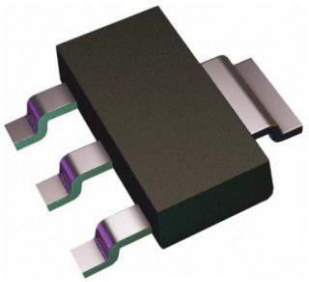
1. Overview

The SL4264-2 is a monolithic integrated low dropout fixed voltage regulator with a load capability of 150mA. SL4264-2 is designed for applications requiring very low quiescent current. The device is housed in a SOT-223-3 surface mount package for powering MCU systems in harsh automotive environments, hence additional overload, short circuit and over temperature protection. SL4264-2 can also be used in any other occasions that require stable voltage.

The input voltage in the range of 5.5V<VI<42V is regulated to a 5V output voltage with an accuracy of ≤±1%.

2. Characteristics



SOT-223-3

- Output voltage accuracy≤ ±1%
- 150mA current output capability
- Low drop
- Ultra-low power consumption: 80uA
- Over temperature protection, short circuit protection
- ROHS

3.Pin Descriptions

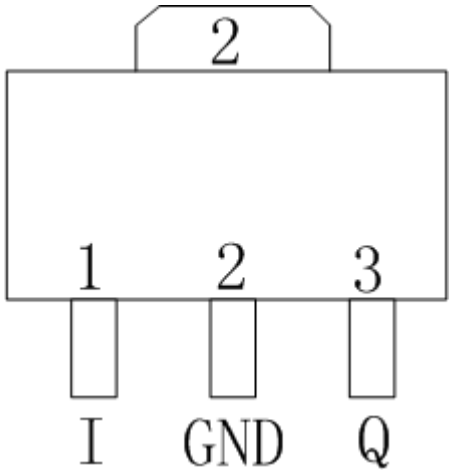


Figure 3-1 Pin configuration diagram SOT-223-3 (top view)

Table 3.1 Pin Definitions and Functions

Pin	Symbol	Function
1	I	Input Voltage: Connect directly to ground using a ceramic capacitor
2	GND	Chip ground
3	Q	5V Output voltage: Use a capacitor with CQ≥1uF and ESR≤4Ω to ground

4. Circuit description

The control op amp compares a resistor-regulated high-precision reference voltage to a voltage proportional to the output voltage and drives the bases of the series transistors through a buffer. A saturation control unit as a function of load current prevents oversaturation of the power components and the chip is additionally protected against overload and over temperature.

