Low Dropout, High-accuracy, Adjustable LDO FC6322

Description

FC6322 is a low dropout, high-accuracy, adjustable linear regulator. FC6322 has built-in fixed voltage reference, temperature protection, current limiting circuit, phase compensation circuit and low internal resistance MOSFET to achieve high precision, low power consumption, high ripple suppression and low dropout performance.

The FC6322 is compatible with ceramic capacitors with a smaller volume than tantalum capacitors, and does not require the use of 0.1uF By-pass capacitors, which can save space.

The high-speed response characteristics of the FC6322 series cope with the fluctuation of load current, so it is especially suitable for handheld and radio frequency products. The output can be turned off by controlling the EN pin on the chip, and the power consumption after turning off is only 0uA.

Feature

- Adjustable output voltage range:0.8V~5.0V
- Maximum Output Current:400mA
  (V_{IN}=2.5V, VFB=V_{OUT} = 0.8V)
- Dropout Voltage:100mV@ I_{OUT} =100mA
- Operating voltage range:1.5V~5.5V
- Highly Accuracy:±1％
- Low quiescent current:10uA（TYP.）
- Turn-off current:0uA（TYP.）
- PSRR:65dB@1KHz
- Built-in temperature protection and current limiting protection

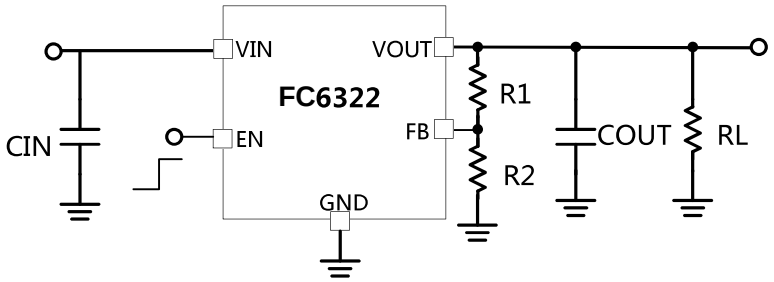
Applications

- Mobile phone
- Cordless telephone equipment
- Camera
- Bluetooth and other RF products
- Reference voltage source

Package

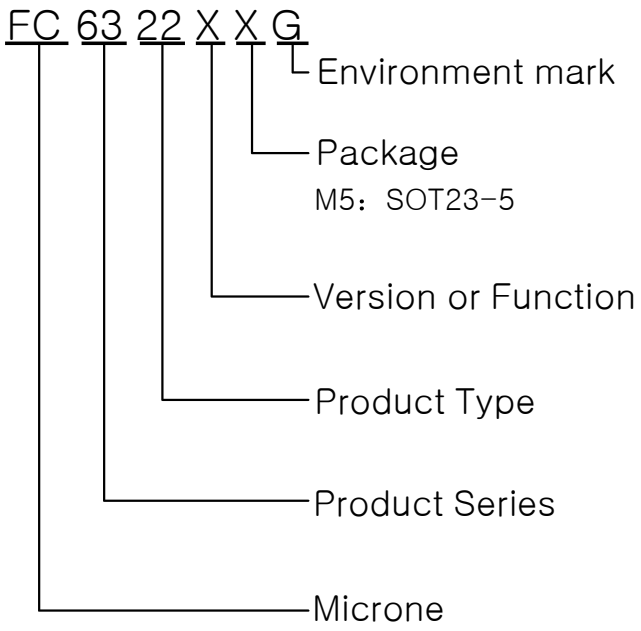
- 5-pin SOT23-5

Typical Application Circuit



VOUT=0.8X（1+R1/R2）

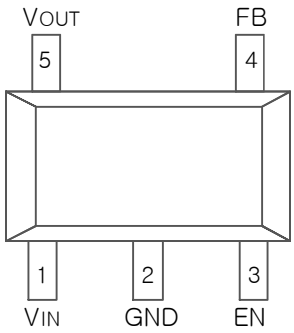
Selection Guide



Product series	Product Function
FC6322CM5G	Package:SOT23-5

NOTE: If you need other voltage and package, please contact our sales staff.

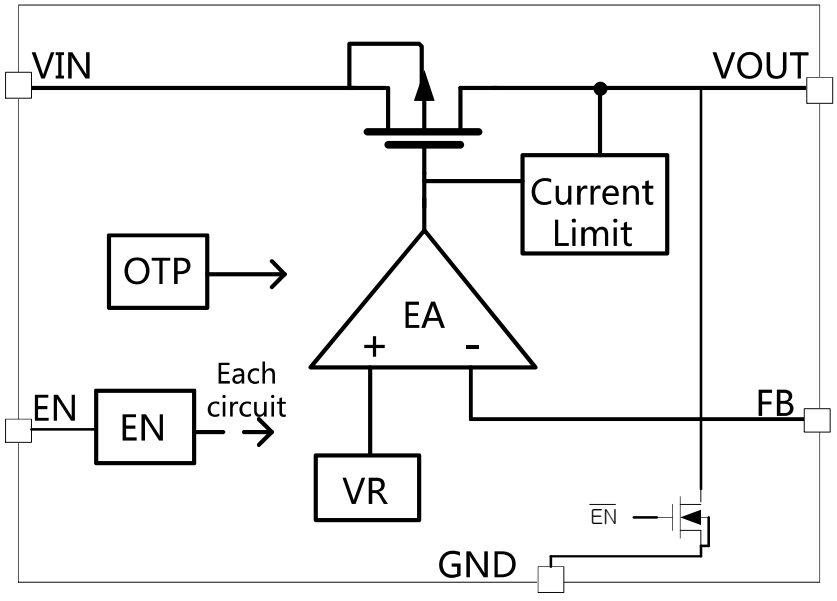
Pin Configuration (Top View)



Pin Assignment

PIN Number	Symbol	Function
1	V_{IN}	Power Input
2	GND	Ground
3	EN	Enable
4	FB	Voltage feedback
5	V_{OUT}	Output

Block Diagram



Absolute Maximum Ratings

Parameter		Symbol	Ratings	Units
Input Voltage		V_{IN}	−0.3~6.5	V
V_{EN} voltage		V_{EN}	V_{IN} −0.3~ V_{IN}+0.3	V
VFB、V_{OUT} Voltage		V_{OUT}	V_{IN} −0.3~ V_{IN}+0.3	V
V_{OUT} Current		I_{OUT}	800	mA
Internal Power Dissipation	SOT23-5	Pd	0.6	W
Thermal resistance (Junction to air)	SOT23-5	θ_{JA}	210	℃/W
Operating Ambient Temperature Range		T_{Opr}	−40~+85	℃
Storage Temperature Range		T_{stg}	−55~+150	℃
Maximum junction temperature		T_J	−40~+150	℃

NOTE: The absolute maximum rating is the maximum physical damage limit that the product can withstand.

Please do not exceed the rating under any circumstances.

Electrical Characteristic

Test conditions: V_{IN}=2.5V，V_{OUT}=V_{FB}　V_{EN} = V_{IN}，Ta=25℃，unless otherwise noted.

Parameter	Symbol	Conditions		Min.	Typ.	Max.	Units
Operating Input Voltage	V_{IN}			1.5	–	5.5	V
V_{FB} Output Voltage	V_{FB}	I_{OUT}=10mA, V_{IN}= 2.5V		0.792	0.8	0.808	V
FB Current	I_{FB}			–	0	–	nA
Power adjustment rate	ΔV_{OUT}	I_{OUT} =10mA 2.5≤VIN≤6V		–	5	9	mV
Load adjustment rate	ΔV_{OUT}	V_{IN}= V_{OUT}+1V , 1mA≤I_{OUT}≤100mA		–	5	10	mV
Maximum output current	I_{OUTMAX}	V_{IN}= 2.5V　V_{OUT}=V_{FB}		–	400	–	mA
Supply Current	I_Q	V_{IN}= 2.5V　V_{OUT}=V_{FB}		–	10	15	μA
Turn-off current	I_{OFF}	V_{EN}＝0V		–	0	0.2	μA
Dropout Voltage (Note 3)	VDIF	V_{OUT}=3.3V	I_{OUT} =100mA	–	100	–	mV
			I_{OUT} =200mA	–	200	–	
Output Current Limit	I_{LIM}			–	500	–	mA
EN “high” level	V_{ENH}	Turn		1.0	–	–	V
EN “low” level	V_{ENL}	Off		–	–	0.5	V
Ripple Rejection Rate (Note 4)	PSRR	V_{IN} = (V_{OUT}+1)V+0.2VppAC , I_{OUT}=10mA	f=1kHz	–	65	–	dB
			f=10kHz	–	50	–	
Thermal Shutdown Temperature (Note 4)	T_{SD}	Temperature increasing,I_{OUT} =10mA		–	160	–	℃
Thermal Shutdown Hysteresis (Note 4)	ΔT_{SD}	Temperature falling		–	20	–	℃

NOTES :

1. V_{OUT} (T) :Specified Output Voltage
2. V_{OUT} (E) :Effective Output Voltage,That is, the output voltage when I_{OUT} maintains a certain value and VI_N=(V_{OUT} (T)+1.0V).
3. V_{DIF}:V_{IN1} –V_{OUT} (E)’
   V_{IN1}:Gradually reduce the input voltage when the output voltage drops to 98% of V_{OUT} (E).
   V_{OUT} (E)’= V_{OUT} (E)*98%
4. Design assurance parameters.

Typical Performance Characteristics

FC6322(V_{EN} = V_{IN} =2.5V,V_{OUT}=V_{FB},CIN=COUT=1uF,Ta=25℃unless otherwise noted.)

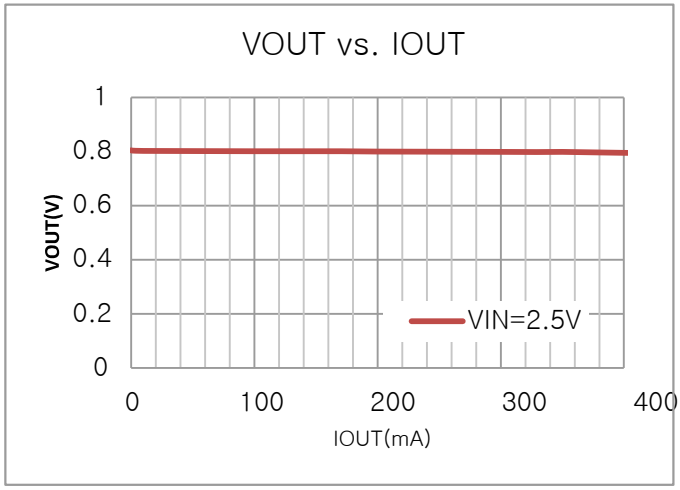


Figure 1. Output Voltage vs. Output Current

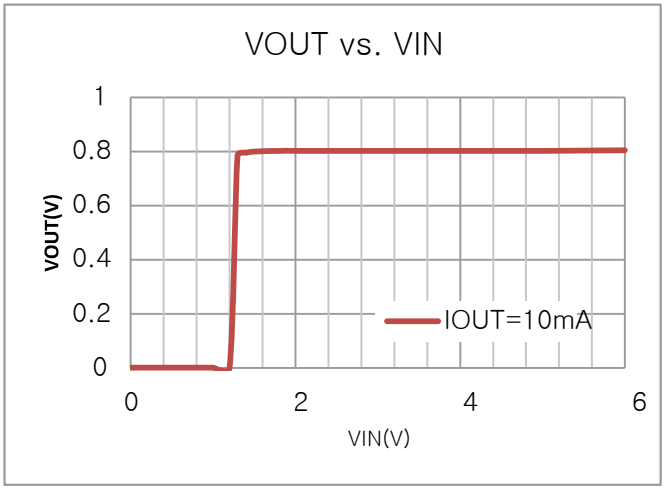


Figure 2. Output Voltage vs. Input Voltage

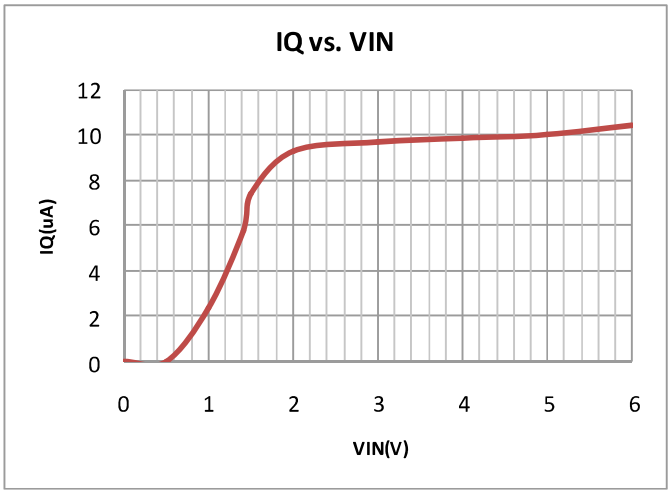


Figure 3.Quiescent Current vs. Input Voltage

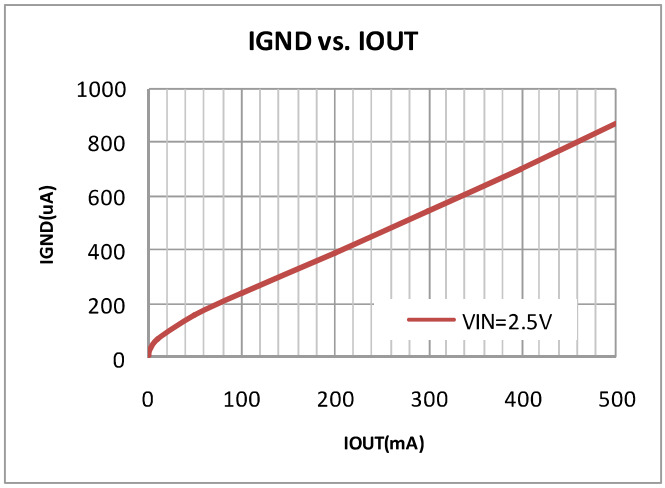


Figure 4. GND Current vs. Output Current

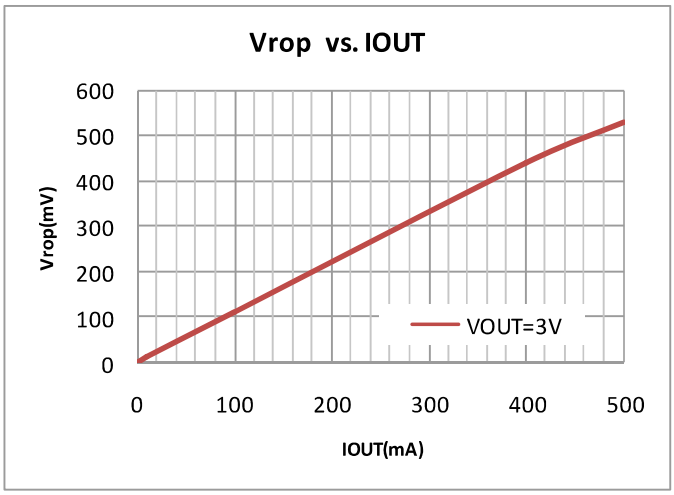


Figure 5. Dropout Voltage vs. Output Current

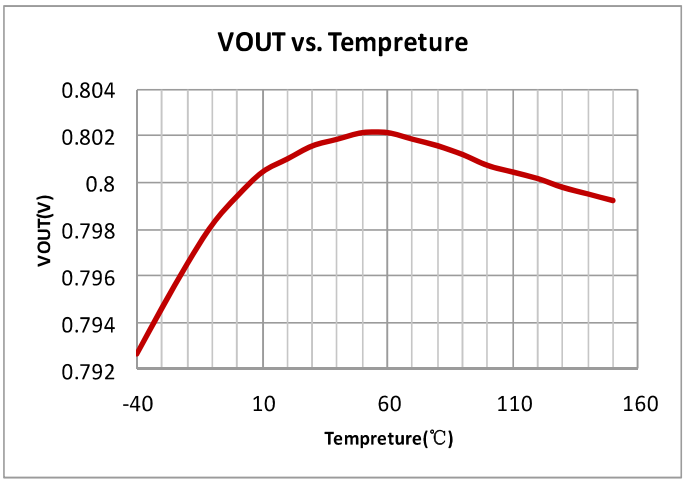


Figure 6. Output Voltage vs. Temperature

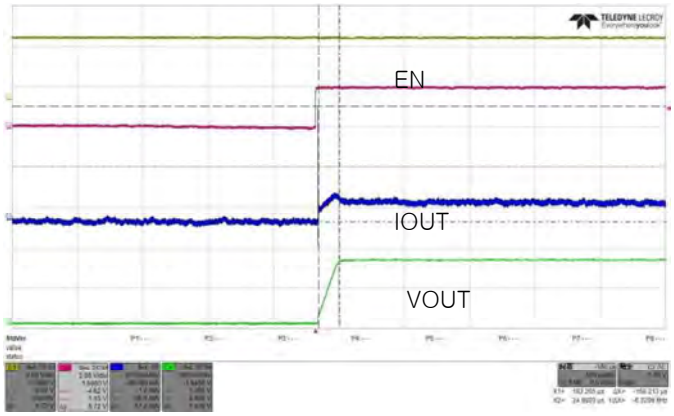


Figure 7. Enable open response IOUT=0mA

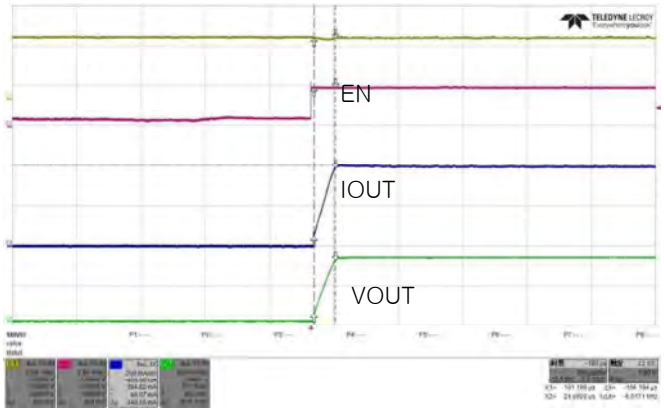
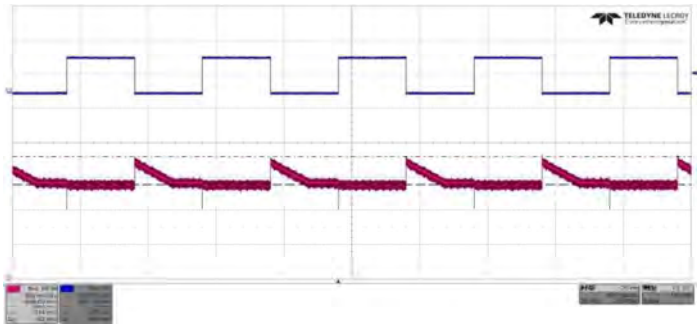
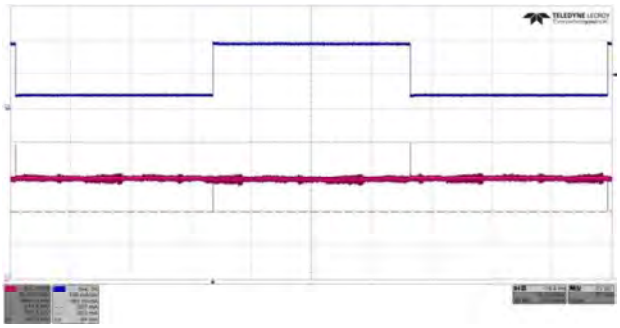


Figure 8. Enable open response IOUT=400mA



VIN=3V IOUT=0mA to 200mA



VIN=3V IOUT=40mA to 380mA

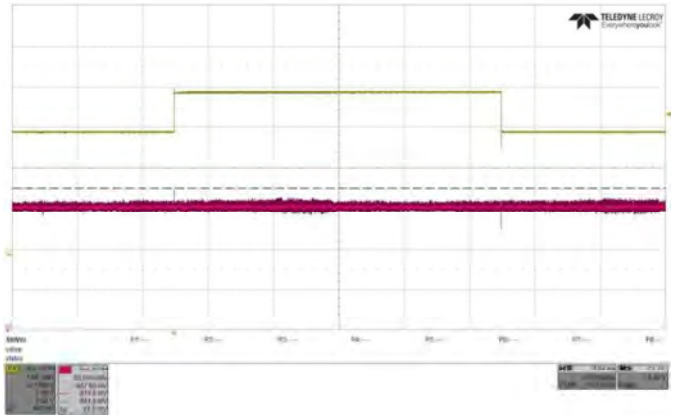


Figure 11. Power transient response IOUT=10mA VIN=3V to 4V

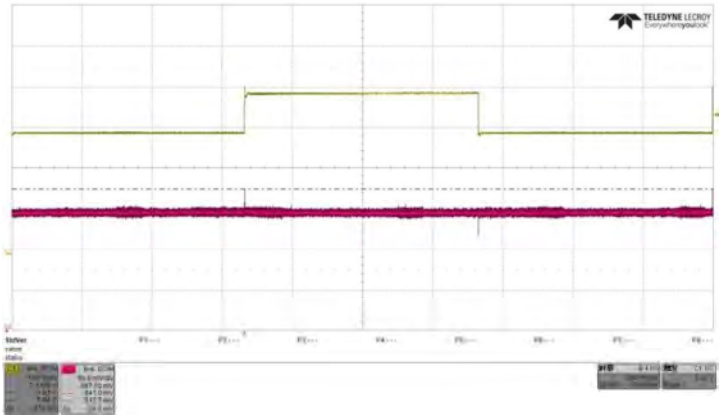


Figure 12. Power transient response IOUT=400mA VIN=3V to 4V

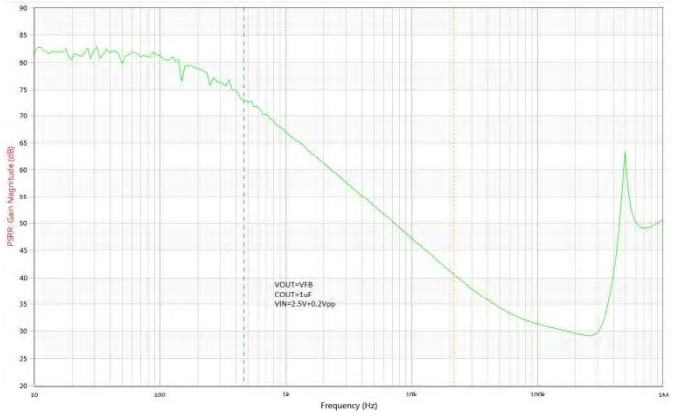


Figure 13. PSRR vs.Frequency

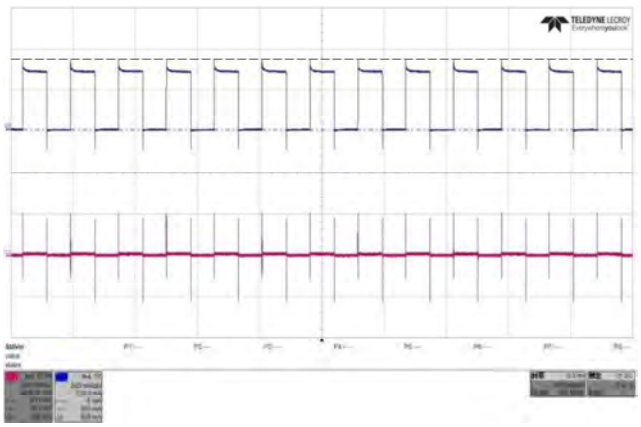


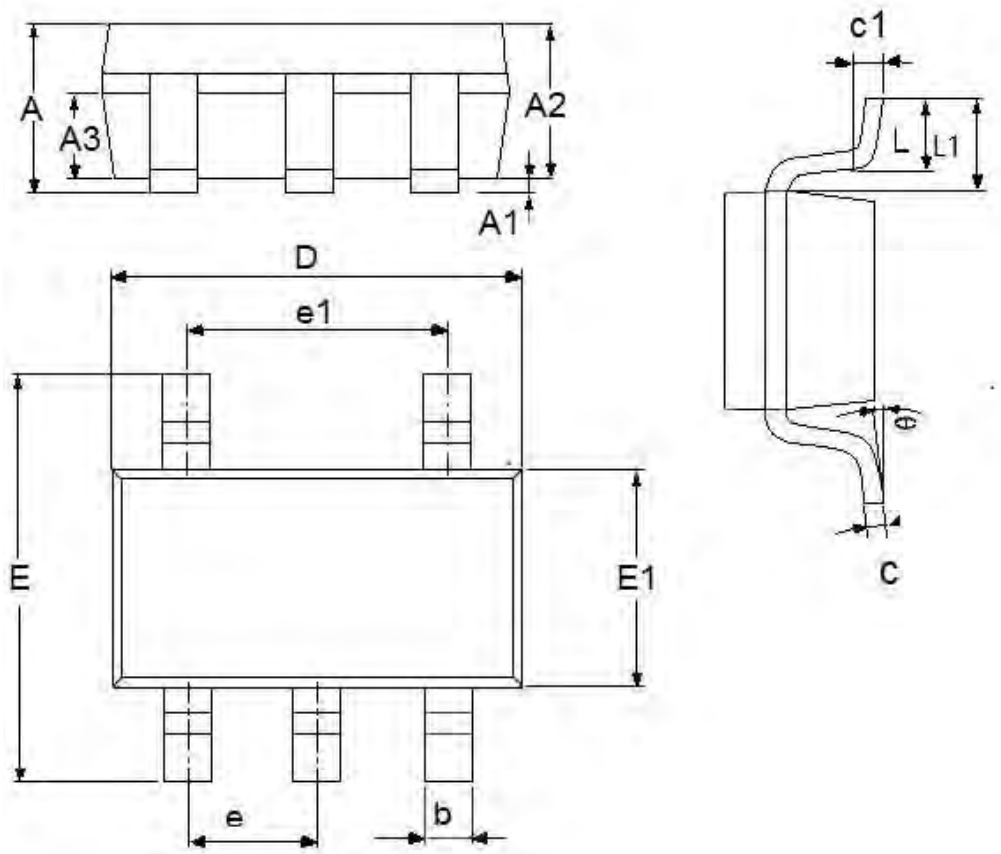
Figure 14. VIN=3V VOUT=GND short

Package Quantity

Package Type	Minimum Packing QTY	Units	Small box	Large box
SOT23-5	3000	Tape & Reel	30K	120K

Packaging Information

- Package Type: SOT23-5



DIM	Millimeters		Inches	
	Min	Max	Min	Max
A	1.05	1.45	0.0413	0.0571
A1	0	0.15	0.0000	0.0059
A2	0.9	1.3	0.0354	0.0512
A3	0.6	0.7	0.0236	0.0276
b	0.25	0.5	0.0098	0.0197
c	0.1	0.23	0.0039	0.0091
D	2.82	3.05	0.1110	0.1201
e1	1.9(TYP)		0.0748(TYP)	
E	2.6	3.05	0.1024	0.1201
E1	1.5	1.75	0.0512	0.0689
e	0.95(TYP)		0.0374(TYP)	
L	0.3	0.6	0.0118	0.0236
L1	0.59(TYP)		0.0232(TYP)	
θ	0	8°	0.0000	8°
c1	0.2(TYP)		0.0079(TYP)	