CYT 8117

1A Positive Voltage Regulator

General Description

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

Features

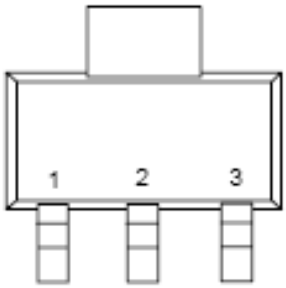
- 1.1V dropout at full load current（Typ）
- Low Dropout Performance.
- Guaranteed 1A Output Current.
- Wide Input Supply Voltage Range.
- Over-temperature and Over-current Protection.
- Fixed or Adjustable Output Voltage.
- Rugged 3KV ESD withstand capability.
- Available in SOT-223 Packages.

Applications

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

SOT-223 Package

Pin Configuration

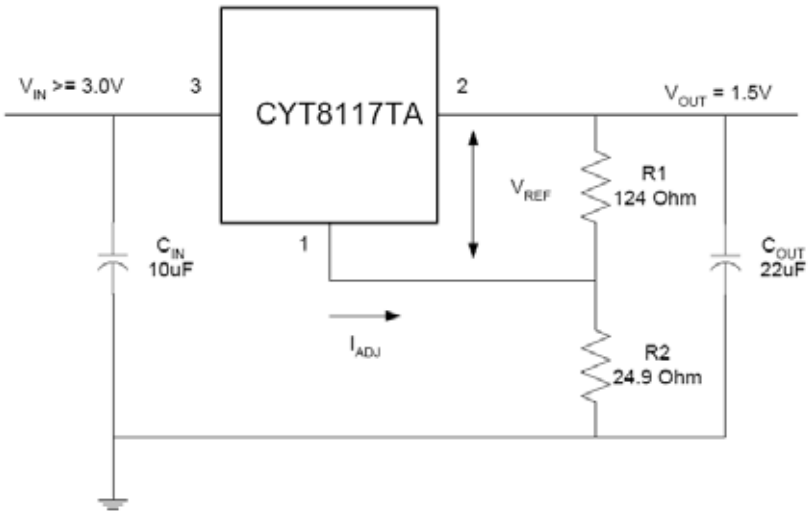


1. ADJ/GND
2. OUT
3. VIN

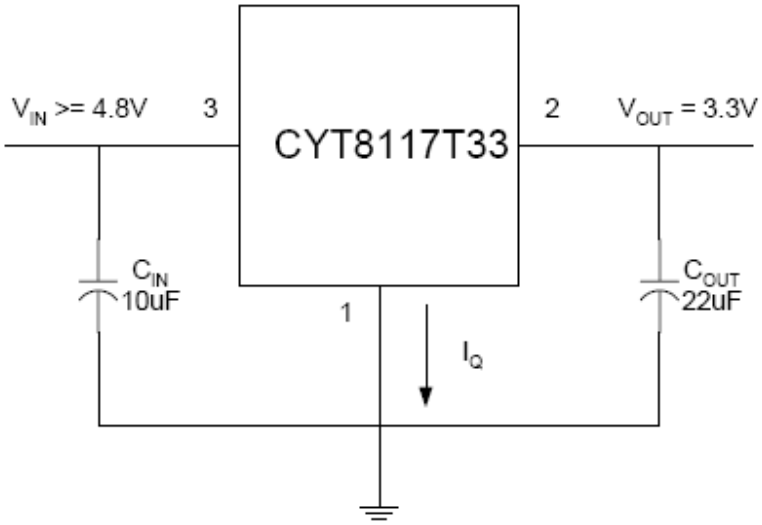
SOT-223

Typical Application

Adjustable Voltage Regulator



Fixed Voltage Regulator



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

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

Symbol	Parameter	Conditions	Min	Typ	Max	Units
V_{OUT}	Output Voltage(1)	(V_{IN}-V_{OUT})=1.5V , I_{OUT}= 10mA, TA=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≤I_{OUT}≤1A,	--	0.4	--	%
I_{ADJ}	Adjust Pin Current		--	48	--	uA
ΔI_{ADJ}	Adjust Pin Current Change	V_{OUT}+1.5V <V_{IN}< 8V 10mA≤I_{OUT}≤1A,	--	0.2	--	uA
V_D	Dropout Voltage(2)	ΔV_{REF}=1%, I_{OUT}=1A	--	1.1	--	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	--	%/°C
OTP	Thermal Protection		--	175	--	°C
V_N	RMS Output Noise	T_A=25°C, 10Hz ≤ f ≤ 10KHz	--	0.003	--	%Vo
R_A	Ripple Rejection Ratio	F=120Hz, Cout=22uF (Tantalum),(V_{IN}-V_{OUT})=3V, I_{OUT}=1A	--	35	--	dB

Notes:1. Low duty cycle pulse testing with which TJ remains unchanged.
2. ΔVOUT, ΔVREF = 1%.

Absolute Maximum Rating

Parameter	Symbol	Value	Units
Input Supply Voltage	V_{IN}	9	V
Thermal Resistance, Junction-to-Ambient SOT-223	Θ_{JA}	60	°C/W
Lead Temperature (Soldering,10 sec.)	T_{LEAD}	260	°C
Operating Junction Temperature Range	TJ	0 to +125	°C
Storage Temperature Range	TSTG	-40 to +150	°C

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 increase 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 increase without limit.

Thermal Considerations

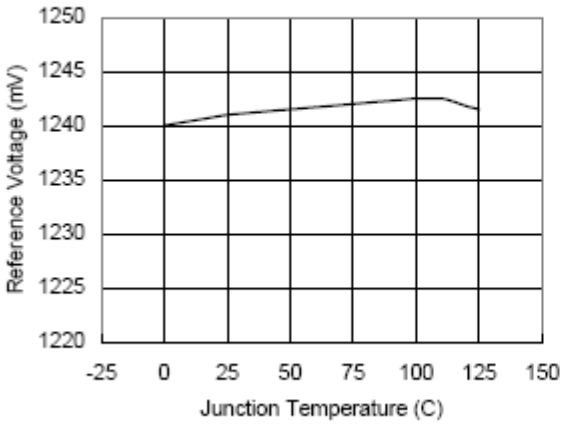
It is important that the thermal limit of the package is not exceeded. The CYT8117 has built-in thermal protection. When the thermal limit is exceeded, the IC will enter protection, and VOUT will be pulled to ground. The power dissipation for a given application can be calculated as following: The power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

$$PD = IOUT * [VIN – VOUT]$$

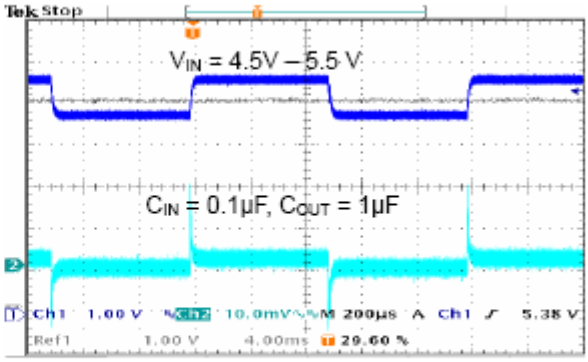
The thermal limit of the package is then limited to PD(MAX) = [TJ – TA]/ΘJA where TJ is the junction temperature, TA is the ambient temperature, and ΘJA is around 60°C/W for CYT8117.CYT8117 is designed to enter thermal protection at 175°C. For example, if TA is 25°C then the maximum PD is limited to about 2.5W. In other words, if IOUT(MAX) = 1A, then [VIN – VOUT] cannot exceed 2.5V.

Typical Performance Characteristics

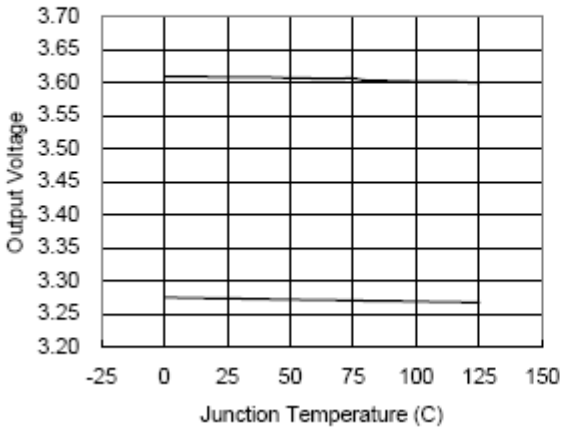
Reference Voltage vs Junction Temperature



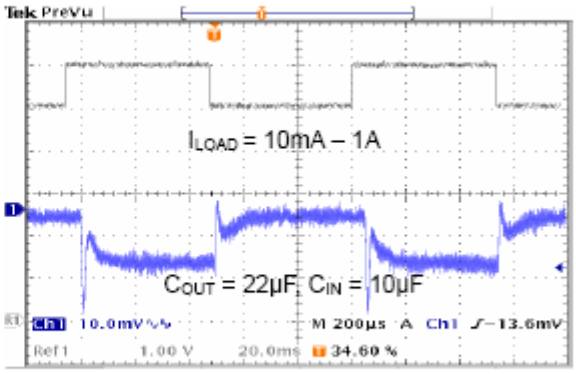
Line Transcients



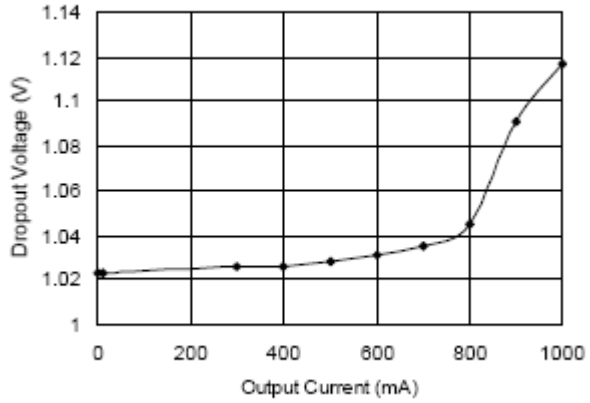
Output Voltage vs Junction Temperature



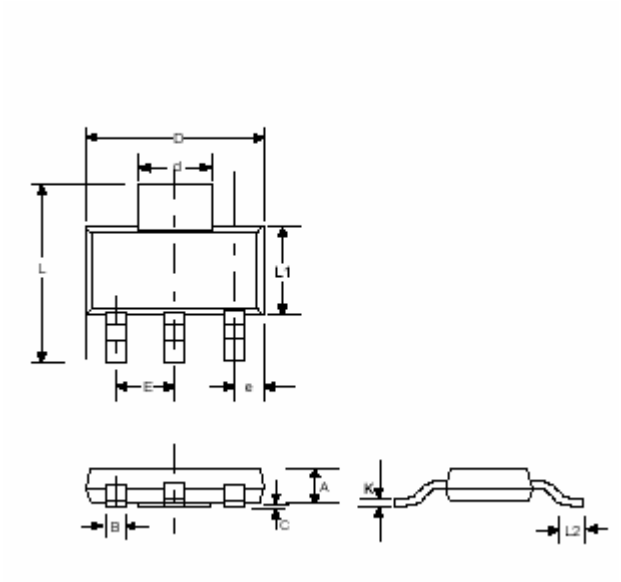
Load Transients



Dropout Voltage vs Output Current



Outline Drawing for SOT-223



DIMENSIONS				
DIM[N]	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