



Description

SE5170 is a precision voltage reference that is designed to work at very low current and low voltage conditions. The SE5170 can work from a supply voltage as low as 1.6V, and consumes as low as 8uA current. Temperature stability is averaging 50ppm/°C. It is ideal for MP3/MPEG4 applications where a constant voltage reference is required, which is independent of the environment temperature. In addition, SE5170 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.

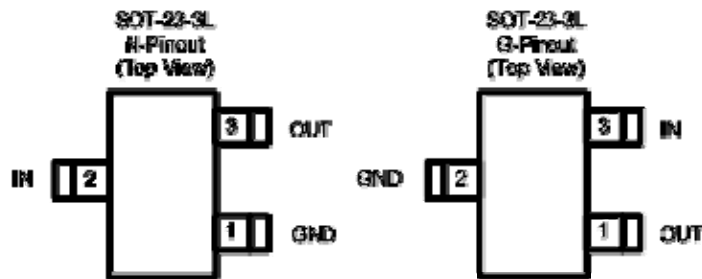
Features

- Minimum Vin at 1.6V.
- Low Ground current as low as 8uA. (Typ.)
- Guaranteed 5mA output current over the full operating temperature range.
- Extremely low temperature drift at 50ppm/°C.
- Stable operation without Cin and Cout.
- Rugged 5KV ESD withstand capability.
- Standard SOT-23-3L package.

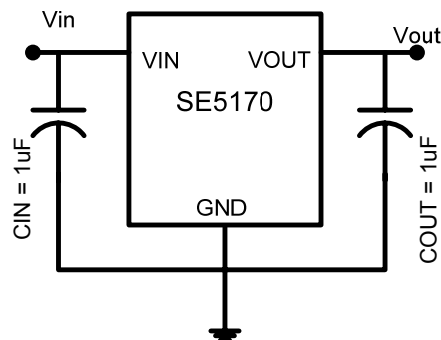
Applications

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

Pin Configuration



Typical Application





Absolute Maximum Ratings⁽¹⁾

Supply Input Voltage (V_{IN})+6V
 Power Dissipation (P_D) Internally Limited ⁽³⁾
 Junction Temperature (T_J) 150°C
 Lead Temperature (soldering, 5 sec.) 260°C
 Storage Temperature (T_S) -10°C to +150°C

Operating Ratings⁽²⁾

Supply Input Voltage (V_{IN}) +1.6V to +5.5V
 Junction Temperature (T_J) 0°C to +125°C
 Package Thermal Resistance 250°C/W

Electrical Characteristics

$V_{IN} = 5V$; $I_{OUT} = 1mA$; $T_J = 25°C$, unless otherwise specified.

Symbol	Parameter	Conditions	Min	Typ	Max	Units
V_{IN}	Input Voltage Range		1.6		6	V
V_{OUT}	Output Voltage Accuracy	SE5170-1.5V	1.470	1.5	1.530	V
$\Delta V_{OUT} / \Delta T$	Output Voltage Temperature Coefficient	Note 4	--	-50	--	ppm/°C
$\Delta V_{OUT} / V_{OUT}$	Line Regulation	$V_{IN} = 1.6V$ to $5.5V$	--	0.3	--	%/V
$\Delta V_{OUT} / V_{OUT}$	Load Regulation ⁽⁵⁾	$V_{IN} = 2V, I_{OUT} = 0mA$ to $5mA$	--	1.0	--	%
$T_{PROTECTION}$	Thermal Protection	Thermal Protection Temperature	--	150	--	°C
		Protection Hysterisys	--	20	--	
PSRR	Ripple Rejection	$f = 100Hz, V_{in} = 2.2V, V_{p-p} = 1V$	--	70	--	dB
I_{GROUND}	Ground Current	$I_{OUT} = 1mA$	--	8	--	μA



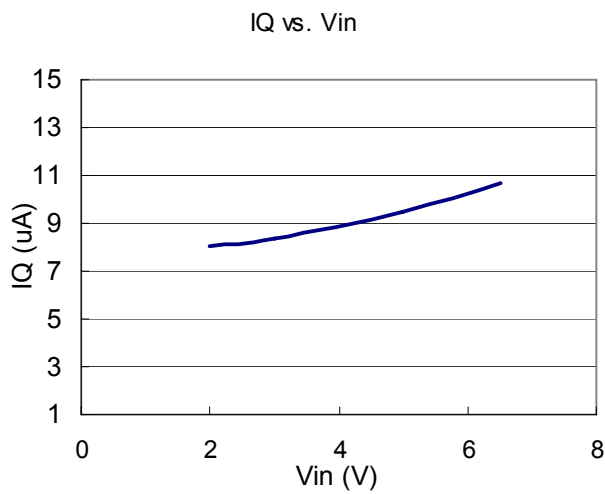
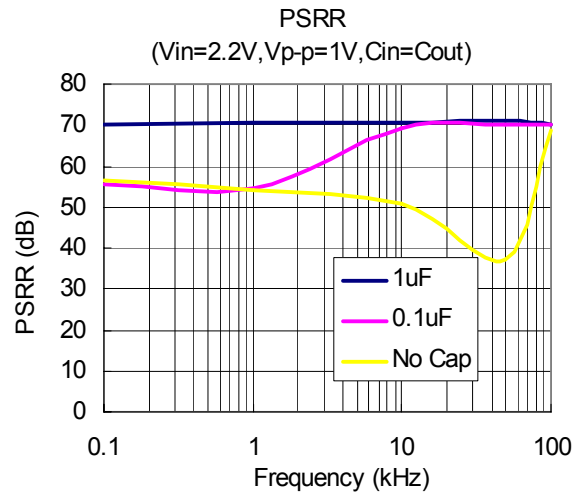
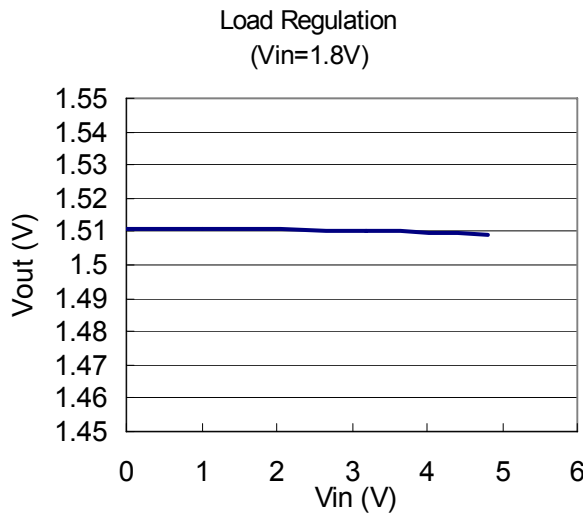
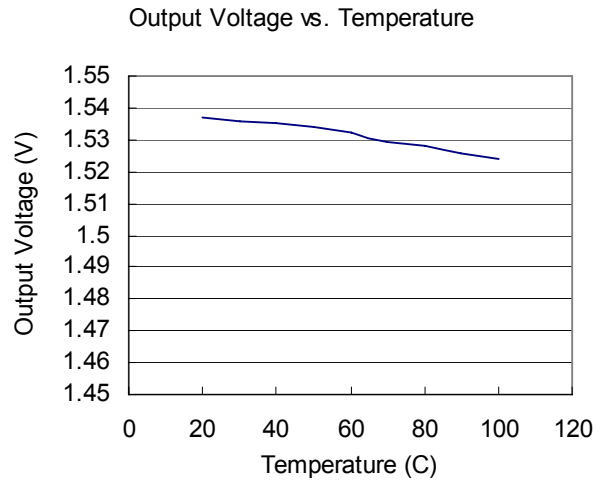
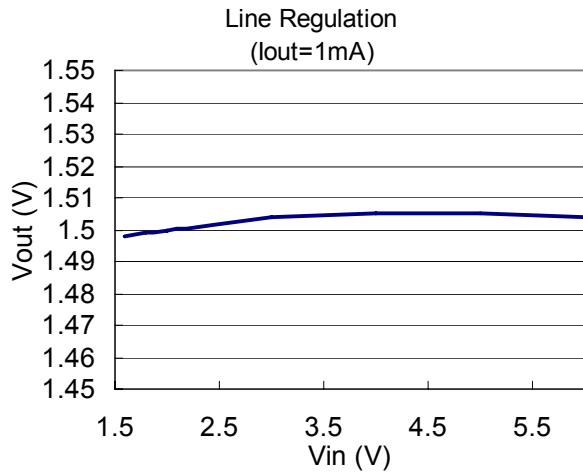
Note 1: Exceeding the absolute maximum rating may damage the device.

Note 2: The device is not guaranteed to function outside its operating rating.

Note 3: The maximum allowable power dissipation at any TA (ambient temperature) is calculated using: $P_{D(MAX)} = (T_{J(MAX)} - T_A)/\theta_{JA}$. Exceeding the maximum allowable power dissipation will result in excessive die temperature, and the regulator will go into thermal shutdown.

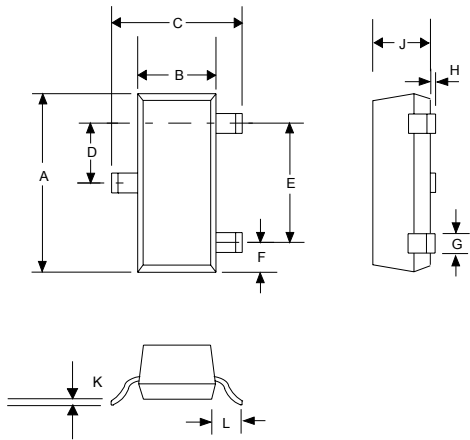
Note 4: Output voltage temperature coefficient is the worst-case voltage change divided by the total temperature range.

Note 5: Regulation is measured at constant junction temperature using low duty cycle pulse testing. Parts are tested for load regulation in the load range from 0A to 5mA. Changes in output voltage due to heating effects are covered by the thermal regulation specification.





OUTLINE DRAWING SOT-23-3L (SC-59)



DIM ^N	DIMENSIONS			
	INCHES		MM	
	MIN	MAX	MIN	MAX
A	0.110	0.120	2.80	3.04
B	0.047	0.055	1.20	1.40
C	0.083	0.104	2.10	2.64
D	0.035	0.040	0.89	1.03
E	0.070	0.080	1.78	2.05
F	0.018	0.024	0.45	0.60
G	0.015	0.020	0.37	0.51
H	0.0005	0.004	0.013	0.10
J	0.034	0.040	0.887	1.02
K	0.003	0.007	0.085	0.18
L	-	0.027	-	0.69

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