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Adjustable Precision Shunt Regulator

General Description

The CYT431 is a programmable shunt voltage reference with guaranteed temperature stability over the entire temperature range of operation.

The output voltage may be set to any value between 2.5V and 18V with two external resistors. This device has a typical output impedance of 0.2Ω. Active output circuitry provides a very sharp turn on characteristic, making this device excellent replacement for Zener diodes in many applications.

The CYT431 is characterized for operation from 0°C to 105°C.

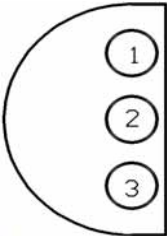
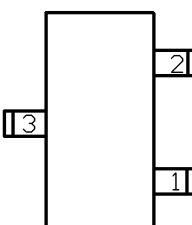
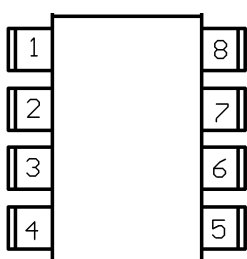
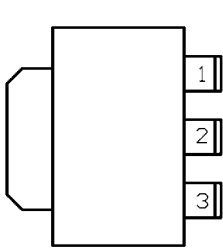
Features

- Adjustable output voltage $V_0 = 2.5V$ to 18V.
- Wide operating current range 120μA to 150mA.
- Low dynamic output impedance 0.2Ω (Typ.).
- Voltage Reference Tolerance: ±0.4%.
- ESD rating is 5.5KV(Per MIL-STD-883D).
- Available in Lead Free Packages.

Applications

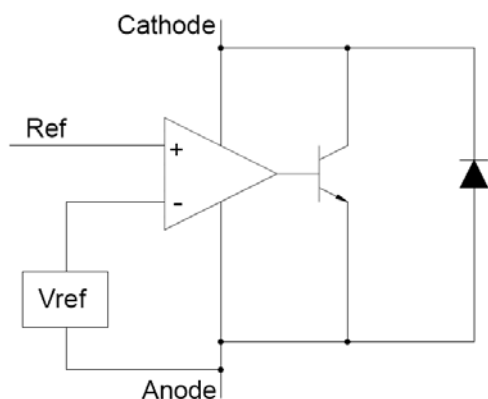
- Adjustable Supplies
- Battery Operated Computers
- Computer Disk Drives
- Linear Regulators
- Instrumentation
- Switching Power Supplies

Pin Configuration

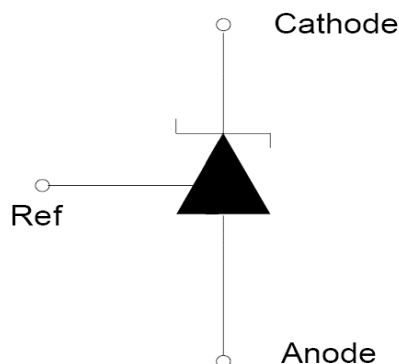
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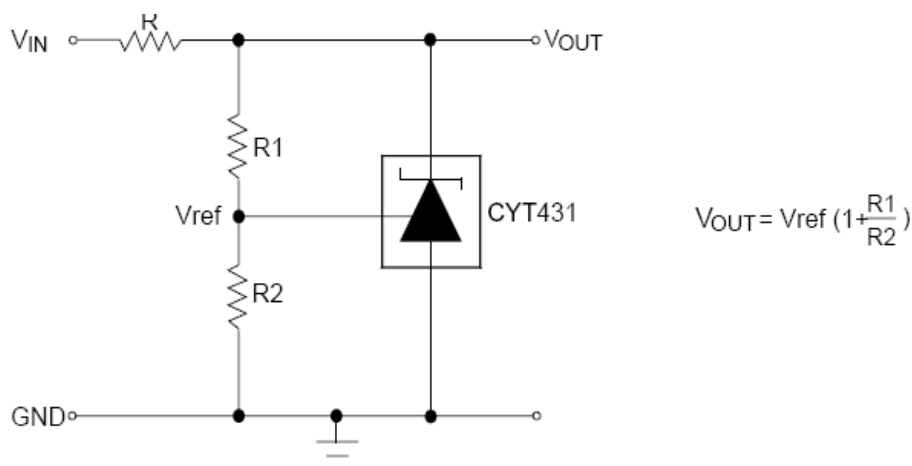
Block Diagram



Symbol Diagram



Application Diagram



Marking Information

Package	Marking	Production Year Code	Production Week Code	Lead-Free Package
SOT-23-3 SC59-3L	CYT431	Starting with S, a bar on top of S is for production year 2001, and underlined S is for year 2002. The next character is marked on top for 2003, and underlined for 2004. The naming pattern continues with consecutive characters for later years.	A-Z:1-26 a-z:27-52	Lead-free package is indicated by a dot on top of the week code.
SOP-8	CYT431 YYWW	YY is the year of production. 04 means the product is manufactured in year of 2004.	WW is the week of production. 26 means the product is manufactured in the 26 th week.	Lead-free package is indicated by LF after YYWW.
SOT-89	CYT431 YYWW			
TO-92	CYT/TL431 YYWW			



Adjustable Precision Shunt Regulator

General Description

The CYT431A is a programmable shunt voltage reference with guaranteed temperature stability over the entire temperature range of operation.

The output voltage may be set to any value between 2.5V and 36V with two external resistors. This device has a typical output impedance of 0.2Ω. Active output circuitry provides a very sharp turn on characteristic, making this device excellent replacement for Zener diodes in many applications.

The CYT431A is characterized for operation from 0°C to 105°C.

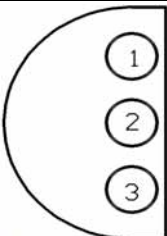
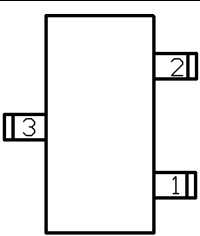
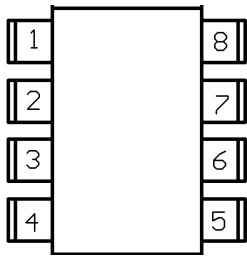
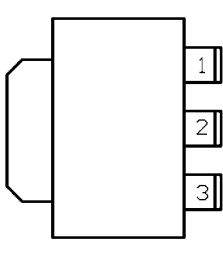
Features

- Adjustable output voltage $V_0 = 2.5V$ to 36V.
- Wide operating current range 120μA to 150mA.
- Low dynamic output impedance 0.2Ω (Typ.).
- Voltage Reference Tolerance: ±0.4%.
- ESD rating is 5.5KV(Per MIL-STD-883D).
- Available in Lead Free Packages.

Applications

- Adjustable Supplies
- Battery Operated Computers
- Computer Disk Drives
- Linear Regulators
- Instrumentation
- Switching Power Supplies

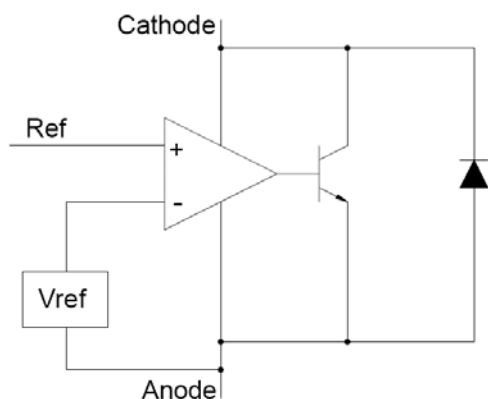
Pin Configuration

 1. Cathode 2. Anode 3. Ref TO-92	 1. Ref 2. Cathode 3. Anode SOT-23
 1. Cathode 2. Anode 3. Anode 4. NC 5. NC 6. Anode 7. Anode 8. Ref SOP-8	 1. Ref 2. Anode 3. Cathode SOT-89

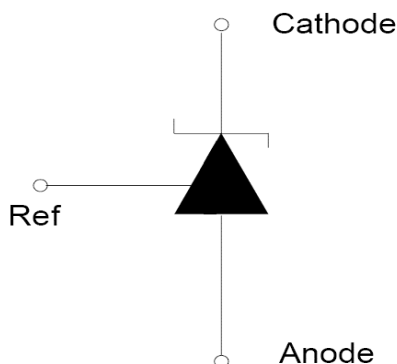


CYT 431A

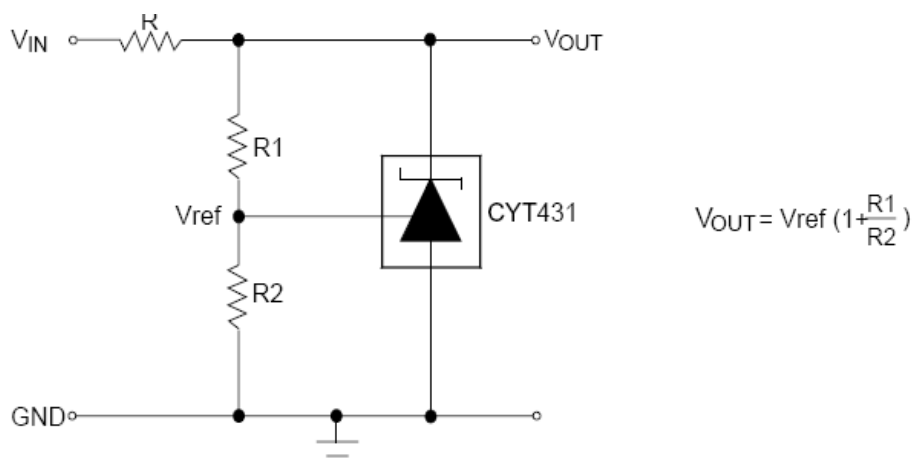
Block Diagram



Symbol Diagram



Application Diagram



Marking Information

Package	Marking	Production Year Code	Production Week Code	Lead-Free Package
SOT-23-3 SC59-3L	CYT431A	Starting with S, a bar on top of S is for production year 2001, and underlined S is for year 2002. The next character is marked on top for 2003, and underlined for 2004. The naming pattern continues with consecutive characters for later years.	A-Z: 1-26 a-z: 27-52	Lead-free package is indicated by a dot on top of the week code.
SOP-8	CYT431A YYWW	YY is the year of production. 04 means the product is manufactured in year of 2004.	WW is the week of production. 26 means the product is manufactured in the 26 th week.	Lead-free package is indicated by LF after YYWW.
SOT-89	CYT431A YYWW			
TO-92	CYT/TL431A YYWW			



Adjustable Precision Shunt Regulator

General Description

The CYT432 is a programmable shunt voltage reference with guaranteed temperature stability over the entire temperature range of operation.

The output voltage may be set to any value between 1.24V and 12V with two external resistors. This device has a typical output impedance of 0.2Ω. Active output circuitry provides a very sharp turn on characteristic, making this device excellent replacement for Zener diodes in many applications.

The CYT432 is characterized for operation from 0°C to 105°C.

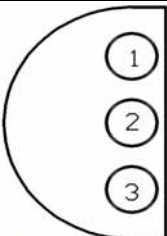
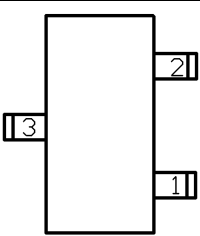
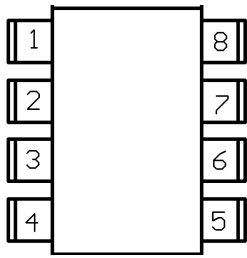
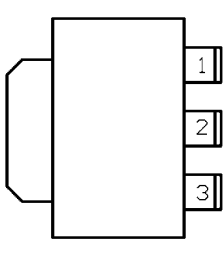
Features

- Adjustable output voltage $V_0 = 1.24V$ to 12V.
- Wide operating current range 0.06 to 100mA.
- Low dynamic output impedance 0.2Ω(Typ.)
- Voltage Reference Tolerance: $\pm 0.5\%$.
- ESD rating is 4KV(Per MIL-STD-883D).
- Available in Lead Free Packages.

Applications

- Adjustable Supplies
- Battery Operated Computers
- Computer Disk Drives
- Linear Regulators
- Instrumentation
- Switching Power Supplies

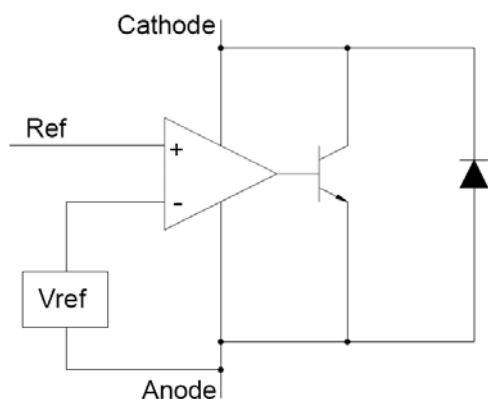
Pin Configuration

 1. Cathode 2. Anode 3. Ref TO-92	 1. Ref 2. Cathode 3. Anode SOT-23
 1. Cathode 2. Anode 3. Anode 4. NC 5. NC 6. Anode 7. Anode 8. Ref SOP-8	 1. Ref 2. Anode 3. Cathode SOT-89

