上海贝岭
SHANGHAI BELLING

BLL1575

40V 150mA Low Consumption Linear Regulator

DESCRIPTION

BLL1575 series is a group of positive voltage output, low power consumption, low dropout voltage regulator. It can provide 100mA output current when input / output voltage differential drops to 900mV (V_{OUT}=2.5V), and it also provides foldback short-circuit protection, thermal protection and output current limit function. The very low power consumption of BLL1575 (I_Q=2.5uA) can greatly improve natural life of batteries.

BLL1575 can provide output value in the range of 1.2V~5.0V in 0.1V steps. It also can customize on command.

BLL1575 includes high accuracy voltage reference, error amplifier, current limit circuit and output driver module.

BLL1575 has well load transient response and good temperature characteristic, and it uses trimming technique to guarantee output voltage accuracy within ±2%.

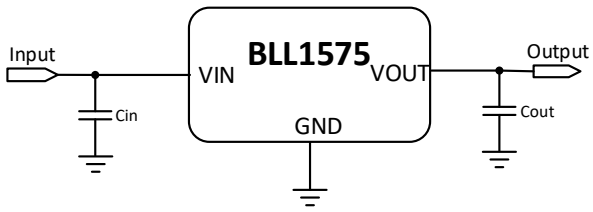
FEATURES

- Low power consumption: 2.5uA (Typ.)
- Maximum output current: 150mA
- Dropout voltage: 900mV@100mA (V_{OUT}=2.5V)
- Max input voltage: 40V
- Output voltage range: 1.2V~5.0V (V_{OUT}>5V customized)
- Highly accurate: ±2% (±1% customized)
- Output current limit: 180mA

APPLICATIONS

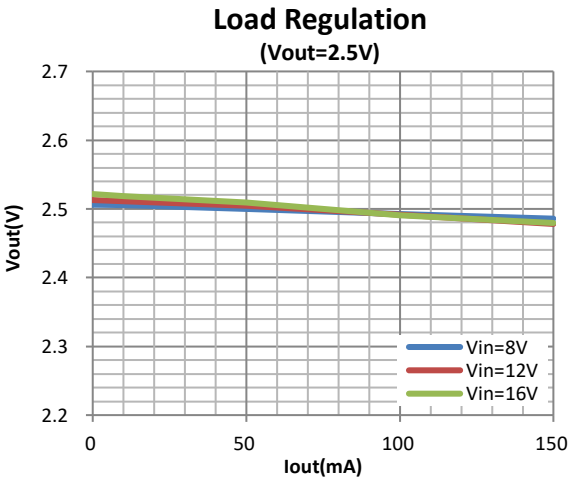
- Battery powered equipment
- Power management of MP3, PDA, DSC, mouse, PS2 games
- Reference voltage source regulation after switching power

TYPICAL APPLICATION



Note: *Input capacitor (C_{IN}=1uF) and Output capacitor (C_{OUT}=1uF) are recommended in all application circuit. Ceramic capacitor is recommended.*

ELECTRICAL CHARACTERISTICS

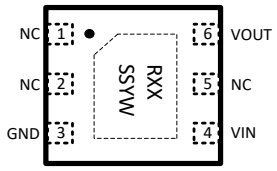


ORDERING INFORMATION

BLL1575 1 2 3 4

Code	Description
1	Temperature&Rohs: C: -40~85°C, Pb Free Rohs Std.
2	Package type: KI: DFN1.8x2-6
3	Packing type: TR: Tape&Reel (Standard)
4	Output voltage: e.g., 18=1.8V 21=2.1V

PIN CONFIGURATION

Product classification		BLL1575CKITR□□
Marking		 DFN1.8x2-6
RXX SSYW	R: Product code	
	XX: Output voltage	
	SS: Lot No.	
	YW: Date code	
VIN	Supply voltage input	
GND	Ground pin	
VOUT	Output voltage	
NC	No connection	

Y: The Year of manufacturing, "1" stands for year 20X1, "2" stands for year 20X2, and "8" stands for year 20X8. (X=0,1,2,….9)

W: The week of manufacturing. "A" stands for week 1,

"Z" stands for week 26, "Ā" stands for week 27, "Z̄" stands for week 52.