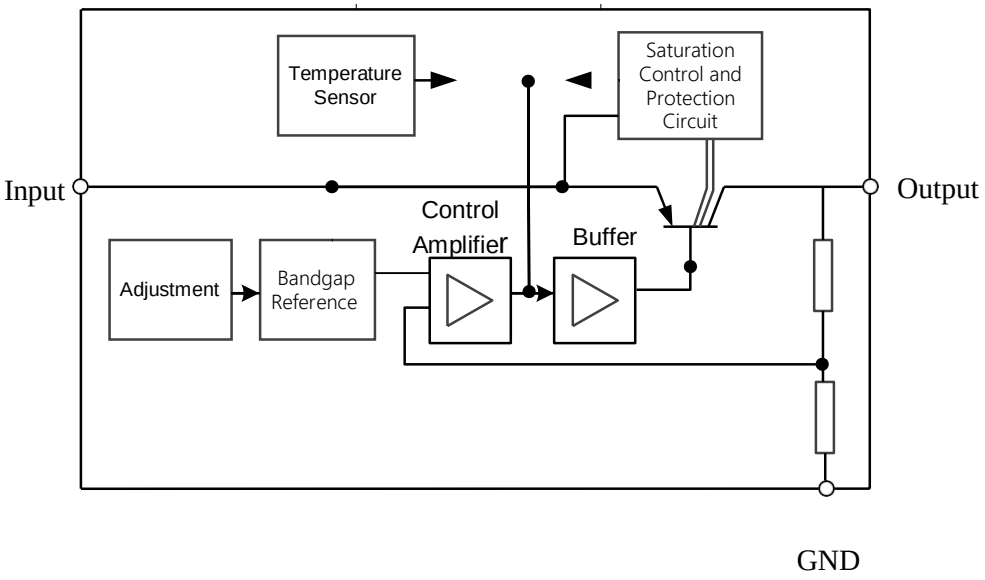


Figure 4-1 Module block diagram

5.Electrical parameters

Table 5.1 Absolute Maximum Ratings

Tj = -40℃ to 150℃. All the voltage values are relative to ground unless otherwise specified.

Parameter	Symbols	Limiting value		Units	Description
		Min	Max		
Input Voltage	VI	-0.3	42	V	
Temperature	Tj	-40	150	℃	Junction temperature
	Tstg	-40	150	℃	Storage temperature
	Top	-40	125	℃	Working temperature
Thermal resistance	Rthj-a		60	K/W	SOT-223-3
ESD withstanding voltage	VESD-HBM[1)]	-2000	2000	V	Human body mode
	VESD-CDM[2)]	-1000	1000	V	Charged Device Model

1) The ESD withstanding voltage human body model is designed according to JESD22-A114

2) ESD withstand voltage live device model according to JESD22-C101E

Table 5.2 Electrical Characteristics

VI = 13.5V； -40℃ ≤ Tj ≤ 150℃,unless otherwise specified.

Parameters	Symbols	Limiting value			Units	Remark
		MIN	Type	MAX		
Working voltage	VI	5.5	13.5	42	V	
Output voltage	VQ	4.95	5.0	5.05	V	IQ=50mA； VI=13.5V
Output current limiting	Ilim		180	300	mA	
Quiescent current	Iq		80	100	uA	IQ = 5mA
Quiescent current	Iq		350	400	uA	IQ = 100mA
Load adjustment rate	Vdr[1)]		0.3	0.5	V	IQ = 100mA
Current regulation	ΔVQLO		50	100	mV	IQ= 1mA～150mA
Voltage regulation	ΔVQLi		2	10	mV	8V<VI<40V； IQ = 5mA
Power supply rejection ratio	PSRR		70		dB	Fr = 100HZ； Vr = 0.5Vpp
Output capacitance	CQ	1			uF	ESR≤4Ω@10KHZ

1) Voltage difference = VI- VQ (it is tested when 100mV drop when compared with the rated voltage at VI = 13.5V).

6. Applications Information

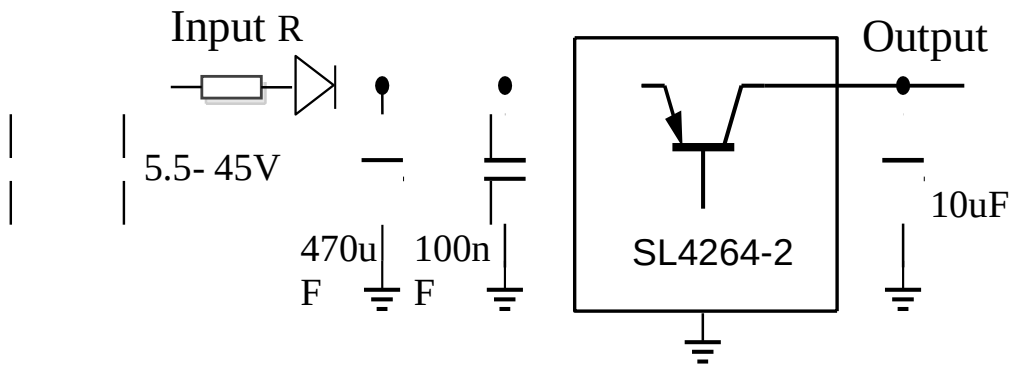


Figure 6-1 Typical application circuit

1) In the input voltage range of 5.5V<VI<42V, the regulation loop controls the output voltage of 5V with 1% accuracy.

2) Figure 6-1 shows a typical application circuit. To ensure that the control loop is stable, an output capacitor with a capacitance of at least 1uF and a maximum ESR of 4R is required at the output. Both tantalum capacitors and multilayer ceramic capacitors are suitable.

3) To compensate for trace effects, input capacitors (100nF ceramic capacitors are recommended) are required at the regulator input. A resistor of about 1R in series with the input capacitor CI suppresses any oscillations caused by the input inductance and input capacitance.

4) To buffer power line effects, an additional 470uF electrolytic input capacitor is added to the application circuit shown in Figure 6-1. This capacitor is recommended if the device is powered by a power line several meters long.

7.Typical characteristic curve

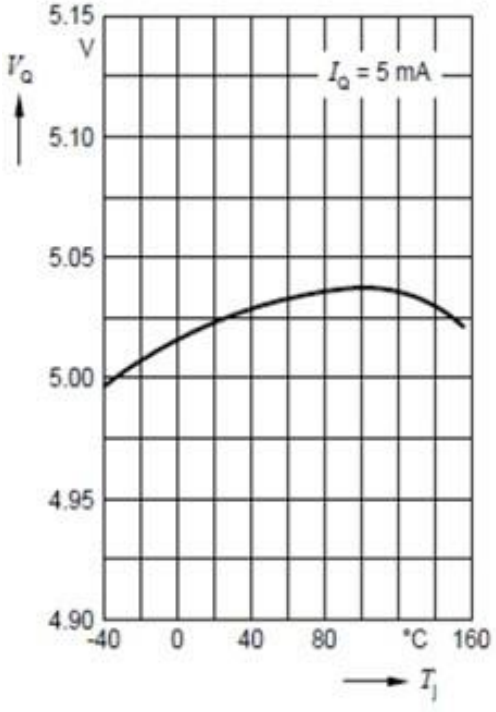


Figure 7-1output voltage VS Junction temperature

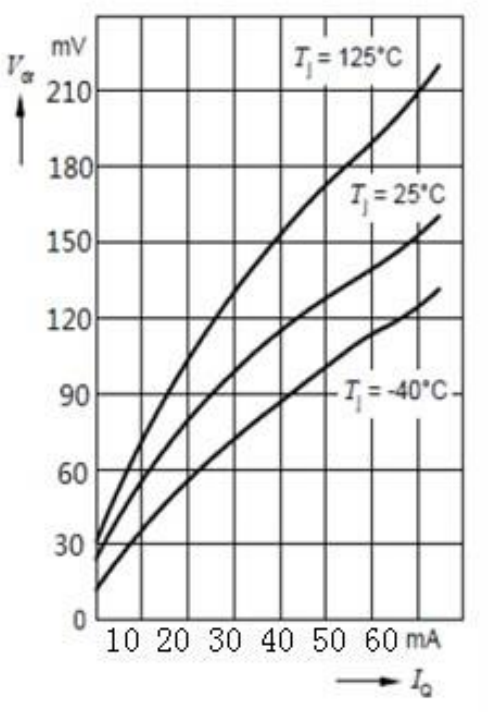


Figure 7-2 Dropout voltage VS Output Current

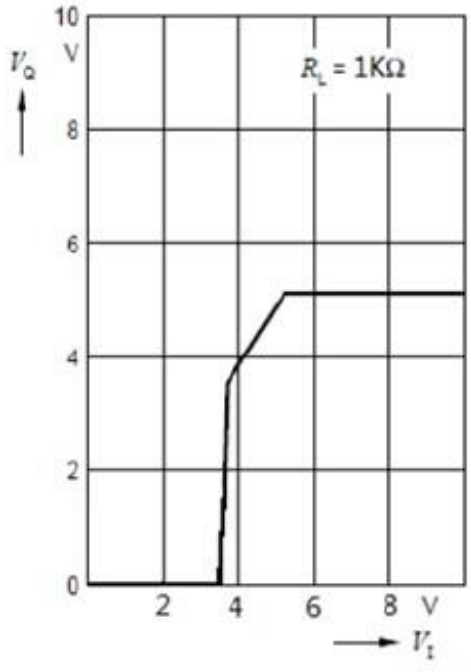


Figure 7-3 Input Voltage VS Output Voltage

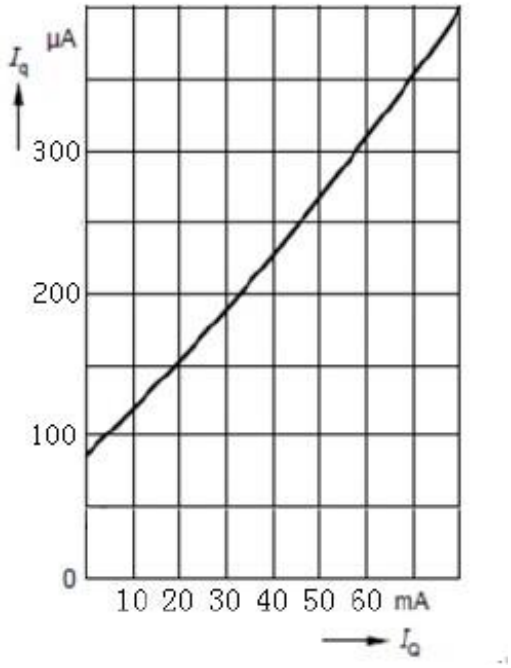
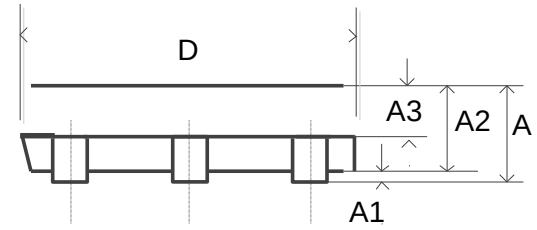
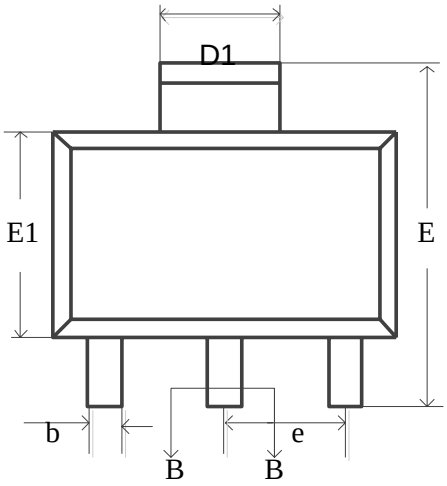


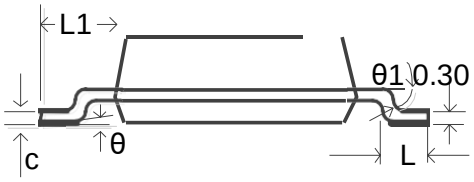
Figure 7-4 Quiescent Current VS Output Current

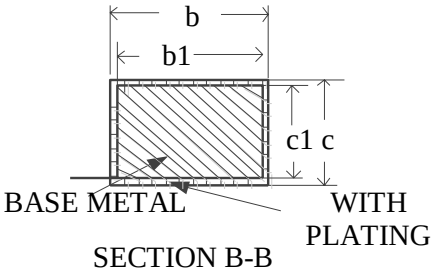
8.Package information

SOT-223-3L package dimension









SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	1.50	1.65	1.80
A1	0.03	0.06	0.09
A2	1.45	1.60	1.75
A3	0.80	0.90	1.00
b	0.69	-----	0.78
b1	0.68	0.71	0.74
c	0.30	-----	0.35
c1	0.29	0.30	0.31
D	6.30	6.50	6.70
D1	3.00 REF		
E	6.80	7.00	7.20
E1	3.40	3.50	3.60
e	2.30 BSC		
L	0.90	-----	-----
L1	1.75 BSC		
θ	0	----	7°
θ1	37.5 REF		