

GENERAL DESCRIPTION

BL8071 series are a group of positive voltage output, high precise, and low power consumption voltage regulator. Voltages are selectable in 100mV steps within a range of 1.2V to 5.0V. It also can be customized on command.

BL8071 series have 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 $\pm 2\%$.

BL8071 series are available in SOT-223 package, which are lead (Pb)- free.

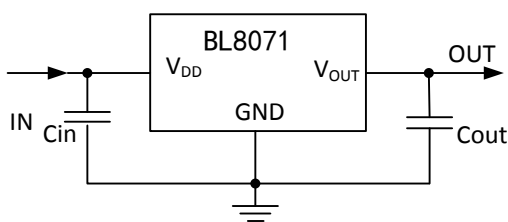
FEATURES

- Low Quiescent Current: 100uA at 5V
- High PSRR: 70dB range to 1KHz
- Low Output Noise: 44uVRMS
- Low Dropout: 300mV at 1A load
- Maximum output current: 1.5A
- Highly Accurate: $\pm 2\%$
- Low ESR Ceramic Capacitor Compatible

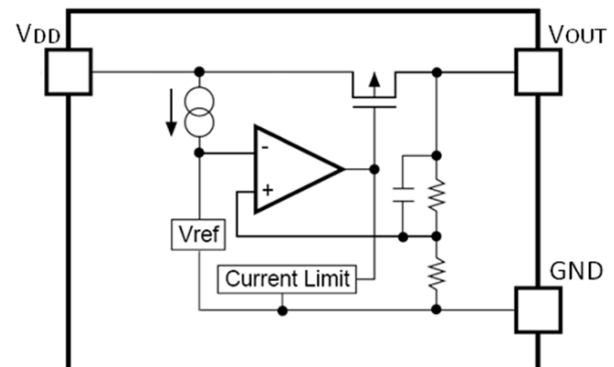
APPLICATIONS

- Reference Voltage Source
- Battery Powered Equipment
- PC Peripherals
- Wireless Devices
- Instrumentation

TYPICAL APPLICATION



BLOCK DIAGRAM

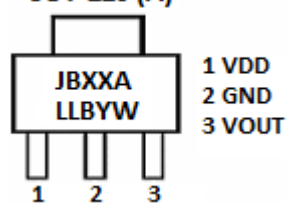
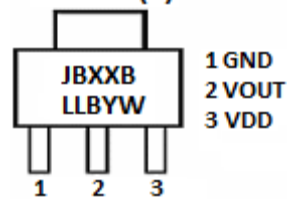


ORDERING INFORMATION

BL8071 ①②③④⑤

| Code | Description |
|------|---|
| ① | Temperature&Rohs: C:-40~85°C ,Pb Free Rohs Std. |
| ② | Package type: LA: SOT-223 (A) LB: SOT-223 (B) |
| ③ | Packing type: TR:Tape&Reel (Standard) |
| ④ | Output voltage: e.g. 12=1.2V 18=1.8V 25=2.5V 33=3.3V 50=5.0V |
| ⑤ | Voltage accuracy: 1=±1%(Customized) Blank(default)=±2% |

PIN CONFIGURATION

| | | |
|------------------------|----------------------|---|
| Product Classification | | BL8071CLATR□□ |
| JBXX LLBYW | JB:Product Code | SOT-223 (A)  |
| | XX:Output Voltage | |
| | A: A type | |
| | LL:LOT NO. | |
| | B:FAB Code | |
| | YW:Date Code | |
| Product Classification | | BL8071CLBTR□□ |
| JBXX LLBYW | JB:Product Code | SOT-223 (B)  |
| | XX:Output Voltage | |
| | B: B type | |
| | LL:LOT NO. | |
| | B:FAB Code | |
| | YW:Date Code | |
| VDD | Supply Voltage Input | |
| GND | Ground Pin | |
| VOUT | Output Voltage | |

Y: The Year of manufacturing, "1" stands for year 2011, "2" stands for year 2012, and "8" stands for year 2018.
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.

ABSOLUTE MAXIMUM RATING

| Parameter | | Value |
|--|---------|---------------|
| Max Input Voltage | | 8V |
| Operating Junction Temperature (T _J) | | 125°C |
| Ambient Temperature (T _A) | | -40°C~85°C |
| Package Thermal Resistance | SOT-223 | 20°C / W |
| Storage Temperature (T _S) | | -40°C~150°C |
| Lead Temperature & Time | | 260°C, 10 Sec |

Note: Exceed these limits to damage to the device.

