

Low noise 150mA LDO regulator

Features:

- Low Power Consumption: 25uA (Typ.)
- Low output noise (27uVRMS)
- Standby Mode: 0.1uA
- Low dropout Voltage: 0.2V@100mA (Typ.)
- High Ripple Rejection: 65dB@1kHz (Typ.)
- Low Temperature Coefficient: $\pm 100\text{ppm}/^\circ\text{C}$
- Excellent Line regulation: 0.05%/V
- Build-in chip enable circuit
- Output Voltage Range: 1.2V~5.0V (customized on command every 0.1V step)
- Highly Accurate: $\pm 2\%$ ($\pm 1\%$ customized)
- Output Current Limit

Applications:

- Power source for cellular phones and various kind of PCSs
- Battery Powered equipment
- Power Management of MP3, PDA, DSC, Mouse, PS2 Games
- Reference Voltage Source
- Regulation after Switching Power

General Description:

BL8555 series is a group of positive voltage output, low power consumption, low dropout voltage regulator.

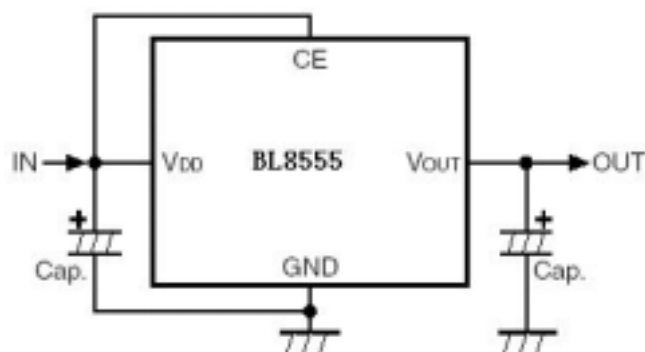
BL8555 can provide output value in the range of 1.2V~5.0V every 0.1V step. It also can be customized on command.

BL8555 includes high accuracy voltage reference, error amplifier, current limit circuit and output driver module.

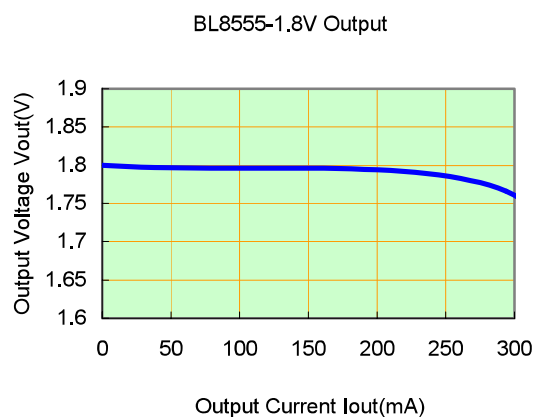
BL8555 has excellent load and line transient response and good temperature characteristics, which can assure the stability of chip and power system. And it uses trimming technique to guarantee output voltage accuracy within $\pm 2\%$.

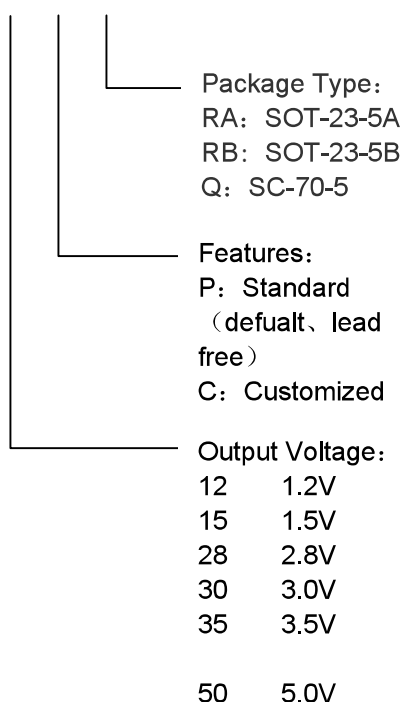
BL8555 is available in SOT-23-5, SC-70-5 packages which is lead free. It also can available in these packages with lead.