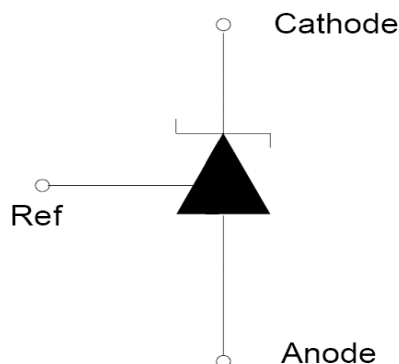


CYT 432

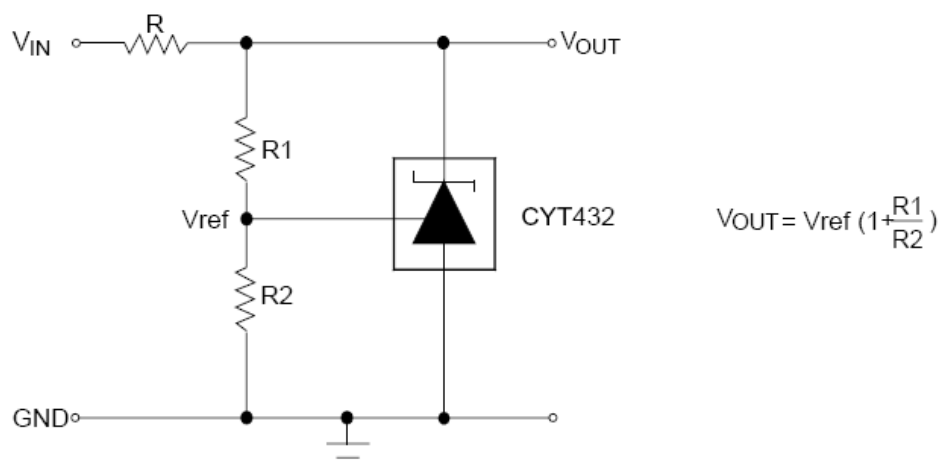
Block Diagram



Symbol Diagram



Application Diagram



Marking Information

Package	Marking	Production Year Code	Production Week Code	Lead-Free Package
SOT-23-3 SC59-3L	CYT432	Starting with S, a bar on top of S is for production year 2001, and underlined S is for year 2002. The next character is marked on top for 2003, and underlined for 2004. The naming pattern continues with consecutive characters for later years.	A-Z: 1-26 a-z: 27-52	Lead-free package is indicated by a dot on top of the week code.
SOP-8	CYT432 YYWW	YY is the year of production. 04 means the product is manufactured in year of 2004.	WW is the week of production. 26 means the product is manufactured in the 26 th week.	Lead-free package is indicated by LF after YYWW.
SOT-89	CYT432 YYWW			
TO-92	CYT/TL432 YYWW			



1A Positive Voltage Regulator

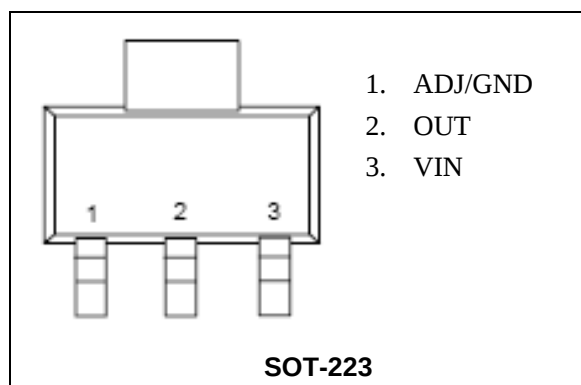
General Description

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

Features

- 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.

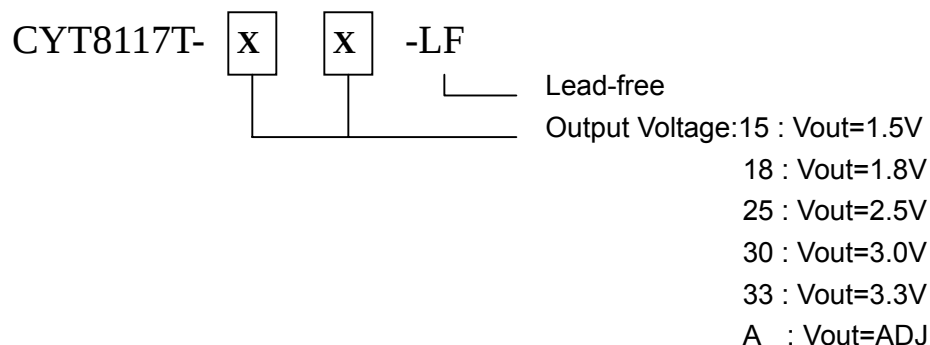
Pin Configuration



Applications

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

Ordering Information



**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	

Electrical Characteristic

V_{IN,MAX} ≤ 8V, V_{IN,MIN} – V_{OUT} = 1.5V, I_{OUT} = 10mA, C_{IN} = 10μF, C_{OUT} = 22μF, T_J = 0 – 125°C, unless otherwise specified.

Symbol	Parameter	Conditions	Min	Typ	Max	Units
V _{OUT}	Output Voltage	(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 (Adj. Voltage Version)	(V _{IN} -V _{OUT})=1.5V , I _{OUT} = 10mA,	-2%	1.25	-2%	V
V _{SR}	Line Regulation	V _{OUT} +1.5V < V _{IN} < 8V I _{OUT} = 10mA,	--	0.3	--	%
V _{LR}	Load Regulation	(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	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	--	%/
OTP	Thermal Protection		--	175	--	
V _N	RMS Output Noise	T _A =25 , 10Hz ≤ f ≤ 10KHz	--	0.003	--	%V _O
R _A	Ripple Rejection Ratio	F=120Hz, C _{out} =22uF (Tantalum),(V _{IN} -V _{OUT})=3V, I _{OUT} =1A	--	35	--	dB



Three Terminal Positive Voltage Regulator

General Description

The CYT78L05 is three-terminal positive regulator.

The CYT78L05 can be used as Zener diode/resistor combination replacement. It offers an effective output impedance improvement of two orders of magnitude, and lower quiescent current. This fixed voltage regulators can provide local or on-card regulation for elimination of noise and distribution problems associated with single point regulation. It is an excellent solution to the stereo power supply on PC main board.

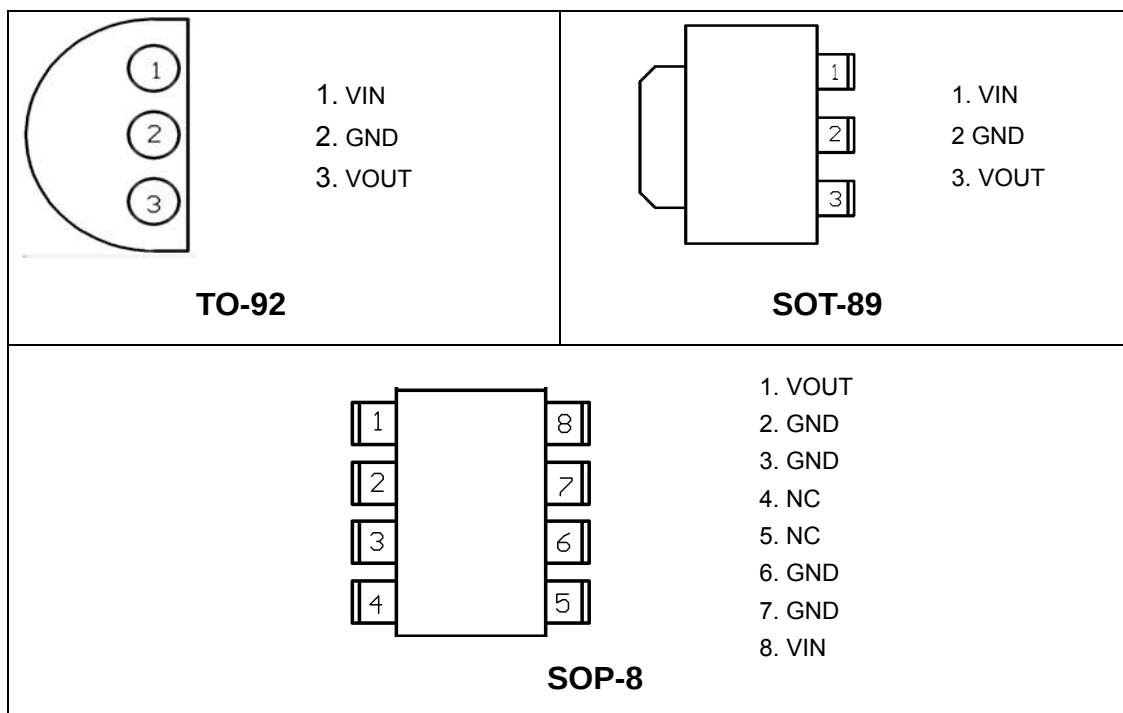
Features

- Output current up to 150mA
- Output voltage of 5.0V.
- Output voltage tolerances of $\pm 4\%$
- Minimum external components.
- ESD rating is 2.7KV(Per MIL-STD-883D).

Applications

- Networking Equipments.
- DVD-ROM, CD-ROM.
- Sound card on PC main board.

Pin Configuration





Absolute Maximum Rating

Parameter	Symbol	Maximum	Units
Power Dissipation	P	0.75	W
Input Supply Voltage	V _{IN}	18	V
Thermal Resistance,	Θ _{JA}	150 (TO-92)	/W
Lead Temperature (Soldering, 10 sec.)	T _{LEAD}	260	
Operating Junction Temperature Range	T _J	0 to +125	
Storage Temperature Range	T _{STG}	-65 to +150	
ESD (HBM) Susceptibility	V _{ESD}	2.7	KV

Electrical Characteristics

V_{IN} = 10V; I_{OUT} = 10mA; C_{IN} = 0.33μF; C_{OUT} = 0.1μF T_J = 25°C; unless otherwise specified

Symbol	Parameter	Conditions	Min	Typ	Max	Units
V _{OUT}	Output Voltage Accuracy		4.8	5	5.2	V
V _{OUT} /V _{OUT}	Line Regulation	7V ≤ V _{IN} ≤ 18V	--	11	45	mV
V _{OUT} /V _{OUT}	Load Regulation	1mA ≤ I _{OUT} ≤ 100mA	--	5	50	
I _Q	Quiescent Current		--	4.3	6	mA
I _Q	Quiescent Current Change	8V ≤ V _{IN} ≤ 18V	--	1.1	--	
		1mA ≤ I _{OUT} ≤ 40mA	--	0.13	--	
V _{IN} /V _{OUT}	Ripple Rejection	F=120Hz , 8V ≤ V _{IN} ≤ 16V	--	62	--	dB
I _{PK}	Peak Output Current		--	150	--	mA
V _{OUT} / T	Average Output Voltage Tempco	I _{OUT} =5mA	--	0.66	--	MV/
V _{IN} (Min)	Minimum Value of Input Voltage Required to Maintain Line Regulation		--	6.1	6.4	V



500mA CMOS LDO Regulator

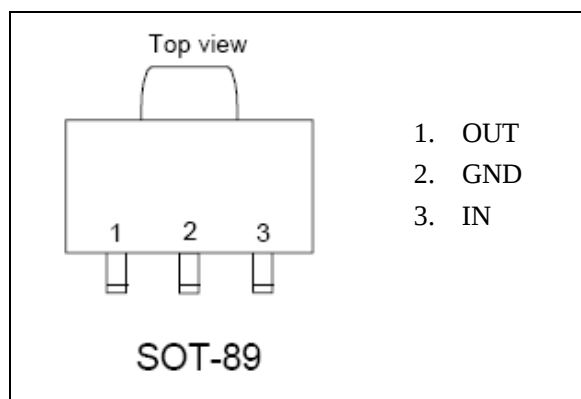
General Description

The CYT6118 is an efficient linear voltage regulator. It has extra low dropout voltage. At light loads the typical dropout voltage is 4.6mV, at full load the typical dropout voltage is 300mV. The output voltage accuracy is better than 2%. The CYT6118 has low ground current, so it can help prolong battery life. The CYT6118 is specially designed for hand-held, battery-powered devices.

Features

- Typical 90mV dropout voltage at 150mA.
- Guaranteed 500mA output over the full operating temperature range.
- Low 300mV typical dropout voltage at full load.
- Extremely tight load and line regulation.
- Low temperature coefficient.
- Current and thermal limiting.
- No-load stability.
- Standard SOT-89-3 package.

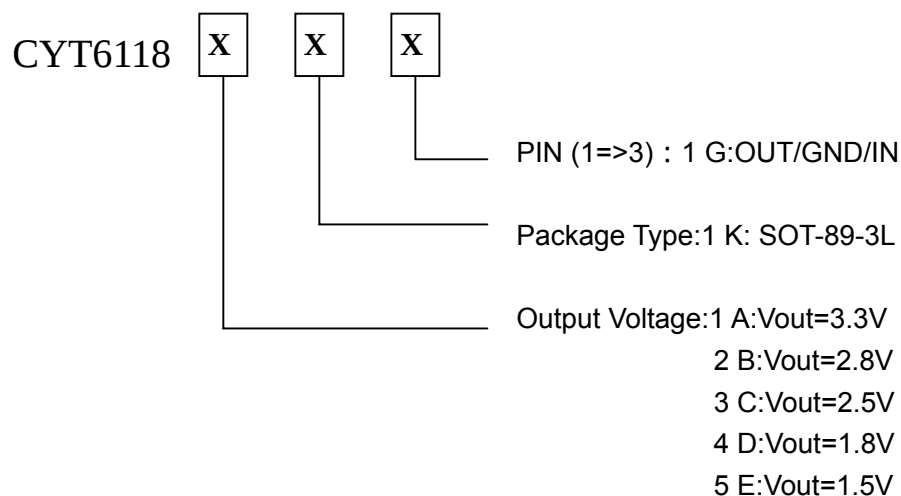
Pin Configuration



Applications

- Active SCSI terminators.
- Post regulators for switching supplies.
- Battery chargers.
- High-efficiency linear power supplies.
- Computer motherboard, display, graphic card DC/DC converter, such as 5V to 3.3V, 3.3V to 2.8V or 3.3V to 2.5V.

Ordering Information





Absolute Maximum Ratings

Supply Input Voltage (VIN)	0.7V to +7V
Power Dissipation (PD)	Internally Limited(3)
Junction Temperature (TJ)	0°C to +125°C
Lead Temperature (soldering, 5 sec)	260°C
Storage Temperature (TS)	-10°C to +150°C

Operating Ratings

Package Thermal Resistance	120°C /W
Supply Input Voltage (VIN)	+2.5V to +6V
Junction Temperature (TJ)	0°C to +125°C

Electrical Characteristics

VIN = VOUT + 1.0V; COUT = 4.7μF, IOUT = 10mA; TJ = 25°C; unless otherwise specified.

Symbol	Parameter		Conditions	Min	Typ	Max	Units
V _{OUT}	Output Voltage Accuracy		CYT6118-1.5V CYT6118-1.8V CYT6118-2.5V CYT6118-2.8V CYT6118-3.3V	1.470 1.764 2.450 2.744 3.234	1.5 1.8 2.5 2.8 3.3	1.530 1.836 2.550 2.856 3.366	V
V _{OUT} / T	Output Voltage Temperature Coefficient			--	40	--	ppm/
V _{OUT} /V _{OUT}	Line Regulation		V _{IN} =V _{OUT} +1V to 5.5V	--	0.3	--	%
V _{OUT} /V _{OUT}	Load Regulation		I _{OUT} =100mA to 500mA	--	0.5	--	%
V _{IN} -V _{OUT}	Dropout Voltage	V _{OUT} < 2V	I _{OUT} =10mA	--	9	--	mV
			I _{OUT} =150mA	--	175	--	
			I _{OUT} =500mA	--	530	--	
		V _{OUT} > 2V	I _{OUT} =10mA	--	4.6	--	mV
			I _{OUT} =150mA	--	90	--	
			I _{OUT} =500mA	--	300	--	
T _{PROTECTION}	Thermal Protection		Thermal Protection Temperature	--	150	--	
			Protection Hysterisys	--	30	--	
PSRR	Ripple Rejection		F=120Hz	--	35	--	dB
I _{GROUND}	Ground Current		I _{OUT} =10mA	--	1	--	mA
I _{LIMIT}	Current Limit		V _{OUT} =0V	--	1.5	--	A



400mA CMOS LDO Regulator

General Description

The CYT6119 is an efficient linear voltage regulator. It has extra low dropout voltage. At light loads the typical dropout voltage is 15mV, at full load the typical dropout voltage is 600mV. The output voltage accuracy is better than 2%.

The CYT6119 has low ground current at 65uA, so it can help prolong battery life. The CYT6119 is specially designed for hand-held, battery-powered devices.

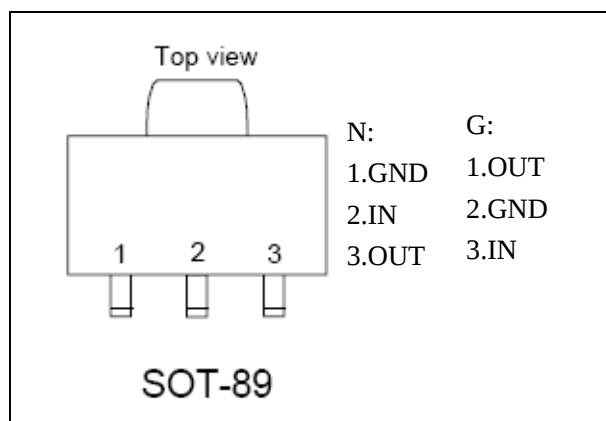
Features

- Typical 175mV dropout voltage at 150mA.
- Guaranteed 400mA output over the full operating temperature range.
- Extremely tight load and line regulation.
- Low temperature coefficient.
- Current and thermal limiting.
- No-load stability.
- Standard SOT-89-3 package.

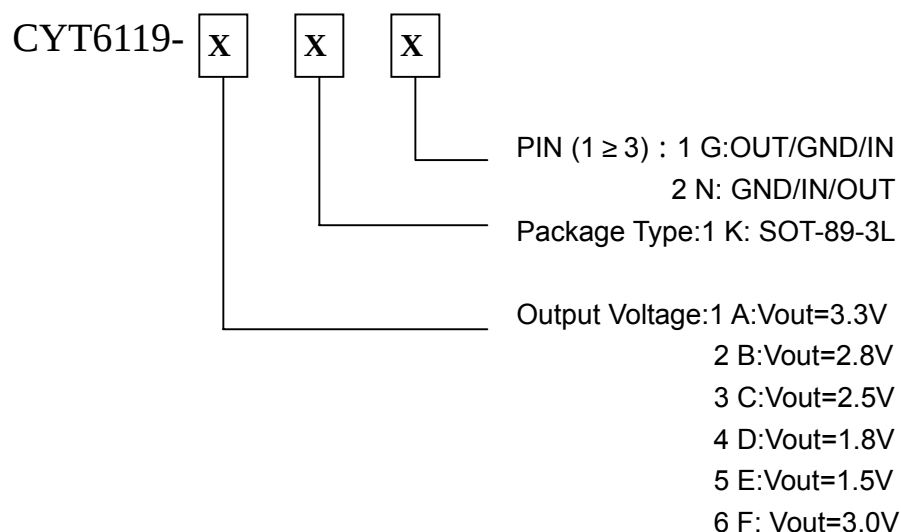
Applications

- Active SCSI terminators.
- Post regulators for switching supplies.
- Battery chargers.
- High-efficiency linear power supplies.
- Computer motherboard, display, graphic card DC/DC converter, such as 5V to 3.3V, 3.3V to 2.8V or 3.3V to 2.5V.

Pin Configuration



Ordering Information





Absolute Maximum Ratings

Supply Input Voltage (VIN)	6V
Power Dissipation (PD)	Internally Limited
Junction Temperature (TJ)	0°C to +150°C
Lead Temperature (soldering, 5 sec)	260°C
Storage Temperature (TS)	-10°C to +150°C

Operating Ratings

Package Thermal Resistance	180°C /W
Supply Input Voltage (VIN)	+2.8V to +5.5V
Junction Temperature (TJ)	0°C to +125°C

Electrical Characteristics

VIN = VOUT + 1.0V; COUT = 4.7μF, IOUT = 10mA; TJ = 25°C; unless otherwise specified.

Symbol	Parameter	Conditions	Min	Typ	Max	Units
VOUT	Output Voltage Accuracy	CYT6119-1.5V	1.470	1.5	1.530	V
		CYT6119-1.8V	1.764	1.8	1.836	
		CYT6119-2.5V	2.450	2.5	2.550	
		CYT6119-2.8V	2.744	2.8	2.856	
		CYT6119-3.3V	3.234	3.3	3.366	
VOUT/ T	Output Voltage Temperature Coefficient		--	50	--	ppm/
VOUT/VOUT	Line Regulation	VIN=VOUT+1V to 5.5V	--	1	--	%
VOUT/VOUT	Load Regulation	IOUT=10mA to 250mA	--	1	--	%
		IOUT=10mA to 400mA	--	1.5	--	
VIN-VOUT	Dropout Voltage	IOUT=10mA	--	15	--	mV
		IOUT=150mA	--	175	--	
		IOUT=250mA	--	320	--	
		IOUT=400mA	--	600	--	mV
T _{PROTECTION}	Thermal Protection	Thermal Protection Temperature	--	150	--	
		Protection Hysteresis	--	20	--	
PSRR	Ripple Rejection	F=120Hz	--	51	--	dB
I _{GROUND}	Ground Current	IOUT=10mA	--	65	--	uA
		IOUT=400mA	--	110	--	
I _{LIMIT}	Current Limit	VOUT=0V	--	600	--	mA



1.5A CMOS Super LDO Voltage Regulator

General Description

The CYT6120 series of fixed output low dropout linear regulators are designed for portable battery powered applications, which require low power consumption and low dropout voltage. Each device contains a bandgap voltage reference, an error amplifier, a PMOS power transistor, and resistors for setting output voltage, and current limit and temperature limit protection circuits.

The CYT6120 has been designed to be used with low cost capacitors and requires a minimum output capacitor of 1.0 μ F. Standard voltage versions are 3.3, 3.0V, and adjustable output from 0.8V to 4.5V.

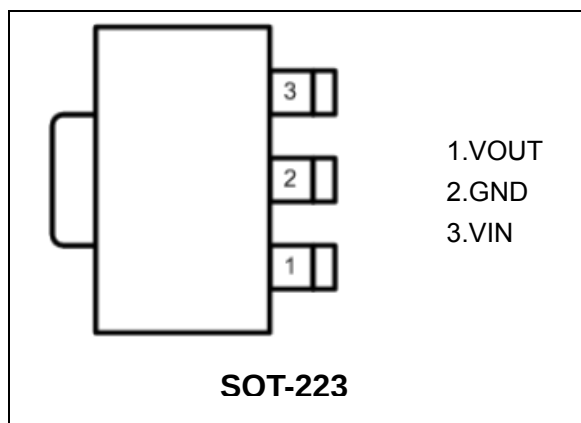
Features

- Typical 135mV Dropout Voltage at 500mA.
- Excellent Line and Load Regulation.
- High Accuracy Output Voltage of 2%.
- Ultra-Low Ground Current at 62 μ A (Typ.)
- Thermal and Over-Current Protection.
- Standard SOT-223 Package.

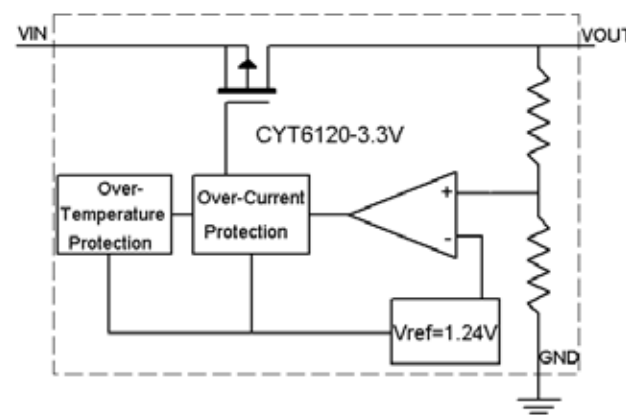
Applications

- USB removable devices.
- MPEG4 HDD devices.
- Wireless LAN's.
- Hand-Held Instrumentation.
- Portable DVD players.
- Digital camera.

Pin Configuration



Application Diagram





400mA CMOS LDO Regulator

General Description

The CYT6167 is an efficient linear voltage regulator. It has extra low dropout voltage. At light loads the typical dropout voltage is 15mV, at full load the typical dropout voltage is 600mV. The output voltage accuracy is better than 2%.

The CYT6167 has low ground current at 65uA, so it can help prolong battery life. The CYT6167 is specially designed for hand-held, battery-powered devices.

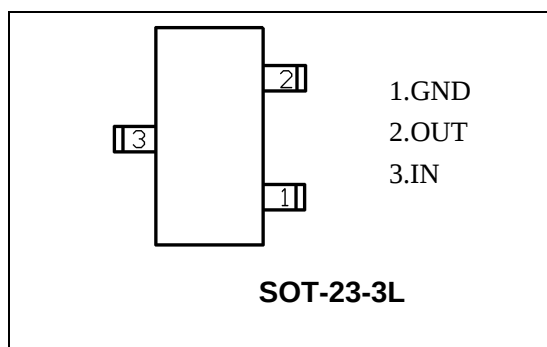
Features

- Typical 175mV dropout voltage at 150mA.
- Guaranteed 400mA output over the full operating temperature range.
- Extremely tight load and line regulation.
- Low temperature coefficient.
- Current and thermal limiting.
- No-load stability.
- Standard SOT-23-3L package.

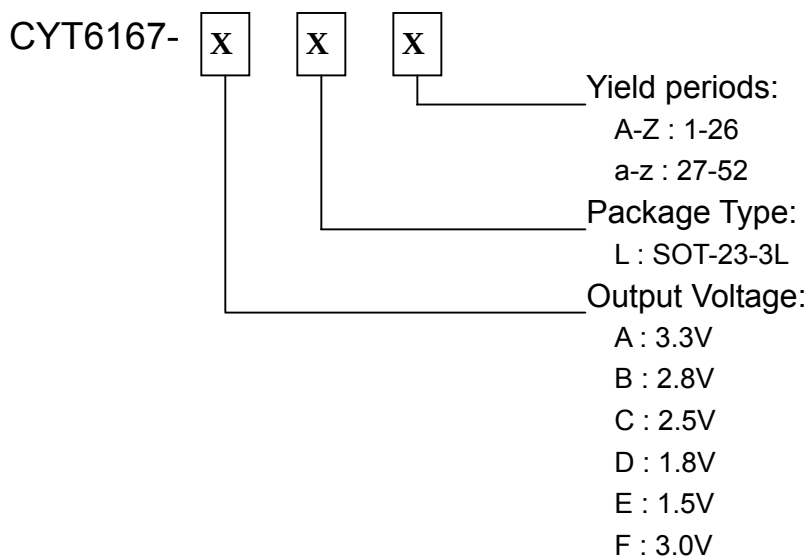
Applications

- CD/DVD-ROM, CD/RW.
- Wireless LAN card, Keyboard, Mouse.
- Battery Powered Equipments.
- PCMCIA Card.

Pin Configuration



Ordering Information





Absolute Maximum Ratings

Supply Input Voltage (VIN)	6V
Power Dissipation (PD)	Internally Limited
Junction Temperature (TJ)	0°C to +150°C
Lead Temperature (soldering, 5 sec)	260°C
Storage Temperature (TS)	-10°C to +150°C

Operating Ratings

Package Thermal Resistance	250°C /W
Supply Input Voltage (VIN)	+2.8V to +5.5V
Junction Temperature (TJ)	0°C to +125°C

Electrical Characteristics

VIN = VOUT + 1.0V; CIN = 2.2μF; COUT = 2.2μF; IOUT = 10mA; TJ = 25°C, unless otherwise specified.

Symbol	Parameter	Conditions	Min	Typ	Max	Units
VOUT	Output Voltage Accuracy	CYT6167-1.5V	1.470	1.5	1.530	V
		CYT6167-1.8V	1.764	1.8	1.836	
		CYT6167-2.5V	2.450	2.5	2.550	
		CYT6167-2.8V	2.744	2.8	2.856	
		CYT6167-3.0V	2.940	3.0	3.060	
		CYT6167-3.3V	3.234	3.3	3.366	
VOUT/ T	Output Voltage Temperature Coefficient		--	0.025	--	mV/
VOUT/VOUT	Line Regulation	VIN=4.3V to 6V, IOUT=10mA (VOUT=3.3V)	--	1.0	--	%/V
VOUT/VOUT	Load Regulation	VIN=5V IOUT=10 to 400mA (VOUT=3.3V)	--	1.0	--	%
VIN-VOUT	Dropout Voltage	IOUT=10mA	--	15	--	mV
		IOUT=150mA	--	175	--	
		IOUT=300mA	--	380	--	
		IOUT=400mA	--	600	--	mV
T _{PROTECTION}	Thermal Protection	Thermal Protection Temperature	--	150	--	
		Protection Hysterisys	--	20	--	
PSRR	Ripple Rejection	F=120Hz	--	59	--	dB
I _{GROUND}	Ground Current	IOUT=10mA	--	65	--	uA
I _{LIMIT}	Current Limit	VOUT=0V	--	600	--	mA



150mA CMOS LDO Regulator

General Description

The CYT6168 is an efficient linear voltage regulator. It has extra low dropout voltage. At light loads the typical dropout voltage is 15mV, at full load the typical dropout voltage is 600mV. The output voltage accuracy is better than 2%.

The CYT6168 has low ground current at 50uA, so it can help prolong battery life. The CYT6168 is specially designed for hand-held, battery –powered devices.

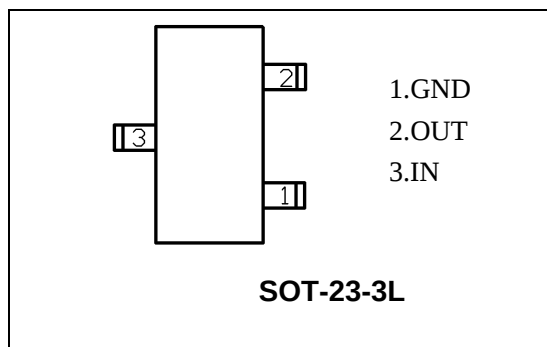
Features

- Typical 200mV dropout voltage at 75mA.
- Guaranteed 150mA output over the full operating temperature range.
- Extremely tight load and line regulation.
- Low temperature coefficient.
- Current and thermal limiting.
- No-load stability.
- Standard SOT-23-3L package.

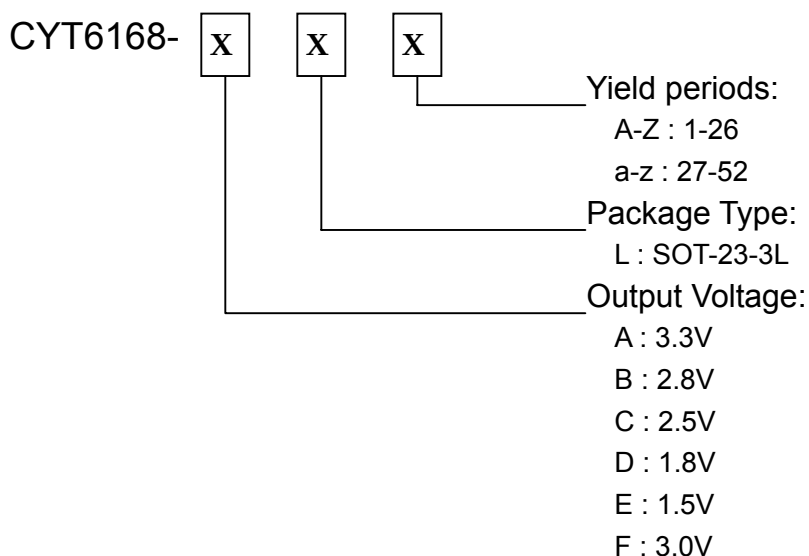
Applications

- CD/DVD-ROM, CD/RW.
- Wireless LAN card, Keyboard, Mouse.
- Battery Powered Equipments.
- PCMCIA Card.

Pin Configuration



Ordering Information





Absolute Maximum Ratings

Supply Input Voltage (VIN)	0.7V to +6V
Power Dissipation (PD)	Internally Limited
Junction Temperature (TJ)	0°C to +125°C
Lead Temperature (soldering, 5 sec)	260°C
Storage Temperature (TS)	-40°C to +150°C

Operating Ratings

Package Thermal Resistance	230°C /W(sot-23)
Supply Input Voltage (VIN)	+2.0V to +5.5V
Junction Temperature (TJ)	0°C to +125°C Package Thermal

Electrical Characteristics

V_{IN} = 5V; C_{IN} = 2.2μF; C_{OUT} = 2.2μF; I_{OUT} = 10mA; T_J = 25°C; unless otherwise noted

Symbol	Parameter	Conditions	Min	Typ	Max	Units
V _{OUT}	Output Voltage Accuracy	CYT6168-1.5V	1.470	1.5	1.530	V
		CYT6168-1.8V	1.764	1.8	1.836	
		CYT6168-2.5V	2.450	2.5	2.550	
		CYT6168-2.8V	2.744	2.8	2.856	
		CYT6168-3.0V	2.940	3.0	3.060	
		CYT6168-3.3V	3.234	3.3	3.366	
V _{OUT} / T	Output Voltage Temperature Coefficient		--	0.033	--	mV/
V _{OUT} /V _{OUT}	Line Regulation	V _{IN} =V _{OUT} +1V to 6V, I _{OUT} =10mA (V _{OUT} =3.3V)	--	1.0	--	%/V
V _{OUT} /V _{OUT}	Load Regulation	V _{IN} =5V I _{OUT} =10 to 150mA (V _{OUT} =3.3V)	--	1.0	--	%
V _{IN} -V _{OUT}	Dropout Voltage	I _{OUT} =10mA	--	20	--	mV
		I _{OUT} =75mA	--	200	--	
		I _{OUT} =150mA	--	500	--	
T _{PROTECTION}	Thermal Protection	Thermal Protection Temperature	--	150	--	
		Protection Hysterisys	--	20	--	
PSRR	Ripple Rejection	F=120Hz	--	57	--	dB
I _Q	Quiescent Current	I _{OUT} =10mA	--	50	--	uA
I _{LIMIT}	Current Limit	V _{OUT} =0V	300	--	--	mA



150mA CMOS LDO Regulator

General Description

The CYT6169 is a precision voltage reference that is designed to work at very low current and low voltage conditions.

The CYT6169 can work from a supply voltage as low as 1.6V and consumes as low as 8uA current. Temperature stability is averaging 50ppm/. It is ideal for MP3/MPEG4 applications where a constant voltage reference is required. Which is independent of the environment temperature. In addition, CYT6169 is designed to be stable under conditions where Cin and Cout are not present. However, it is recommended to include Cin and Cout in the system design as this will increase the PSRR rating, as shown in the PSRR graph.

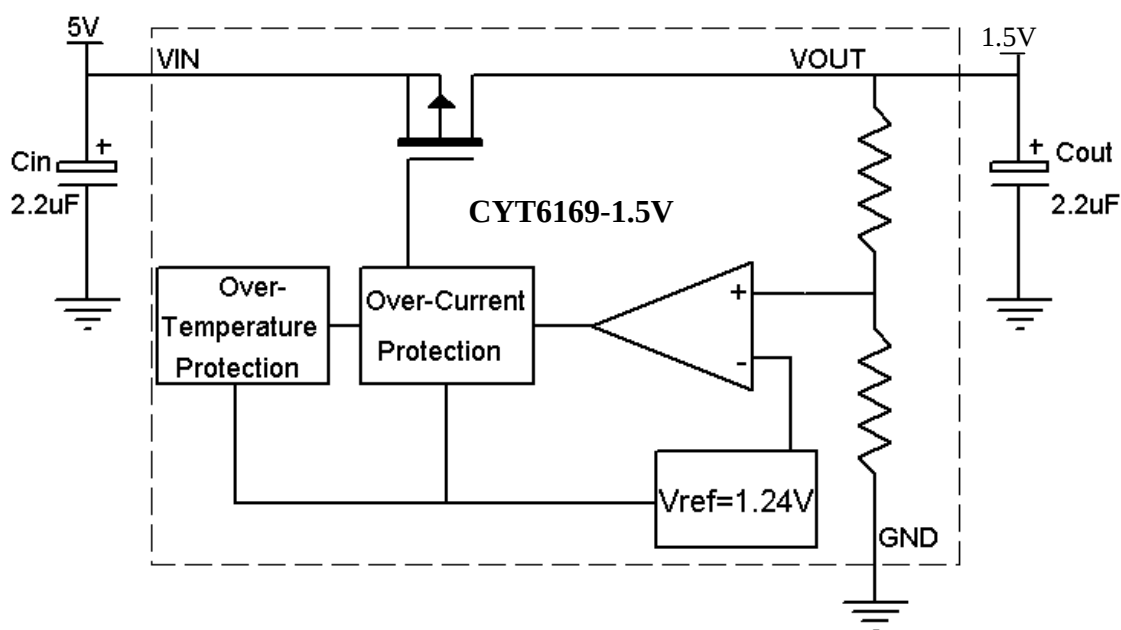
Features

- Minimum Vin at 1.6V.
- Low Ground current as low as 8uA.(TYP.)
- Guaranteed 500mA output current over the full operating temperature range.
- Extremely low temperature drift at 50 ppm/°C.
- Stable operation without Cin and Vout.
- Standard SOT-23-3L package.

Applications

- 1.5V Reference for Action 2051,2085,2097 MP3 solutions.
- 1.5V Temperature Independent Voltage reference.
- Other independent voltage reference applications.

Application Diagram





Absolute Maximum Ratings

Supply Input Voltage (VIN)	+6V
Power Dissipation (PD)	Internally Limited
Junction Temperature (TJ)	150°C
Lead Temperature (soldering, 5 sec)	260°C
Storage Temperature (TS)	-10°C to +150°C

Operating Ratings

Package Thermal Resistance	250°C /W
Supply Input Voltage (VIN)	+1.6V to +5.5V
Junction Temperature (TJ)	0°C to +125°C Package Thermal

Electrical Characteristics

V_{IN} = 5V; I_{OUT} = 1mA; T_J = 25°C; unless otherwise noted

Symbol	Parameter	Conditions	Min	Typ	Max	Units
V _{in}	Input Voltage Range		1.6		6	V
V _{out}	Output Voltage Accuracy	CYT6169-1.5V	1.470	1.5	1.530	V
V _{out} / T	Output Voltage Temperature Coefficient		--	-50	--	ppm/
V _{out} / V _{out}	Line Regulation	V _{in} =1.6V to 5.5V	--	0.3	--	%/V
V _{out} / V _{out}	Load Regulation ⁽²⁾	V _{in} =2V, I _{out} =0mA to 5mA	--	1.0	--	%
T _{protection}	Thermal Protection	Thermal Protection Temperature	--	150	--	
		Protection Hysterisys	--	20	--	
PSRR	Ripple Rejection	F=100Hz, V _{in} =2.2V, V _{p-p} =1V	--	70	--	dB
I _{ground}	Ground Vurrent	I _{out} = 1mA	--	8	--	uA



400mA CMOS LDO Regulator

General Description

The CYT6218 series of fixed output low dropout linear regulators are designed for portable battery powered applications, which require low noise environment, fast enable response time, and low dropout voltage. Each device contains a bandgap voltage reference, an error amplifier, a PMOS power transistor, and resistors for setting output voltage, and current limit and temperature limit protection circuits.

The CYT6218 has been designed to be used with low cost capacitors and requires a minimum output capacitor of 1.0 μ F. Standard voltage versions are 5, 1.8, 2.5, 2.8, 3.0, and 3.3V.

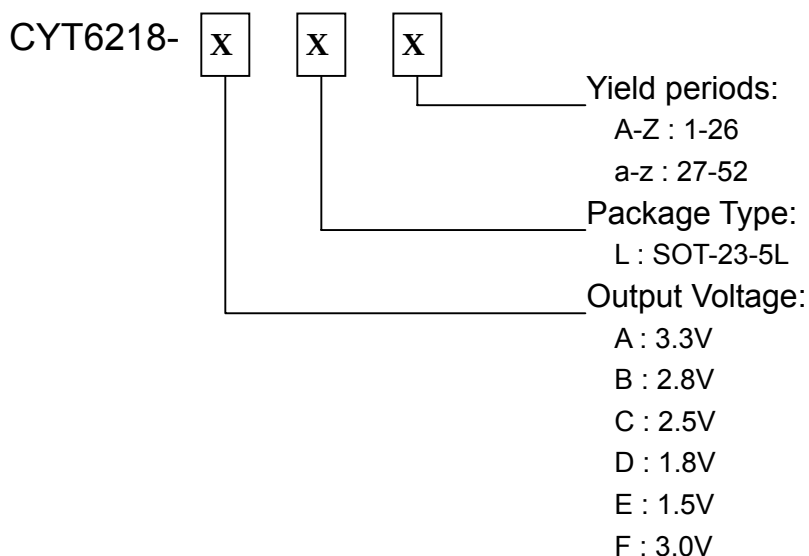
Features

- Typical 175mV dropout voltage at 150mA..
- Excellent Line and Load Regulation.
- Fast Enable Turn-On Time of 20 μ s.
- Disable Current Less than 0.3 μ A (Typ.).
- Ultra-Low Ground Current at 65 μ A (Typ.).
- Thermal Protection.
- Standard SOT-23-5 package.

Applications

- Digital camera.
- USB removable devices.
- Portable DVD players.
- MPEG4 devices.
- Wireless LAN's.

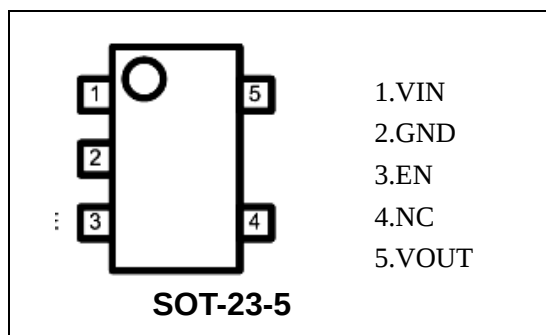
Ordering Information



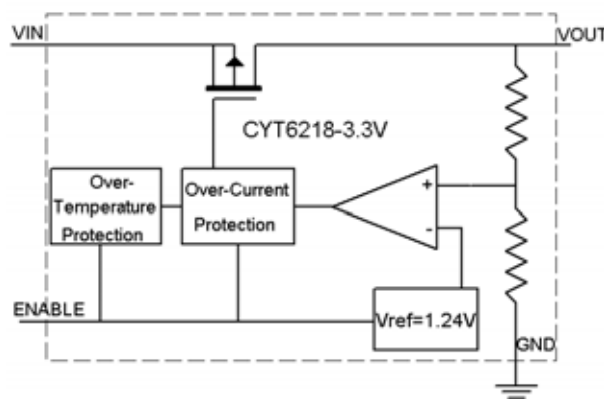


CYT 6218

Pin Configuration



Block Diagram



Electrical Characteristics

$V_{IN} = V_{OUT} + 1V$; $I_{OUT} = 10mA$, $C_{IN} = 2.2\mu F$; $C_{OUT} = 2.2\mu F$; $I_{OUT} = 10mA$; $T_J = 25^{\circ}C$; unless otherwise specified.

Symbol	Parameter	Conditions	Min	Typ	Max	Units
V_{OUT}	Output Voltage Accuracy	CYT6218-XX	-2%		+2%	V
V_{OUT}/T	Output Voltage Temperature Coefficient		--	0.025	--	mV/
V_{OUT}/V_{OUT}	Line Regulation	$V_{IN}=4.3V$ to $6V$, $I_{OUT}=10mA$ ($V_{OUT}=3.3V$)	--	1.0	--	%/V
V_{OUT}/V_{OUT}	Load Regulation	$V_{IN}=5V$ $I_{OUT}=10$ to $400mA$ ($V_{OUT}=3.3V$)	--	1.0	--	%
$V_{IN}-V_{OUT}$	Dropout Voltage	$I_{OUT}=10mA$	--	15	--	mV
		$I_{OUT}=150mA$	--	175	--	
		$I_{OUT}=250mA$	--	320	--	
		$I_{OUT}=400mA$	--	600	--	
$T_{PROTECTION}$	Thermal Protection	Thermal Protection Temperature	--	150	--	
		Protection Hysterisys	--	20	--	
PSRR	Ripple Rejection	$F=120Hz$	--	59	--	dB
I_Q	Quiescent Current	$V_{EN}=0V$	--	0.3	--	uA
		$V_{EN}=V_{TH(EN)}$; $I_{OUT}=10mA$	--	65	--	
		$V_{EN}=V_{TH(EN)}$; $I_{OUT}=400mA$	--	110	--	
$V_{TH(EN)}$	Enable Input Threshold Voltage	Voltage Increasing, Output Turns On, Logic High	1.6	--	--	V
		Voltage Decreasing, Output Turns Off, Logic Low	--	--	0.4	
I_{LIMIT}	Current Limit	$V_{OUT}=0V$	--	600	--	mA



150mA CMOS LDO Regulator

General Description

The CYT6508 series of fixed output low dropout linear regulators are designed for portable battery powered applications, which require low noise environment, fast enable response time, and low dropout voltage. An optional bypass capacitor can be added for better low-noise performance. Each device contains a voltage reference unit, an error amplifier, a PMOS power transistor, and resistors for setting output voltage, and current limit and temperature limit protection circuits.

The CYT6508 has been designed to be used with low cost capacitors and requires a minimum output capacitor of 1.0 μ F. Standard voltage versions are 1.5, 1.8, 2.5, 2.8, 3.0, and 3.3V.

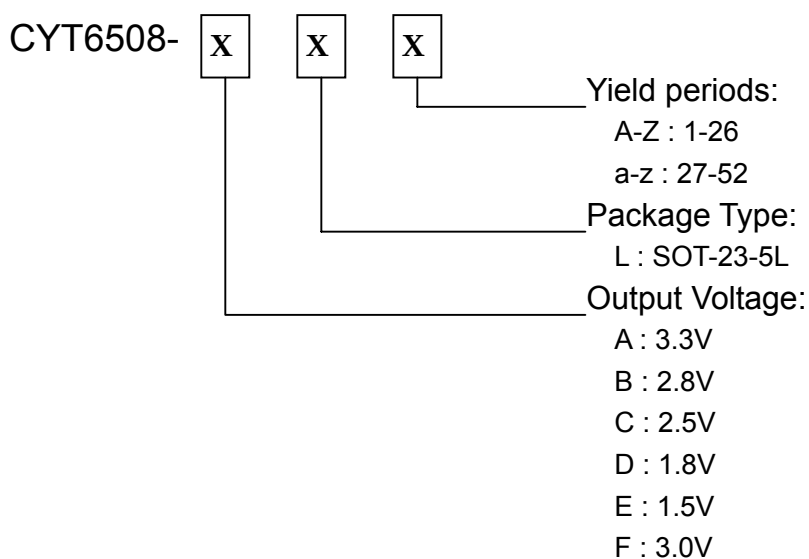
Features

- Excellent Noise Rejection at 62 dB.
- Typical 200mV dropout voltage at 75mA.
- Excellent Line and Load Regulation.
- Fast Enable Turn-On Time of 20 μ s.
- Typical Low Ground Current at 50 μ A.
- Typical Disable Current Less than 0.3 μ A.
- Thermal Protection.
- Standard SOT-23-5 package.
- Available in Lead-Free Packages.

Applications

- Digital camera.
- USB removable devices.
- Portable DVD players.
- MPEG4 devices.
- Wireless LAN's.
- Cellphones

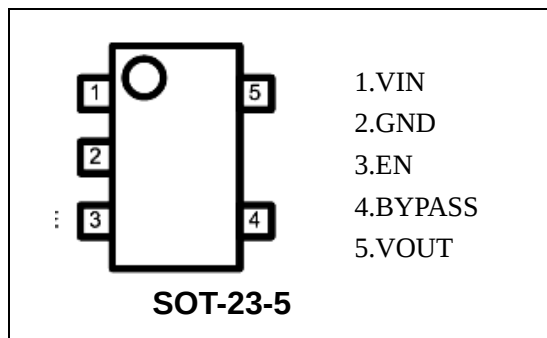
Ordering Information



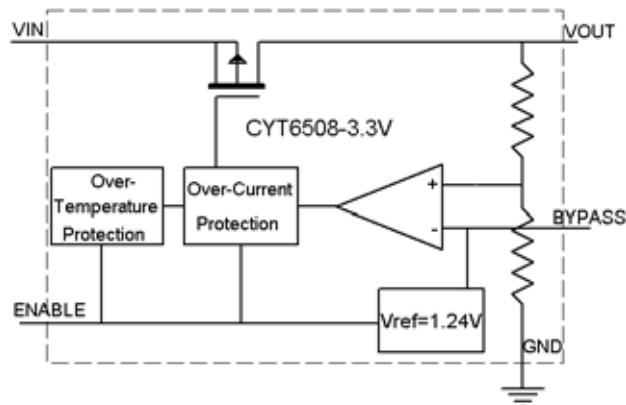


CYT 6508

Pin Configuration



Block Diagram



Electrical Characteristics

$V_{IN} = 5V$; $I_{OUT} = 10mA$, $C_{IN} = 2.2\mu F$; $C_{OUT} = 2.2\mu F$; $T_J = 25^\circ C$; unless otherwise specified.

Symbol	Parameter	Conditions	Min	Typ	Max	Units
V_{OUT}	Output Voltage Accuracy	CYT6508-XX	-2%		+2%	V
V_{OUT}/T	Output Voltage Temperature Coefficient	Note4	--	0.033	--	mV/
V_{OUT}/V_{OUT}	Line Regulation	$V_{IN}=V_{OUT}+1V$ to $6V$, $I_{OUT}=10mA$ ($V_{OUT}=3.3V$)	--	1.0	--	%/V
V_{OUT}/V_{OUT}	Load Regulation	$V_{IN}=5V$ $I_{OUT}=10$ to $150mA$ ($V_{OUT}=3.3V$)	--	1.0	--	%
$V_{IN}-V_{OUT}$	Dropout Voltage	$I_{OUT}=10mA$	--	20	--	mV
		$I_{OUT}=75mA$	--	200	--	
		$I_{OUT}=150mA$	--	500	--	
$T_{PROTECTION}$	Thermal Protection	Thermal Protection Temperature	--	150	--	
		Protection Hysterisys	--	20	--	
PSRR	Ripple Rejection	$F=120Hz$	--	62	--	dB
I_Q	Quiescent Current	$V_{EN}=0V$	--	0.3	--	uA
		$V_{EN}=V_{TH(EN)}$; $I_{OUT}=10mA$	--	65	--	
$V_{TH(EN)}$	Enable Input Threshold Voltage	Voltage Increasing, Output Tums On, Logic High	1.6	--	--	V
		Voltage Decreasing, Output Tums Off, Logic Low	--	--	0.4	
I_{LIMIT}	Current Limit	$V_{OUT}=0V$	--	300	--	mA



600mA CMOS Low Power Low Noise LDO Voltage Regulator

General Description

The CYT6603 series of fixed output low dropout linear regulators are designed for portable battery powered applications, which require low power consumption, low noise environment, and low dropout voltage. Each device contains a bandgap voltage reference, an error amplifier, a PMOS power transistor, and resistors for setting output voltage, and current limit and temperature limit protection circuits.

The CYT6603 has been designed to be used with low cost capacitors and requires a minimum output capacitor of 1.0 μ F. Standard voltage versions are 1.5, 1.8, 2.5, 2.8, 3.0, 3.3, 3.5 and 3.6V.

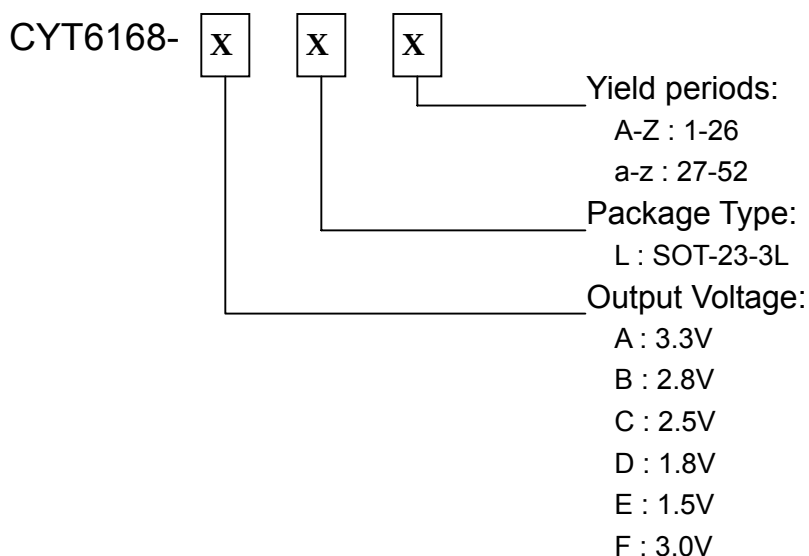
Features

- Typical 175mV Dropout Voltage at 150mA.
- Excellent Line and Load Regulation.
- High Accuracy Output Voltage of 2%.
- Ultra-Low Ground Current at 25 μ A (Typ.)
- Over Current and thermal Protection.
- No-load stability.
- Standard SOT-89 package.

Applications

- USB removable devices.
- MPEG4 devices.
- Wireless LAN's.
- Hand-Held Instrumentation.
- Portable DVD players.
- Digital camera.

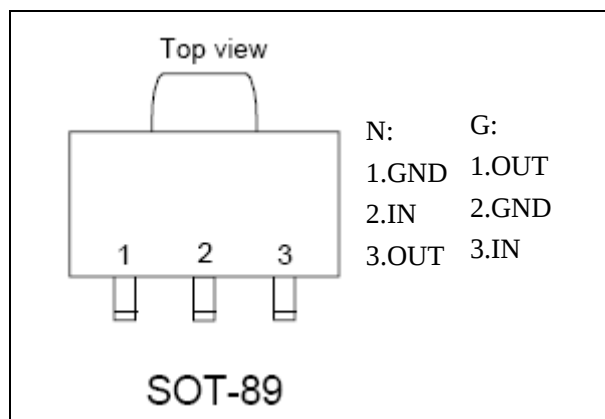
Ordering Information



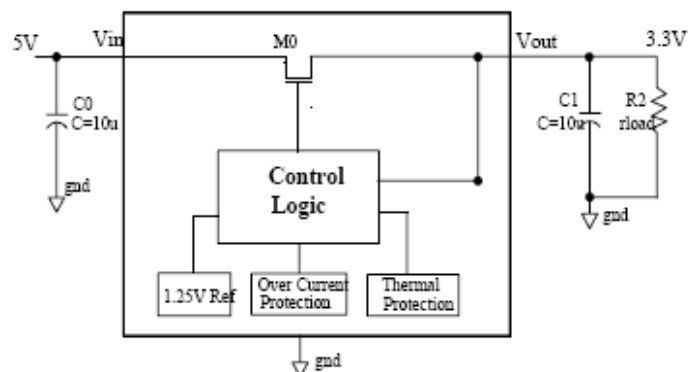


CYT 6603

Pin Configuration



Application Diagram



Electrical Characteristics

VIN = 5.0V , CIN=2.2uF COUT = 2.2uF, IOUT = 10mA; TJ = 25°C;unless otherwise specified.

Symbol	Parameter	Conditions	Min	Typ	Max	Units
VOUT	Output Voltage Accuracy	CYT6603-1.5V	1.470	1.5	1.530	V
		CYT6603-1.8V	1.764	1.8	1.836	
		CYT6603-2.5V	2.450	2.5	2.550	
		CYT6603-2.8V	2.744	2.8	2.856	
		CYT6603-3.3V	3.234	3.3	3.366	
		CYT6603-3.5V	3.430	3.5	3.570	
		CYT6603-3.6V	3.528	3.6	3.672	
VOUT/ T	Output Voltage Temperature Coefficient		--	0.1	--	mV/
VOUT/VOUT	Line Regulation	VIN=VOUT+0.8V to 5.5V	--	0.2	--	%/V
VOUT/VOUT	Load Regulation	VIN=VOUT+0.8V to 2.5V IOUT=10mA to 600mA	--	2.0	--	%
VIN-VOUT	Dropout Voltage	IOUT=10mA	--	5	--	mV
		IOUT=150mA	--	175	--	
		IOUT=250mA	--	300	--	
		IOUT=600mA	--	800	--	
T _{PROTECTION}	Thermal Protection	Thermal Protection Temperature	--	150	--	
		Protection Hysterisys	--	20	--	
PSRR	Ripple Rejection	F=120Hz	--	60	--	dB
I _{GROUND}	Ground Current	IOUT=10mA	--	25	--	uA
I _{LIMIT}	Current Limit	VOUT=0V	600	--	--	mA



300mA CMOS Low Noise LDO Regulator

General Description

The CYT6606 series of fixed output low dropout linear regulators are designed for portable battery powered applications, which require low power consumption, low noise environment, and low dropout voltage. Each device contains a bandgap voltage reference, an error amplifier, a PMOS power transistor, and resistors for setting output voltage, and current limit and temperature limit protection circuits.

The CYT6606 has been designed to be used with low cost capacitors and requires a minimum output capacitor of 1.0 μ F. The devices are available in fixed voltages range from 1.3V to 4.4V with 0.1V per step.

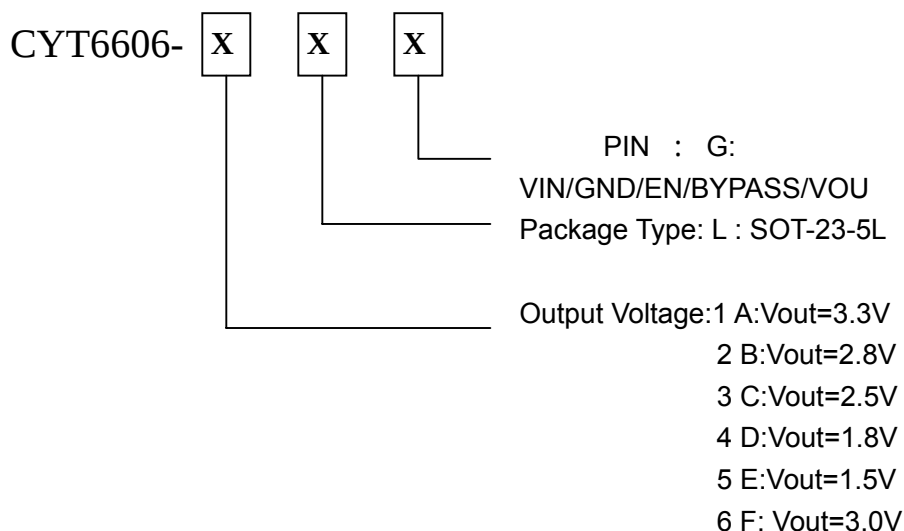
Features

- Typical 140mV Dropout Voltage at 150mA.
- Fast Enable Turn-On Time of 20 μ s (Typ.)
- Excellent Line and Load Regulation.
- High Accuracy Output Voltage of 2%.
- Ultra-Low Ground Current at 22 μ A (Typ.)
- Disable Current Less than 0.1 μ A (Typ.)
- Over Current and thermal Protection.
- Standard SOT-23-5 package.

Applications

- USB removable devices.
- MPEG4 devices.
- Wireless LAN's.
- Hand-Held Instrumentation.
- Portable DVD players.
- Digital camera.

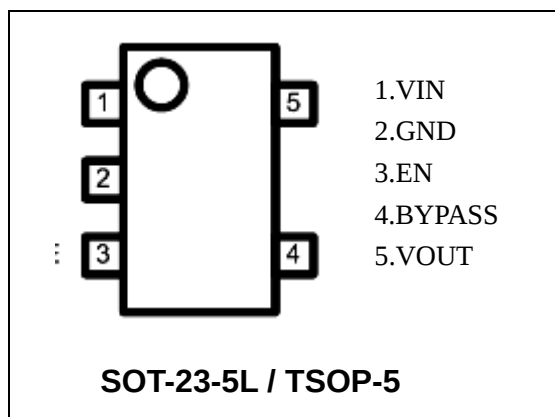
Ordering Information



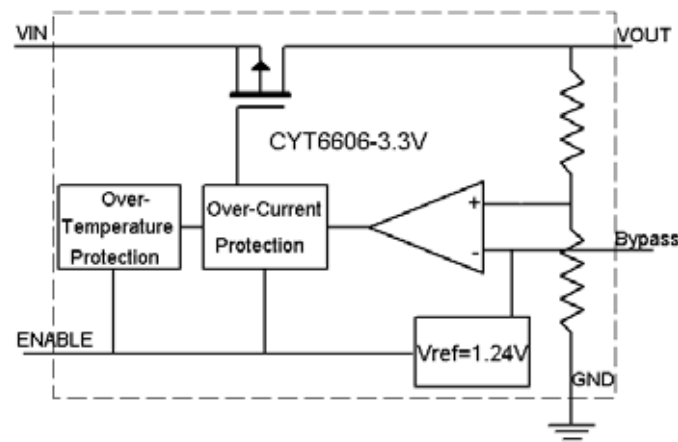


CYT 6606

Pin Configuration



Application Diagram



Electrical Characteristics

$V_{IN} = 5V$; $I_{OUT} = 10mA$, $C_{IN} = 2.2\mu F$; $C_{OUT} = 2.2\mu F$; $T_J = 25^{\circ}C$; unless otherwise specified.

Symbol	Parameter	Conditions	Min	Typ	Max	Units
V_{OUT}	Output Voltage Accuracy	CYT6606-XX	-2%		+2%	V
V_{OUT}/T	Output Voltage Temperature Coefficient		--	0.26	--	mV/
V_{OUT}/V_{OUT}	Line Regulation	$V_{IN}=V_{OUT}+1V$ to 5.0V	--	0.3	--	%/V
V_{OUT}/V_{OUT}	Load Regulation	$I_{OUT}=10$ to 300mA	--	2.0	--	%
$V_{IN}-V_{OUT}$	Dropout Voltage	$I_{OUT}=10mA$	--	8	--	mV
		$I_{OUT}=150mA$	--	140	--	
		$I_{OUT}=300mA$	--	310	--	
$T_{PROTECTION}$	Thermal Protection	Thermal Protection Temperature	--	130	--	
		Protection Hysterisys	--	15	--	
PSRR	Ripple Rejection	F=10KHz, Bypass=0.1uF	--	70	--	dB
I_q	Quiescent Current	$V_{EN}=0V$	--	0.1	--	uA
		$V_{EN}=V_{TH(EN)}$; $I_{OUT}=10mA$	--	22	--	
$V_{TH(EN)}$	Enable Input Threshold Voltage	Voltage Increasing, Output Turns On, Logic High	1.6	--	--	V
		Voltage Decreasing, Output Turns Off, Logic Low	--	--	0.4	
I_{LIMIT}	Current Limit	$V_{OUT}=0V$	--	600	--	mA



500mA LDO Regulator

General Description

The CYT6619 series of high performance low dropout voltage regulators are designed for applications that require efficient conversion and fast transient response.

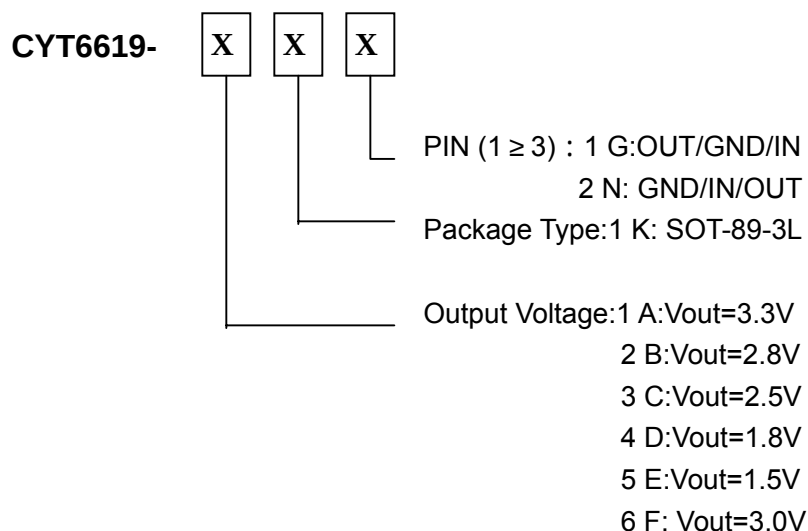
Features

- Low Dropout Performance.
- Guaranteed 500mA Output Current.
- Wide Input Supply Voltage Range.
- Over-temperature and Over-current Protection.
- Rugged 3KV ESD withstand capability.
- No-load stability.
- Available in SOT-89-3L Packages.

Applications

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

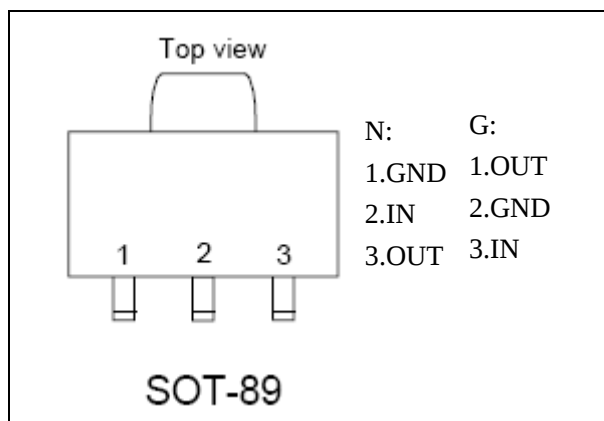
Ordering Information



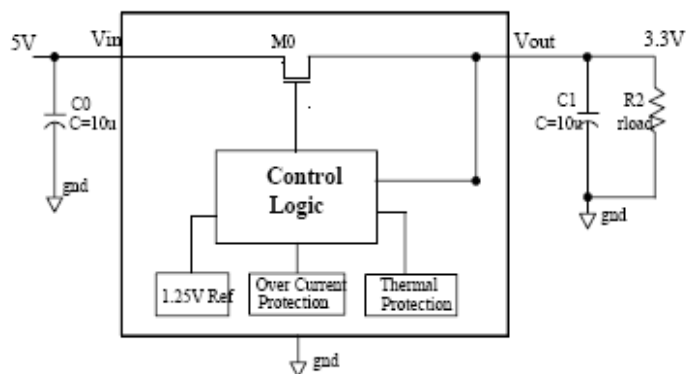


CYT 6619

Pin Configuration



Application Diagram



Electrical Characteristics

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

Symbol	Parameter	Test Condition	Min	Typ	Max	Units
V_O	Output Voltage ⁽¹⁾	CYT6619T33	3.234	3.3	3.366	V
V_{SR}	Line Regulation ⁽¹⁾	$V_{OUT}+1.5V < V_{IN} < 8V$ $I_{OUT}=10mA$	--	0.3	--	%
V_{LR}	Load Regulation ⁽¹⁾	$(V_{IN}-V_{OUT}) = 1.5V$ $10mA \leq I_{OUT} \leq 500mA$	--	0.4	--	%
I_Q	Quiescent Current		--	10	--	mA
V_D	Dropout Voltage ⁽²⁾	$I_{OUT}=500mA$	--	1.0	--	V
I_O	Minimum Load Current		--	4	--	mA
I_{CL}	Current Limit		--	0.8	--	A
T_C	Temperature Coefficient		--	0.07	--	%/
OTP	Thermal Protection		--	175	--	
V_N	RMS Output Noise	$T_A=25^\circ C$, $10Hz \leq f \leq 10KHz$	--	0.003		% V_O
RA	Ripple Rejection Ratio	$f=120Hz$, $C_{OUT}=22\mu F$ (Tantalum), $(V_{IN}-V_{OUT})=3V$, $I_{OUT}=500mA$	--	35	--	dB



White LED Step-Up Converter

General Description

The CYT2506 is a step-up DC/DC converter specifically designed to drive white LEDs with a constant current. The device can drive two, three or four LEDs in series from a Li-Ion cell. Series connection of the LEDs provides identical LED current resulting in uniform brightness and eliminating the need for ballast resistors.

The CYT2506 switches at 1MHz, allowing the use of any tiny external components. The output capacitor can be as small as 1 μ F, saving space and cost versus alternative solutions. A low 95mV feedback voltage minimizes power loss in the current setting resistor for better efficiency.

CYT2506 is available in low profile SOT-23-5 packages.

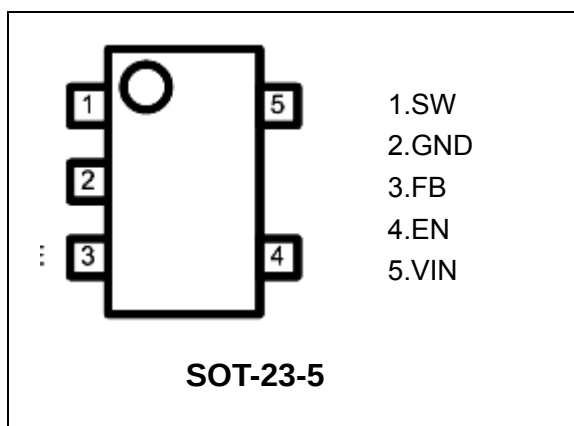
Features

- Inherently Matched LED Current.
- High Efficiency: 84% Typical.
- Drives Up to Four LEDs from a 3.2V Supply.
- Drives Up to Six LEDs from a 5V Supply.
- Fast 1.2MHz Switching Frequency.
- Uses Tiny 1mm Tall Inductors.
- Requires Only 1 μ F Output Capacitor.
- Standard SOT-23-5 package.