The date code of the 53rd week is the same as that of the first week of the next year. For example, the date code of the 53rd week of 2017 is the same as that of the first week of 2018, which are 1801 and 8A.

ABSOLUTE MAXIMUM RATING

Parameter		Value
Max input voltage		50V
Operating junction temperature (T_J)		150°C
Ambient temperature (T_A)		-40°C to 85°C
Power dissipation (P_D@T_A=25°C)	DFN1.8x2-6	1W
Package thermal resistance (θ_{JC})		18°C/W
Package thermal resistance (θ_{JA})		80°C/W
Storage temperature (T_S)		-40°C to 150°C
Lead temperature & time		260°C, 10s

Note:
Exceed these limits to damage to the device.
Exposure to absolute maximum rating conditions may affect device reliability.

RECOMMENDED WORK CONDITIONS

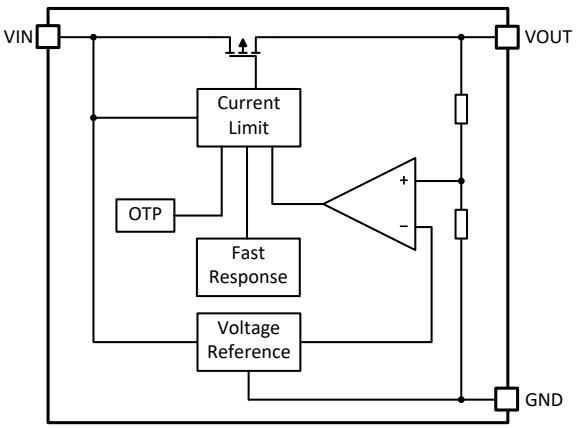
Item	Min	Recommended	Max	Units
Input voltage range			40	V
Ambient temperature	-40		85	°C

ELECTRICAL CHARACTERISTICS

Test Conditions: C_{IN}=1uF, C_{OUT}=1uF, T_A=25℃, unless otherwise stated.

Symbol	Parameter	Conditions	Min	Typ	Max	Units
V_{IN}	Input voltage				40	V
V_{OUT}	Output voltage	V_{OUT}≤1.5V, I_{OUT}=1mA, V_{IN}=$V_{OUT(SET)}$+1.8V	$V_{OUT(SET)}$ -0.03	$V_{OUT(SET)}$	$V_{OUT(SET)}$ +0.03	V
		V_{OUT}>1.5V, I_{OUT}=1mA, V_{IN}=$V_{OUT(SET)}$+1V	$V_{OUT(SET)}$ x0.98		$V_{OUT(SET)}$ X1.02	
$I_{OUT(Max)}$	Maximum output current	$V_{OUT(SET)}$<2.5V, V_{IN}=V_{OUT}+1.8V	150			mA
		2.5V≤$V_{OUT(SET)}$<5V, V_{IN}=V_{OUT}+1.2V				
		$V_{OUT(SET)}$≥5V, V_{IN}=V_{OUT}+1V				
V_{DROP}	Input-output voltage differential	I_{OUT}=100mA, V_{OUT}=1.8V		1500		mV
		I_{OUT}=100mA, V_{OUT}=2V		1400		mV
		I_{OUT}=100mA, V_{OUT}=2.5V		900		mV
$\frac{\Delta Vout}{\Delta Vin \cdot Vout}$	Line regulation	I_{OUT}=1mA, $V_{OUT(SET)}$+1.8V≤V_{IN}≤40V	-0.2	0.05	0.2	%/V
ΔVout	Load regulation	$V_{OUT(SET)}$<2.5V, V_{IN}=V_{OUT}+1.8V, 1mA≤I_{OUT}≤150mA	-100		100	mV
		2.5V≤$V_{OUT(SET)}$<5V, V_{IN}=V_{OUT}+1.2V, 1mA≤I_{OUT}≤150mA				
		$V_{OUT(SET)}$≥5V, V_{IN}=V_{OUT}+1V, 1mA≤I_{OUT}≤150mA				
I_Q	Quiescent current	I_{OUT}=0mA, V_{IN}=12V, Ground pin current		2.5	5	uA
$\frac{\Delta Vout}{\Delta T \cdot Vout}$	Output voltage temperature coefficient	I_{OUT}=10mA		±100		ppm/°C
T_{SD}	Thermal shutdown			130		°C

