

GENERAL DESCRIPTION

The HP6018 series are low dropout linear regulators and optimized to provide a high performance solution for battery power system to delivery low quiescent current. The device offer a new level of cost effective performance in cellular phones, laptop and notebook computers, and other portable devices.

HP6018 can provide output value in the range of 1.2V~3.6V by every 0.1V step.

The HP6018 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 HP6018 regulators are available in DFN1x1_4L packages. Standard products are Pb-free and Halogen-free.

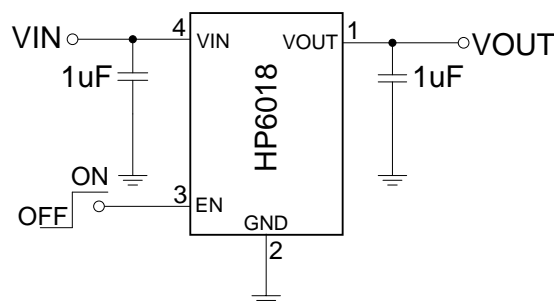
FEATURES

- Input voltage: 2.5V~6.5V
- Output range: 1.2V~3.6V (customized by every 0.1V step)
- Output current: 300mA @ $V_{IN}-V_{OUT}=0.5V$
- Dropout voltage: 100mV @ $I_{OUT}=100mA$
- Quiescent current : 1 μ A Typ.
- Recommend capacitor: 1 μ F

APPLICATIONS

- Reference voltage source
- Toys
- Bluetooth, wireless handsets
- Low Consumption Device
- Others portable electronics device

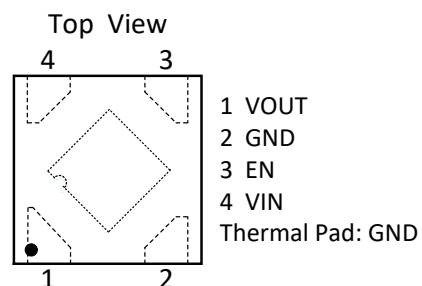
TYPICAL APPLICATION CIRCUIT



PIN ASSIGNMENT



DFN1x1_4L



ORDER INFORMATION

| PART NO | ACCURACY | PACAKGE | TEMPERATURE | TAPE & REEL |
|-------------|----------|-----------|-------------|-------------|
| HP6018D4-XX | 2% | DFN1x1_4L | -40 ~ +85°C | 10000/REEL |

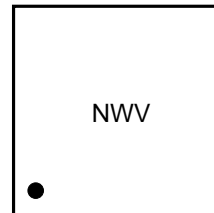
Note: XX indicates 1.2V~3.6V by 0.1V step. For example, 33 means product outputs 3.3V.

PART NUMBER RULES

HP6018 [1] - [2]

| Code | Description |
|------|--|
| [1] | Package: D4: DFN1x1_4L |
| [2] | Voltage version: XX: 1.2V~3.6V by 0.1V step Example: 33: 3.3V |

MARKING DESCRIPTION:



“N”: Product code, here use “U” stands for “HP6018”.

“W”: The week of manufacturing. “A” stands for week 1, “Z” stands for week 26, “a” stands for week 27, “z” stands for week 52.

“V”: Output voltage code.

PIN DESCRIPTION

| PIN NO | SYMBOL | I/O | DESCRIPTION |
|--------|--------|-------|------------------------------------|
| 1 | VOUT | O | Output |
| 2 | GND | GND | Ground |
| 3 | EN | I | Enable (Active high, do not float) |
| 4 | VIN | Power | Input |

ABSOLUTE MAXIMUM RATINGS (Note)

| SYMBOL | ITEMS | VALUE | UNIT | |
|---------------------|--|-----------|------|------|
| V _{IN} | Input Voltage | -0.3~8 | V | |
| I _{OUT} | Output Current | 350 | mA | |
| P _{DMAX} | Power Dissipation | DFN1x1_4L | 0.6 | W |
| R _{θJA} | Thermal Resistance | DFN1x1_4L | 250 | °C/W |
| T _J | Junction Temperature | -40~125 | °C | |
| T _A | Ambient Temperature | -40~85 | °C | |
| T _{STG} | Storage Temperature | -55~150 | °C | |
| T _{SOLDER} | Package Lead Soldering Temperature (10s) | 260 | °C | |

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

RECOMMENDED OPERATING RANGE

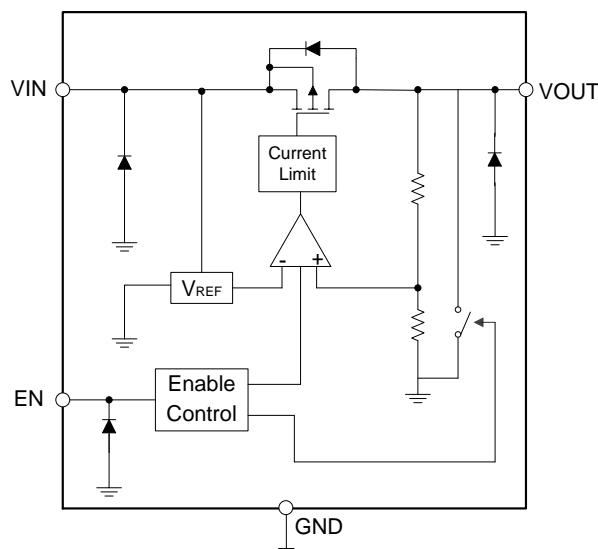
| SYMBOL | ITEMS | VALUE | UNIT |
|-----------|-----------------------|------------|------|
| V_{IN} | Supply Voltage | 2.5 to 6.5 | V |
| T_{OPT} | Operating Temperature | -40 to +85 | °C |

ELECTRICAL CHARACTERISTICS

The following specifications apply for $V_{OUT}=3.3V$, $T_A=25^{\circ}C$, unless otherwise noted.

| SYMBOL | ITEMS | CONDITIONS | MIN | TYP | MAX | UNIT |
|-------------------|-----------------------|--|-----|-----------|----------|---------|
| V_{IN} | Input Voltage | | | | 6.5 | V |
| V_{OUT} | Output Voltage | $I_{OUT}=1mA$ | -2 | V_{OUT} | 2 | % |
| I_Q | Quiescent Current | $V_{OUT}=3.3V, I_{OUT}=0$ | | 1 | 2 | μA |
| I_{LIMIT} | Current Limit | $V_{IN}-V_{OUT}=0.5V$ | | 350 | | mA |
| V_{DROP} | Dropout Voltage | $V_{OUT}=3.3V, I_{OUT}=100mA$ | | 110 | | mV |
| | | $V_{OUT}=3.3V, I_{OUT}=200mA$ | | 230 | | |
| ΔV_{LINE} | Line Regulation | $V_{IN}=2.7\sim 5.5V, I_{OUT}=1mA$ | | 0.01 | | %/V |
| ΔV_{LOAD} | Load Regulation | $V_{OUT}=3.3V, I_{OUT}=1\sim 300mA$ | | 100 | | mV |
| I_{SHORT} | Short Current | $V_{EN}=V_{IN}, V_{OUT}$ Short to GND with 1Ω | | 90 | | mA |
| I_{SHDN} | Shut-down Current | $V_{EN}=0V$ | | 0.1 | 1 | μA |
| V_{ENH} | EN Logic High Voltage | $V_{IN}=5.5V, I_{OUT}=1mA$ | 1.2 | | V_{IN} | V |
| V_{ENL} | EN Logic Low Voltage | $V_{IN}=5.5V, V_{OUT}=0V$ | | | 0.4 | V |
| I_{EN} | EN Input Current | $V_{EN}= 0$ to 5.5V | | | 1.0 | μA |

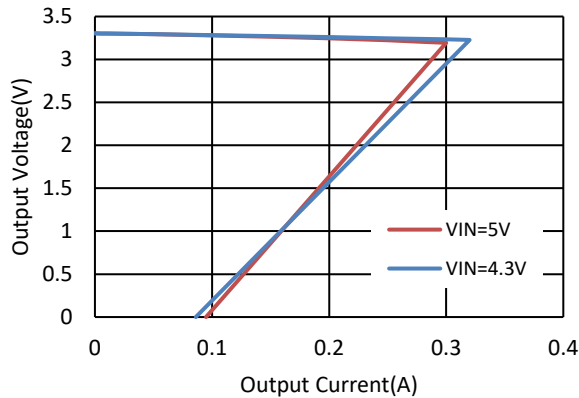
SIMPLIFIED BLOCK DIAGRAM



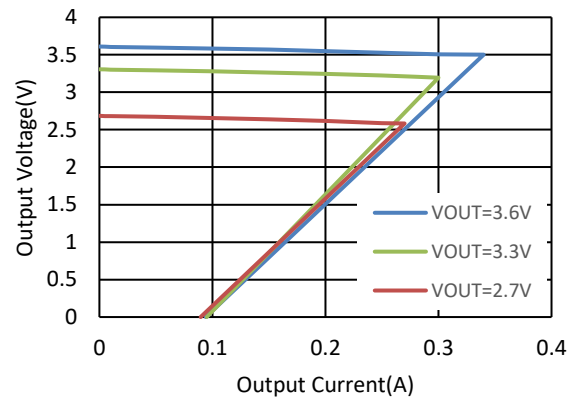
TYPICAL PERFORMANCE CHARACTERISTICS

$C_{IN}=1\mu F$, $C_{OUT}=1\mu F$, $T_{OPT}=25^{\circ}C$, $V_{IN}=5V$, $V_{OUT}=3.3V$, unless otherwise noted.

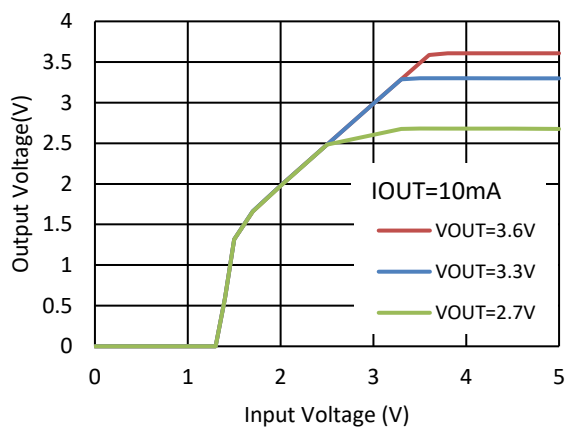
Output Voltage vs. Output Current



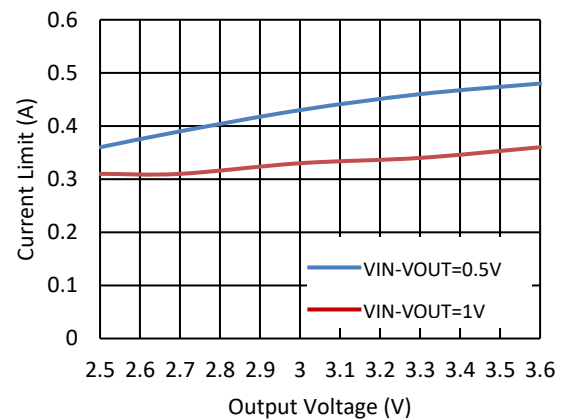
Output Voltage vs. Output Current



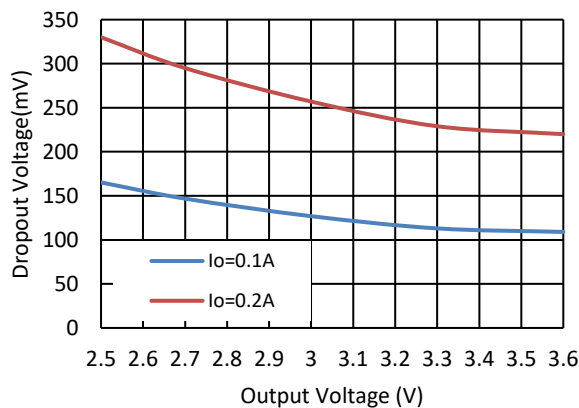
Output Voltage vs. Input Voltage



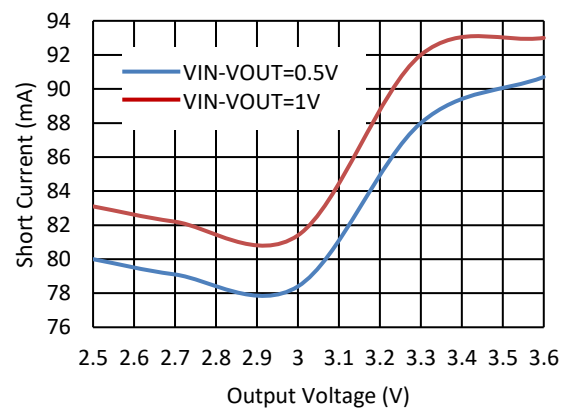
Current Limit vs. Output Voltage



Dropout Voltage vs. Output Voltage

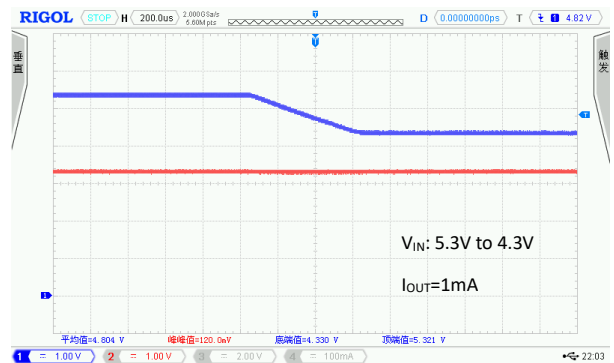
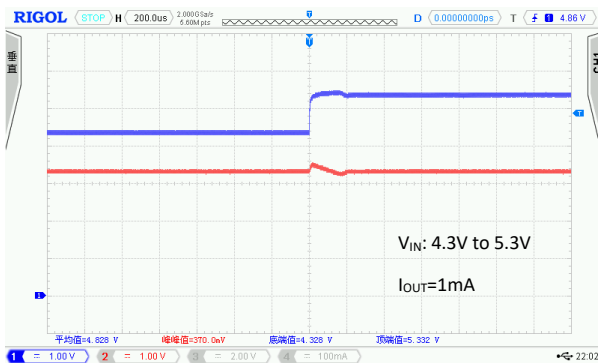
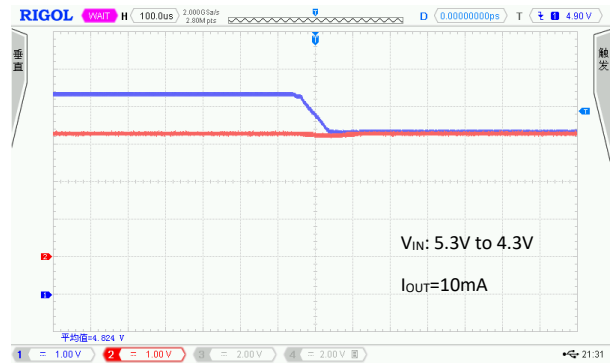
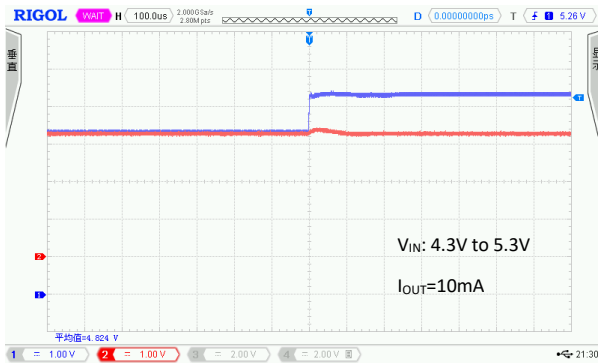


Short Current vs. Output Voltage



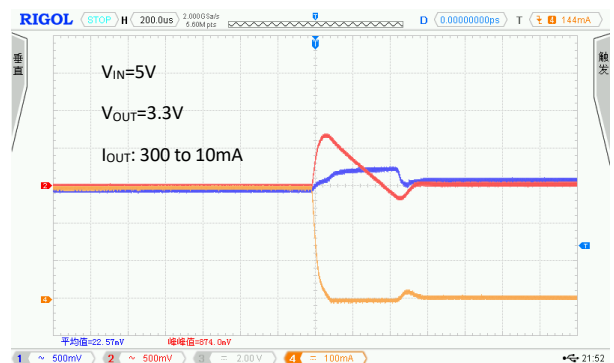
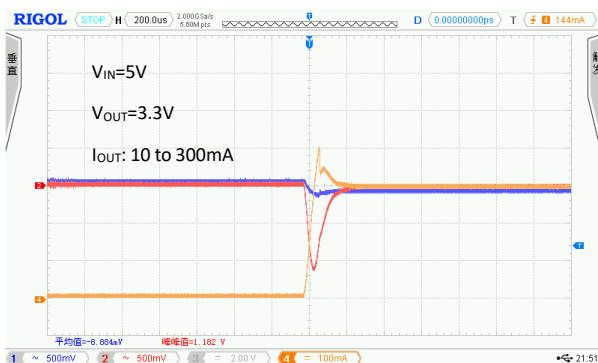
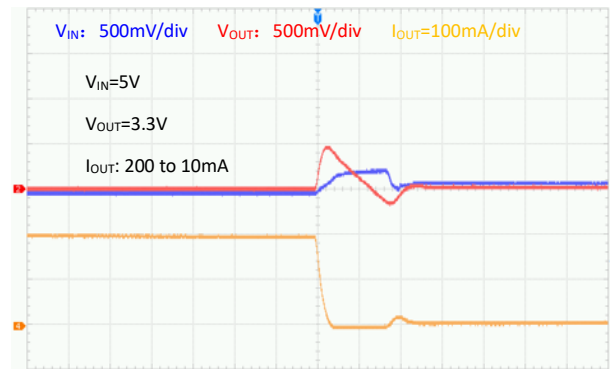
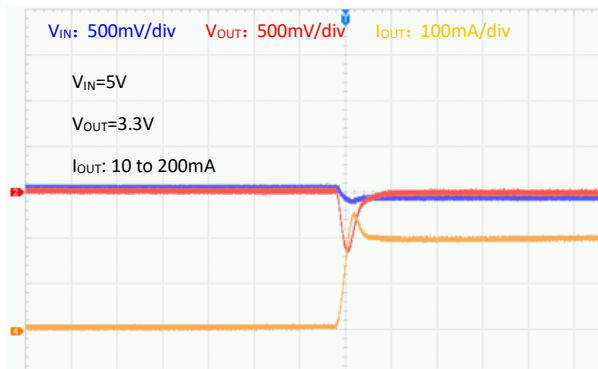
Line Transient Response

CH1: V_{IN} CH2: V_{OUT}



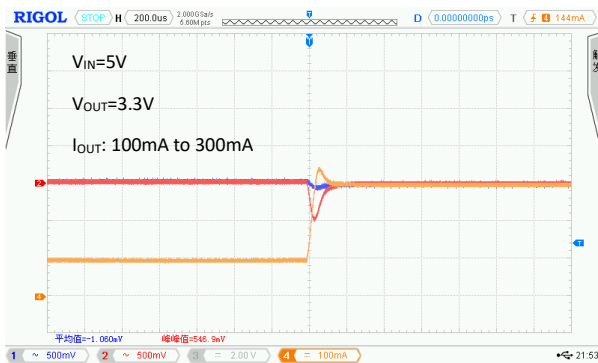
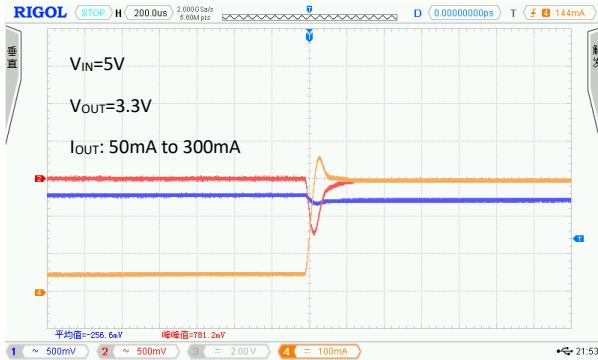
Load Transient Response

CH1: V_{IN} CH2: V_{OUT} CH3: I_{OUT}



Load Transient Response

CH1: V_{IN} CH2: V_{OUT} CH3: I_{OUT}



PACKAGE OUTLINE

| Package | DFN1x1_4L | Devices per reel | 10000Pcs | Unit | mm |
|--|-----------|--|----------|------|----|
| Package Dimension: | | | | | |
| <p style="text-align: center;">TOP VIEW [顶视图]</p> | | <p style="text-align: center;">SIDE VIEW 侧视图</p> | | | |
| <p style="text-align: center;">BOTTOM VIEW 背视图</p> | | | | | |

REVISION HISTORY

| Version No. | Date | Description |
|--------------------|-------------|--|
| Preliminary | 2017-10-26 | - Initial preliminary release |
| Version 1.0 | 2018-07-31 | - Remove 1% accuracy version and change PN rules |
| Version 1.1 | 2018-12-18 | - Update DFN1x1_4L package dimension |
| | | - |

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