical Characteristics

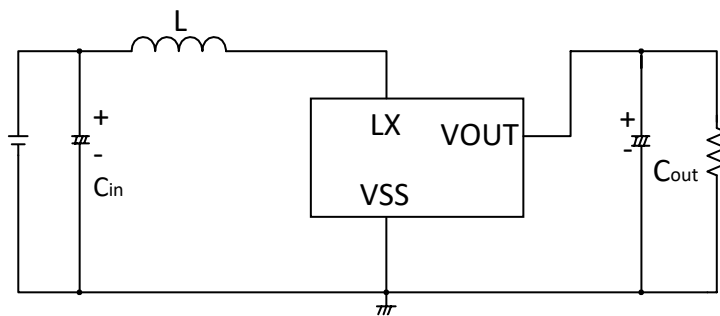
(Unless otherwise specified, $T_a = 25^\circ\text{C}$)

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	CONDITION
Output Voltage	VOUT	VOUT (S) $\times 0.98$	VOUT	VOUT (S) $\times 1.02$	V	-
Input Voltage	VIN	-	-	7.5	V	-
Operation Start Voltage	VST1		-	0.9	V	IOUT=1mA VOUT=2.2V~4.2V
Operation Start Voltage	VST1	-	-	1.2	V	IOUT=1mA VOUT=4.2V~5.5V
Input Current At No Load	ISS	-	15	25	μA	VIN=1.8V, VOUT=3.0V
			25	35	μA	VIN=0.9V, VOUT=3.0V
Current Consumption 2	ISS2	-	6	10	μA	VOUT=VOUT (S) +0.5V
Maximum Oscillation Frequency	fosc		300		KHz	VOUT=0.95xVOUT (S), measure Waveform at LX pin
Duty Ratio1	Duty1	70	78	85	%	VOUT=0.95xVOUT (S)
Efficiency	EFF1		90		%	

Remark: VOUT(S) specified above is the set output voltage value, and VOUT is the typical value of the actual output voltage

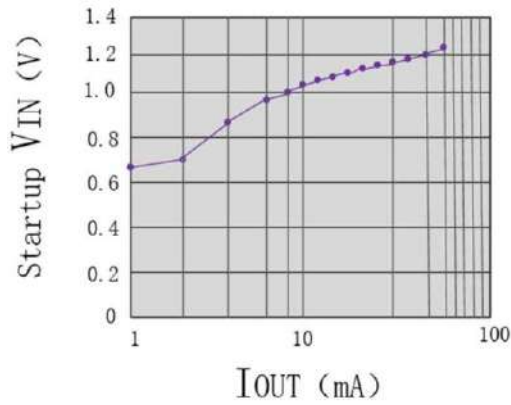
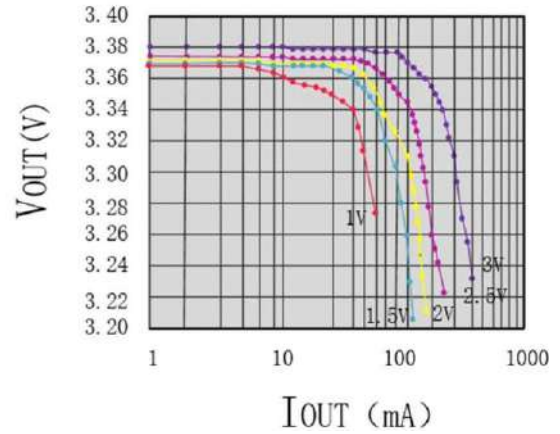
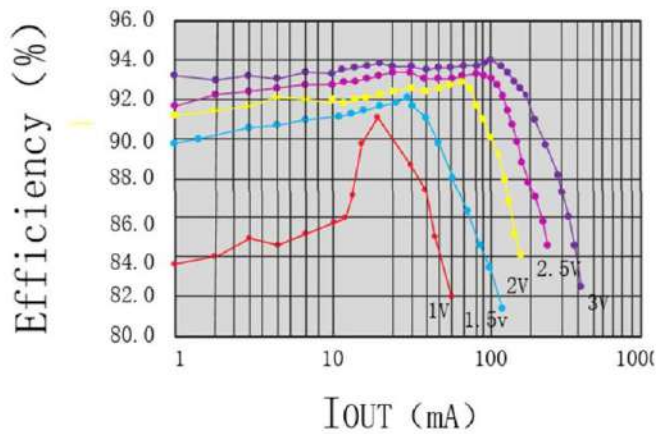
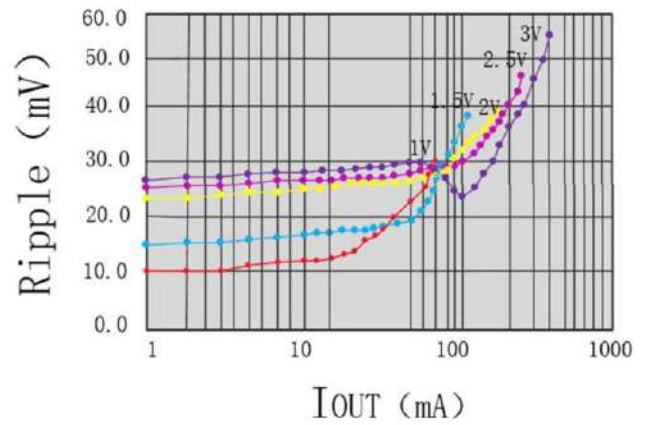
Application Circuits

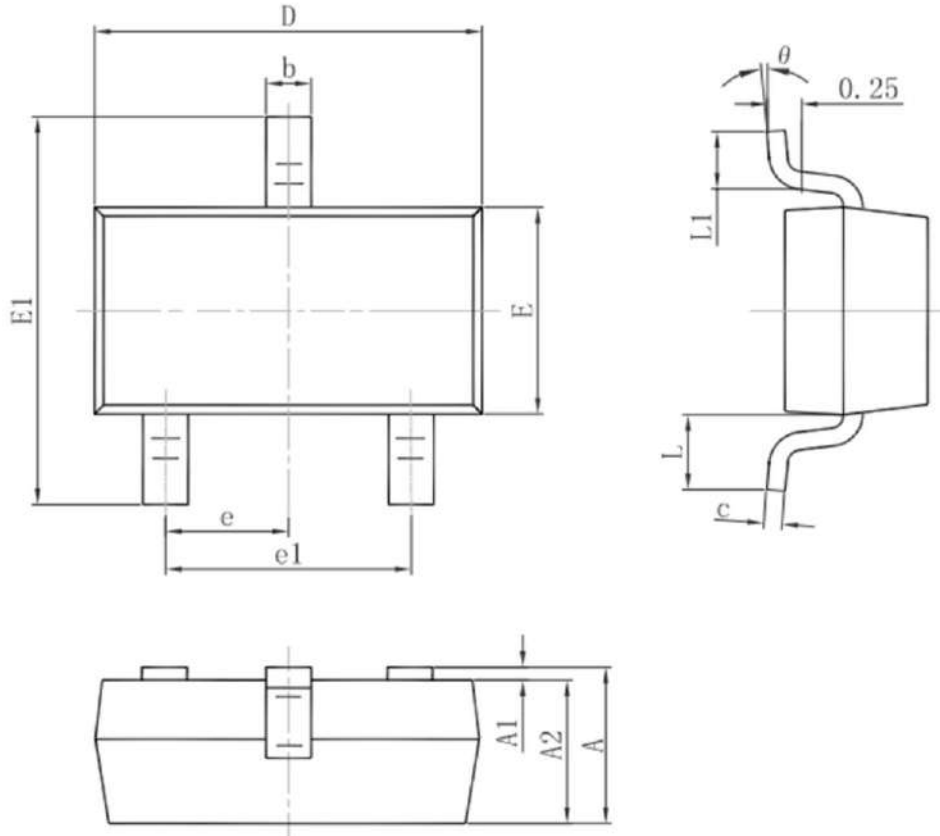
CYH8116



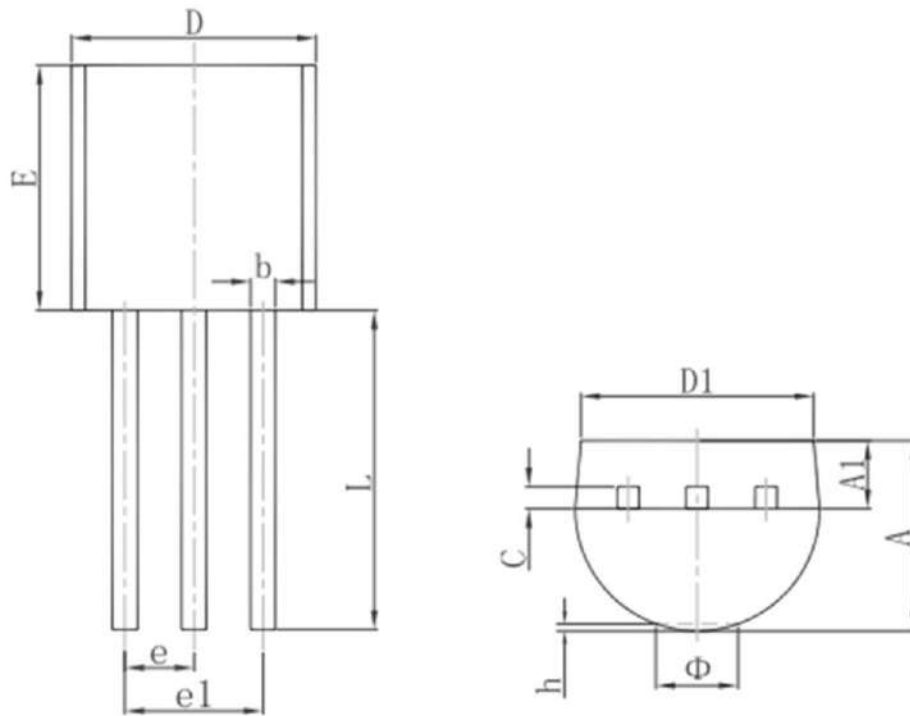
TYPICAL PERFORMANCE CHARACTERISTICS

 (C_{in}=C_{out}=100uF,L=47uH)

I_{OUT} VS Startup V_{IN}

I_{OUT} VS V_{OUT}

I_{OUT} VS Efficiency

I_{OUT} VS Ripple


Package Information
3-pin SOT23 Outline Dimensions


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950TYP.		0.037TYP.	
e1	1.800	2.000	0.071	0.079
L	0.550REF.		0.022REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

3-pin TO92 Outline Dimensions


Symbol	Dimensions In Milimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	3.300	3.700	0.130	0.146
A1	1.100	1.400	0.043	0.055
b	0.380	0.550	0.015	0.022
c	0.360	0.510	0.014	0.020
D	4.300	4.700	0.169	0.185
D1	3.430		0.135	
E	4.300	4.700	0.169	0.185
e	1.270TYP.		0.050TYP.	
e1	2.440	2.640	0.096	0.104
L	14.100	14.500	0.555	0.571
Φ		1.600		0.063
h	0.000	0.380	0.000	0.015



Special Version

The company reserves the right of final interpretation of this specification.

Version Change Description

Versions: V1.4

Writer: Liu Hang

Time: 2021.9.7

Amendant record:

1. Re-typesetting the manual and checking some data