BLOCK DIAGRAM



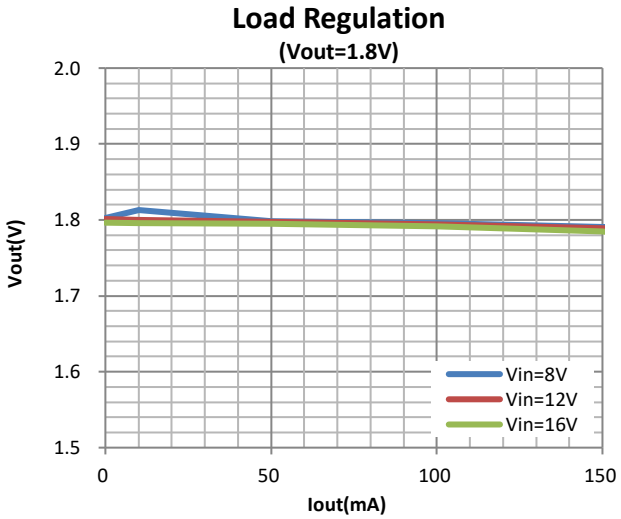
EXPLANATION

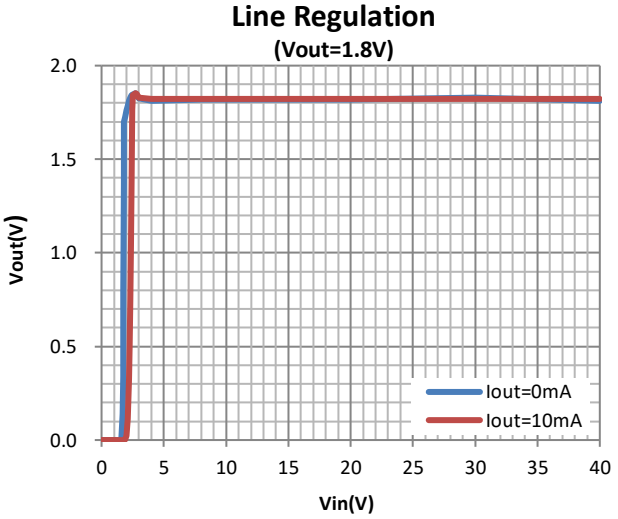
BLL1575 is a series of low dropout voltage and low power consumption regulator. Its application circuit is very simple, which only needs two outside capacitors. It is composed of these modules: high accuracy voltage reference, current limit circuit, error amplifier, output driver and power transistor.

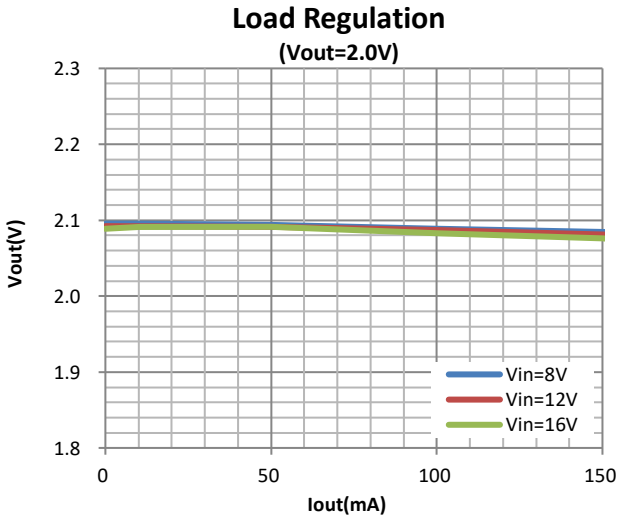
Current Limit module can keep chip and power system away from danger when load current is more than 180mA.

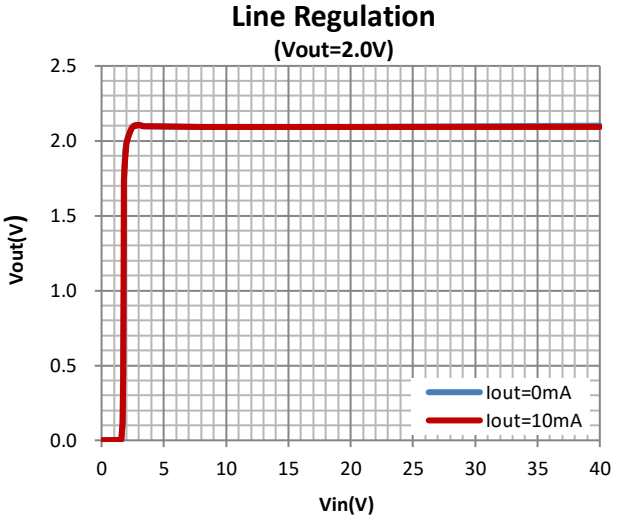
BLL1575 uses trimming technique to assure the accuracy of output value within ±2%, at the same time, temperature compensation is elaborately considered in this chip, which makes BLL1575's temperature coefficient within ±100ppm/°C.

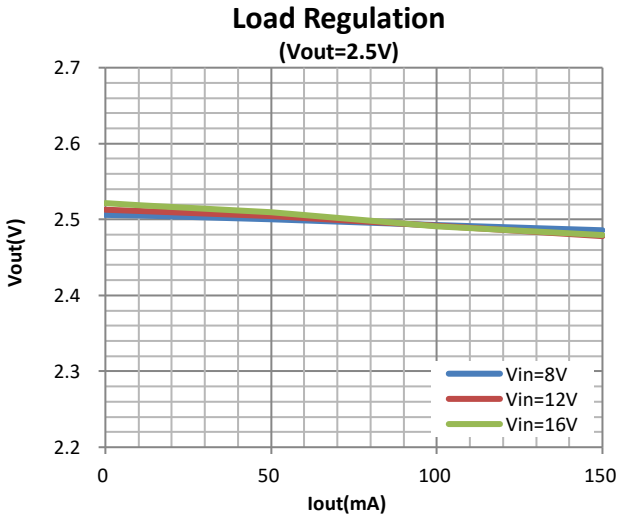
TYPICAL PERFORMANCE CHARACTERISTICS

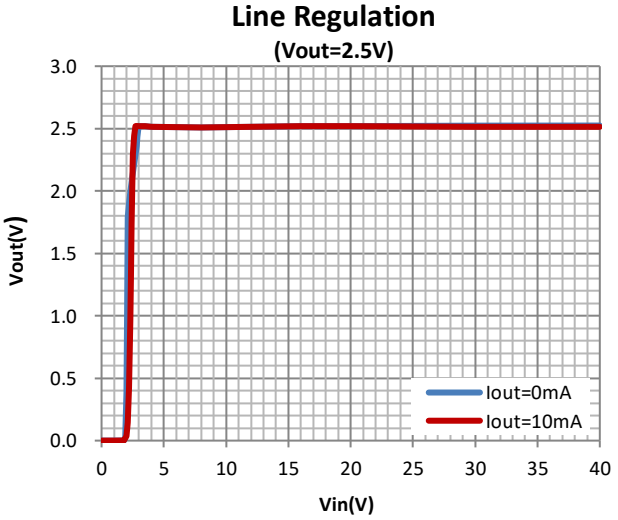




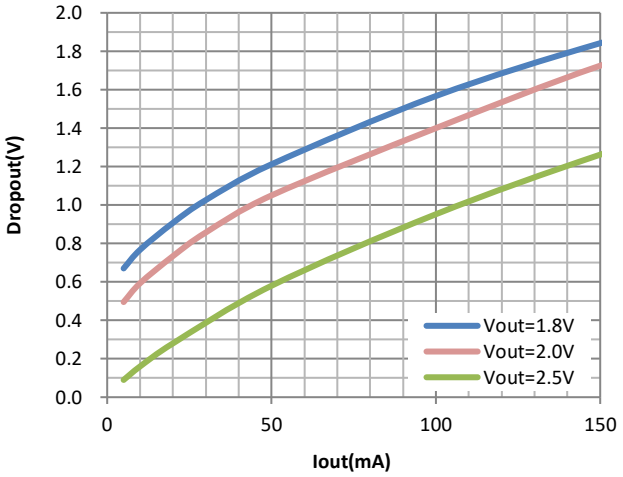




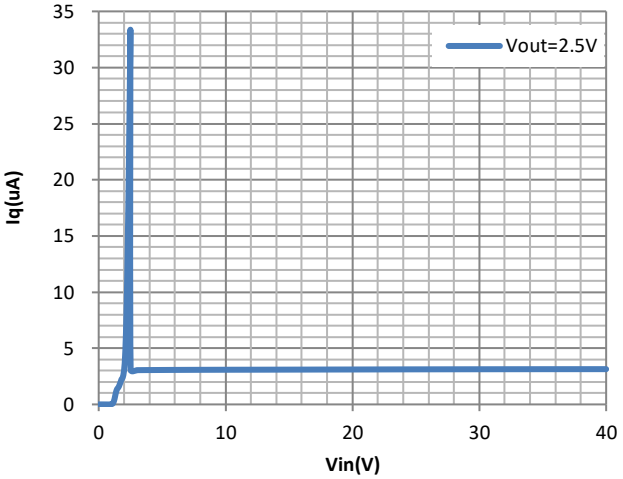




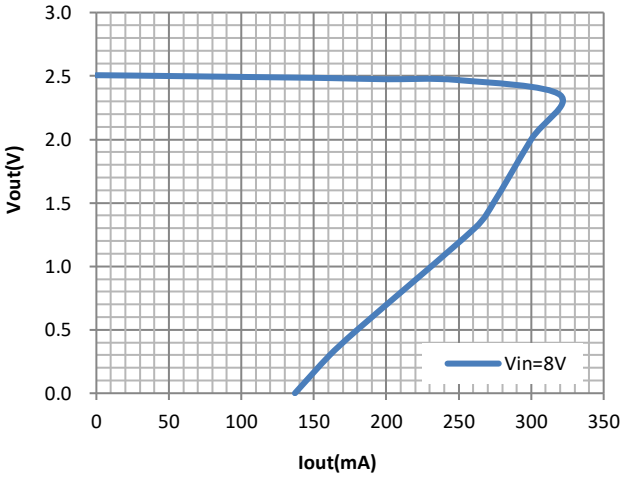
Dropout



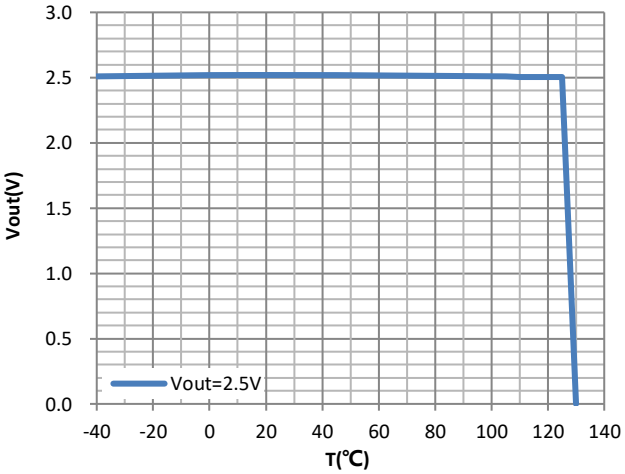
Iq



Current Limit

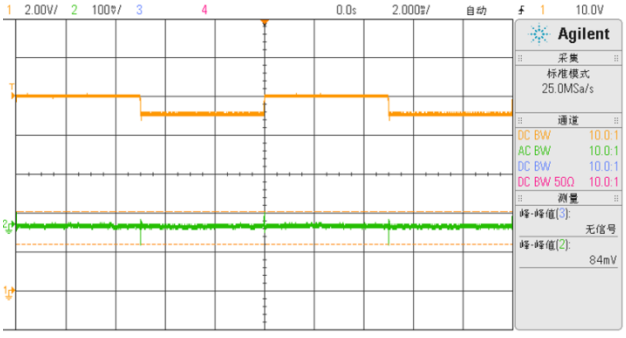


Vout vs. Temp



Line transient response

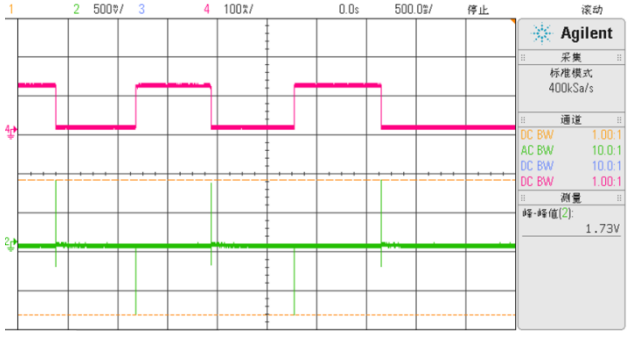
(Vin=9V~10V, Iout=10mA)



CH1: Vin, CH2: Vout

Load transient response

(Vin=12V, Iout=10mA~100mA)

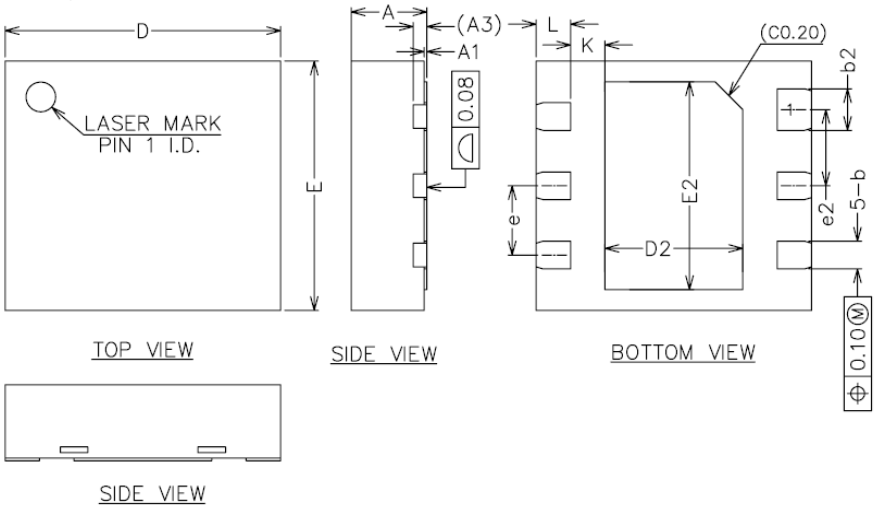


CH2: Vout, CH4: Iout

PACKAGE OUTLINE

Package	DFN1.8x2-6	Devices per reel	3000pcs

Package dimension:



COMMON DIMENSIONS
(UNITS OF MEASURE=MILLIMETER)

SYMBOL	MIN	NOM	MAX
A	0.50	–	0.60
A1	0.00	0.02	0.05
A3		0.10REF	
b	0.15	0.20	0.25
b2	0.25	0.30	0.35
D	1.90	2.00	2.10
D2	0.90	1.00	1.10
E	1.70	1.80	1.90
E2	1.40	1.50	1.60
e	0.40	0.50	0.60
e2	0.45	0.55	0.65
K	0.15	–	–
L	0.20	0.25	0.30

Unit: mm