Exposure to absolute maximum rating conditions may affect device reliability.

RECOMMENDED WORK CONDITIONS

| Parameter | | Value |
|---------------------|--|------------|
| Input Voltage Range | | Max. 6V |
| Ambient Temperature | | -40°C~85°C |

ELECTRICAL CHARACTERISTICS

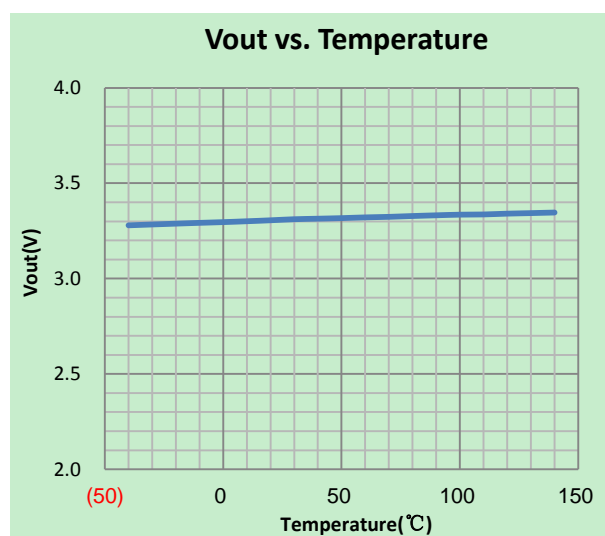
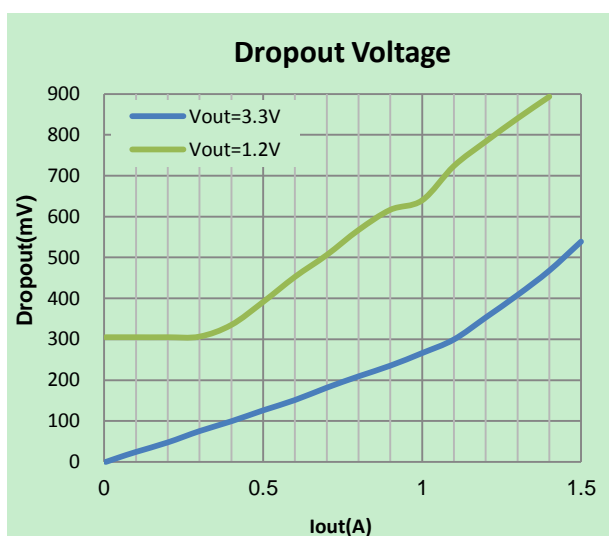
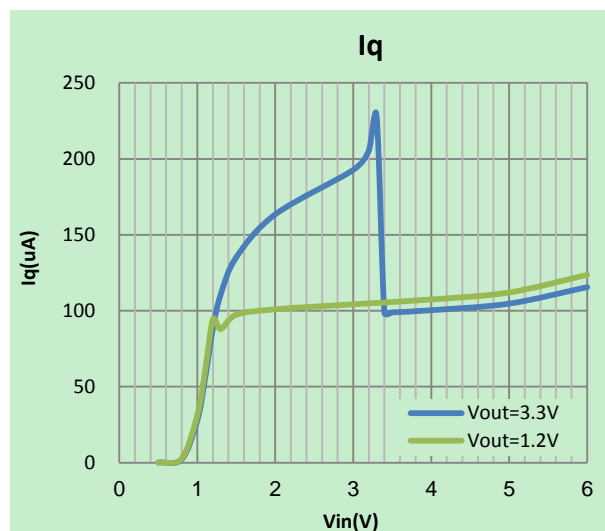
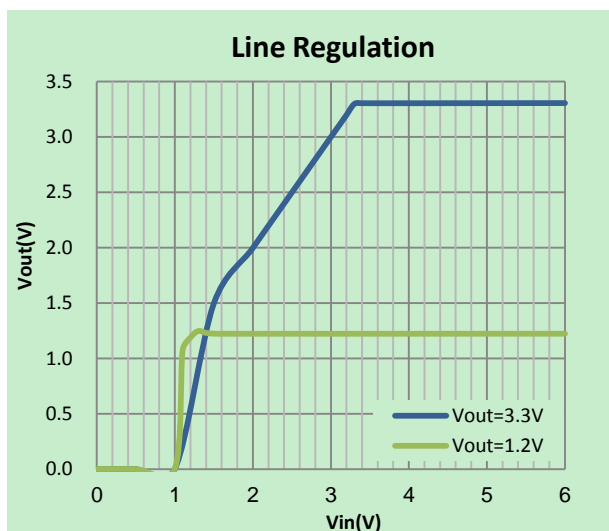
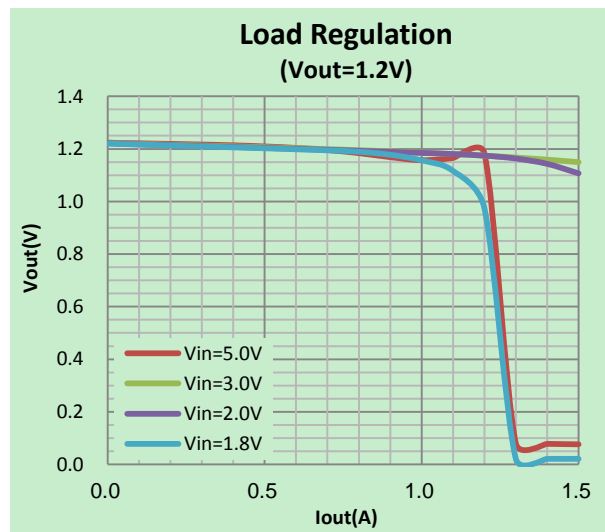
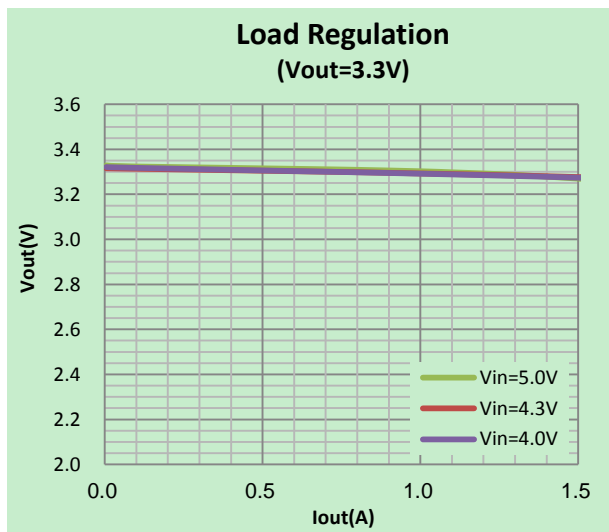
Test Conditions: C_{IN}=4.7uF, C_{OUT}=4.7uF, T_A=25°C, unless otherwise specified.