BL8555 Typical Application Circuit



BL8555 Typical Performance Characteristics:



Selection Guide:
BL8555-XX X X

Pin Assignment:

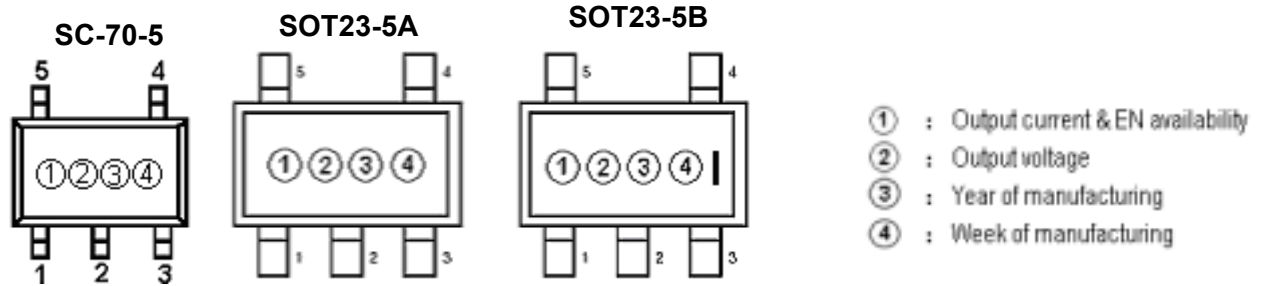
| Product Classification | Assembly type & Pin Configuration |
|------------------------------|---|
| BL8555-□□PQ |  |
| BL8555-□□PRA BL8555-□□PRB |  |

Pin Description:

| Pin Number | | | Symbol | Function |
|------------|-----------|-----------|--------|-----------------|
| SC-70-5 | SOT-23-5A | SOT-23-5B | | |
| 5 | 5 | 1 | VOUT | Output pin |
| 1 | 1 | 3 | VDD | Input Pin |
| 2 | 2 | 2 | GND | Ground Pin |
| 3 | 3 | 4 | CE | Chip Enable Pin |
| 4 | 4 | 5 | NC | No Connection |

Product Classification:

| Output Voltage | Package Type | Product Name | Package Type | Product Name | Package Type | Product Name |
|----------------|--------------|--------------|--------------|--------------|--------------|--------------|
| 1.2V | SOT-23-5A | BL8555-12PRA | SOT-23-5B | BL8555-12PRB | SC-70-5 | BL8555-12PQ |
| 1.5V | SOT-23-5A | BL8555-15PRA | SOT-23-5B | BL8555-15PRB | SC-70-5 | BL8555-15PQ |
| 1.8V | SOT-23-5A | BL8555-18PRA | SOT-23-5B | BL8555-18PRB | SC-70-5 | BL8555-18PQ |
| 2.1V | SOT-23-5A | BL8555-21PRA | SOT-23-5B | BL8555-21PRB | SC-70-5 | BL8555-21PQ |
| 2.5V | SOT-23-5A | BL8555-25PRA | SOT-23-5B | BL8555-25PRB | SC-70-5 | BL8555-25PQ |
| 2.8V | SOT-23-5A | BL8555-28PRA | SOT-23-5B | BL8555-28PRB | SC-70-5 | BL8555-28PQ |
| 3.0V | SOT-23-5A | BL8555-30PRA | SOT-23-5B | BL8555-30PRB | SC-70-5 | BL8555-30PQ |
| 3.2V | SOT-23-5A | BL8555-32PRA | SOT-23-5B | BL8555-32PRB | SC-70-5 | BL8555-32PQ |
| 3.3V | SOT-23-5A | BL8555-33PRA | SOT-23-5B | BL8555-33PRB | SC-70-5 | BL8555-33PQ |
| 3.5V | SOT-23-5A | BL8555-35PRA | SOT-23-5B | BL8555-35PRB | SC-70-5 | BL8555-35PQ |
| ⋮ | ⋮ | ⋮ | ⋮ | ⋮ | ⋮ | ⋮ |
| 5.0V | SOT-23-5A | BL8555-50PRA | SOT-23-5B | BL8555-50PRB | SC-70-5 | BL8555-50PQ |

Product Marking information:


①

| Code | Iout | EN | 代码 | Iout | EN |
|------|-------|----|----|-------|-----|
| A | 50mA | No | Ā | 50mA | Yes |
| B | 100mA | No | B̄ | 100mA | Yes |
| C | 150mA | No | C̄ | 150mA | Yes |
| D | 200mA | No | D̄ | 200mA | Yes |
| E | 250mA | No | Ē | 250mA | Yes |
| F | 300mA | No | F̄ | 300mA | Yes |
| G | 350mA | No | Ḡ | 350mA | Yes |
| H | 400mA | No | H̄ | 400mA | Yes |
| I | 450mA | No | Ī | 450mA | Yes |
| J | 500mA | No | J̄ | 500mA | Yes |

For example:

BL8555 with output current 150mA, SC-82 or SOT-23-5 package with an EN pin, its position ① is C̄

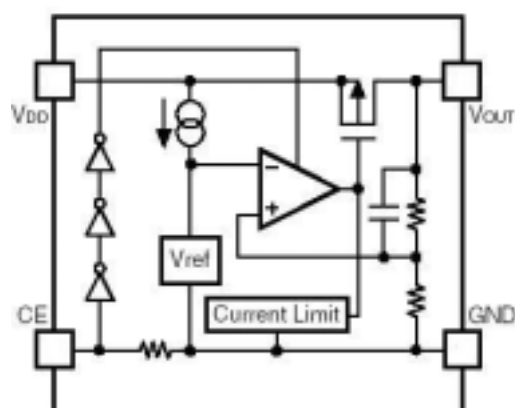
③ The year of manufacturing, "5" stands for year 2005, "6" stands for year 2006, and "8" for year 2010.

②

| Code | Vout | Code | Vout | Code | Vout |
|------|-------|------|------|------|------|
| 2 | 1.2V | ȳ | 2.7V | ȷ | 4.2V |
| 3 | 1.3V | Ȅ | 2.8V | ȸ | 4.3V |
| 4 | 1.4V | ȅ | 2.9V | ȹ | 4.4V |
| 5 | 1.5V | Ȇ | 3.0V | Ⱥ | 4.5V |
| 6 | 1.6V | ȇ | 3.1V | Ȼ | 4.6V |
| 7 | 1.7V | Ȉ | 3.2V | ȼ | 4.7V |
| 8 | 1.8V | ȉ | 3.3V | Ƚ | 4.8V |
| 9 | 1.9V | Ȋ | 3.4V | Ⱦ | 4.8V |
| 0 | 2.0V | ȋ | 3.5V | ȿ | 5.0V |
| ȳ | 2.1V | Ȍ | 3.6V | | |
| ȷ | 2.12V | ȍ | 3.7V | | |
| ȸ | 2.3V | Ȏ | 3.8V | | |
| ȹ | 2.4V | ȏ | 3.9V | | |
| Ⱥ | 2.5V | Ȑ | 4.0V | | |
| Ȼ | 2.6V | ȑ | 4.1V | | |

④

| Code | Week of Mfg | Code | Week of Mfg | Code | Week of Mfg | Code | Week of Mfg | Code | Week of Mfg |
|------|-------------|------|-------------|------|-------------|------|-------------|------|-------------|
| A | 1 | L | 12 | W | 23 | R | 34 | S | 45 |
| B | 2 | M | 13 | X | 24 | T | 35 | ȳ | 46 |
| C | 3 | N | 14 | Y | 25 | J | 36 | Ȅ | 47 |
| D | 4 | O | 15 | Z | 26 | R | 37 | ȅ | 48 |
| E | 5 | P | 16 | Ā | 27 | L | 38 | Ȇ | 49 |
| F | 6 | Q | 17 | B̄ | 28 | M | 39 | ȇ | 50 |
| G | 7 | R | 18 | C̄ | 29 | R | 40 | Ȉ | 51 |
| H | 8 | S | 19 | D̄ | 30 | D̄ | 41 | ȉ | 52 |
| I | 9 | T | 20 | Ē | 31 | F | 42 | | |
| J | 10 | U | 21 | F̄ | 32 | Ḡ | 43 | | |
| K | 11 | V | 22 | Ḡ | 33 | R | 44 | | |

Block Diagram:


Absolute Maximum Ratings:

| | | |
|--|-------|-------------|
| Max input voltage | ----- | 10V |
| Junction Temperature (T _J) | ----- | 125°C |
| Output Current | ----- | 200mA |
| Power Dissipation | | |
| SOT-23-5 | ----- | 200mW |
| SC-70-5 | ----- | 200mW |
| Storage Temperature(T _s) | ----- | -45°C~150°C |
| Lead Temperature and Time | ----- | 260°C, 10S |

Recommended Work Conditions:

| Item | Min | Recommended | Max | unit |
|---------------------|-----|-------------|-----|------|
| Input Voltage Range | | | 8 | V |
| Ambient Temperature | -40 | | 85 | °C |

Electrical Characteristics:

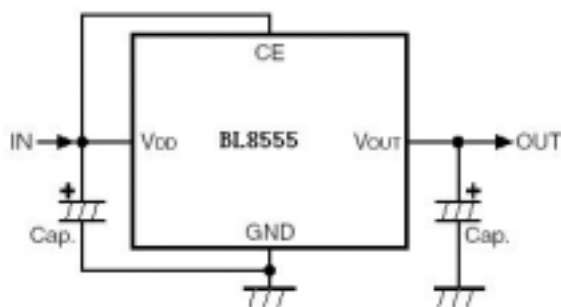
(Test Conditions: C_{in}=1uF, C_{out}=2.2uF, T_A=25°C, unless otherwise specified.)

BL8555, for arbitrary output voltage

| Symbol | Parameter | Conditions | Min | Typ | Max | Units |
|--|---|---|---------------------------|------|---------------------------|--------|
| V _{in} | Input Voltage | | 1.8 | | 8 | V |
| V _{out} | Output Voltage | V _{in} =Set V _{out} +1V 1mA≤I _{out} ≤30mA | V _{out} x0.98 | | V _{out} X1.02 | V |
| I _{out} (Max.) | Maximun Output Current | V _{in} -V _{out} =1V | 150 | | | mA |
| Dropout Voltage | Input-Output Voltage Differentia | Refer to the ELECTRICAL CHARACTERISTICS by OUTPUT VOLTAGE | | | | |
| $\frac{\Delta V_{out}}{\Delta V_{in} \cdot V_{out}}$ | Line Regulation | I _{out} =40mA 1.6V≤V _{in} ≤8V | | 0.05 | 0.2 | %/V |
| $\Delta V_{out} / \Delta I_{out}$ | Load Regulation | V _{in} =Set V _{out} +1V 1mA≤I _{out} ≤80mA | | 12 | 40 | mV |
| I _{ss} | Supply Current | V _{in} =Set V _{out} +1V | | 25 | 50 | uA |
| I _{standby} | Supply Current (S _{randby}) | V _{in} =Set V _{out} +1V V _{ce} =Gnd | | 0.1 | 1.0 | uA |
| $\frac{\Delta V_{out}}{\Delta T \cdot V_{out}}$ | Output Voltage Temperature Coefficiency | I _{out} =30mA | | ±100 | | ppm/°C |
| PSRR | Ripple Rejection | F=1kHz, Ripple=0.5Vp-p V _{in} =Set V _{out} +1V | | 65 | | dB |
| I _{lim} | Short Current Limit | V _{out} =0V | | 20 | | mA |
| R _{pd} | CE Pull down Resistance | | 2.0 | 5.0 | 10.0 | MΩ |
| V _{ceh} | CE Input Voltage "H" | | 1.5 | | V _{in} | V |
| V _{cel} | CE Input Voltage "L" | | 0 | | 0.25 | V |
| f _{en} | Output Noise | BW=10Hz~100kHz | | 27 | | uVrms |

Electrical Characteristics by Output Voltage

| Output Voltage Vout (V) | Dropout Voltage, V _{DIF} (V) | | |
|----------------------------|---------------------------------------|------|------|
| | Condition | Typ. | Max. |
| Vout = 1.5V | Iout = 120mA | 0.38 | 0.70 |
| Vout = 1.6V | | 0.36 | 0.65 |
| Vout = 1.7V | | 0.34 | 0.60 |
| 1.8 ≤ Vout ≤ 2.0 | | 0.32 | 0.55 |
| 2.1 ≤ Vout ≤ 2.7 | | 0.28 | 0.50 |
| 2.8 ≤ Vout ≤ 4.0 | | 0.22 | 0.35 |

Typical Application Circuit:

Application hints:

NOTE1: Input capacitor (C_{in}=1uF) is recommended in all application circuit.

NOTE2: Output capacitor (C_{out}=1uF/2.2uF) is recommended in all application to assure the stability of circuit.

Explanation:

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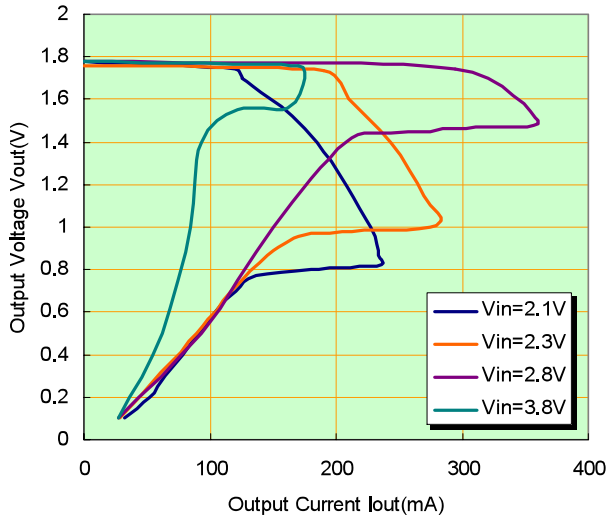
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Typical Performance Characteristics:

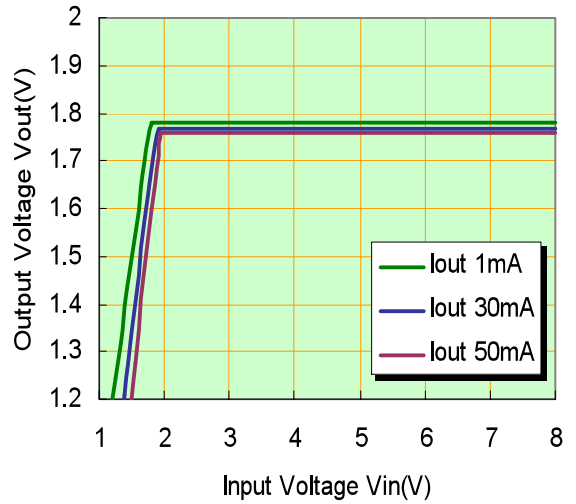
1) Output Voltage vs. Output Current (with output short protection)

BL8555-1.8V

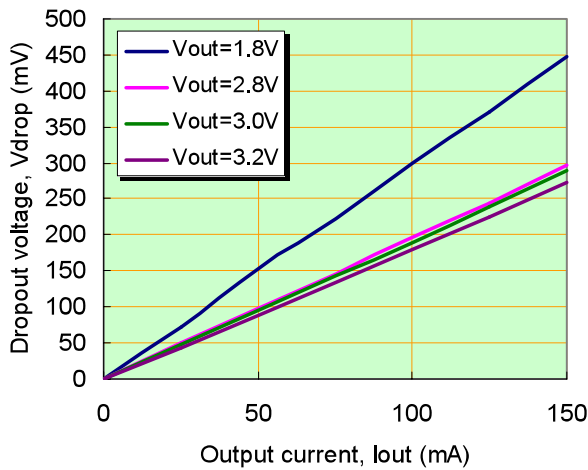


2) Output Voltage vs. Input Voltage

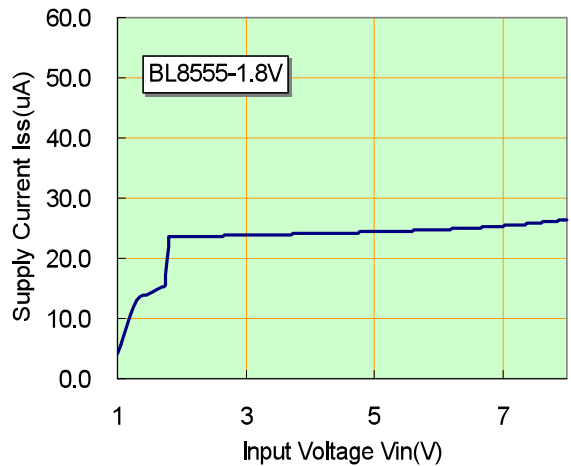
BL8555-1.8V



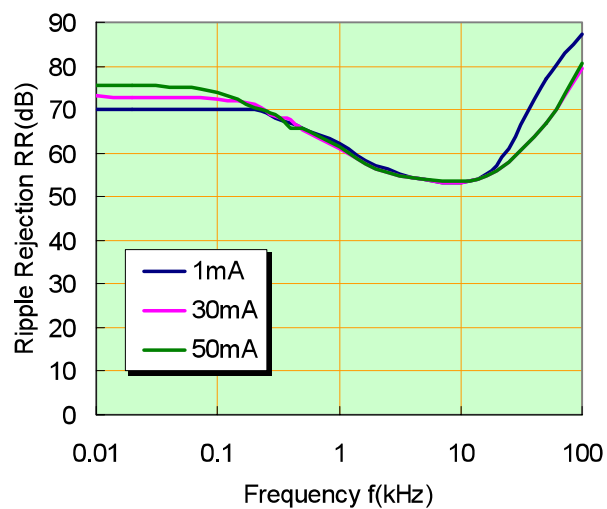
3) Dropout Voltage vs. Output Current



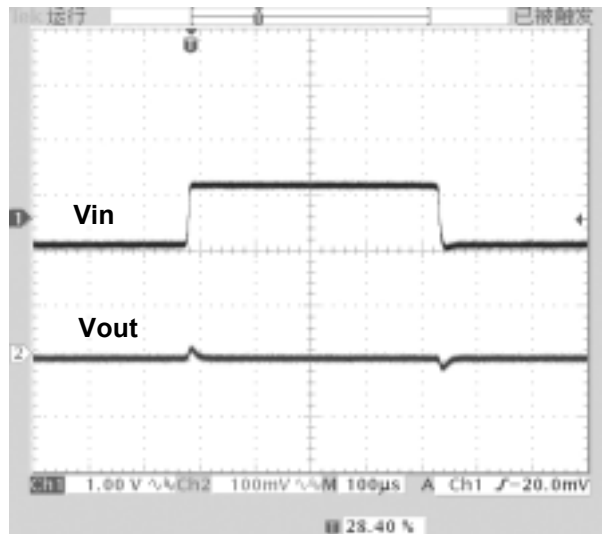
4) Supply Current vs. Input Voltage



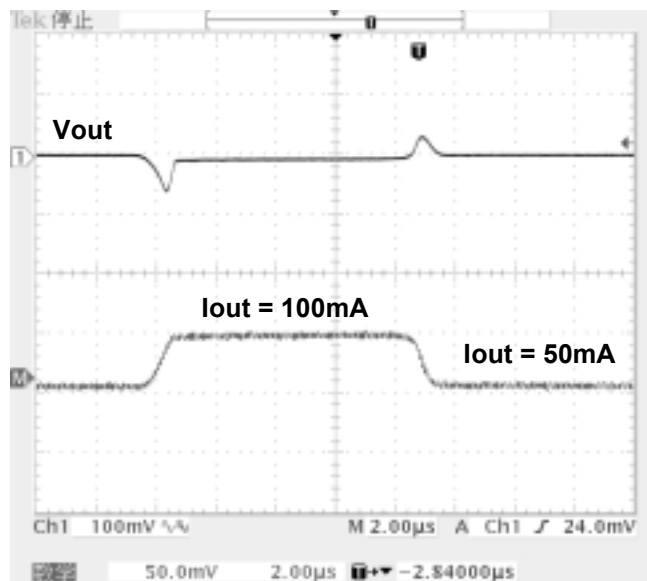
5) Ripple rejection vs. Frequency



6) Line transient response



7) Load transient response



Package Information:
