STANSON TECHNOLOGY **ST8433 (Pb-Free)**

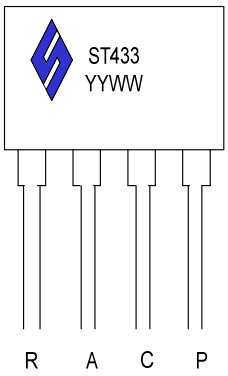
Constant Voltage and Constant Current Controller

DESCRIPTION

The ST8433 is high-voltage four-terminal adjustable voltage references, with over current protection feature. The ST8433 is a one chip solution to a 2.5V precision voltage reference and constant current output in the application of secondary feedback control of power supply, DC/DC converter, adaptor and charger. ST8433 is idea for low cost switching power supply application.

PIN CONFIGURATION

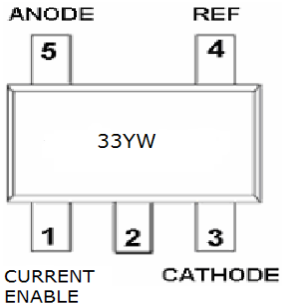
TO-92-4



R: Reference A: Anode C: Cathode
P: Current Enable

YY: Year WW: Week

SOT-23-5L



Y: Year Code W: WEEK

FEATURE

- Voltage Reference Accuracy of 1%
- Sink Current Capability from 1mA to 100mA
- Adjustable Output Voltage from V_{REF} to 18V
- Low Output Noise
- Typical Output Dynamic Impedance Less Than 200mΩ
- Available in SOT23-5 and TO92-4 package
- Over Current Protection

APPLICATIONS

- Battery Charger
- Battery Power Equipment
- Linear Regulators
- Switch Power Supply
- Cellular Phone
- Digital Cameras
- Computer Disk Drivers
- Instrumentation

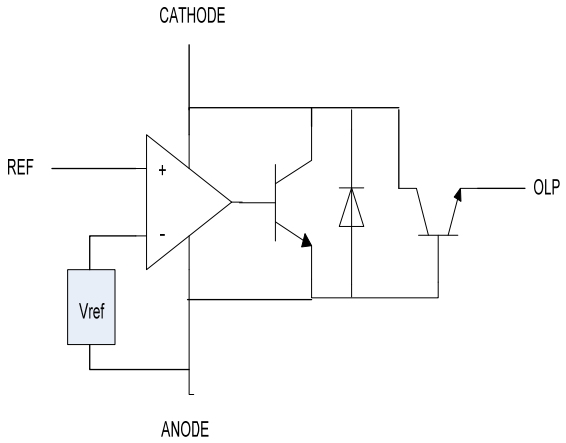
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ORDERING INFORMATION

Part Number	Voltage Tolerance	Package	Part Marking
ST8433ATRG	0.5%	TO92-4	ST433A
ST8433BTRG	1.0%	TO92-4	ST433B
ST8433ASRG	0.5%	SOT23-5L	33xxA
ST8433BSRG	1.0%	SOT23-5L	33xxB

Week Code : A ~ Z ; a ~ z
ST8433XTTG S : SOT23-5L ; T : TO92-4 ; T : Tape Box ; G : Pb – Free

Block Diagram



ABSOULTE MAXIMUM RATINGS (T_A=25℃ Unless Otherwise Specified)

Rating	Symbol	Values	Units
Cathode Voltage	V_Z	18	V
Continuous Cathode Current Range	I_Z	150	mA
Reference Current Range	I_{REF}	10	mA
Operating Junction Temperature Range	T_J	-40 to +150	℃
Storage Temperature Range	T_{STG}	-65 to 150	℃
Lead Temperature Range (Soldering 10Sec)	T_{SOL}	260	℃
Thermal Resistance	θ_{JA}	140	℃/W

The IC has protection Circuit sgsinst static electricity. Do not apply high static electricity or high voltage that exceeds the performance of the protection circuit to the IC.

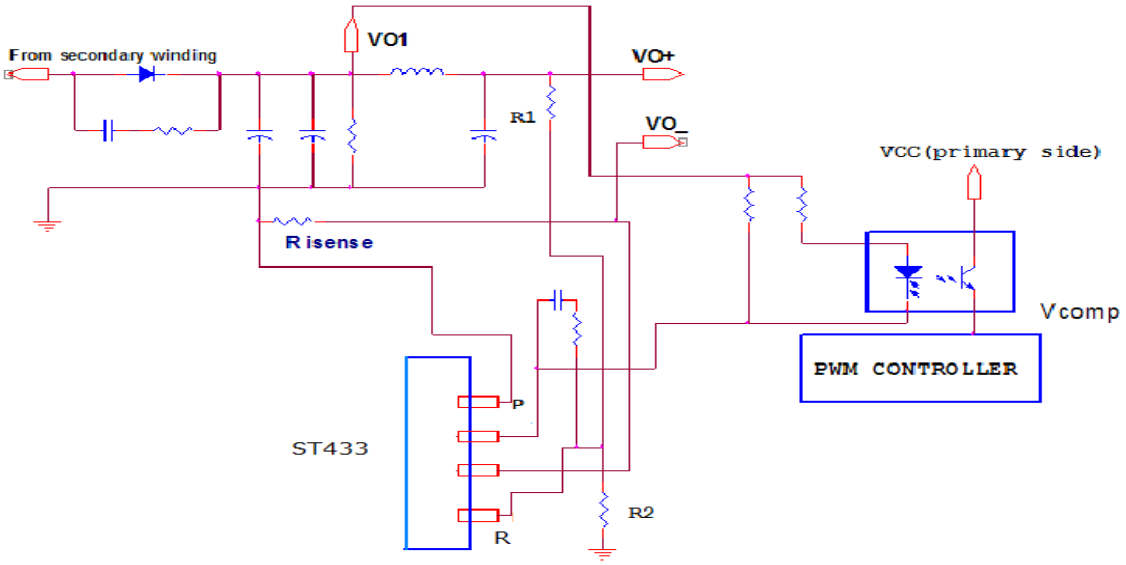
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ELECTRICAL CHARACTERISTICS (T_A=25℃ Unless Otherwise Specified)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Reference Input Voltage (IK=10mA,V_Z=V_{REF})	V_{REF}	ST8433A ST8433B	2.487 2.475	2.5 2.5	2.513 2.525	V
V_{REF} Temp Deviation	V_{DEV}	TA=-40℃~+80℃ V_Z=V_{REF} I_Z=10mA		10	25	mV
Ratio Of Change In R_{EF} To Change In Cathode Voltage	△V_{REF}/ △V_Z	I_Z=10mA, △V_Z = 18V~V_{REF}		-1.4	-2.7	mV/V
Reference Input Current	I_{REF}	I_Z=10mA R1=10KΩ R2=∞			1	uA
I_{REF} Temp Deviation	$I_{REF(DEV)}$	TA=-40℃~+80℃ R1=10KΩ , R2=∞ I_Z=10mA			2.5	uA
Off-State Cathode Current	$I_{Z(OFF)}$	V_{REF}=0V , V_Z=18V			0.1	uA
Dynamic Output Impedance	R_Z	f<1kHz , V_Z=V_{REF} I_Z=1mA~100mA		1.0	1.5	Ω
Minimum Operating Current	$Iz_{(MIN)}$	V_Z=V_{REF}			1.0	mA
Current Amplification	Iamp	V_C=1V, I_A=50uA	10			mA
Saturation Voltage	Vsat	Ic=150mA, I_A=10mA			0.8	V
Maximum Protection Current	I_P				100	mA

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APPLICATION CIRCUIT



APPLICATION NOTE

In the above application, ST8433 is used to provide an accurate control of voltage and current. The voltage loop is controlled through an internal error amplifier, the resistor bridge R1, R2 and the photo-coupler. The relation between Vout, R1, R2 and Vref is shown in:

$$Vout = Vref \times (1+R1/R2)$$

The current loop is controlled through an internal transistor, the sense resistor and the photo-coupler. The control equation is:

$$Rsense \times I\text{-}limit = 0.7V \text{ (typical)}$$

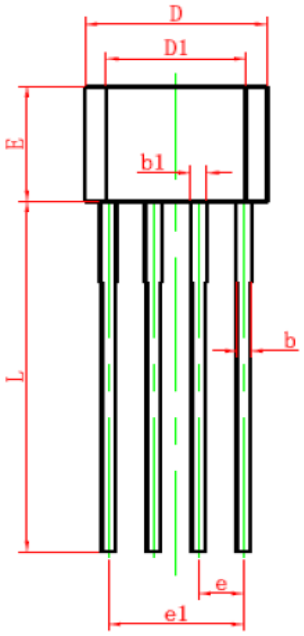
Where I-limit is the desired current limit. The selection of Rsense should consider the power loss through Rsense. It is calculated as:

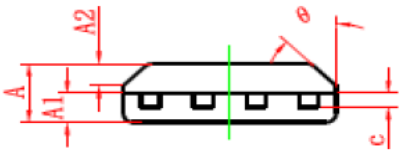
$$P\text{-}limit = 0.7 \times I\text{-}limit$$

Whether AC input is at High Line or Low Line, ST8433 can provide the same current protection. It has the fuse function at the output.

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TO92-4 PACKAGE OUTLINE

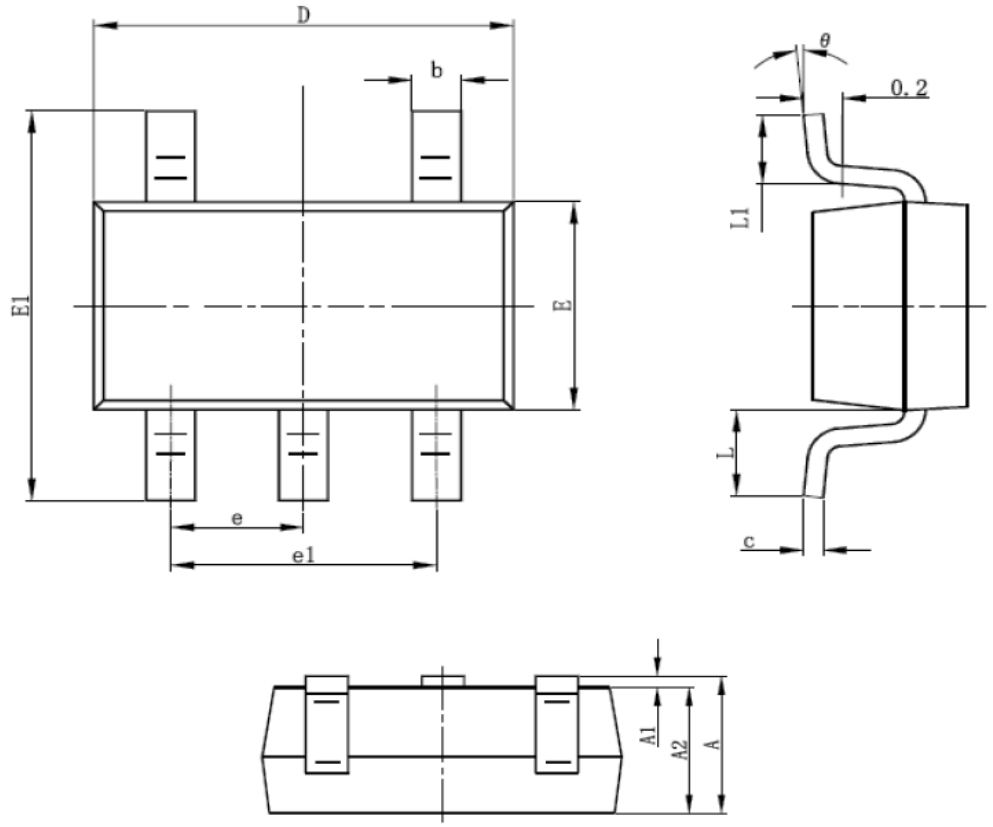




Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.400	1.800	0.055	0.071
A1	0.700	0.900	0.028	0.035
A2	0.500	0.700	0.020	0.028
b	0.360	0.500	0.014	0.020
b1	0.380	0.550	0.015	0.022
c	0.360	0.510	0.014	0.020
D	4.980	5.280	0.196	0.208
D1	3.780	4.080	0.149	0.161
E	3.450	3.750	0.136	0.148
e	1.270 TYP		0.050 TYP	
e1	3.710	3.910	0.146	0.154
L	14.900	15.300	0.587	0.602
θ	45° TYP		45° TYP	

SOT-23-5L PACKAGE OUTLINE

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Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.400	0.012	0.016
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950TYP		0.037TYP	
e1	1.800	2.000	0.071	0.079
L	0.700REF		0.028REF	
L1	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

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