



1A Positive Voltage Regulator

General Description

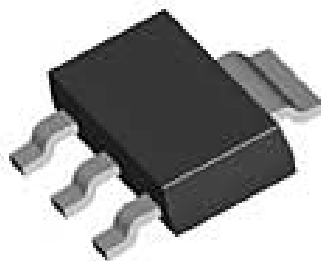
The CYT8117 series of high performance low dropout voltage regulators are designed for applications that require efficient conversion and fast transient response.

Features

- 1.1V dropout at full load current (Typ)
- Low Dropout Performance.
- Guaranteed 1A Output Current.
- Wide Input Supply Voltage Range.
- Over-temperature and Over-current Protection.
- Fixed or Adjustable Output Voltage.
- Rugged 3KV ESD withstand capability.
- Available in SOT-223 Packages.

Applications

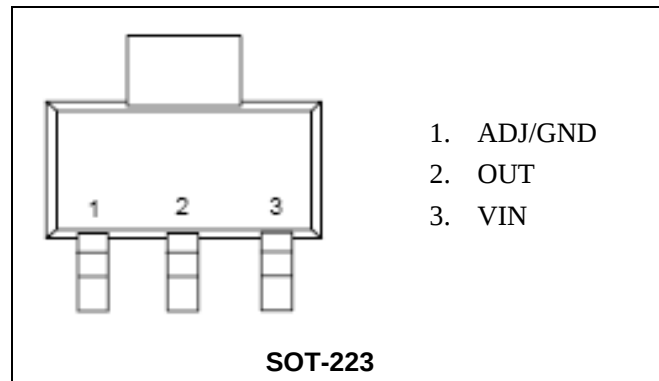
- Active SCSI Terminators.
- High Efficiency Linear Regulators.
- 5V to 3.3V Linear Regulators
- Motherboard Clock Supplies.



SOT-223 Package

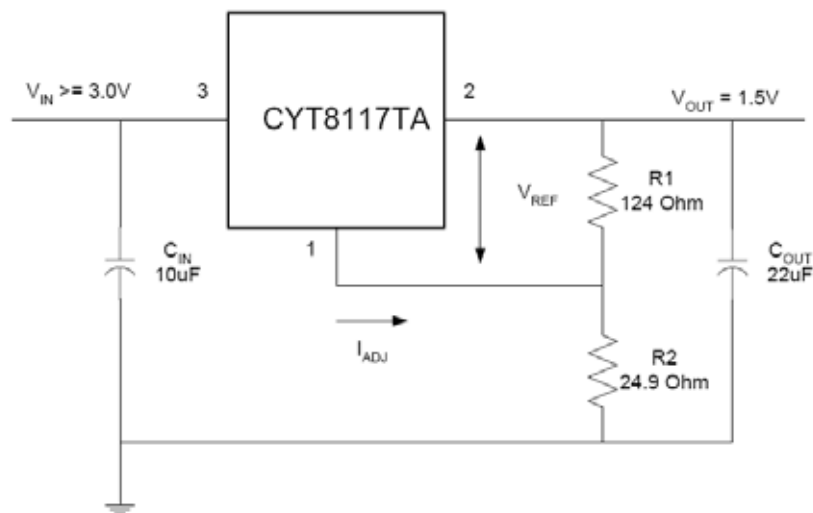


Pin Configuration

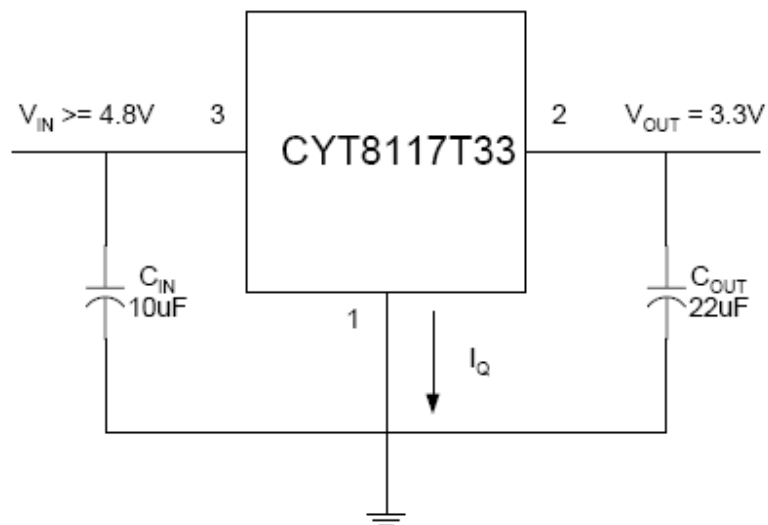


Typical Application

Adjustable Voltage Regulator



Fixed Voltage Regulator





CYT 8117

Ordering Information

CYT8117T-X X -LF

Lead-free

Output Voltage: 15 : Vout=1.5V

18 : Vout=1.8V

25 : Vout=2.5V

30 : Vout=3.0V

33 : Vout=3.3V

A : Vout=ADJ

Electrical Characteristic

$V_{IN,MAX} \leq 8V$, $V_{IN,MIN} - V_{OUT} = 1.5V$, $I_{OUT} = 10mA$, $C_{IN} = 10\mu F$, $C_{OUT} = 22\mu F$, $T_J = 0 - 125^\circ C$, unless otherwise specified.

Symbol	Parameter	Conditions	Min	Typ	Max	Units
V_{OUT}	Output Voltage ⁽¹⁾	($V_{IN}-V_{OUT}$)=1.5V , $I_{OUT}=10mA$, $T_A=25$ CYT8117T15 CYT8117T18 CYT8117T25 CYT8117T30 CYT8117T33	-2%	1.5 1.8 2.5 2.8 3.0	+2%	V
V_{REF}	Reference Voltage ⁽¹⁾ (Adi. Volage Version)	($V_{IN}-V_{OUT}$)=1.5V , $I_{OUT}=10mA$,	-2%	1.25	-2%	V
VSR	Line Regulation ⁽¹⁾	$V_{OUT}+1.5V < V_{IN} < 8V$ $I_{OUT}=10mA$,	--	0.3	--	%
V_{LR}	Load Regulation ⁽¹⁾	($V_{IN}-V_{OUT}$)=1.5V , $10mA \leq I_{OUT} \leq 1A$,	--	0.4	--	%
I_{ADJ}	Adjust Pin Current		--	48	--	μA
ΔI_{ADJ}	Adjust Pin Current Change	$V_{OUT}+1.5V < V_{IN} < 8V$ $10mA \leq I_{OUT} \leq 1A$,	--	0.2	--	μA
V_D	Dropout Voltage ⁽²⁾	$\Delta V_{REF}=1\%$, $I_{OUT}=1A$	--	1.1	1.4	V
I_Q	Quiescent Current	Fixed Output Version	--	10	--	mA
I_O	Minimum Load Current		--	4	--	mA
I_{CL}	Current Limit		--	1.8	--	A
T_C	Temperature Voefficient		--	0.07	--	%/
OTP	Thermal Protection		--	175	--	
V_N	RMS Output Noise	$T_A=25$, $10Hz \leq f \leq 10KHz$	--	0.003	--	%Vo
R_A	Ripple Rejection Ratio	$F=120Hz$, $C_{out}=22\mu F$ (Tantalum), ($V_{IN}-V_{OUT}$)=3V, $I_{OUT}=1A$	--	35	--	dB

Notes: 1. Low duty cycle pulse testing with which T_J remains unchanged.

2. ΔV_{OUT} , $\Delta V_{REF} = 1\%$.

ShenZhen CYT IC Design CO ,Ltd



Absolute Maximum Rating

Parameter	Symbol	Value	Units
Input Supply Voltage	V _{IN}	9	V
Thermal Resistance, Junction-to-Ambient SOT-223	Θ _{JA}	60	/W
Lead Temperature (Soldering, 10 sec.)	T _{LEAD}	260	
Operating Junction Temperature Range	T _J	0 to +125	
Storage Temperature Range	T _{STG}	-40 to +150	

Application Hints

Like any linear voltage regulator, CYT8117 requires external capacitors to ensure stability. The external capacitors must be carefully selected to ensure performance.

Input Capacitor

An input capacitor of at least 10μF is required. Ceramic or Tantalum can be used. The value can be increased without upper limit.

Output Capacitor

An output capacitor is required for stability. It must be placed no more than 1 cm away from the VOUT pin, and connected directly between VOUT and GND pins. The minimum value is 22μF but may be increased without limit.

Thermal Considerations

It is important that the thermal limit of the package is not exceeded. The CYT8117 has built-in thermal protection. When the thermal limit is exceeded, the IC will enter protection, and VOUT will be pulled to ground. The power dissipation for a given application can be calculated as follows: The power dissipation (PD) is

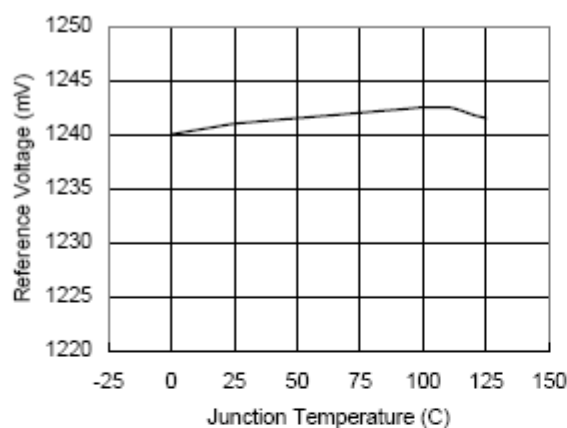
$$PD = I_{OUT} * [V_{IN} - V_{OUT}]$$

The thermal limit of the package is then limited to $PD(MAX) = [T_J - T_A] / \Theta_{JA}$ where T_J is the junction temperature, T_A is the ambient temperature, and Θ_{JA} is around 60°C/W for CYT8117. CYT8117 is designed to enter thermal protection at 175°C. For example, if T_A is 25°C then the maximum PD is limited to about 2.5W. In other words, if $I_{OUT}(MAX) = 1A$, then $[V_{IN} - V_{OUT}]$ cannot exceed 2.5V.

