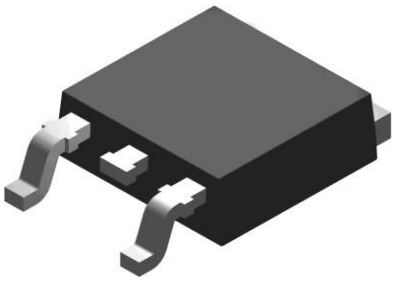
1.Function Description

SL4284 is a NPN type monolithic integrated fixed voltage regulator in a 3-pin TO package, with a typical drive current of 400mA, and the chip package TO252-3. The chip is applied to driving of micro-processor systems or automobile applications of several conditions; in addition, it has such as overloading protection, short circuit protection and over-temperature protection.

If the input voltage V1 is within the ranges of (VQ+Vdr) < V1 < 55V, it is regulated to VQ, and the voltage difference Vdr changes between 0.3V and 0.5V according to the size of the driving current.

2. Characteristics

- Rated output voltage 5V
- Typical output current 400mA
- Low drop
- Short circuit protection
- Over-temperature protection
- Input voltage as high as 55V
- Working temperature ranges
  Top＝-40～125℃
- RoHS



TO252-3L

3.Description of pins

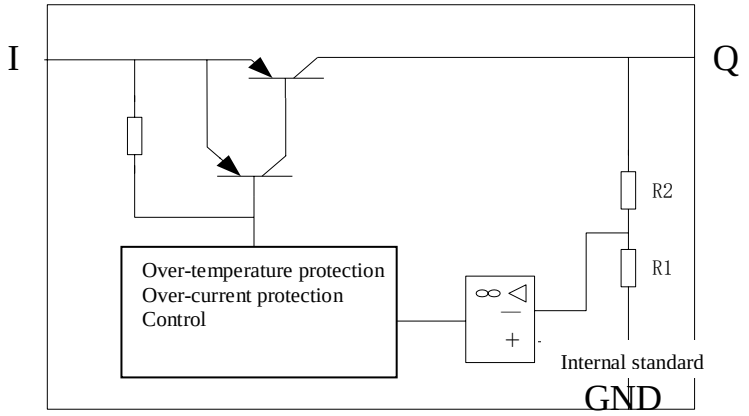


Figure 3- 1 SL4284 Fixed output voltage module block diagram

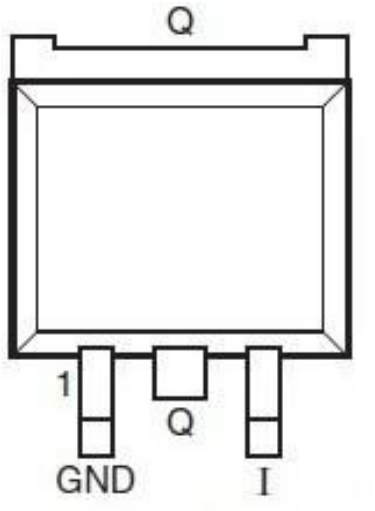


Figure 3-2 Pin configuration (top view)

Table 3.1Pin definition and functions

No. of pin	Symbols	Function
1	GND	Grounding end
2，Tab	Q	Output; connect to ground using a capacitor with CQ≥10uF and ESR≤10Ω at 10KHz. connected to the cooling
3	I	Input

4. Electrical parameters

Table 4.1 Scope of work

Parameters	Symbols	Parameter values		Units	Remark
		Min	Max		
Input Voltage	VI	VQ+Vdr	55	V	
Junction temperature	Tj	-40	150	℃	

Table 4.2 Absolute Maximum Ratings

Tj=-40℃to150℃.All the voltage values are relative to ground unless otherwise specified.

Parameters	Symbols	Limiting value		Units	Remark
		Min	Max		
Input and output voltage difference	VI-VQ	-0.3	50	V	
Input Voltage	VI	-0.3	55	V	
Output voltage	VQ	-0.3	12	V	
ESD withstanding voltage					
HBM	Voltage		4	KV	
CDM	Voltage		400	V	
Temperature	Tj	-40	150	℃	Junction temperature
	Tstg	-40	150	℃	Storage temperature
Thermal resistance					
Thermal resistance	Rthj-a	50	90	K/W	Only pin

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

2) The ESD withstanding voltage charging/discharging equipment model is designed according to JESD22-C101.

Remarks: The voltage listed above may lead to permanent injury to the chip, and long-term exposure in the maximum rated value may lead to influences on reliability of the device.

Table 4.3 Electrical Characteristics

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

Parameters	Symbols	Parameter values			Units	Note
		Min	Typ	Max		
Output voltage	VQ	4.85	5.00	5.15	V	10≤IQ≤400mA； 6.4V≤VI≤16V
			5.0		V	10≤IQ≤400mA； 16V≤VI≤40V 1)
Linear adjustment rate	ΔVQLi			10	mV	6.4V≤VI≤40V
Load regulation ratio	ΔVQLo			100	mV	10mA≤IQ≤400mA 2) VINVI=VQnom+Vdr
Load djustment rate	Vdr		0.3	0.5	V	IQ = 300mA 3)
Quiescent current	Iq		90	120	uA	IQ=10mA
Output current limiting	IQ,max	400	800	1100	mA	VI-VQ<18V; VQ=Vnom-100mV
RMS output noise			30		pp m	VQ ppm Tj=25℃ 10Hz≤f≤10KHz
Power supply rejection ratio	PSRR		65		dB	Fr = 120HZ Vr = 0.5Vpp

1) Tj<125℃, avoid chip over temperature

2) The junction temperature keeps constant during testing.

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

5. Application Information

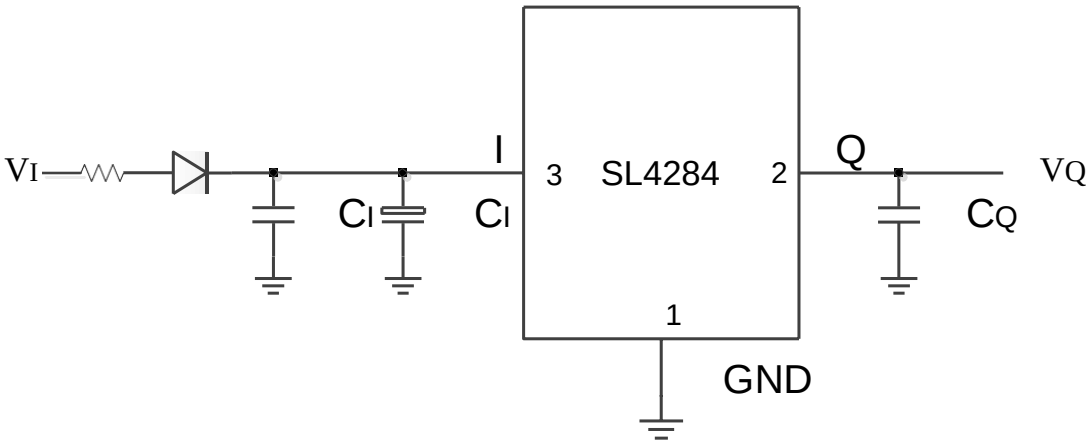
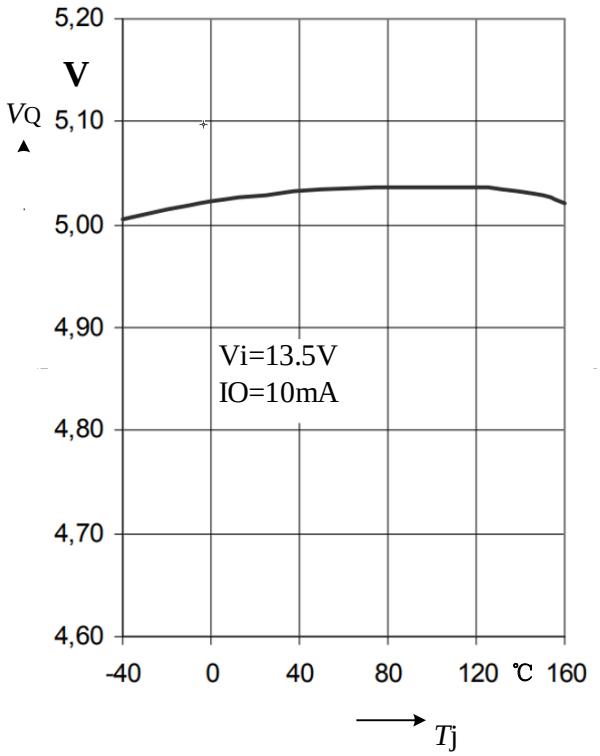


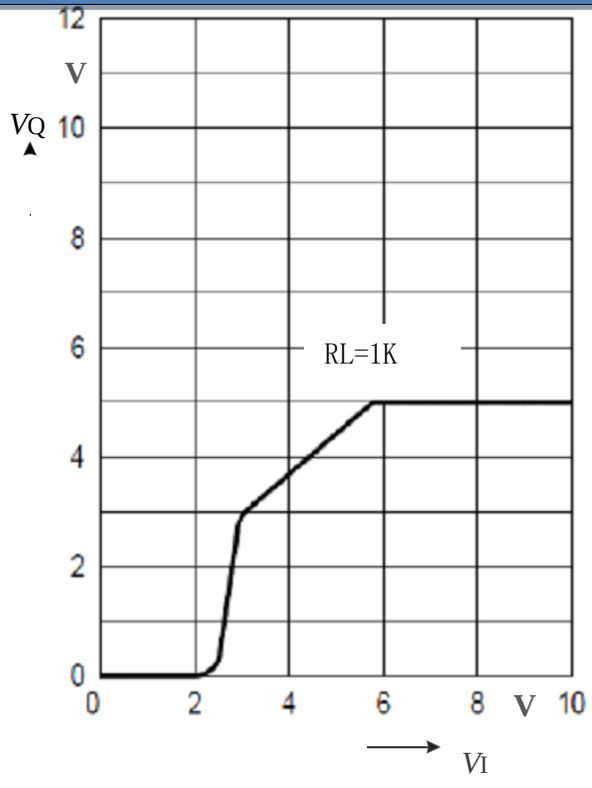
Figure 5-1 Typical application circuit

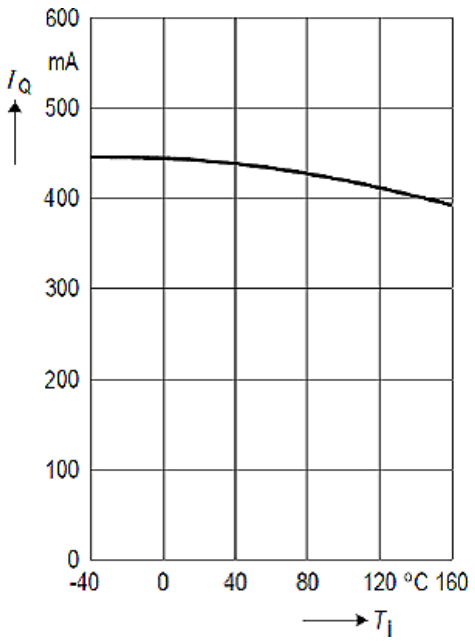
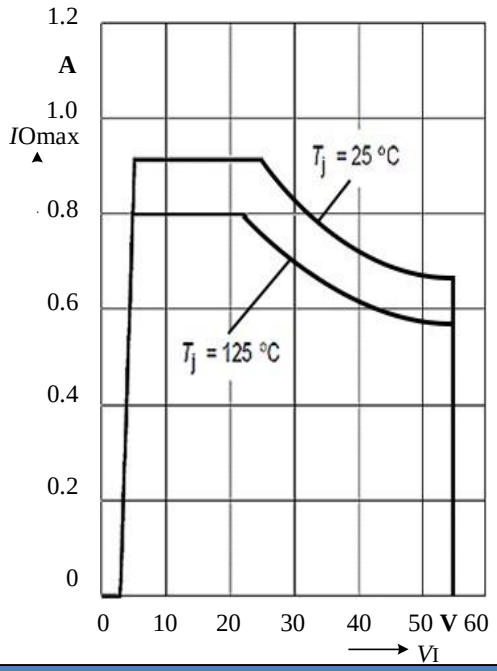
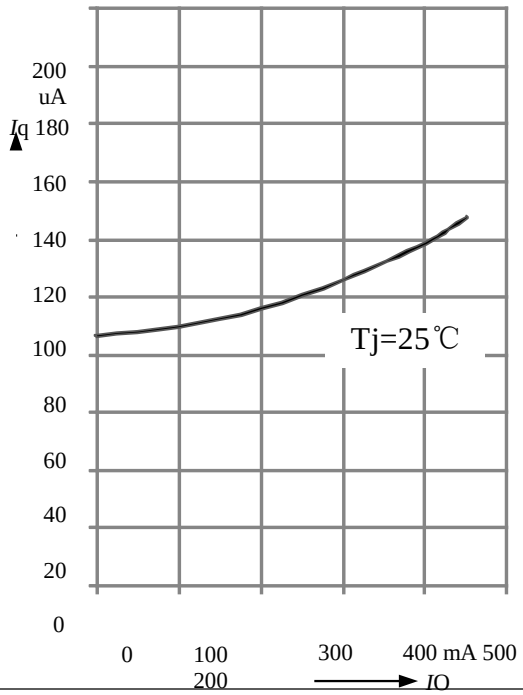
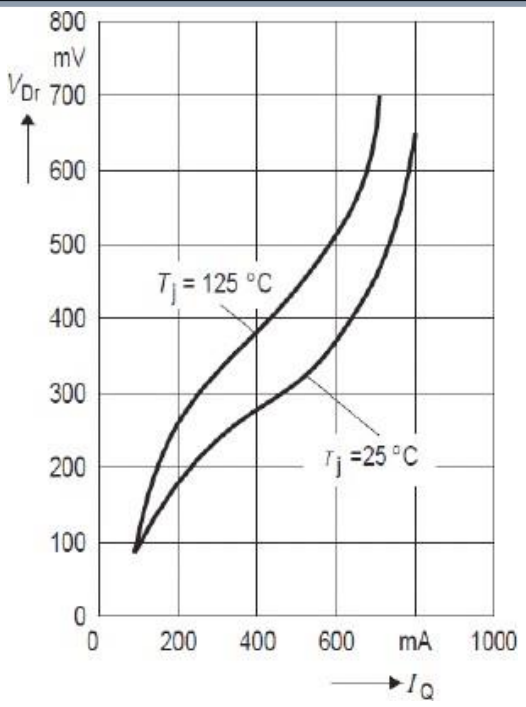
6.Typical characteristic curve

Output voltage VQ VS Tj
Junction temperature

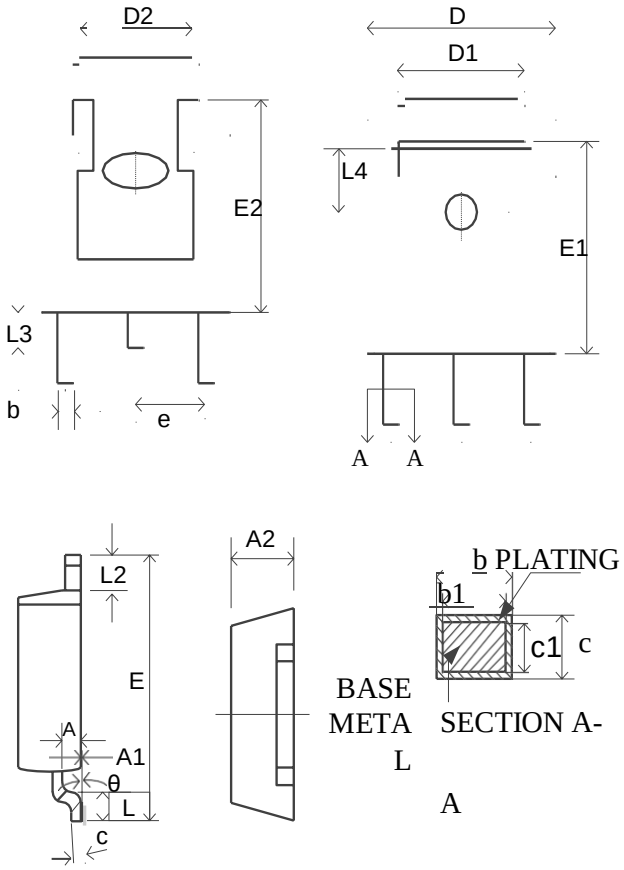


Output voltage VQ VS input voltage VI



Output voltage VQ VS Tj Junction temperature	Output Limited Current IQ VS input voltage VI
	
Quiescent current Iq VS output current IQ	Voltage difference Vdr VS output current IQ
	

7. Package dimension



SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A1	0.00	----	0.10
A2	2.20	2.30	2.40
A3	1.02	1.067	1.12
b	0.75	----	0.84
b1	0.74	----	0.79
c	0.49	----	0.57
c1	0.48	0.508	0.52
D	6.50	6.60	6.70
D1	5.334 REF		
D2	4.70	4.826	4.92
E	9.90	10.1	10.3
E1	6.00	6.10	6.20
E2	5.30 REF		
e	2.286 BSC		
L	1.40	1.50	1.60
L2	0.90	----	1.25
L3	0.60	0.80	1.00
L4	1.70	1.80	1.90
θ	0	----	8°
L/F carrier dimension	198*133		

Figure 7-1 Package TO252-3

Green Product (RoHS Compliant)

In order to meet the environmental protection requirements of global customers' products and comply with government regulations, the chip is a RoHS compliant green product (ie, lead-free certification, according to IPC/JEDRC J-STD-020, suitable for lead-free soldering).