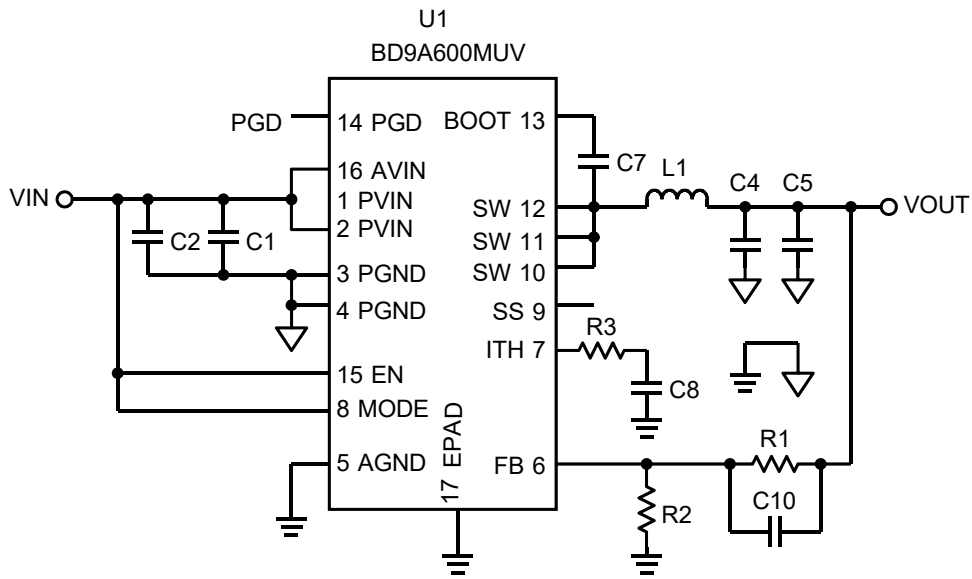


DC/DC Converter Reference Circuit

| | |
|-----------------|---|
| IC Product Name | BD9A600MUV |
| Topology | Buck (Step-Down) Switching Regulator |
| Type | Non-Isolation |

| | Input | Output |
|----|---------------|----------|
| 1 | 2.7V to 4.0V | 1.0V, 6A |
| 2 | 2.7V to 4.0V | 1.1V, 6A |
| 3 | 2.7V to 4.0V | 1.2V, 6A |
| 4 | 2.7V to 4.0V | 1.5V, 6A |
| 5 | 2.7V to 4.0V | 1.8V, 6A |
| 6 | 4.0V to 5.5V | 1.0V, 6A |
| 7 | 4.0V to 5.5V | 1.1V, 6A |
| 8 | 4.0V to 5.5V | 1.2V, 6A |
| 9 | 4.0V to 5.5V | 1.5V, 6A |
| 10 | 4.0V to 5.5V | 1.8V, 6A |
| 11 | 4.71V to 5.5V | 3.3V, 6A |

■ Typical Application Circuit



■ MODE terminal setting (8-pin)

| Terminal state | IC operation |
|----------------|---|
| High | Automatic switching operation between PWM and light load mode |
| Low | PWM fixing operation |

■ SS terminal setting (9-pin)

| Terminal state | Soft start time |
|----------------------|--|
| Open | $T_{SS} = 1[ms]$ |
| Capacitor connection | $T_{SS} = \frac{C \times 0.8}{1.8 \times 10^{-6}} [s]$ |

■ EN terminal setting (15-pin)

| Terminal state | IC operation |
|----------------|------------------|
| 2.0V to AVIN | Normal operation |
| GND to 0.8V | Power down |

■ Output voltage setting

$$V_{OUT} = \frac{R_1 + R_2}{R_2} \times 0.8 [V]$$

Input/output voltage conditions are required to satisfy the following equations:

$$V_{OUT} = 0.8V \sim (V_{IN} \times 0.7)V$$

■ Bill of Materials

1. $V_O=1.0V$ ($V_{IN}=2.7V$ to $4.0V$)

| Count | Reference Designator | Type | Value | Description | Manufacturer Part Number | Manufacturer | Configuration (mm) |
|-------|----------------------|-------------------|---------------|---|--------------------------|--------------|--------------------|
| 1 | C1 | Ceramic Capacitor | 0.1 μ F | 16V, X5R, \pm 10% | GRM155R61C104KA88 | MURATA | 1005 |
| 1 | C2 | Ceramic Capacitor | 10 μ F | 10V, X5R, \pm 10% | GRM31CR61A106KA01 | MURATA | 3216 |
| 2 | C4, C5 | Ceramic Capacitor | 22 μ F | 10V, X5R, \pm 20% | GRM21BR61A226ME44 | MURATA | 2012 |
| 1 | C7 | Ceramic Capacitor | 0.47 μ F | 16V, X5R, \pm 20% | GRM188R61C474MA12 | MURATA | 1608 |
| 1 | C8 | Ceramic Capacitor | 5600pF | 25V, X7R, \pm 10% | GRM155R71E562KA01 | MURATA | 1005 |
| 1 | C10 | Ceramic Capacitor | 470pF | 50V, X7R, \pm 10% | GRM155R71H471KA01 | MURATA | 1005 |
| 1 | L1 | Inductor | 1.0 μ H | See the recommended inductor list of separate volume. | | | |
| 1 | R1 | Resistor | 7.5k Ω | 0.063W, 50V, 1% | MCR01MZPF7501 | ROHM | 1005 |
| 1 | R2 | Resistor | 30k Ω | 0.063W, 50V, 1% | MCR01MZPF3002 | ROHM | 1005 |
| 1 | R3 | Resistor | 5.1k Ω | 0.063W, 50V, 5% | MCR01MZPJ512 | ROHM | 1005 |
| 1 | U1 | IC | - | Buck DC/DC Converter | BD9A600MUV | ROHM | VQFN016V3030 |

2. $V_O=1.1V$ ($V_{IN}=2.7V$ to $4.0V$)

| Count | Reference Designator | Type | Value | Description | Manufacturer Part Number | Manufacturer | Configuration (mm) |
|-------|----------------------|-------------------|---------------|---|--------------------------|--------------|--------------------|
| 1 | C1 | Ceramic Capacitor | 0.1 μ F | 16V, X5R, \pm 10% | GRM155R61C104KA88 | MURATA | 1005 |
| 1 | C2 | Ceramic Capacitor | 10 μ F | 10V, X5R, \pm 10% | GRM31CR61A106KA01 | MURATA | 3216 |
| 2 | C4, C5 | Ceramic Capacitor | 22 μ F | 10V, X5R, \pm 20% | GRM21BR61A226ME44 | MURATA | 2012 |
| 1 | C7 | Ceramic Capacitor | 0.47 μ F | 16V, X5R, \pm 20% | GRM188R61C474MA12 | MURATA | 1608 |
| 1 | C8 | Ceramic Capacitor | 5600pF | 25V, X7R, \pm 10% | GRM155R71E562KA01 | MURATA | 1005 |
| 1 | C10 | Ceramic Capacitor | 330pF | 50V, X7R, \pm 10% | GRM155R71H331KA01 | MURATA | 1005 |
| 1 | L1 | Inductor | 1.0 μ H | See the recommended inductor list of separate volume. | | | |
| 1 | R1 | Resistor | 10k Ω | 0.063W, 50V, 1% | MCR01MZPF1002 | ROHM | 1005 |
| 1 | R2 | Resistor | 27k Ω | 0.063W, 50V, 1% | MCR01MZPF2702 | ROHM | 1005 |
| 1 | R3 | Resistor | 5.6k Ω | 0.063W, 50V, 5% | MCR01MZPJ562 | ROHM | 1005 |
| 1 | U1 | IC | - | Buck DC/DC Converter | BD9A600MUV | ROHM | VQFN016V3030 |

3. $V_O=1.2V$ ($V_{IN}=2.7V$ to $4.0V$)

| Count | Reference Designator | Type | Value | Description | Manufacturer Part Number | Manufacturer | Configuration (mm) |
|-------|----------------------|-------------------|---------------|---|--------------------------|--------------|--------------------|
| 1 | C1 | Ceramic Capacitor | 0.1 μ F | 16V, X5R, \pm 10% | GRM155R61C104KA88 | MURATA | 1005 |
| 1 | C2 | Ceramic Capacitor | 10 μ F | 10V, X5R, \pm 10% | GRM31CR61A106KA01 | MURATA | 3216 |
| 2 | C4, C5 | Ceramic Capacitor | 22 μ F | 10V, X5R, \pm 20% | GRM21BR61A226ME44 | MURATA | 2012 |
| 1 | C7 | Ceramic Capacitor | 0.47 μ F | 16V, X5R, \pm 20% | GRM188R61C474MA12 | MURATA | 1608 |
| 1 | C8 | Ceramic Capacitor | 5600pF | 25V, X7R, \pm 10% | GRM155R71E562KA01 | MURATA | 1005 |
| 1 | C10 | Ceramic Capacitor | 330pF | 50V, X7R, \pm 10% | GRM155R71H331KA01 | MURATA | 1005 |
| 1 | L1 | Inductor | 1.0 μ H | See the recommended inductor list of separate volume. | | | |
| 1 | R1 | Resistor | 10k Ω | 0.063W, 50V, 1% | MCR01MZPF1002 | ROHM | 1005 |
| 1 | R2 | Resistor | 20k Ω | 0.063W, 50V, 1% | MCR01MZPF2002 | ROHM | 1005 |
| 1 | R3 | Resistor | 6.2k Ω | 0.063W, 50V, 5% | MCR01MZPJ622 | ROHM | 1005 |
| 1 | U1 | IC | - | Buck DC/DC Converter | BD9A600MUV | ROHM | VQFN016V3030 |

■ Bill of Materials (continued)

4. $V_O=1.5V$ ($V_{IN}=2.7V$ to $4.0V$)

| Count | Reference Designator | Type | Value | Description | Manufacturer Part Number | Manufacturer | Configuration (mm) |
|-------|----------------------|-------------------|---------------|---|--------------------------|--------------|--------------------|
| 1 | C1 | Ceramic Capacitor | 0.1 μ F | 16V, X5R, \pm 10% | GRM155R61C104KA88 | MURATA | 1005 |
| 1 | C2 | Ceramic Capacitor | 10 μ F | 10V, X5R, \pm 10% | GRM31CR61A106KA01 | MURATA | 3216 |
| 2 | C4, C5 | Ceramic Capacitor | 22 μ F | 10V, X5R, \pm 20% | GRM21BR61A226ME44 | MURATA | 2012 |
| 1 | C7 | Ceramic Capacitor | 0.47 μ F | 16V, X5R, \pm 20% | GRM188R61C474MA12 | MURATA | 1608 |
| 1 | C8 | Ceramic Capacitor | 5600pF | 25V, X7R, \pm 10% | GRM155R71E562KA01 | MURATA | 1005 |
| 1 | C10 | Ceramic Capacitor | 220pF | 50V, X7R, \pm 10% | GRM155R71H221KA01 | MURATA | 1005 |
| 1 | L1 | Inductor | 1.0 μ H | See the recommended inductor list of separate volume. | | | |
| 1 | R1 | Resistor | 16k Ω | 0.063W, 50V, 1% | MCR01MZPF1602 | ROHM | 1005 |
| 1 | R2 | Resistor | 18k Ω | 0.063W, 50V, 1% | MCR01MZPF1802 | ROHM | 1005 |
| 1 | R3 | Resistor | 7.5k Ω | 0.063W, 50V, 5% | MCR01MZPJ752 | ROHM | 1005 |
| 1 | U1 | IC | - | Buck DC/DC Converter | BD9A600MUV | ROHM | VQFN016V3030 |

5. $V_O=1.8V$ ($V_{IN}=2.7V$ to $4.0V$)

| Count | Reference Designator | Type | Value | Description | Manufacturer Part Number | Manufacturer | Configuration (mm) |
|-------|----------------------|-------------------|---------------|---|--------------------------|--------------|--------------------|
| 1 | C1 | Ceramic Capacitor | 0.1 μ F | 16V, X5R, \pm 10% | GRM155R61C104KA88 | MURATA | 1005 |
| 1 | C2 | Ceramic Capacitor | 10 μ F | 10V, X5R, \pm 10% | GRM31CR61A106KA01 | MURATA | 3216 |
| 2 | C4, C5 | Ceramic Capacitor | 22 μ F | 10V, X5R, \pm 20% | GRM21BR61A226ME44 | MURATA | 2012 |
| 1 | C7 | Ceramic Capacitor | 0.47 μ F | 16V, X5R, \pm 20% | GRM188R61C474MA12 | MURATA | 1608 |
| 1 | C8 | Ceramic Capacitor | 5600pF | 25V, X7R, \pm 10% | GRM155R71E562KA01 | MURATA | 1005 |
| 1 | C10 | Ceramic Capacitor | 100pF | 25V, CH, \pm 5% | GRM1552C1E101JA01 | MURATA | 1005 |
| 1 | L1 | Inductor | 1.0 μ H | See the recommended inductor list of separate volume. | | | |
| 1 | R1 | Resistor | 30k Ω | 0.063W, 50V, 1% | MCR01MZPF3002 | ROHM | 1005 |
| 1 | R2 | Resistor | 24k Ω | 0.063W, 50V, 1% | MCR01MZPF2402 | ROHM | 1005 |
| 1 | R3 | Resistor | 9.1k Ω | 0.063W, 50V, 5% | MCR01MZPJ912 | ROHM | 1005 |
| 1 | U1 | IC | - | Buck DC/DC Converter | BD9A600MUV | ROHM | VQFN016V3030 |

6. $V_O=1.0V$ ($V_{IN}=4.0V$ to $5.5V$)

| Count | Reference Designator | Type | Value | Description | Manufacturer Part Number | Manufacturer | Configuration (mm) |
|-------|----------------------|-------------------|---------------|---|--------------------------|--------------|--------------------|
| 1 | C1 | Ceramic Capacitor | 0.1 μ F | 16V, X5R, \pm 10% | GRM155R61C104KA88 | MURATA | 1005 |
| 1 | C2 | Ceramic Capacitor | 10 μ F | 10V, X5R, \pm 10% | GRM31CR61A106KA01 | MURATA | 3216 |
| 2 | C4, C5 | Ceramic Capacitor | 22 μ F | 10V, X5R, \pm 20% | GRM21BR61A226ME44 | MURATA | 2012 |
| 1 | C7 | Ceramic Capacitor | 0.47 μ F | 16V, X5R, \pm 20% | GRM188R61C474MA12 | MURATA | 1608 |
| 1 | C8 | Ceramic Capacitor | 5600pF | 25V, X7R, \pm 10% | GRM155R71E562KA01 | MURATA | 1005 |
| 1 | C10 | Ceramic Capacitor | 470pF | 50V, X7R, \pm 10% | GRM155R71H471KA01 | MURATA | 1005 |
| 1 | L1 | Inductor | 1.0 μ H | See the recommended inductor list of separate volume. | | | |
| 1 | R1 | Resistor | 7.5k Ω | 0.063W, 50V, 1% | MCR01MZPF7501 | ROHM | 1005 |
| 1 | R2 | Resistor | 30k Ω | 0.063W, 50V, 1% | MCR01MZPF3002 | ROHM | 1005 |
| 1 | R3 | Resistor | 4.3k Ω | 0.063W, 50V, 5% | MCR01MZPJ432 | ROHM | 1005 |
| 1 | U1 | IC | - | Buck DC/DC Converter | BD9A600MUV | ROHM | VQFN016V3030 |

■ Bill of Materials (continued)

7. $V_O=1.1V$ ($V_{IN}=4.0V$ to $5.5V$)

| Count | Reference Designator | Type | Value | Description | Manufacturer Part Number | Manufacturer | Configuration (mm) |
|-------|----------------------|-------------------|---------------|---|--------------------------|--------------|--------------------|
| 1 | C1 | Ceramic Capacitor | 0.1 μ F | 16V, X5R, \pm 10% | GRM155R61C104KA88 | MURATA | 1005 |
| 1 | C2 | Ceramic Capacitor | 10 μ F | 10V, X5R, \pm 10% | GRM31CR61A106KA01 | MURATA | 3216 |
| 2 | C4, C5 | Ceramic Capacitor | 22 μ F | 10V, X5R, \pm 20% | GRM21BR61A226ME44 | MURATA | 2012 |
| 1 | C7 | Ceramic Capacitor | 0.47 μ F | 16V, X5R, \pm 20% | GRM188R61C474MA12 | MURATA | 1608 |
| 1 | C8 | Ceramic Capacitor | 5600pF | 25V, X7R, \pm 10% | GRM155R71E562KA01 | MURATA | 1005 |
| 1 | C10 | Ceramic Capacitor | 330pF | 50V, X7R, \pm 10% | GRM155R71H331KA01 | MURATA | 1005 |
| 1 | L1 | Inductor | 1.0 μ H | See the recommended inductor list of separate volume. | | | |
| 1 | R1 | Resistor | 10k Ω | 0.063W, 50V, 1% | MCR01MZPF1002 | ROHM | 1005 |
| 1 | R2 | Resistor | 27k Ω | 0.063W, 50V, 1% | MCR01MZPF2702 | ROHM | 1005 |
| 1 | R3 | Resistor | 4.7k Ω | 0.063W, 50V, 5% | MCR01MZPJ472 | ROHM | 1005 |
| 1 | U1 | IC | - | Buck DC/DC Converter | BD9A600MUV | ROHM | VQFN016V3030 |

8. $V_O=1.2V$ ($V_{IN}=4.0V$ to $5.5V$)

| Count | Reference Designator | Type | Value | Description | Manufacturer Part Number | Manufacturer | Configuration (mm) |
|-------|----------------------|-------------------|---------------|---|--------------------------|--------------|--------------------|
| 1 | C1 | Ceramic Capacitor | 0.1 μ F | 16V, X5R, \pm 10% | GRM155R61C104KA88 | MURATA | 1005 |
| 1 | C2 | Ceramic Capacitor | 10 μ F | 10V, X5R, \pm 10% | GRM31CR61A106KA01 | MURATA | 3216 |
| 2 | C4, C5 | Ceramic Capacitor | 22 μ F | 10V, X5R, \pm 20% | GRM21BR61A226ME44 | MURATA | 2012 |
| 1 | C7 | Ceramic Capacitor | 0.47 μ F | 16V, X5R, \pm 20% | GRM188R61C474MA12 | MURATA | 1608 |
| 1 | C8 | Ceramic Capacitor | 5600pF | 25V, X7R, \pm 10% | GRM155R71E562KA01 | MURATA | 1005 |
| 1 | C10 | Ceramic Capacitor | 330pF | 50V, X7R, \pm 10% | GRM155R71H331KA01 | MURATA | 1005 |
| 1 | L1 | Inductor | 1.0 μ H | See the recommended inductor list of separate volume. | | | |
| 1 | R1 | Resistor | 10k Ω | 0.063W, 50V, 1% | MCR01MZPF1002 | ROHM | 1005 |
| 1 | R2 | Resistor | 20k Ω | 0.063W, 50V, 1% | MCR01MZPF2002 | ROHM | 1005 |
| 1 | R3 | Resistor | 5.1k Ω | 0.063W, 50V, 5% | MCR01MZPJ512 | ROHM | 1005 |
| 1 | U1 | IC | - | Buck DC/DC Converter | BD9A600MUV | ROHM | VQFN016V3030 |

9. $V_O=1.5V$ ($V_{IN}=4.0V$ to $5.5V$)

| Count | Reference Designator | Type | Value | Description | Manufacturer Part Number | Manufacturer | Configuration (mm) |
|-------|----------------------|-------------------|---------------|---|--------------------------|--------------|--------------------|
| 1 | C1 | Ceramic Capacitor | 0.1 μ F | 16V, X5R, \pm 10% | GRM155R61C104KA88 | MURATA | 1005 |
| 1 | C2 | Ceramic Capacitor | 10 μ F | 10V, X5R, \pm 10% | GRM31CR61A106KA01 | MURATA | 3216 |
| 2 | C4, C5 | Ceramic Capacitor | 22 μ F | 10V, X5R, \pm 20% | GRM21BR61A226ME44 | MURATA | 2012 |
| 1 | C7 | Ceramic Capacitor | 0.47 μ F | 16V, X5R, \pm 20% | GRM188R61C474MA12 | MURATA | 1608 |
| 1 | C8 | Ceramic Capacitor | 5600pF | 25V, X7R, \pm 10% | GRM155R71E562KA01 | MURATA | 1005 |
| 1 | C10 | Ceramic Capacitor | 220pF | 50V, X7R, \pm 10% | GRM155R71H221KA01 | MURATA | 1005 |
| 1 | L1 | Inductor | 1.5 μ H | See the recommended inductor list of separate volume. | | | |
| 1 | R1 | Resistor | 16k Ω | 0.063W, 50V, 1% | MCR01MZPF1602 | ROHM | 1005 |
| 1 | R2 | Resistor | 18k Ω | 0.063W, 50V, 1% | MCR01MZPF1802 | ROHM | 1005 |
| 1 | R3 | Resistor | 6.2k Ω | 0.063W, 50V, 5% | MCR01MZPJ622 | ROHM | 1005 |
| 1 | U1 | IC | - | Buck DC/DC Converter | BD9A600MUV | ROHM | VQFN016V3030 |

■ Bill of Materials (continued)

10. $V_O=1.8V$ ($V_{IN}=4.0V$ to $5.5V$)

| Count | Reference Designator | Type | Value | Description | Manufacturer Part Number | Manufacturer | Configuration (mm) |
|-------|----------------------|-------------------|---------------|---|--------------------------|--------------|--------------------|
| 1 | C1 | Ceramic Capacitor | 0.1 μ F | 16V, X5R, \pm 10% | GRM155R61C104KA88 | MURATA | 1005 |
| 1 | C2 | Ceramic Capacitor | 10 μ F | 10V, X5R, \pm 10% | GRM31CR61A106KA01 | MURATA | 3216 |
| 2 | C4, C5 | Ceramic Capacitor | 22 μ F | 10V, X5R, \pm 20% | GRM21BR61A226ME44 | MURATA | 2012 |
| 1 | C7 | Ceramic Capacitor | 0.47 μ F | 16V, X5R, \pm 20% | GRM188R61C474MA12 | MURATA | 1608 |
| 1 | C8 | Ceramic Capacitor | 5600pF | 25V, X7R, \pm 10% | GRM155R71E562KA01 | MURATA | 1005 |
| 1 | C10 | Ceramic Capacitor | 100pF | 25V, CH, \pm 5% | GRM1552C1E101JA01 | MURATA | 1005 |
| 1 | L1 | Inductor | 1.5 μ H | See the recommended inductor list of separate volume. | | | |
| 1 | R1 | Resistor | 30k Ω | 0.063W, 50V, 1% | MCR01MZPF3002 | ROHM | 1005 |
| 1 | R2 | Resistor | 24k Ω | 0.063W, 50V, 1% | MCR01MZPF2402 | ROHM | 1005 |
| 1 | R3 | Resistor | 6.8k Ω | 0.063W, 50V, 5% | MCR01MZPJ682 | ROHM | 1005 |
| 1 | U1 | IC | - | Buck DC/DC Converter | BD9A600MUV | ROHM | VQFN016V3030 |

11. $V_O=3.3V$ ($V_{IN}=4.71V$ to $5.5V$)

| Count | Reference Designator | Type | Value | Description | Manufacturer Part Number | Manufacturer | Configuration (mm) |
|-------|----------------------|-------------------|--------------|---|--------------------------|--------------|--------------------|
| 1 | C1 | Ceramic Capacitor | 0.1 μ F | 16V, X5R, \pm 10% | GRM155R61C104KA88 | MURATA | 1005 |
| 1 | C2 | Ceramic Capacitor | 10 μ F | 10V, X5R, \pm 10% | GRM31CR61A106KA01 | MURATA | 3216 |
| 2 | C4, C5 | Ceramic Capacitor | 22 μ F | 10V, X5R, \pm 20% | GRM32NR61A226ME19 | MURATA | 3225 |
| 1 | C7 | Ceramic Capacitor | 0.47 μ F | 16V, X5R, \pm 20% | GRM188R61C474MA12 | MURATA | 1608 |
| 1 | C8 | Ceramic Capacitor | 5600pF | 25V, X7R, \pm 10% | GRM155R71E562KA01 | MURATA | 1005 |
| 1 | C10 | Ceramic Capacitor | 33pF | 25V, CH, \pm 5% | GRM1552C1E330JA01 | MURATA | 1005 |
| 1 | L1 | Inductor | 1.5 μ H | See the recommended inductor list of separate volume. | | | |
| 1 | R1 | Resistor | 75k Ω | 0.063W, 50V, 1% | MCR01MZPF7502 | ROHM | 1005 |
| 1 | R2 | Resistor | 24k Ω | 0.063W, 50V, 1% | MCR01MZPF2402 | ROHM | 1005 |
| 1 | R3 | Resistor | 13k Ω | 0.063W, 50V, 5% | MCR01MZPJ133 | ROHM | 1005 |
| 1 | U1 | IC | - | Buck DC/DC Converter | BD9A600MUV | ROHM | VQFN016V3030 |

■ Precautions for use

- (1) This document provides the BOM for evaluation boards. Small parts can also be selected for resistor, capacitor, and coil.
- (2) When miniaturizing a resistor, consider decrease in rated power and withstand voltage.
- (3) When miniaturizing a ceramic capacitor, consider decrease in withstand voltage. In addition, the capacity may be decreased by DC bias characteristics, and the desired characteristics may not be obtained.
- (4) If ceramic capacitor models differ even when they have the same capacity and withstand voltage, the capacity may be decreased by DC bias characteristics depending on the model, and desired characteristics may not be obtained. Be sure to check the DC bias characteristics.
- (5) When miniaturizing a coil, consider increase in direct current resistance and decrease in rated current. An increase in DC resistance can cause a deterioration of power conversion efficiency. A decrease in rated current can saturate the coil when outputting a large current, which may deteriorate efficiency or make it impossible to obtain the desired output current.
- (6) If there is a possibility that the output will short-circuit, use a coil with a rated current that is larger than the maximum IC output current. For example, even when up to 100 mA is actually used for an IC that can output 1 A, select a coil whose rated current is larger than 1 A. If a coil with a small rated current is used, it will be saturated by a large current in the event of output short-circuiting, resulting in a steep increase in output voltage. The IC may be broken down because the processing speed of the overcurrent protecting function of the IC cannot keep up with the increase in voltage.
- (7) This circuit constant is the value for our evaluation board. It may be necessary to adjust the constant for the actual board. Carry out suitable evaluations.

Notes

- 1) The information contained herein is subject to change without notice.
- 2) Before you use our Products, please contact our sales representative and verify the latest specifications :
- 3) Although ROHM is continuously working to improve product reliability and quality, semiconductors can break down and malfunction due to various factors.
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