Applications

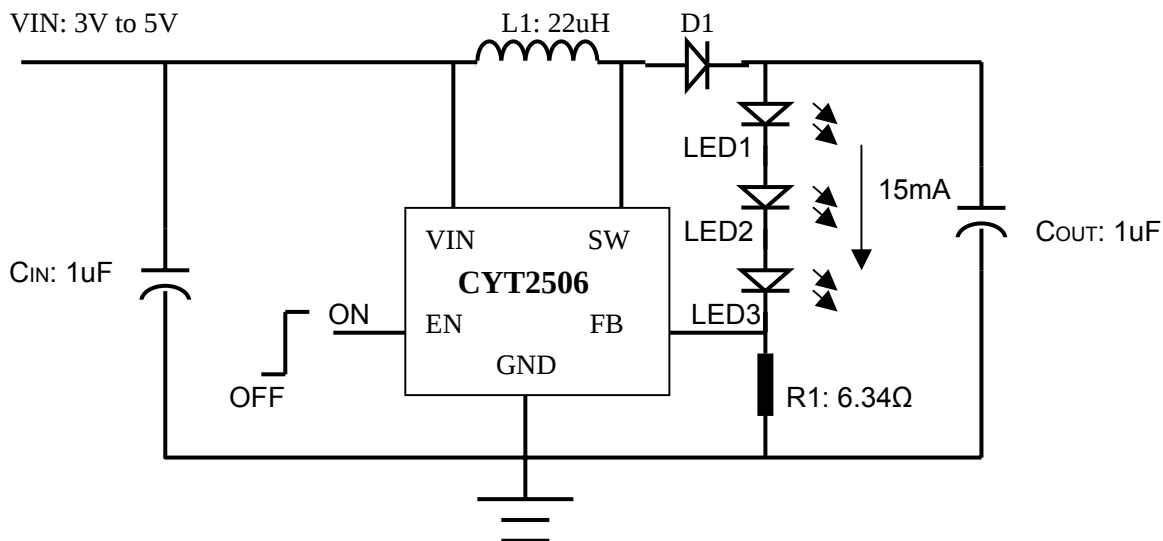
- Cellular Phones.
- PDAs,
- Handheld Computers.
- Digital Camera.
- MP3 Players.
- GPS Receivers.

Pin Configuration





Typical Application



Electrical Characteristics

$V_{IN} = V_{EN} = 3.6V$; $T_J = 25^\circ C$; unless otherwise specified

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V_{IN}	Input Voltage Range		2.7	--	5.0	V
V_{FB}	Feedback Voltage	$I_{SW} = 100mA$, Duty Cycle = 66%	--	95	--	mV
I_{FB}	FB Pin Bias Current		--	45	100	nA
I_{CC}	Supply Current		--	100	--	μA
		$V_{EN} = 0V$	--	0.1	1	μA
	Switching Frequency		--	1.0	--	MHz
	Maximum Duty Cycle		--	85	--	%
I_{LIMIT}	Switch Current Limit		--	300	--	mA
	Switch Leakage Current	$V_{SW} = 5V$		0.01	5	μA
$V_{TH(EN)}$	Enable Input Threshold Voltage	Voltage Raising, Output Turns On, Logic High	1.6	--	--	V
		Voltage Falling, Output Turns Off, Logic Low	--	--	0.4	
I_{EN}	Enable Pin Bias Current		--	300	--	nA



Microprocessor Reset Monitoror(Preliminary)

General Description

The CYT809 is a cost-effective system supervisor circuits designed to monitor VCC in digital systems and provide a reset signal to the host processor when necessary. No external components are required.

The reset output is driven active within 20μsec of VCC falling through the reset voltage threshold. Reset is maintained active for a minimum of 140msec after VCC rises above the reset threshold. The CYT809 has an active-low RESET output. The output of the CYT809 is guaranteed valid down to VCC=1V. Both devices are available in a SOT-23 package.

The CYT809 is optimized to reject fast transient glitches on the VCC line. Low supply current of 15μA (VCC=3.3V) makes these devices suitable for battery powered applications.

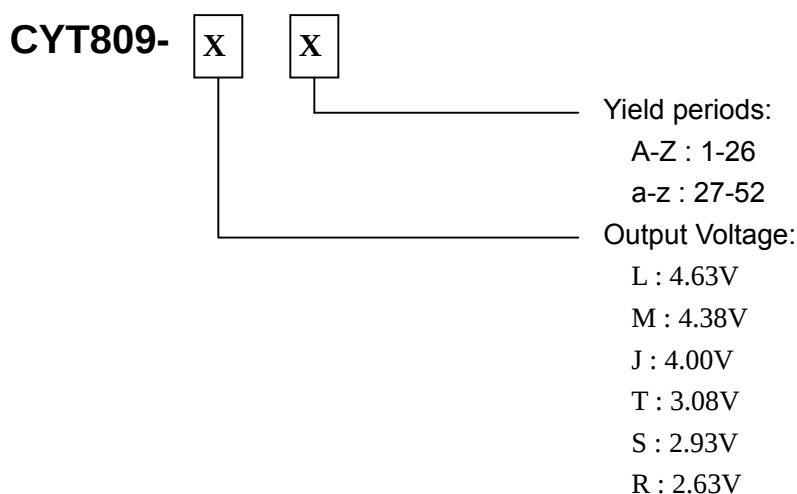
Features

- Precision VCC Monitor for 3.0V, 3.3V, and 5.0V Supplies.
- 140msec Guaranteed Minimum RESET Output Duration.
- RESET Output Guaranteed to VCC=1.0V.
- Low 15μA Supply Current.
- VCC Transient Immunity.
- Small SOT-23 Package.
- No External Components.

Applications

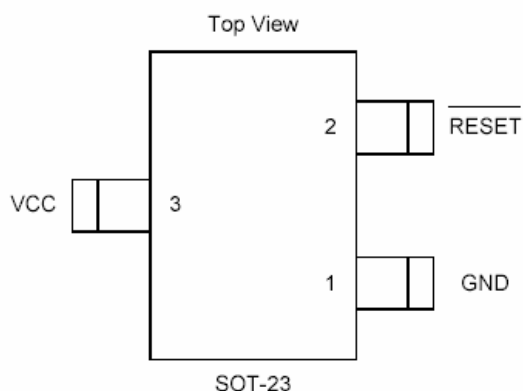
- Computers.
- Embedded systems.
- Battery powered equipment.
- Critical μP power supply monitoring.

Ordering/Marking Information

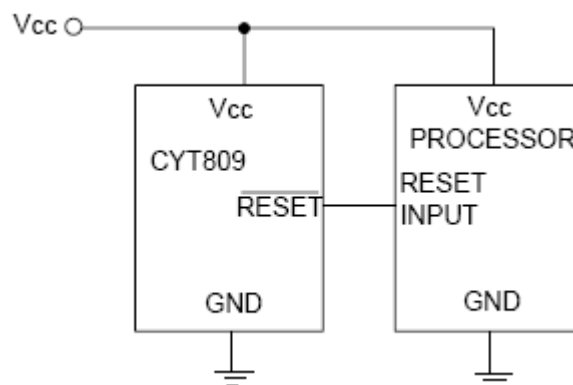




Pin Configuration



Application Diagram



Electrical Characteristics

$V_{IN} = V_{EN} = 3.6V$; $T_J = 25^{\circ}C$; unless otherwise specified

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V_{CC}	Input Voltage Range		2.0	--	5.5	V
I_{CC}	Supply Current		--	18	25	μA
V_{TH}	Reset Threshold	CYT809LXX: CYT809MXX: CYT809JXX: CYT809TXX: CYT809SXX: CYT809RXX:	4.54 4.29 3.92 3.02 2.87 2.58	4.63 4.38 4.00 3.08 2.93 2.63	4.72 4.47 4.08 3.14 2.99 2.68	V
	Reset Threshold Temperature Coefficient ⁽⁴⁾		--	30	--	Ppm/ $^{\circ}C$
	Vcc to Reset Delay Vcc= V_{TH} to ($V_{TH}-100mV$)		--	20	--	μsec
	Reset Active Timeout Period		140	240	600	msec
V_{OL}	RESET Output Voltage Low	$I_{SNK}=3mA$	--	--	0.4	V
V_{OH}	RESET Output Voltage High	$I_{SOURCE} = 800\mu A$	$0.8V_{CC}$	--	--	V



White LED Step-Up Converter

General Description

CYT5026 is a complete constant-current & constant voltage linear charger for single cell Lithium-ion and Lithium-Polymer batteries. Its SOT-23 package and low external component count make CYT5026 ideally suited for portable applications. Furthermore, the CYT5026 is specifically designed to work within USB power specification. At the same time, CYT5026 can also be used in the standalone Lithium-ion and Lithium-Polymer battery charger.

No external sense resistor is needed, and no blocking diode is required due to the internal MOSFET architecture. Thermal feedback regulates the charge current to limit the die temperature during high power operation or high ambient temperature. The charge voltage is fixed at 4.2V, and the charge current can be programmed externally with a single resistor. The CYT5026 automatically terminates the charge cycle when the charge current drops to 1/10th the programmed value after the final float voltage is reached.

When the input supply (wall adapter or USB supply) is removed, the CYT5026 automatically enters a low current stage, dropping the battery drain current to less than 2uA. The CYT5026 can be put into shutdown mode, reducing the supply current to 25uA.

Other features include charge current monitor, undervoltage lockout, automatic recharge and a status pin to indicate charge termination and the presence of an input voltage.

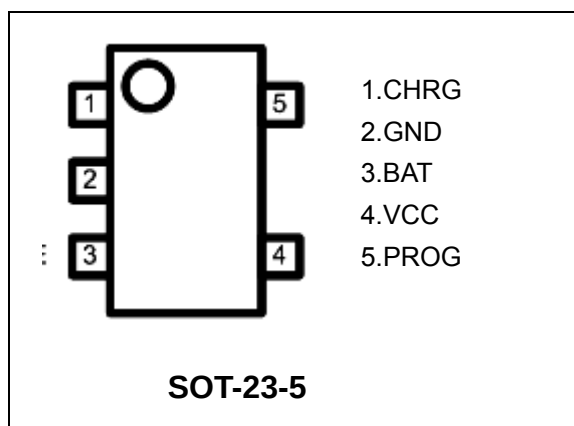
Features

- Programmable Charge Current Up to 800mA.
- No MOSFET, Sense Resistor or Blocking Diode Required.
- Constant-Current/Constant-Voltage Operation with Thermal Protection to Maximize Charge Rate without Risk of Overheating.
- Charges Single Cell Li-Ion Batteries Directly from USB Port.
- Preset 4.2V Charge Voltage with $\pm 1\%$ Accuracy.
- 1uA Supply Current in Shutdown.
- 2.9V Trickle Charge Threshold.
- Available Without Trickle Charge.
- Soft-Start Limits Inrush Current.
- Available in 5-Lead SOT-23 Package.

Applications

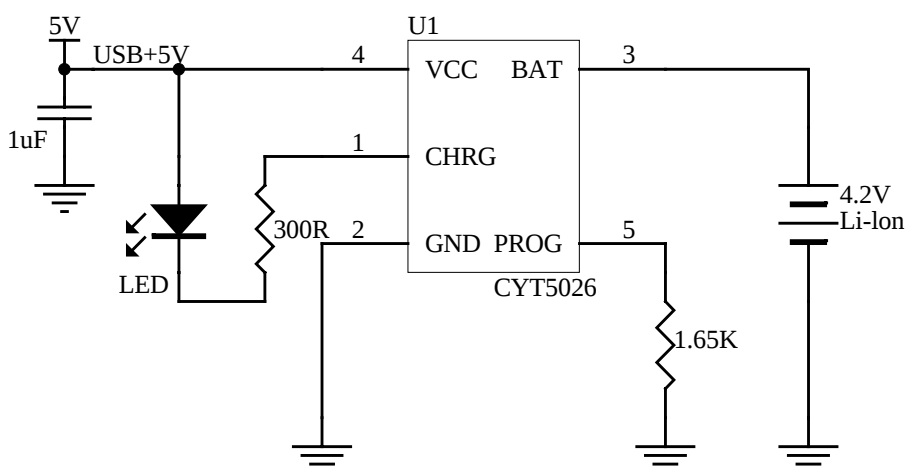
- Cellular Telephones, PDA's, MP3 Players.
- Charging Docks and Cradles.
- Bluetooth Applications.

Pin Configuration





Typical Application



600mA Single Cell Li-Ion Charger

Absolute Maximum Ratings

Parameter	Symbol	Value	Units
Input Supply Voltage	V _{CC}	10	V
PROG Voltage	V _{PROG}	V _{CC} +0.3	V
BAT Voltage	V _{BAT}	7	V
CHRG Voltage	V _{CHRG}	10	V
BAT Short-Circuit Duration		Continuous	
BAT Pin Current	I _{BAT}	800	mA
PROG Pin Current	I _{PROG}	800	uA
Maximum Junction Temperature	T _J	125	
Storage Temperature	T _S	-65 to +125	
Lead Temperature(Soldering,10 sec)		300	



600mA Synchronous Step-Down Regulator

General Description

The CYT2508 is a high efficiency monolithic synchronous buck regulator using a constant frequency, voltage mode architecture. The device is available in fixed output voltage of 1.8V and 1.5V and adjustable output voltage. Supply current during operation is only 20 μ A and drop to $\leq$ 1 μ A in shutdown. The 2.5V to 5.5V input voltage range makes the CYT2508 ideally suited for single Li-Ion battery-powered applications. 100% duty cycle provides low dropout operation, extending battery life in portable systems. Switching frequency is internally set at 1.25MHz, allowing the use of small surface mount inductors and capacitors.

The internal synchronous switch increases efficiency and eliminates the need for an external Schottky diode. The CYT2508 is available in low profile SOT-23-5 package.

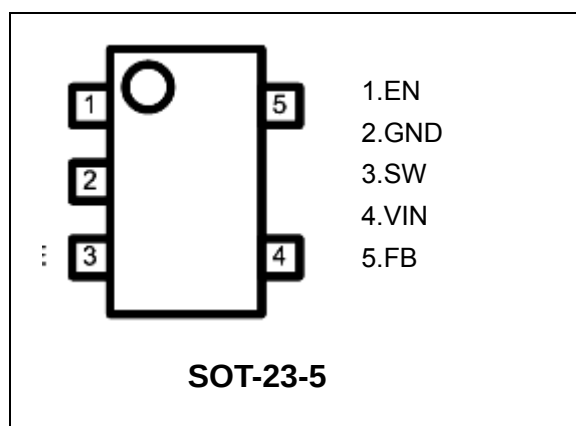
Features

- High Efficiency: Up to 96%
- Very Low Quiescent Current: Only 20 μ A During Operation
- 600mA Output Current
- 2.5V to 5V Input Voltage Range
- 1.25MHz Constant Frequency Operation
- No Schottky Diode Required
- Low Dropout Operation: 100% Duty Cycle
- Shutdown Mode draws $\leq$ 1 μ A Supply Current
- Excellent Line and Load Transient Response
- Overtemperature Protection
- Available in SOT Package

Applications

- Cellular Phone
- Personal Information Appliances
- Wireless and DSL Modems
- Digital Still Cameras
- MP3 Players
- Portable Instruments

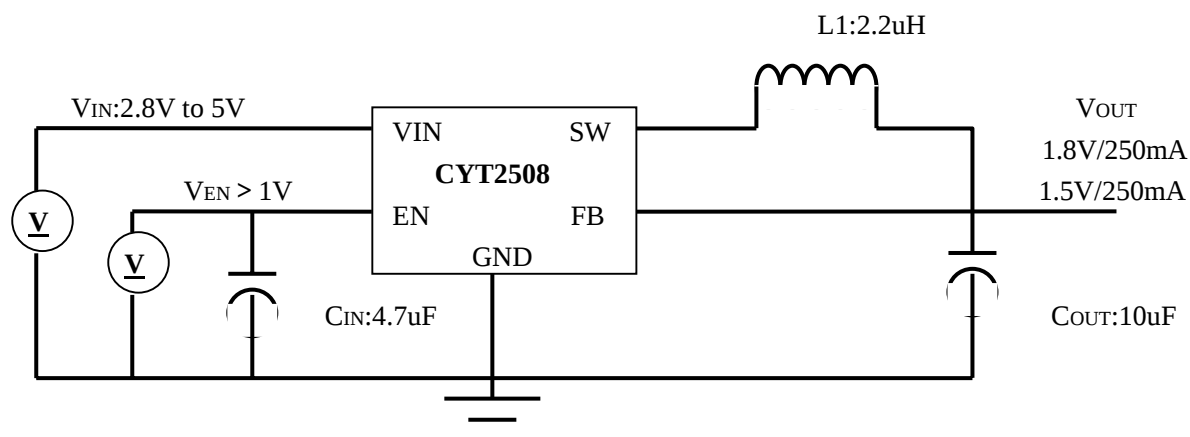
Pin Configuration



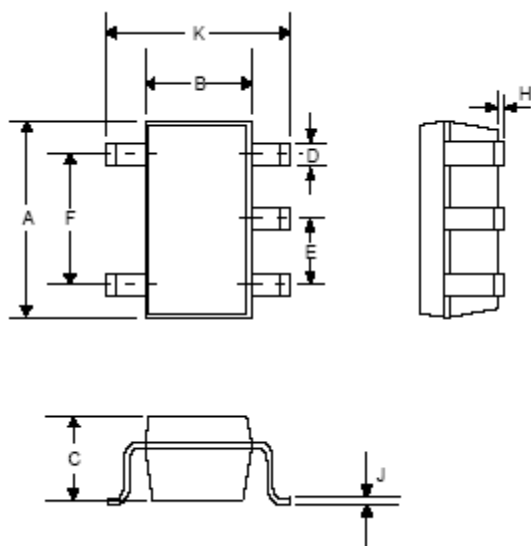


CYT 2508

Typical Application



Outline Drawing SOT-23-5



DIM ^N	DIMENSIONS			
	INCHES		MM	
	MIN	MAX	MIN	MAX
A	0.110	0.120	2.80	3.05
B	0.059	0.070	1.50	1.75
C	0.036	0.051	0.90	1.30
D	0.014	0.020	0.35	0.50
E	-	0.037	-	0.95
F	-	0.075	-	1.90
H	-	0.006	-	0.15
J	0.0035	0.008	0.090	0.20
K	0.102	0.118	2.60	3.00



PFM Step-Up DC-DC Converter

General Description

The CYT2606 Series are PFM step-up DC-DC converters with very low ripple noise due to the high operation frequency. The maximum operation frequency is 260KHz.

Only three components are required to realize the conversion from the battery voltage to a selected output voltage.

A driver pin (EXT) is provided for driving external power transistor to extend the output current capability where large current is required. Enable pin (EN) is also provided so that the circuit can be powered down.

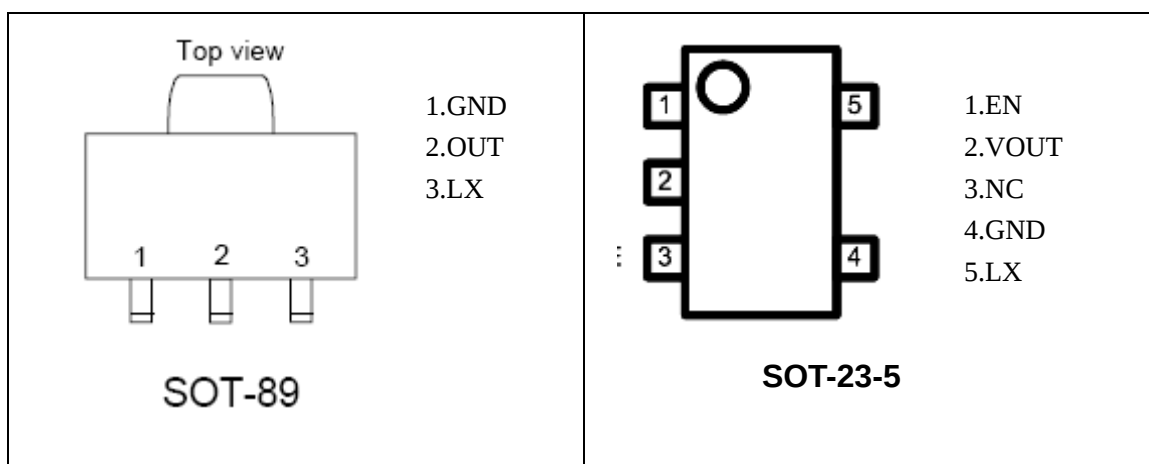
Features

- 260KHz Maximum Operation Frequency.
- 2.0V to 5.0V Output Voltage With 0.1V Step.
- Low Start-up Voltage: 0.8V at 1mA.
- $\pm 2.5\%$ Output Voltage Accuracy.
- Up to 88% Efficiency.
- Output current: 300mA at 2.5V input, 3.3V output.
- Low Ripple and Low Noise.
- Output Current Extendable by External Switch.

Applications

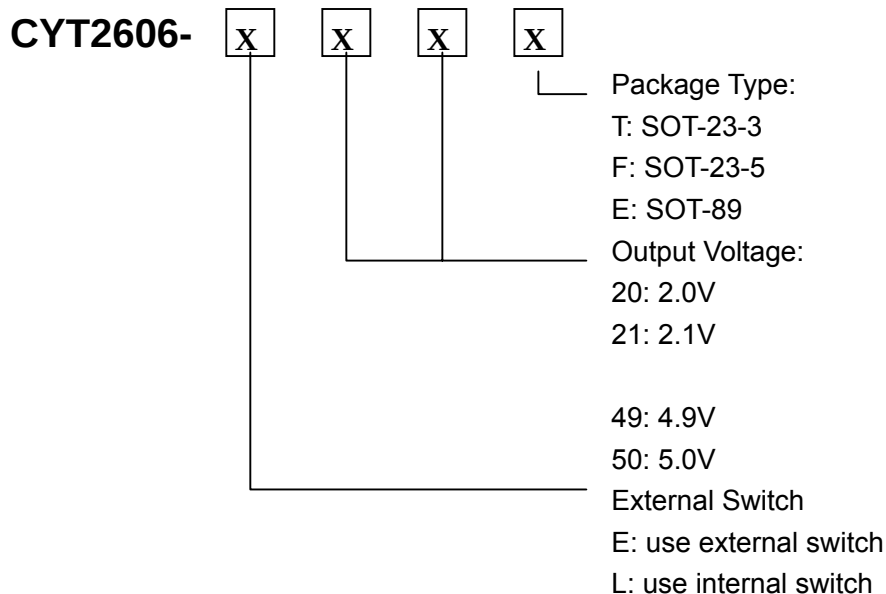
- Power source for applications where a higher voltage than the battery voltage is required.
- One to three cell battery devices,
- Power source for cameras.
- camcorders.
- VCRs, PDAs, LED and hand held communication instrument.
- GPS Receivers.

Pin Configuration





Ordering Information



Electrical Characteristics

$V_{IN} = 5V$; $I_{OUT} = 10mA$, $C_{IN} = 2.2\mu F$; $C_{OUT} = 2.2\mu F$; $T_J = 25^{\circ}C$; unless otherwise specified.

Symbol	Parameter	Test Condition	Min	Typ	Max	Unit
V _{OUT}	Output voltage accuracy		-2		2	%
V _{IN} MAX	Maximum input voltage		0.7		V _{OUT}	V
V _{START}	Start-up voltage	I _{LOAD} =1mA, V _{IN} :0→2V			0.85	V
V _{HOLD}	Hold-on voltage	I _{LOAD} =1mA, V _{IN} :2→0V	0.6			V
F _{MAX}	Maximum oscillation frequency		220	260	280	KHz
DC _{OSC}	Oscillator duty cycle		75	80	85	%
η	Efficiency			85	88	%
I _{LIMIT}	Current limit		600	800	1000	mA
I _{IN0}	Input current at no load	V _{IN} =1.8V V _{OUT} =3.0V		20		uA
		V _{IN} =1.8V V _{OUT} =5.0V		25		uA
I _{INQ}	Input standby current	No load, EN="low"			1	uA
	EN "High" voltage level		0.4*V _{OUT}			V
	EN "low" level				0.2	V
	EN "high" input current				0.1	uA
	EN "low" input current		-0.1			uA
	EXT output current		-5		5	mA



DC-DC Synchronous Regulator

General Description

The MC34063A Series is a monolithic control circuit containing the primary functions required for DC-to-DC converters. These devices consist of an internal temperature compensated reference, comparator, controlled duty cycle oscillator with an active current limit circuit, driver and high current output switch. This series was specifically designed to be incorporated in Step-Down and Step-Up and Voltage applications with a minimum number of external components.

The MC34063 is available in the plastic DIP-8, SOP-8 and SOIC-8 package.

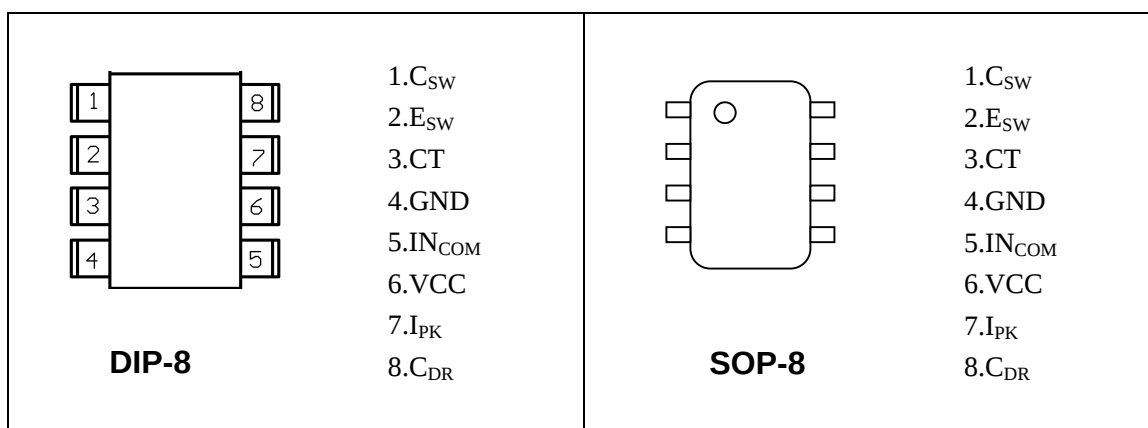
Features

- Operation from 3.0V to 40 V Input
- Low Standby Current
- Current limiting
- Output Switch current to 1.5A
- Output Voltage Adjustable
- Frequency Operature to 100kHz
- Precision 2% Reference

Applications

- Battery Chargers
- NICs/Switches/Hubs
- ADSL Modems
- Negative Voltage Power Supplies

Pin Configuration



**ELECTRICAL CHARACTERISTICS**(V_{CC}=5.0 V, T_A=T_{low} to T_{high}, unless otherwise specified.)

Characteristics	Symbol	Min	Type	Max	Unit
OSCILLATOR					
Frequency (V _{pin5} =0V, C _T =1.0nF, T _A =25°C)	f _{OSC}	24	33	42	KHz
Charge Current(V _{CC} =5.0V to 40 V, T _A =25°C)	I _{CHG}	24	35	42	μA
Discharge Current(V _{CC} =5.0V to 40V, T _A =25°C)	I _{dischg}	140	220	260	μA
Discharge to Charge Current Ratio (Pin 7 to V _{CC} , T _A =25°C)	I _{dischg} /I _{chg}	5.2	6.5	7.5	---
Current Limit Sense Voltage(I _{cha} =I _{discha} , T _A =25°C)	V _{ipk(sense)}	250	300	350	mV
OUTPUT SWITCH (NOTE 2)					
Saturation Voltage, Darlington Connection (I _{SW} =1.0A, Pins 1,8 connected)	V _{CE(sat)}	---	1.0	1.3	V
Saturation Voltage, Darlington Connection (I _{SW} =1.0A, R _{pin8} =82Ω to V _{CC} , Forced β≈20)	V _{CE(sat)}	---	.045	0.7	V
DC Current Gain(I _{SW} =1.0A, V _{CE} =5.0V, T _A =25°C)	h _{FE}	50	75	---	---
Collector Off-State Current (V _{CE} =40V)	I _{C(off)}	---	40	100	μA
COMPARATOR					
Threshold Voltage (T _A =25°C) (T _A =T _{low} to T _{high})	V _{th}	1.225 1.21	1.25 ----	1.275 1.29	V
Threshold Voltage Line Regulation (V _{CC} =3.0V to 40V)	Reg _{line}	---	1.4	5.0	mV
Input Bias Current(V _{in} =0V)	I _{IB}	---	-20	-400	nA
TOTAL DEVICE					
Supply Current (V _{CC} =5.0V to 40V, C _T =1.0nF, Pin7=V _{CC} , V _{pin5} >V _{th} , Pin2=Gnd, remaining pins open)	I _{CC}	---	---	4.0	mA