1.5A Ultra Low Dropout Regulator

FEATURES

- Fixed output voltages of 1.2/1.5/1.8/2.5/3.3V
- Output current up to 1.5A
- Over-current and over-temperature protection
- Low dropout voltage 500mV @ 1.5A
- Low ground current
- SOT-223 package

APPLICATIONS

- Battery powered systems
- Motherboards
- Peripheral cards
- Network cards
- Set Top Boxes
- Notebook Computers

Pb-free; RoHS compliant.

DESCRIPTION

The SS8053G is a high performance positive voltage regulator designed for use in applications requiring very low dropout voltage at up to 1.5 Amps. The SS8053G features 500mV dropout voltages and very low ground current. Although designed for high current loads, these devices are also useful in lower current, extremely low dropout-critical systems, where their minimal dropout voltage and ground current values are important characteristics.

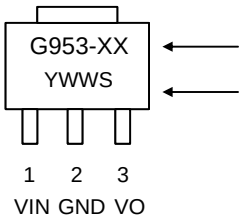
The SS8053G provides excellent regulation over variations in line, load and temperature.

ORDERING INFORMATION

SS8053-xxGT6 XX

- Packing:
  - TR: Tape and reel
- Output voltage:
  - 12: 1.2V
  - 15: 1.5V
  - 18: 1.8V
  - 25: 2.5V
  - 33: 3.3V

PIN CONFIGURATION AND MARKING

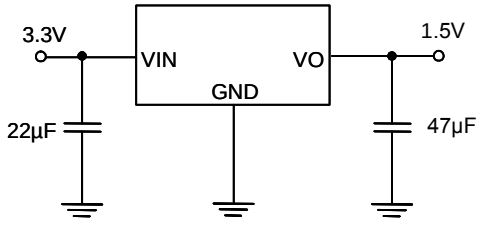


G953-xx = SS8053-xxG

DATE/LOT CODE:

- Y = year: H=2005, I=2006, J=2007, ...
- WW = work week (01 -> 52)
- S = lot code sequence

TYPICAL APPLICATION CIRCUIT



ABSOLUTE MAXIMUM RATINGS (Note 1)

Input Voltage……7V

Power Dissipation Internally Limited (Note 2)
Maximum Junction Temperature……150°C
Storage Temperature Range……..-65°C ≤T_J ≤ +150°C
Reflow Temperature (soldering, 10sec)……..260°C
Thermal Resistance Junction to Ambient…….141°C/W
Thermal Resistance Junction to Case……..20.1°C/W
ESD Rating (Human Body Model)……2kV

OPERATING CONDITIONS (Note 1)

Input Voltage……2.2V ~5.5V
Temperature Range……-40°C ≤T_A ≤ +85°C

ELECTRICAL CHARACTERISTICS

V_{IN} =5V, I_O = 0.5A, C_{IN} = 4.7µF, C_{OUT} =10µF, T_A = T_J = 25°C unless otherwise specified (Note 3)

PARAMETER	SYMBOL	CONDITION	MIN	TYP	MAX	UNIT
Supply Voltage	V_{IN}		2.2	---	5.5	V
Output Voltage	V_O	V_{IN}=V_O +0.7V, I_O=10mA	-2	V_O	2	%
Line Regulation		V_O+0.7V ≤ V_{IN} ≤ 5.5V, I_O=10mA	---	0.2	2	%
Load Regulation		10mA ≤ I_O ≤ 1.5A	---	0.8	2	%
Quiescent Current	I_Q	V_{IN}=3.3V	---	1.7	2.5	mA
Ripple Rejection		fi=120Hz, 1V_{P-P}, I_O=100mA	---	55	---	dB
Dropout Voltage	V_D	I_O=1.5A	---	0.5	0.65	V
Short Circuit Current			---	0.8	---	A

Note 1: Absolute Maximum Ratings are limits beyond which damage to the device may occur. Operating Conditions are conditions under which the device functions but the specifications might not be guaranteed. For guaranteed specifications and test conditions see the Electrical Characteristics.

Note2: The maximum power dissipation is a function of the maximum junction temperature, T_{Jmax} ; total thermal resistance, Θ_{JA}, and ambient temperature T_A. The maximum allowable power dissipation at any ambient temperature is (T_{jmax}-T_A) / Θ_{JA}. If this dissipation is exceeded, the die temperature will rise above 150°C and the chip will go into thermal shutdown.

Note3: Low duty pulse techniques are used during test to maintain the junction temperature as close to ambient as possible.

Note4: The type of output capacitor should be tantalum or aluminum.

Definitions

Dropout Voltage

The input/output voltage differential at which the regulator output no longer maintains regulation against further reductions in input voltage. Measured when the output drops 2% below its nominal value, dropout voltage is affected by junction temperature, load current and minimum input supply requirements.

Line Regulation

The change in output voltage for a change in input voltage. The measurement is made under conditions of low dissipation or by using pulse techniques such that the average chip temperature is not significantly affected.

Load Regulation

The change in output voltage for a change in load current at constant chip temperature. The measurement is made under conditions of low dissipation or by using pulse techniques such that the average chip temperature is not significantly affected.

Maximum Power Dissipation

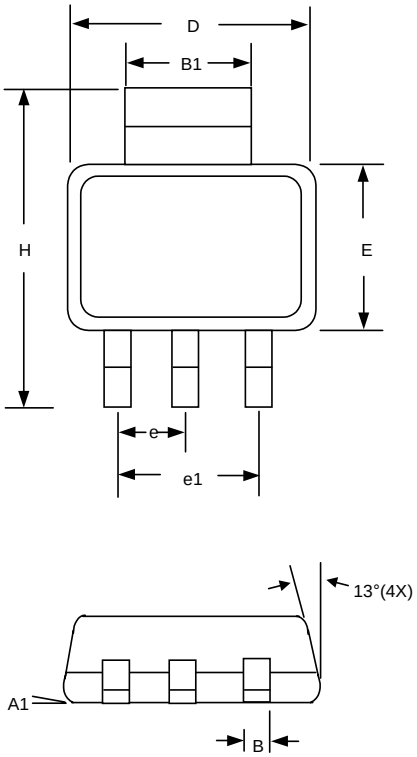
The maximum total device dissipation for which the regulator will still operate within specifications.

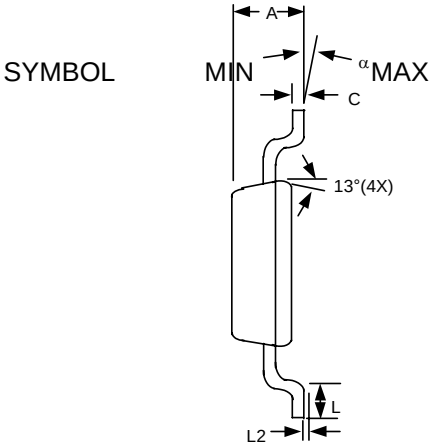
Quiescent Bias Current

Current which is used to operate the regulator chip and is not delivered to the load.

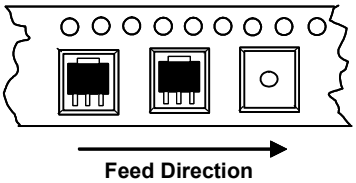
PHYSICAL DIMENSIONS

SOT-223 (unit: mm)





Taping Specification



Feed Direction
SOT-223 Package Orientation

SYMBOL	MILLIMETER		INCH	
	MIN	MAX	MIN	MAX
A	1.55	1.80	0.061	0.071
A1	0.02	0.12	0.0008	0.0047
B	0.60	0.80	0.024	0.031
B1	2.90	3.10	0.114	0.122
C	0.24	0.32	0.009	0.013
D	6.30	6.70	0.248	0.264
E	3.30	3.70	0.130	0.146
e	2.30 BSC		0.090 BSC	
e1	4.60 BSC		0.181 BSC	
H	6.70	7.30	0.264	0.287
L	0.90 MIN		0.036 MIN	
L2	0.06 BSC		0.0024 BSC	
α	0º	10º	0º	10º