



FEATURES

- Two ored error amplifiers with built-in current generator with enable/disable function.
- 1.24V series voltage reference with trimmed 1% tolerance (CYT101A).
- 4.5 to 32V supply voltage range.
- 5kV ESD protection.
- Temperature-compensated.

DESCRIPTION

The CYT101/CYT101A provide a pin-for-pin replacement of TSM101/A. This is an 8-pin voltage & current controller incorporates a trimmed series bandgap voltage reference, two ored error amplifiers and a current source.

This IC provides a feedback to the primary side of a power supply by comparing the DC voltage and the current level at the output to an internal reference.

The controlled current generator can be used to modify the level of current limitation by offsetting the information coming from the current sensing resistor.

The CYT101/A can be used in every types of application requiring a precision voltage regulation and current limitation. For example, designers can save space by using this 8-pin IC for a CC/CV mode battery charger.

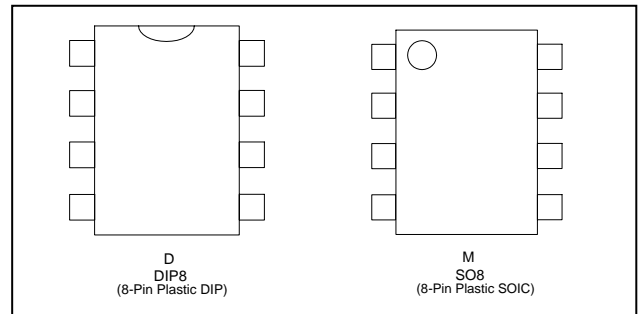
APPLICATIONS

This circuit is designed to be used in battery chargers with a constant voltage and a limited output current.

It can be used in every types of application requiring a precision voltage regulation and current limitation. Other application include voltage supervisors, over voltage protection...

PIN DESCRIPTION

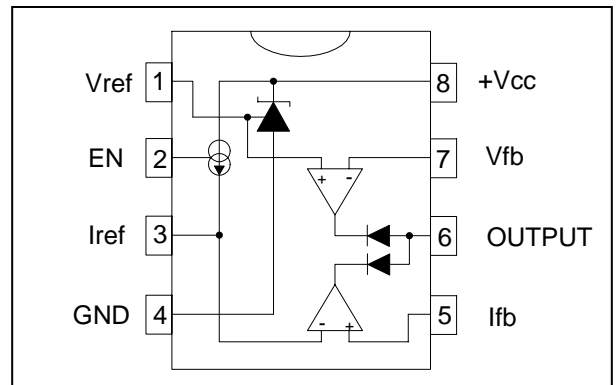
Pin	Name	I/O	Function
1	V_{REF}	O	Trimmed Voltage Reference Output 1.24V, 10mA max.
2	EN	I	Current source enable input. This current source can be used to Offset the voltage measurement on the sense resistor and therefore to modify the charge current. The current source is enabled when the Input voltage on pin 2 is lower than 0.8V
3	I_{REF}	I	Current Limitation Reference Input
4	GND	I	Ground
5	I_{FB}	I	Current Limitation Loop Input, connected to the sense resistor
6	OUTPUT	O	Output pin common to the voltage regulation and current limitation Loops.
7	V_{FB}	I	Inverting input of the voltage error amp, The non-inverting input is from V_{REF} , 1.24V
8	V_{CC}	I	Power Supply Input



ORDER INFORMATION

ORDER CODE	Temperature Range	Bandgap Tolerance
CYT101AM/D	0, +125°C	1%
CYT101M/D		2.5%

PIN CONFIGURATION



**ABSOLUTE MAXIMUM RATINGS**

Symbol	Parameter	Value	Unit
V _{CC}	Supply Voltage	36	V
I _{OUT}	Output Current	20	mA
V _{IN}	Input Voltage	-0.3, V _{CC} -1.5	V
I _{IN}	Input Current	±1	mA
P _D	Power Dissipation	200	mW
T _J	Maximum Junction Temperature	150	°C
R _{THJA}	Thermal Resistance Junction to Ambient	130 to 200	°C/W
T _{STG}	Storage Temperature	0 to +125	°C

RECOMMENDED CONDITIONS

Symbol	Parameter	Value	Unit
V _{CC}	Supply Voltage	4.5 to 32	V
T _{OP}	Operating Free-air Temperature Range	0 to 125	°C

ELECTRICAL CHARACTERISTICS

The conditions are: T_A = 25°C, V_{CC} = 15V unless otherwise stated

Condition Over T_{OP} apply over full temperature range (0 to 125°C)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
ERROR AMPLIFIER						
I _{CC}	Total Supply Current	V _{CC} = 15V			2	mA
V _{IN}	Input Voltage Range		0		V _{CC} -1.5V	V
V _{IO}	Input Offset Voltage	T _A = 25°C Over T _{OP}	-5 -7	1	5 7	mV
I _{IB}	Input Bias Current @ V _{IN} = 1.2V on pin 7 and V _{IN} = 0V on pin 5	T _A = 25°C Over T _{OP}	-700 -1000	-300	0 0	nA
I _{SINK}	Output Sink Current, V _{OL} = 2.5V	25°C Over T _{OP}	8	15		mA
A _{VO}	Large Signal Voltage Gain	R _L = 2KΩ, Over T _{OP}	15			V/mV
PSRR	Power Supply Rejection Ratio	Over T _{OP}	65	90		dB
CMRR	Common Mode Rejection Ratio	Over T _{OP}		80		dB
GBP	Gain Bandwidth Product	V _{CC} = 15V, F = 100kHz V _I = 10mV, R _L = 2kΩ C _L = 100pF		1		MHz
I _{OH}	Output Leakage Current	25°C Over T _{OP}			2 7	μA
VOLTAGE REFERENCE						
V _{REF}	Reference Voltage CYT101A CYT101	I _{OUT} = 1mA	1.227 1.21	1.24 1.24	1.252 1.27	V
TC _{VR}	Temperature Stability	Over T _{OP}		30	100	ppm/°C
V _{LR}	Load Regulation	1 mA < I _{OUT} < 10mA		5	15	mV
V _{SR}	Line Regulation	5V < V _{IN} < 32V		3.5	10	mV

Preliminary and all contents are subject to change without prior notice.



ELECTRICAL CHARACTERISTICS (cont'd)

The conditions are: $T_A = 25^{\circ}\text{C}$, $V_{CC} = 15\text{V}$ unless otherwise stated

Condition Over T_{OP} apply over full temperature range (0°C to 125°C)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
CURRENT GENERATOR						
I_O	Current Source			1.4		mA
T_{CCG}	Temperature Stability	Over T_{OP}		500		ppm/ $^{\circ}\text{C}$
I_{SR}	Line Regulation	$4.5 < V_{CC} < 32\text{V}$		0.003	0.03	mA
V_{EN}	Voltage at EN pin to have $I_O = 1.4\text{mA}$	Over T_{OP}			0.6	V
V_{IDIS}	Voltage at the EN pin to have $I_O = 0\text{mA}$	Over T_{OP}	2			V
I_{EN}	Input Current on the EN pin	Over T_{OP}			30	μA
I_{LEAK}	Leakage Current	$V_{EN} = 2\text{V}$ Over T_{OP}		0.5	2	μA

PACKAGE MECHANICAL SO8

DIM ^N	INCHES		MM	
	MIN	MAX	MIN	MAX
A	0.0532	0.0688	1.35	1.75
A1	0.0040	0.0098	0.10	0.25
B	0.0130	0.0200	0.33	0.51
B1	0.050 BSC		1.27 BSC	
C	0.0075	0.0098	0.19	0.25
D	0.1890	0.1968	4.80	5.00
H	0.2284	0.2440	5.80	6.20
E	0.1497	0.1574	3.80	4.00

PACKAGE MECHANICAL DIP8

DIM ^N	INCHE		MM	
	MIN	MAX	MIN	MAX
A	0.131		3.32	
a	0.020		0.51	
B	0.045	0.065	1.15	1.65
b	0.014	0.022	0.356	0.55
b1	0.008	0.012	0.204	0.304
D		0.430		10.92
E	0.313	0.384	7.95	9.75
e	0.100		2.54	
e1	0.300		7.62	
F		0.260		6.60
I		0.200		5.08
L	0.125	0.150	3.18	3.81
Z		0.060		1.52