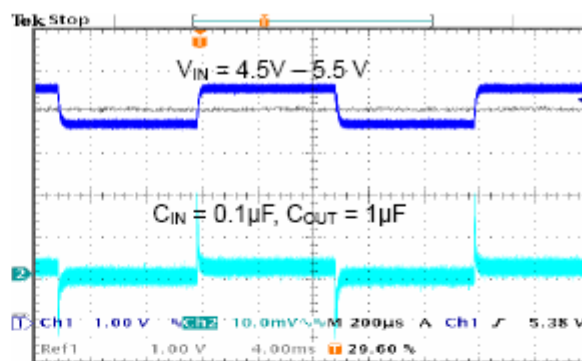


Typical Performance Characteristics

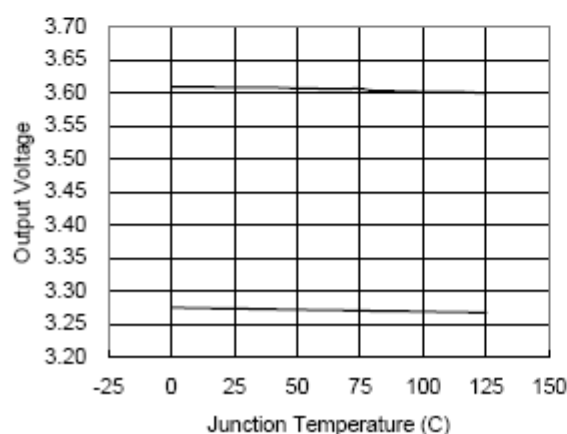
Reference Voltage vs Junction Temperature



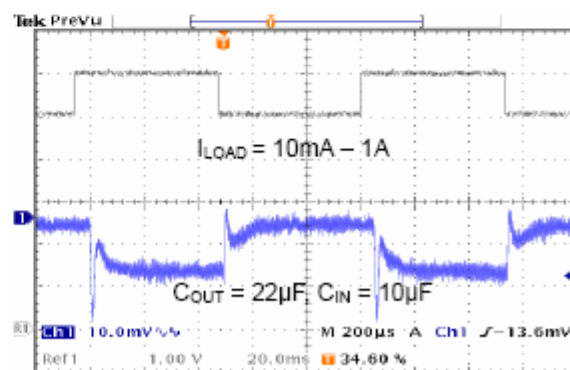
Line Transients



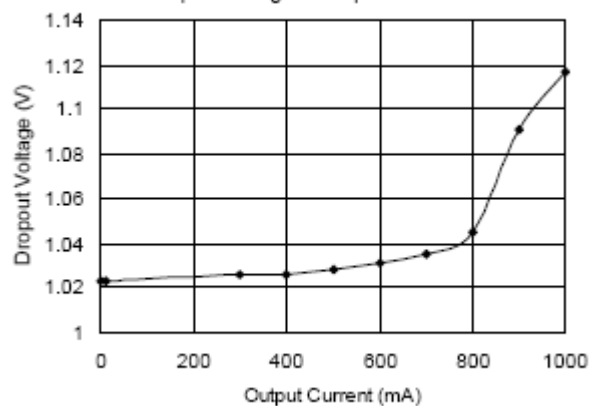
Output Voltage vs Junction Temperature



Load Transients

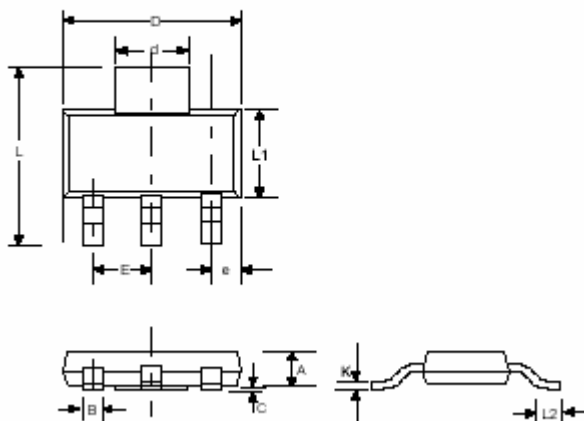


Dropout Voltage vs Output Current





Outline Drawing for SOT-223



DIM ^N	DIMENSIONS			
	INCHES		MM	
	MIN	MAX	MIN	MAX
A	--	0.071	--	1.80
B	0.025	0.033	0.640	0.840
C	0.012	--	0.31	--
D	0.248	0.264	6.30	6.71
d	0.115	0.124	2.95	3.15
E	--	0.090	--	2.29
e	0.033	0.041	0.840	1.04
L	0.264	0.287	6.71	7.29
L1	0.130	0.148	3.30	3.71
L2	0.012	--	0.310	--
K	0.010	0.014	0.250	0.360