| Symbol | Parameter | Conditions | Min | Typ | Max | Units | |
|--|--|---|---|---------------------------|------------------|---------------------------|---|
| V _{DD} | Input Voltage | | 1.5* | | 6 | V | |
| V _{OUT} | Output Voltage | V _{OUT} >1.5 | V _{DD} =Set V _{OUT} +1V | V _{OUT} X0.98 | V _{OUT} | V _{OUT} X1.02 | V |
| | | V _{OUT} <=1.5 | 1mA≤I _{OUT} ≤10mA | V _{OUT} -0.03 | | V _{OUT} +0.03 | |
| I _{OUT} (Max.) ** | Maximum Output Current | V _{DD} -V _{OUT} =1V | 1.5 | | | A | |
| V _{DROP} | Dropout Voltage | V _{OUT} = 3.3V, I _{OUT} =1A | | 300 | 500 | mV | |
| $\frac{\Delta V_{out}}{\Delta V_{in} \cdot V_{out}}$ | Line Regulation | I _{OUT} =10mA, 4V≤V _{DD} ≤6V | | 0.05 | 0.2 | %/V | |
| ΔV _{out} | Load Regulation | V _{DD} =Set V _{OUT} +1V 1mA≤I _{OUT} ≤2.5A | | 30 | 60 | mV | |
| I _S | Supply Current | V _{DD} =Set V _{OUT} +1V, V _{OUT} Floating | | 100 | 150 | uA | |
| $\frac{\Delta V_{out}}{\Delta T \cdot V_{out}}$ | Output Voltage Temperature Coefficient | I _{OUT} =10mA | | ±100 | | ppm/°C | |
| PSRR | Ripple Rejection | f=100Hz, Ripple=0.5Vp-p, V _{DD} =Set V _{OUT} +1V | | 70 | | dB | |
| en | Output Noise | BW=10Hz~100KHz | | 44 | | uVrms | |

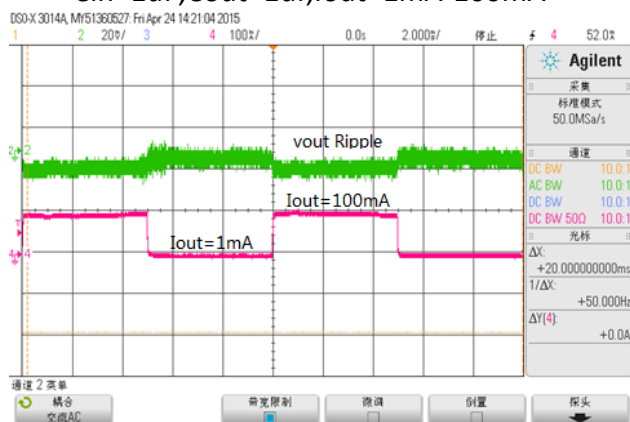
Note: *I_{out}=500mA@V_{out}=1.2V

**The maximum power rating of each package is a constant, so along with the change of I_{LOAD}, the V_{DD}-V_{OUT} should be controlled to a certain range to ensure the normal operation.

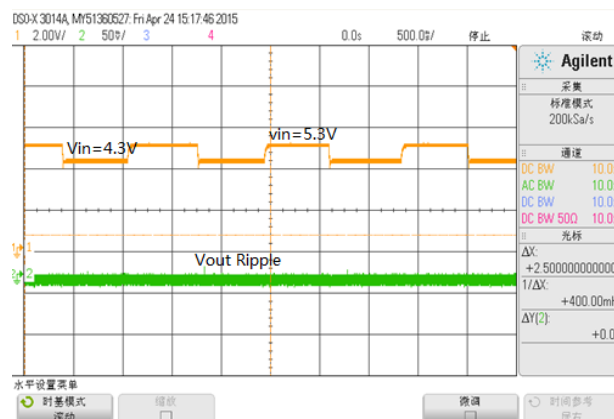
TYPICAL PERFORMANCE CHARACTERISTICS



Load Transient Response (Vin=5V, Vout=3.3V) Cin=1uF, Cout=1uF, Iout=1mA-100mA



Line Transient Response (Vin=5V, Vout=3.3V) Cin=1uF, Cout=1uF, Iout=10mA, Vin=4.3V-5.3V



PACKAGE LINE

| Package | SOT-223 | Devices per reel | 2500Pcs | Unit | mm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|------------------------|---------|------------------|---|------|----|--------|-----|-----|-----|---|---|---|------|----|------|---|------|----|------|------|------|----|------|------|------|---|------|---|------|----|------|------|------|----|------|---|------|----|------|------|------|---|------|---|------|----|------|------|------|---|------|------|------|----|------|------|------|----|---|---|------|---|------|---|------|----|------|------|------|----|------|------|------|---|---------|--|--|----|---------|--|--|---|------|------|------|----|---------|--|--|----|---------|--|--|---|------|---|---|----|------|---|---|-------|----|---|----|---------|-----|-----|-----|
| Package specification: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | <p>COMMON DIMENSIONS (UNITS OF MEASURE=MILLIMETER)</p> <table border="1"> <thead> <tr> <th>SYMBOL</th> <th>MIN</th> <th>NOM</th> <th>MAX</th> </tr> </thead> <tbody> <tr><td>A</td><td>-</td><td>-</td><td>1.80</td></tr> <tr><td>A1</td><td>0.02</td><td>-</td><td>0.10</td></tr> <tr><td>A2</td><td>1.50</td><td>1.60</td><td>1.70</td></tr> <tr><td>A3</td><td>0.80</td><td>0.90</td><td>1.00</td></tr> <tr><td>b</td><td>0.67</td><td>-</td><td>0.80</td></tr> <tr><td>b1</td><td>0.66</td><td>0.71</td><td>0.76</td></tr> <tr><td>b2</td><td>2.96</td><td>-</td><td>3.09</td></tr> <tr><td>b3</td><td>2.95</td><td>3.00</td><td>3.05</td></tr> <tr><td>c</td><td>0.30</td><td>-</td><td>0.35</td></tr> <tr><td>c1</td><td>0.29</td><td>0.30</td><td>0.31</td></tr> <tr><td>D</td><td>6.48</td><td>6.53</td><td>6.58</td></tr> <tr><td>D1</td><td>6.55</td><td>6.60</td><td>6.65</td></tr> <tr><td>D2</td><td>-</td><td>-</td><td>7.05</td></tr> <tr><td>E</td><td>6.80</td><td>-</td><td>7.20</td></tr> <tr><td>E1</td><td>3.40</td><td>3.50</td><td>3.60</td></tr> <tr><td>E2</td><td>3.33</td><td>3.43</td><td>3.53</td></tr> <tr><td>e</td><td colspan="3">2.30BSC</td></tr> <tr><td>e1</td><td colspan="3">4.60BSC</td></tr> <tr><td>L</td><td>0.80</td><td>1.00</td><td>1.20</td></tr> <tr><td>L1</td><td colspan="3">1.75REF</td></tr> <tr><td>L2</td><td colspan="3">0.25BSC</td></tr> <tr><td>R</td><td>0.10</td><td>-</td><td>-</td></tr> <tr><td>R1</td><td>0.10</td><td>-</td><td>-</td></tr> <tr><td>theta</td><td>0°</td><td>-</td><td>8°</td></tr> <tr><td>theta 1</td><td>10°</td><td>12°</td><td>14°</td></tr> </tbody> </table> <p>NOTES: ALL DIMENSIONS REFER TO JEDEC STANDARD TO261-AA</p> | | | SYMBOL | MIN | NOM | MAX | A | - | - | 1.80 | A1 | 0.02 | - | 0.10 | A2 | 1.50 | 1.60 | 1.70 | A3 | 0.80 | 0.90 | 1.00 | b | 0.67 | - | 0.80 | b1 | 0.66 | 0.71 | 0.76 | b2 | 2.96 | - | 3.09 | b3 | 2.95 | 3.00 | 3.05 | c | 0.30 | - | 0.35 | c1 | 0.29 | 0.30 | 0.31 | D | 6.48 | 6.53 | 6.58 | D1 | 6.55 | 6.60 | 6.65 | D2 | - | - | 7.05 | E | 6.80 | - | 7.20 | E1 | 3.40 | 3.50 | 3.60 | E2 | 3.33 | 3.43 | 3.53 | e | 2.30BSC | | | e1 | 4.60BSC | | | L | 0.80 | 1.00 | 1.20 | L1 | 1.75REF | | | L2 | 0.25BSC | | | R | 0.10 | - | - | R1 | 0.10 | - | - | theta | 0° | - | 8° | theta 1 | 10° | 12° | 14° |
| SYMBOL | MIN | NOM | MAX | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| A | - | - | 1.80 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| A1 | 0.02 | - | 0.10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| A2 | 1.50 | 1.60 | 1.70 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| A3 | 0.80 | 0.90 | 1.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| b | 0.67 | - | 0.80 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| b1 | 0.66 | 0.71 | 0.76 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| b2 | 2.96 | - | 3.09 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| b3 | 2.95 | 3.00 | 3.05 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| c | 0.30 | - | 0.35 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| c1 | 0.29 | 0.30 | 0.31 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D | 6.48 | 6.53 | 6.58 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D1 | 6.55 | 6.60 | 6.65 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D2 | - | - | 7.05 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| E | 6.80 | - | 7.20 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| E1 | 3.40 | 3.50 | 3.60 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| E2 | 3.33 | 3.43 | 3.53 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| e | 2.30BSC | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| e1 | 4.60BSC | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| L | 0.80 | 1.00 | 1.20 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| L1 | 1.75REF | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| L2 | 0.25BSC | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| R | 0.10 | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| R1 | 0.10 | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| theta | 0° | - | 8° | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| theta 1 | 10° | 12° | 14° | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |