

**Low noise, High PSRR, RF LDO**

**Descriptions**

The WL2003B series are low dropout linear regulators and optimized to provide a high performance solution for battery power system to deliver low quiescent current. The WL2003B series are designed for portable RF and wireless applications to deliver ultra low output noise and high PSRR. The devices offer a new level of cost effective performance in cellular phones, laptop and notebook computers, and other portable devices.

The WL2003B series are designed to make use of low cost ceramic capacitors which ensure the stability of the output current, and enhance the efficiency in order to prolong the battery life of those portable devices.

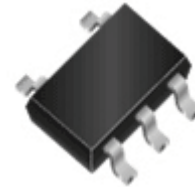
The WL2003B regulators are available in SOT-353 package. Standard products are Pb-free and Halogen-free

**Features**

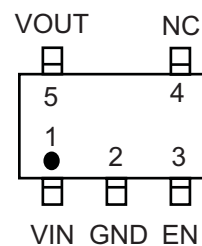
- Input voltage : 2.5V ~ 5.5V
- Output voltage : 1.2V ~ 3.3V
- Output current : 300mA @  $V_{OUT} > 2V$   
: 150mA @  $V_{OUT} < 2V$
- PSRR : 70dB @ 1KHz
- Output noise : 100uVp-p
- Quiescent current : 120μA
- Shut-down current : < 0.1μA
- Dropout voltage : 120mV
- Recommend capacitor : 1uF
- Operating Temperature : -40 ~ +85 °C
- Over current/over temperature protection

**Applications**

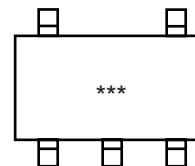
- MP3/MP4 Players
- Cellphones, radiophone, digital cameras
- Bluetooth, wireless handsets
- Others portable electronics device



SOT-353(SC70-5)



**Pin Configuration (Top View)**



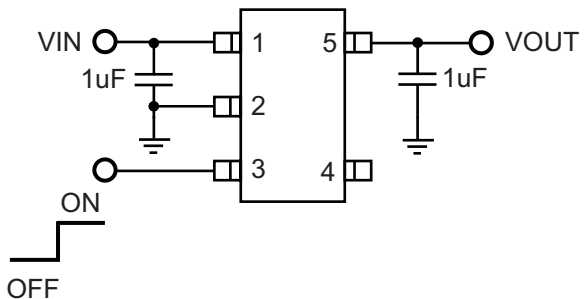
For detail marking information, please see page 7.

**Marking**

**Order Informations**

For detail order information, please see page 7.

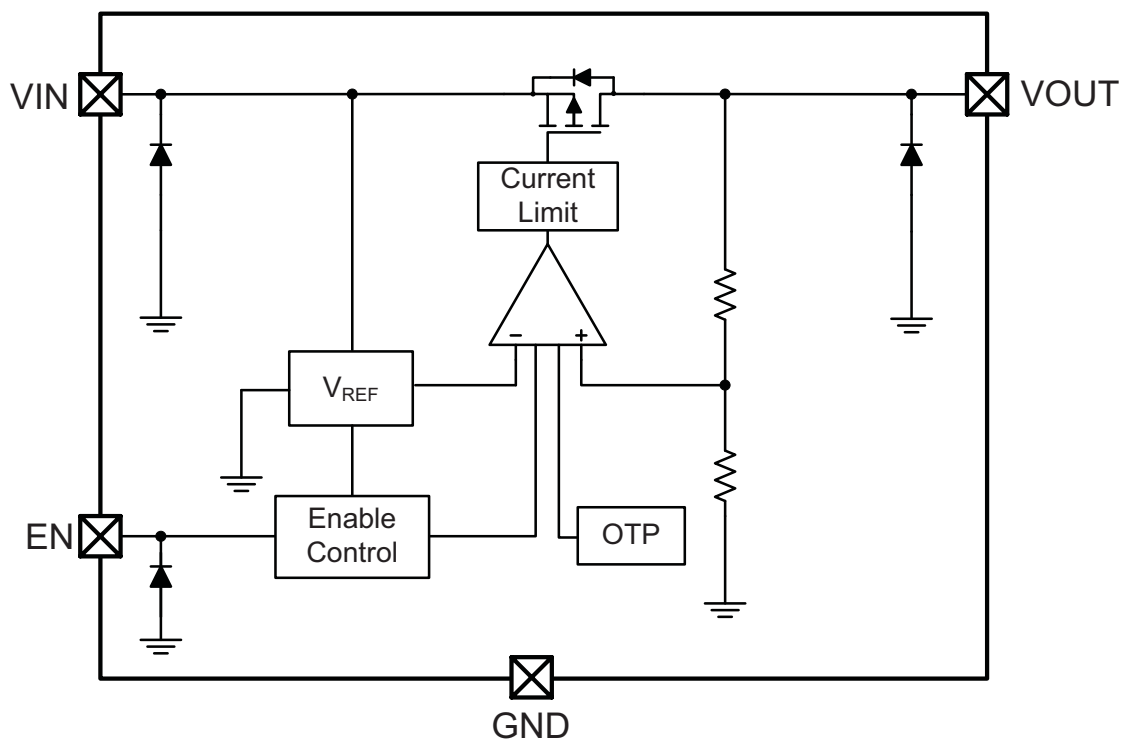
Typical Applications



Pin Descriptions

PIN	Symbol	Description
1	VIN	Input
2	GND	Ground
3	EN	Enable (Active high)
4	NC	Not connected
5	VOUT	Output

Block Diagram



**Absolute Maximum Ratings**

Parameter	Value	Unit
Power Dissipation	300	mW
V <sub>IN</sub> Range	-0.3~6.5	V
V <sub>EN</sub> Range	-0.3~V <sub>IN</sub>	V
V <sub>OUT</sub> Range	-0.3~V <sub>IN</sub>	V
Lead Temperature Range	260	°C
Storage Temperature Range	-55 ~ 150	°C
Operating Junction Temperature Range	150	°C
ESD Rating (HBM)	±8000	V
ESD Rating (MM)	±500	V
ESD Rating (CDM)	±4000	V

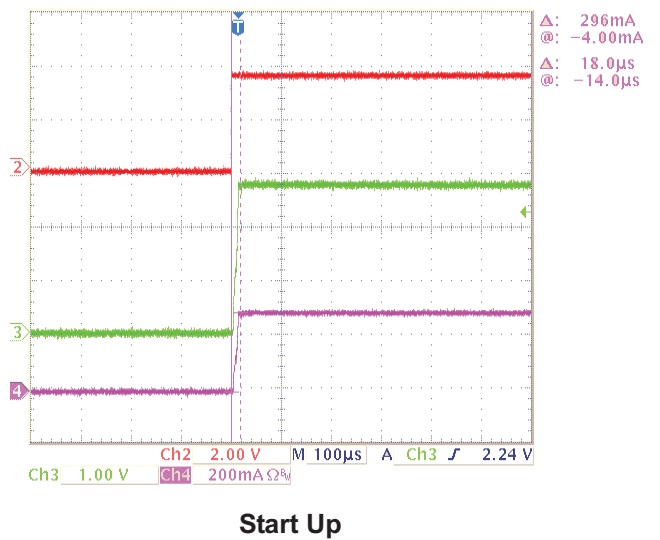
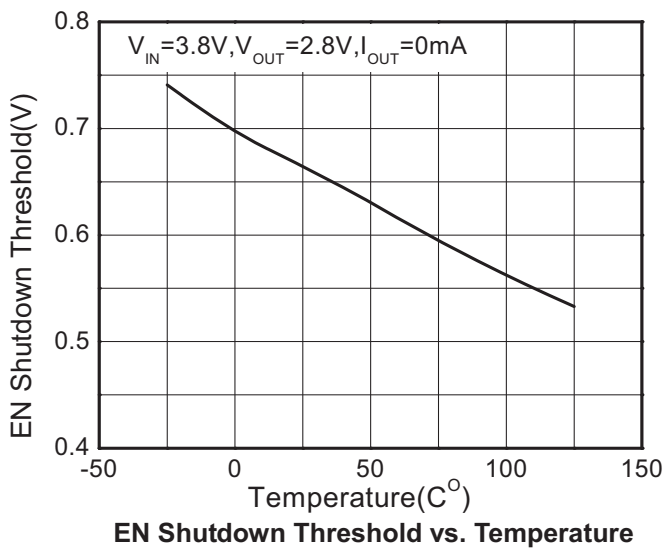
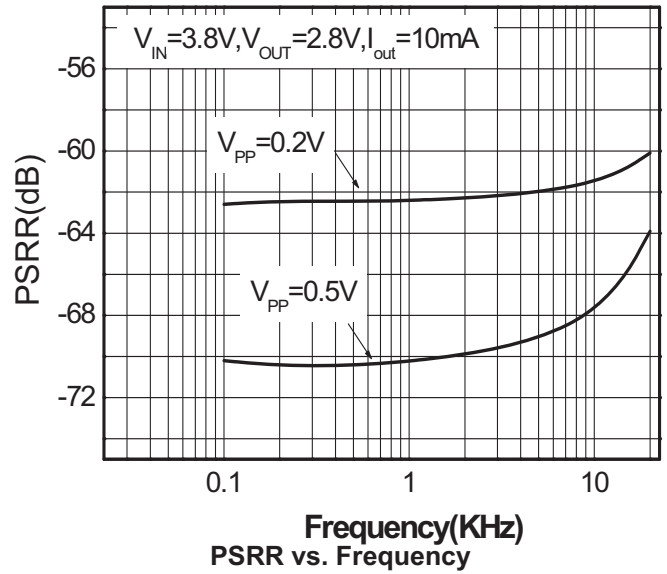
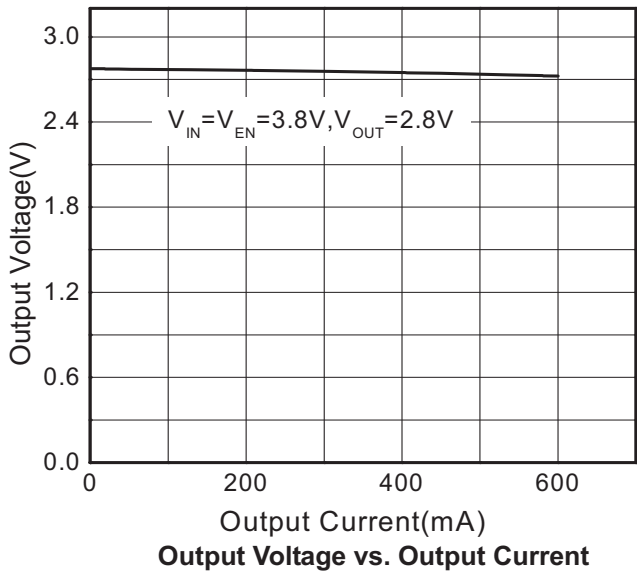
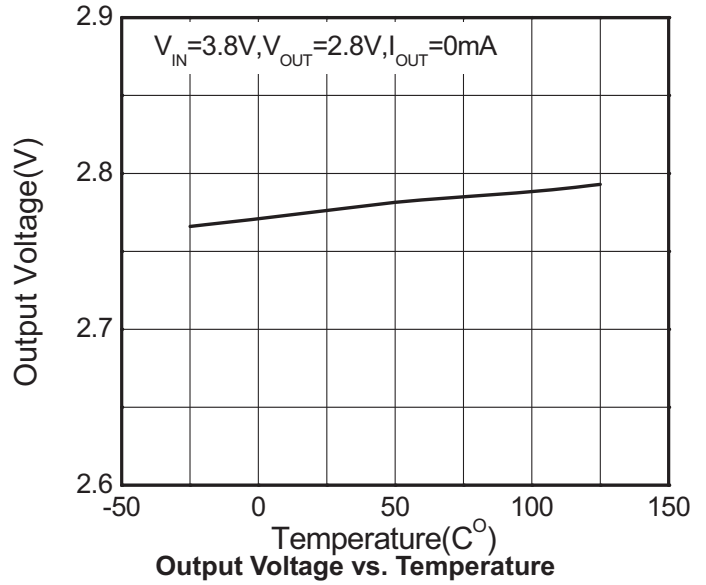
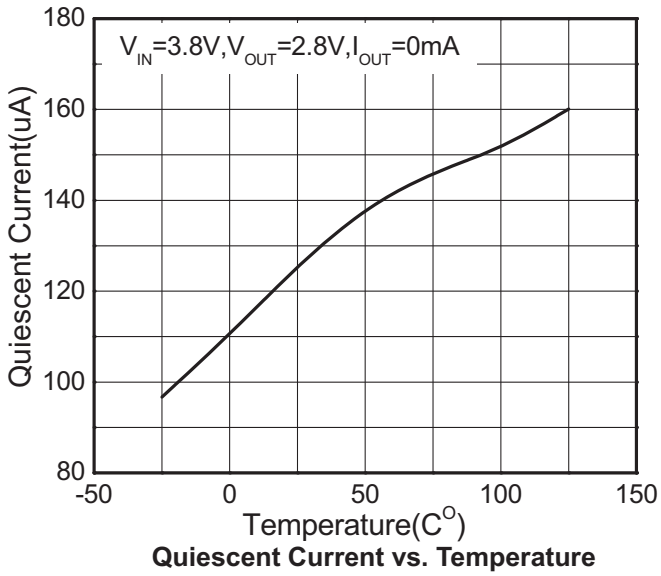
**Recommend Operating Ratings**

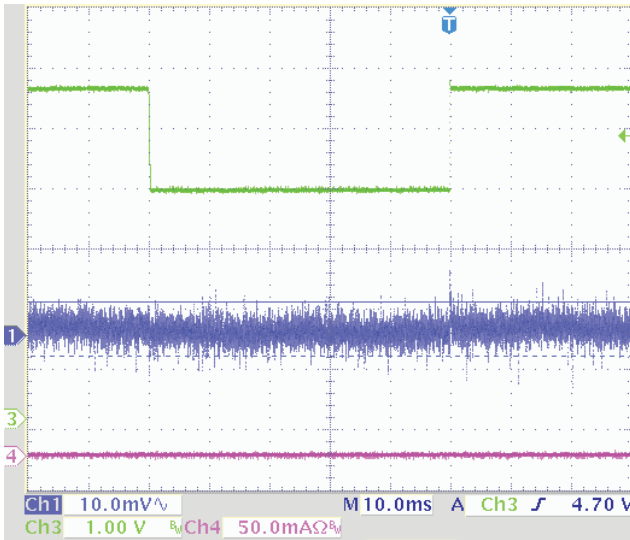
Parameter	Value	Unit
Thermal Resistance, R <sub>θJA</sub>	380	°C/W
Operating Temperature Range	-40~85	°C

**Electronics Characteristics (T<sub>A</sub>=25°C, V<sub>IN</sub>=V<sub>OUT</sub>+1V, C<sub>IN</sub>=C<sub>OUT</sub>=1uF, Unless otherwise noted)**

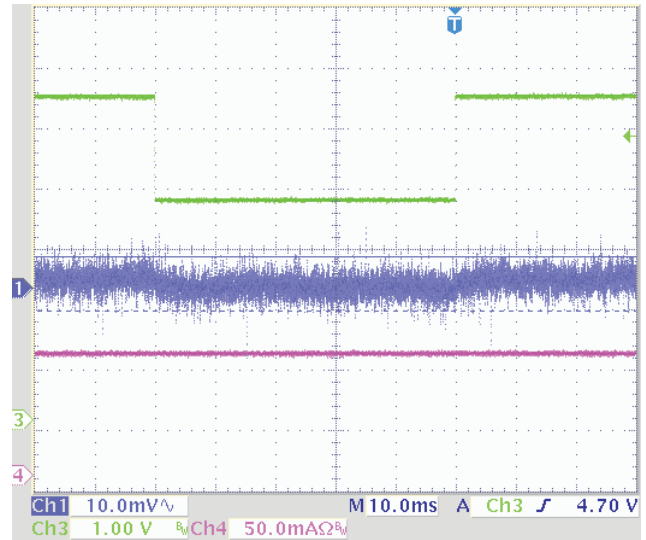
Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Output Voltage Accuracy	V <sub>OUT</sub>	V <sub>OUT</sub> <= 1.5V	±30			mV
		V <sub>OUT</sub> > 1.5V	±2			%
Current Limit	I <sub>LIM</sub>	V <sub>IN</sub> = V <sub>OUT</sub> +1V	400			mA
Dropout Voltage	V <sub>DROP</sub>	I <sub>OUT</sub> =200mA, V <sub>OUT</sub> =2.8V		120	200	mV
		I <sub>OUT</sub> =300mA, V <sub>OUT</sub> =2.8V		190	300	
Line Regulation	ΔV <sub>LINE</sub>	V <sub>IN</sub> =2.5~5.5V, I <sub>OUT</sub> =1mA		0.03	0.15	%/V
Load Regulation	ΔV <sub>Load</sub>	V <sub>IN</sub> =3.8V, I <sub>OUT</sub> = 1~ 300mA		22	30	mV
Quiescent Current	I <sub>Q</sub>	V <sub>EN</sub> >1.2V, I <sub>OUT</sub> =0		120	150	uA
Shut-down Current	I <sub>SHDN</sub>	V <sub>IN</sub> =3.3V, V <sub>EN</sub> =0V		0.1	1.0	uA
Power Supply Rejection Rate	PSRR	F=100Hz, I <sub>OUT</sub> =10 mA, 0.5Vpp		70		dB
		F=10KHz, I <sub>OUT</sub> =10mA, 0.5Vpp		67		
EN logic high voltage	V <sub>ENH</sub>	V <sub>IN</sub> =V <sub>OUT</sub> +1V, Start-up	1.2			V
EN logic low voltage	V <sub>ENL</sub>	V <sub>IN</sub> =V <sub>OUT</sub> +1V, Shutdown			0.4	V
EN Input Current	I <sub>EN</sub>	V <sub>EN</sub> = 0 to 5V			1.0	uA
Output Noise Voltage	e <sub>NO</sub>	10Hz to 100KHz, I <sub>OUT</sub> =200mA, C <sub>OUT</sub> =1uF		100		uVp-p
Thermal Shutdown Temperature	T <sub>SD</sub>			165		°C
Thermal Shutdown Hysteresis	ΔT <sub>SD</sub>			30		°C

Typical Characteristics

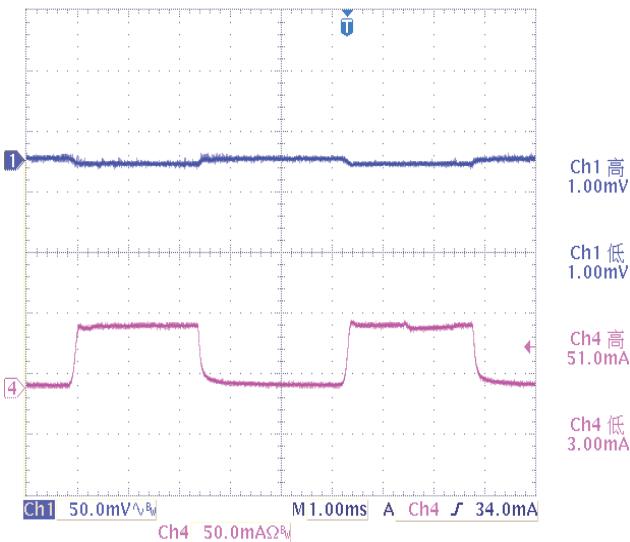




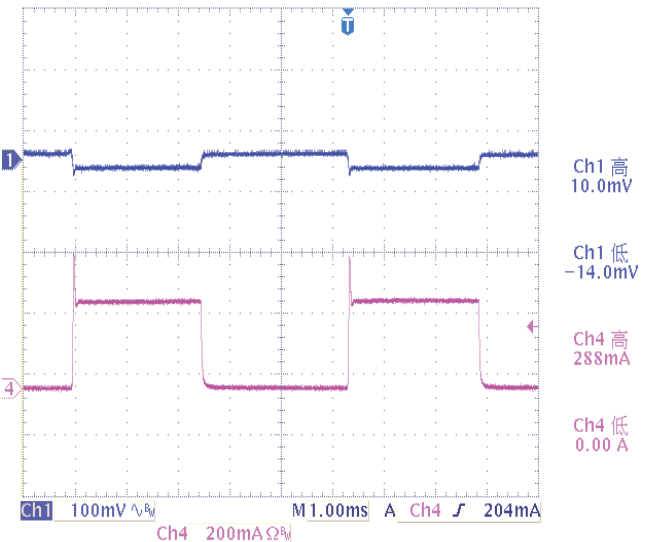
Line Regulation



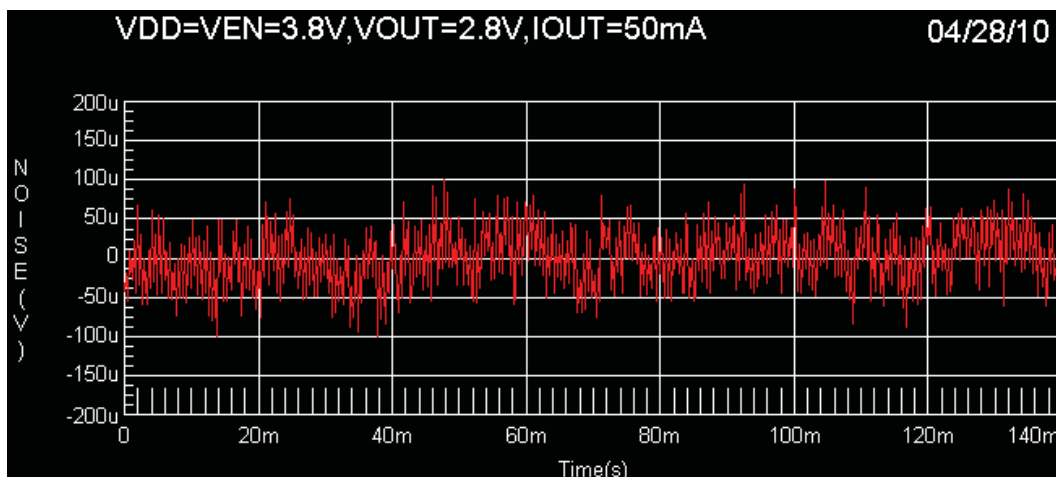
Line Regulation



Load Regulation



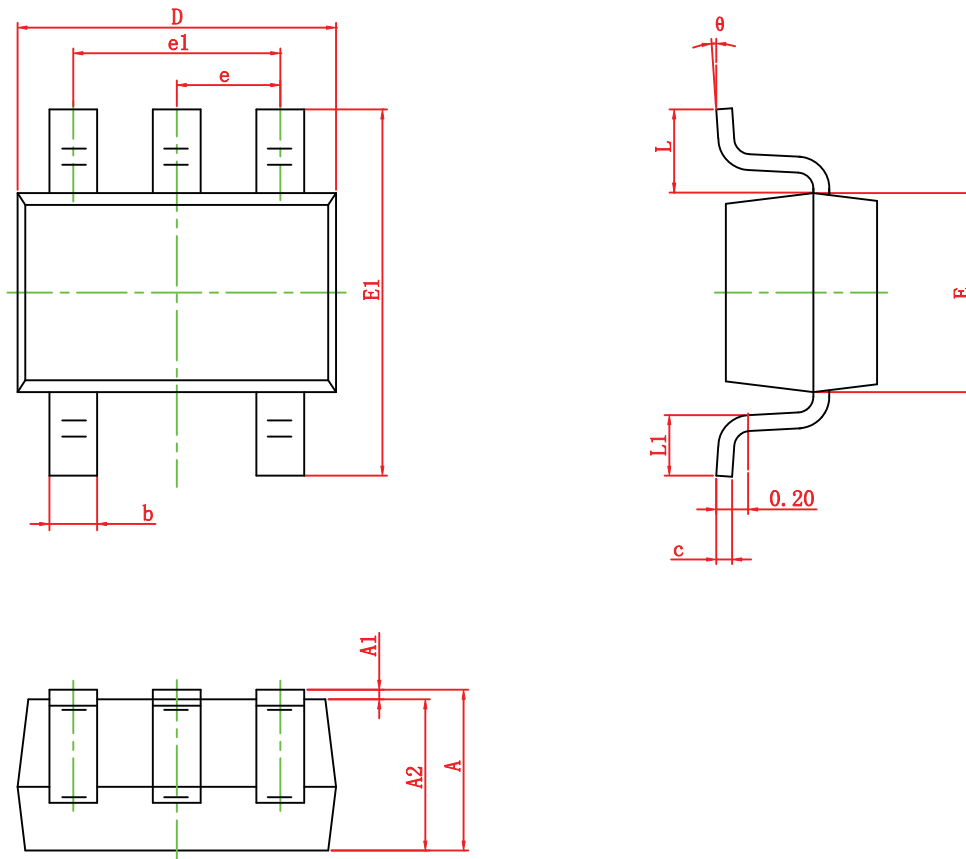
Load Regulation



Output Noise (VDD by Battery)

Package outline dimensions

SOT-353



Symbol	Dimensions In Millimeters	
	Min.	Max.
A	0.900	1.100
A1	0.000	0.100
A2	0.900	1.000
b	0.150	0.350
c	0.080	0.150
D	2.000	2.200
E	1.150	1.350
E1	2.150	2.450
e	0.650 Typ.	
e1	1.2	1.4
L	0.525 Ref.	
L1	0.260	0.460
theta	0°	8°

## ORDER INFORMATION

Ordering No.	Vout (V)	Package	Operating Temperature	Marking	Shipping
WL2003B12G-5/TR	1.2	SOT-353	-40~+85°C	*12	Tape and Reel, 3000
WL2003B13G-5/TR	1.3	SOT-353	-40~+85°C	*13	Tape and Reel, 3000
WL2003B15G-5/TR	1.5	SOT-353	-40~+85°C	*15	Tape and Reel, 3000
WL2003B18G-5/TR	1.8	SOT-353	-40~+85°C	*18	Tape and Reel, 3000
WL2003B25G-5/TR	2.5	SOT-353	-40~+85°C	*25	Tape and Reel, 3000
WL2003B28G-5/TR	2.8	SOT-353	-40~+85°C	*28	Tape and Reel, 3000
WL2003B30G-5/TR	3.0	SOT-353	-40~+85°C	*30	Tape and Reel, 3000
WL2003B33G-5/TR	3.3	SOT-353	-40~+85°C	*33	Tape and Reel, 3000

## Marking:

\* = Month Code (A~Z)

12 = Voltage code (12: 1.2V)