Linear Regulator

Linear Regulators Selection Guide

Ver.5.0

Power

ROHM Co.,Ltd.

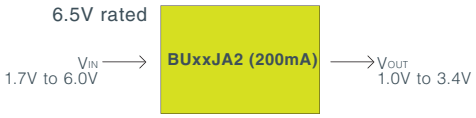
INDEX

Before using the ICs, please verify the numerical values, data, and functions listed in the latest datasheet.

Ultra-Small-size CMOS LDO Regulators

Single Output CMOS LDO Regulators

In the rapidly expanding ADAS (Advanced Driver Assistance System) field, a growing number of cameras and sensor modules are being used to obtain information, increasing the demand for greater miniaturization. ROHM developed the BUxxJA2 series to meet this need. These automotive-grade CMOS LDOs deliver 200mA output in a class-leading small package size. In addition, low current consumption and superior response make them ideal for a range of automotive applications, from ADAS to power supplies for vehicle instrument panels and onboard radar systems.



Product Example **BUxxJA2 series**

- Input voltage :1.7V to 6.0V
- Output current :200mA
- Low Current Consumption :35μA (BUxxJA2MNVX-C)
  33μA (BUxxJA2VG-C, BUxxJA2DG-C)
- High output voltage accuracy :±2% (Ta=−40°C to +125°C)
- Input/output capacitors :0.22μF Min (BUxxJA2MNVX-C)
  0.47μF Min (BUxxJA2VG-C, BUxxJA2DG-C)
- Output discharge (BUxxJA2MNVX-C, BUxxJA2DG-C)
- Enable pin
- Built-in overcurrent protection and thermal shutdown functions
- AEC-Q100 Grade 1

Ultra-Small-size and Leaded Packages

BUxxJA2MNVX-C

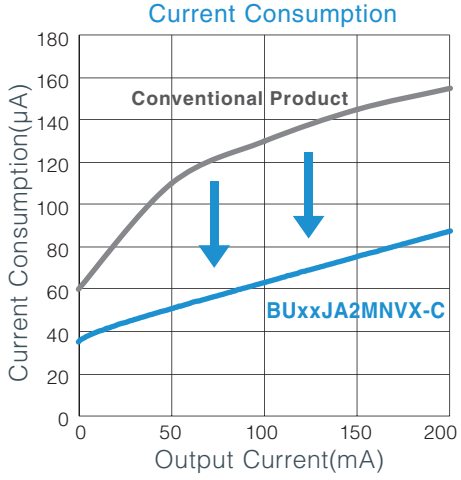
SSON004R1010
W(Typ)×D(Typ)×H(Max)
1.0mm×1.0mm×0.6mm

BUxxJA2VG-C
BUxxJA2DG-C

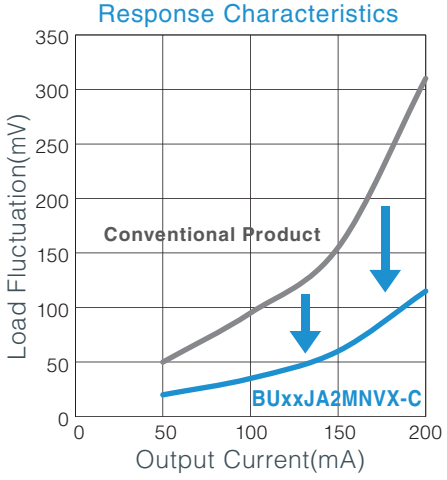
SSOP5 (JEDEC: SOT-23-5)
W(Typ)×D(Typ)×H(Max)
2.9mm×2.8mm×1.25mm

Achieves Fast Load Response with Low Current Consumption

Current Consumption



Response Characteristics



Generally there is a trade-off relationship in which the response characteristics deteriorates as current consumption decreases. However, by optimizing the current to each function block in order to increase response, ROHM was able to improve both characteristics simultaneously .

BUxxJA2 series Specifications

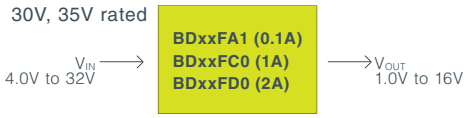
Part No.	Rated Input (V)	Output Current (A)	Input Voltage (V)	Output Voltage (V)		Output Voltage Accuracy (%)	Current Consumption (μA)	Functions						Operating Temperature (°C)	Package	Series Name *2
				Variable	Fixed			Enable	Output Ceramic Capacitor Compatibility	Soft Start	Output Discharge	Overcurrent Protection	TSD			
BUxxJA2	6.5	0.2	1.7 to 6.0	—	1.0 / 1.1 / 1.2 / 1.25 / 1.5 / 1.8 / 2.5 / 2.8 / 2.85 / 2.9 / 3.0 / 3.3 / 3.4	±2*1	35	✓	✓	—	✓	✓	✓	−40 to +125	SSON004R1010	BUxxJA2MNVX-C
					1.0 / 1.2 / 1.25 / 1.5 / 1.8 / 2.5 / 2.8 / 2.85 / 3.0 / 3.3	±2*1	33	✓	✓	—	—	✓	✓	−40 to +125	SSOP5	BUxxJA2VG-C
					1.0 / 1.2 / 1.25 / 1.5 / 1.8 / 2.5 / 2.8 / 2.85 / 3.0 / 3.3	±2*1	33	✓	✓	—	✓	✓	✓	−40 to +125	SSOP5	BUxxJA2DG-C

*1 : Accuracy over the entire temperature range
*2 : xx are placeholders for alphanumeric characters that correspond to the output voltage

High Voltage LDO Regulators

12V/24V Input High Voltage LDOs

The BDxxFA1, BDxxFC0, and BDxxFD0 series are high voltage LDO regulators featuring an input voltage rating of 30V or 35V, ensuring compatibility with circuits requiring 12V or 24V input. The lineup includes output currents of 0.1A, 1A, and 2A to suit a range of needs. A wide range of packages is also offered, from compact types ideal for high density applications to larger packages optimized for sets that demand excellent heat dissipation.



Package Lineup

	BDxxFA1 (0.1A)	BDxxFC0 (1A)		BDxxFD0 (2A)	
					
Package	SOT89-3K	HTSOP-J8	TO252-3 TO252-5	HRP5	TO263-5
Size (mm)	4.50 × 4.095 18.43 mm²	4.90 × 6.00 29.4 mm²	6.50 × 9.50 61.75 mm²	9.395 × 10.54 99.02 mm²	10.16 × 15.10 153.4 mm²
	Small ← Mounting Area → Big				
Thermal Resistance θ_{JA} (Reference Value)	74.3 ˚C/W	45.2 ˚C/W	20.8 ˚C/W	22.0 ˚C/W	20.3 ˚C/W
	Low ← Heat Dissipation Performance → High				

Product Example BDxxFA1, BDxxFC0, BDxxFD0 series

- High precision output voltage: ±1%
- Compatible with most types of capacitors for the output, including ceramic, aluminum electrolytic, tantalum, and conductive polymer
- Current Consumption: 0.3mA (BDxxFA1 series)
  0.5mA (BDxxFC0, BDxxFD0 series)
- Built-in overcurrent protection and thermal shutdown functions
- Rated voltage: 30V (BDxxFA1 series)
  35V (BDxxFC0, BDxxFD0 series)
- Output current: 0.1A (BDxxFA1 series)
  1A (BDxxFC0 series)
  2A (BDxxFD0 series)

Part Number Explanation

B	D	x	x	F	C	0	W	FP

Process
BD : BiCDMOS

Output Voltage
00 : Variable
15 : 1.5V
.
.
90 : 9.0V
J0 : 10V
J6 : 16V

Rating
F : 30V
35V

Enable
Blank : Nore
W : There

Output Current
A1 : 0.1A
C0 : 1A
D0 : 2A

Package
FP3 : SOT89-3K
EFJ : HTSOP-J8
FP : TO252-3
TO252-5
HFP: HRP5
FP2 : TO263-5

BDxxFA1, BDxxFC0, BDxxFD0 series Specifications

Series	Rated Input (V)	Output Current (A)	Input Voltage (V)	Output Voltage (V)		Output Voltage Accuracy (%)	V_{REF} (V)	Current Consumption (mA)	Functions					Operating Temperature (˚C)	Package	Series Name*1
				Variable	Fixed				Enable	Output Ceramic Capacitor Compatibility	Soft Start	Overcurrent Protection	TSD			
BDxxFD0	35	2.0	4.0 to 32	1.5 to 16	1.5 / 1.8 / 2.5 / 3.0 / 3.3 / 5.0 / 8.0 / 9.0 / 12 / 15 / 16	±1	0.75	0.5	✓	✓	—	✓	✓	−25 to +105	HRP5	BDxxFD0WHFP
															TO263-5	BDxxFD0WFP2
BDxxFC0	35	1.0	4.0 to 26.5	1.0 to 15	3.0 / 3.3 / 5.0 / 6.0 / 7.0 8.0 / 9.0 / 10 / 12 / 15	±1	0.75	0.5	✓	✓	—	✓	✓	−25 to +85	HTSOP-J8	BDxxFC0WEFJ
															TO252-5	BDxxFC0WFP
				—	3.3 / 5.0	±1	—	0.5	—	✓	—	✓	✓	−25 to +85	TO252-3	BDxxFC0FP
BDxxFA1	30	0.1	(Vo+3) to 25	3.0 to 12	—	±1	0.8	0.3	✓	✓	✓	✓	✓	−25 to +85	HTSOP-J8	BD00FA1WEFJ
				—	3.3 / 5.0 / 5.4 / 12	±1	—	0.3	—	✓	✓	✓	✓	−25 to +85	SOT89-3K	BDxxFA1FP3

*1 : xx are placeholders for alphanumeric characters that correspond to the output voltage

For existing customers, we recommend switching to the new lineup

The new BDxxFC0 and BDxxFD0 series are improved versions of ROHM's existing 1A/2A output high voltage LDOs. Changing the production process from the conventional bipolar to BiCDMOS (Bipolar + CMOS + DMOS) and redesigning the circuit allowed ROHM to improve the output voltage accuracy of 1A products from ±2% to ±1% while reducing current consumption by 80%, from 2.5mA to 0.5mA. In addition, conventionally the ESR component of the output capacitor is used as part of the phase compensation constant of the negative feedback loop, making the range of capacitors that can be used for output capacitance inherently limited. In contrast, these new products integrate a phase compensation circuit that increases design freedom by enabling support for most types of capacitors. Pin-compatible TO252 and HRP5 packages are offered. However, some external components may need to be changed since the characteristics are not compatible.

1A Output Product Comparison

	Conventional Product	New Product	
Series	**BAxxCC0**	**BDxxFC0**	
Process	Bipolar	BiCDMOS	
Maximum rated voltage	35V	35V	
Input voltage range	4.0 to 25V	4.0 to 26.5V	Improvement
Operating temperature range	−40 to +125˚C	−25 to +85˚C	
Output current	1.0A	1.0A	
Output voltage	Variable 3.0 to 15V Fixed 3/3.3/5/6/7/8/9/10/12/15	Variable 1.0 to 15V Fixed 3/3.3/5/6/7/8/9/10/12/15	
Output Voltage Accuracy	±2%	±1%	Improvement
FB Pin Voltage	1.225V±2%	0.75V±1%	Improvement
Current consumption	2.5mA	0.5mA	Improvement
Standby current	10μA Max	5μA Max	Improvement
Dropout voltage (0.5A)	0.3V	0.3V	
Protection Functions	Overcurrent/overvoltage/thermal shutdown	Overcurrent/thermal shutdown	
Output capacitor	Aluminum electrolytic, some tantalum types (Narrow usable ESR range)	Compatible with most types, including ceramic, aluminum electrolytic, tantalum, and conductive polymer capacitors	Improvement
Package	TO252-3, TO252-5 TO220FP-3, TO220FP-5	TO252-3, TO252-5 HTSOP-J8	

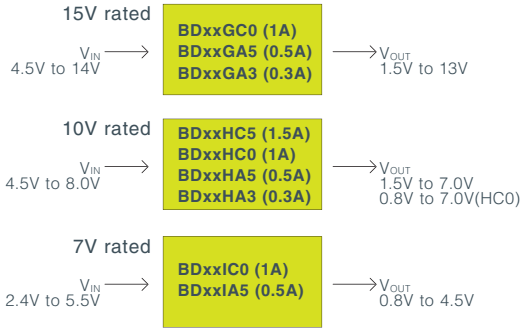
2A Output Product Comparison

	Conventional Product	New Product	
Series	**BAxxDD0**	**BDxxFD0**	
Process	Bipolar	BiCDMOS	
Maximum rated voltage	35V	35V	
Input voltage range	3.0 to 25V	4.0 to 32V	Improvement
Operating temperature range	−40 to +125˚C	−25 to +105˚C	
Output current	2.0A	2.0A	
Output voltage	Variable 1.5 to 16V Fixed 1.5/1.8/2.5/3/3.3/5/9/12/16	Variable 1.5 to 16V Fixed 1.5/1.8/2.5/3/3.3/5/8/9/12/15/16	
Output Voltage Accuracy	±1%	±1%	
PB Pin Voltage	1.27V±1%	0.75V±1%	
Current consumption	0.9mA	0.5mA	Improvement
Standby Current	10μA Max	10μA Max	
Dropout voltage (0.5A)	0.3V	0.4V	
Protection Functions	Overcurrent/overvoltage/thermal shutdown	Overcurrent/thermal shutdown	
Output capacitor	Aluminum electrolytic, some tantalum types (Narrow usable ESR range)	Compatible with most types, including ceramic, aluminum electrolytic, tantalum, and conductive polymer capacitors	Improvement
Package	HRP5	HRP5 TO263-5	

Secondary LDO Regulators

Single Output LDO Regulators

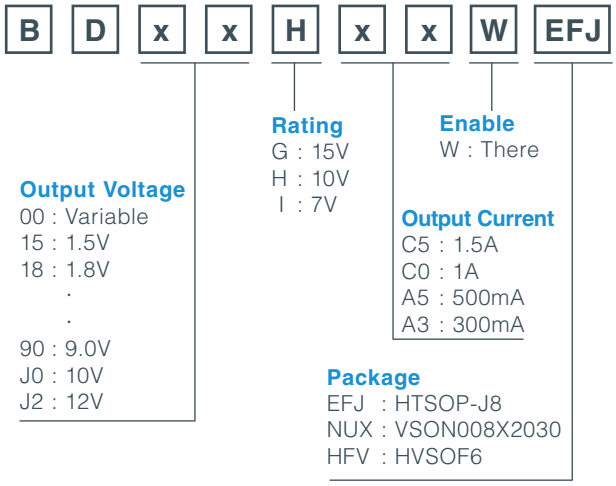
The BDxxGxx, BDxxHxx, and BDxxIxx are secondary LDO regulators designed to supply power near CPUs, DSPs, and controller devices. To meet the needs of various power supply systems, 3 series are offered in rated voltages of 7V, 10V, and 15V and 4 different output currents (0.3A, 0.5A, 1A, and 1.5A) to support both light and heavy current loads.



Product Example BDxxGxx, BDxxHxx, BDxxIxx series

- Rated Voltage ：15V, 10V, 7V
- Output Current ：1.5A, 1A, 0.5A, 0.3A
- Compact HTSOP-J8 package with backside heat dissipation reduces mounting area by half over conventional TO252 types. In addition, adopting a multilayer substrate ensures superior heat dissipation.
- Pin-compatible HTSOP-J8 package enables easy replacement in the event of sudden design changes
- Supports most types of capacitors for the output, including ceramic, aluminum electrolytic, tantalum, and conductive polymer
- High precision output voltage：±1% (Ta=25˚C)
- Voltage feedback pin makes it possible to correct for voltage drops due to wiring resistance via Kelvin connection
- Enable terminal
- Soft start (fixed 800μs Typ) prevents inrush current and output overshoot
- Built-in overcurrent protection and thermal shutdown functions

Part Number Explanation



BDxxGxx, BDxxHxx, BDxxIxx series Specifications

Series	Rated Input (V)	Output Current (A)	Input Voltage (V)	Output Voltage (V)		Output Voltage Accuracy (%)	V_{REF} (V)	Current Consumption (mA)	Functions					Operating Temperature (˚C)	Package	Series Name*1
				Variable	Fixed				Enable	Output Ceramic Capacitor Compatibility	Soft Start	Overcurrent Protection	TSD			
BDxxGC0	15	1.0	4.5 to 14	1.5 to 13	1.5 / 1.8 / 2.5 / 3.0 / 3.3 / 5.0 / 6.0 / 7.0 / 8.0 / 9.0 / 10 / 12	±1	0.8	0.6	✓	✓	✓	✓	✓	−25 to +85	HTSOP-J8	BDxxGC0WEFJ
BDxxGA5		0.5		1.5 to 13	1.5 / 1.8 / 2.5 / 3.0 / 3.3 / 5.0 / 6.0 / 7.0 / 8.0 / 9.0 / 10 / 12										HTSOP-J8	BDxxGA5WEFJ
BDxxGA3		0.3		1.5 to 13	1.5 / 1.8 / 2.5 / 3.0 / 3.3 / 5.0 / 6.0 / 7.0 / 8.0 / 9.0 / 10 / 12										HTSOP-J8	BDxxGA3WEFJ
															VSON008X2030	BDxxGA3WNUX
BDxxHC5	10	1.5	4.5 to 8.0	1.5 to 7.0	1.5 / 1.8 / 2.5 / 3.0 / 3.3 / 5.0 / 6.0 / 7.0	±1	0.8	0.6	✓	✓	✓	✓	✓	−25 to +85	HTSOP-J8	BDxxHC5WEFJ
BDxxHC0		1.0		0.8 to 7.0	1.5 / 1.8 / 2.5 / 3.0 / 3.3 / 5.0 / 6.0 / 7.0										HTSOP-J8	BDxxHC0WEFJ
BDxxHA5		0.5		1.5 to 7.0	1.5 / 1.8 / 2.5 / 3.0 / 3.3 / 5.0 / 6.0 / 7.0										HTSOP-J8	BDxxHA5WEFJ
BDxxHA3		0.3		1.5 to 7.0	1.5 / 1.8 / 2.5 / 3.0 / 3.3 / 5.0 / 6.0 / 7.0										HTSOP-J8	BDxxHA3WEFJ
BDxxIC0	7	1.0	2.4 to 5.5	0.8 to 4.5	1.0 / 1.2 / 1.25 / 1.5 / 1.8 / 2.5 / 2.6 / 3.0 / 3.3	±1	0.8	0.25	✓	✓	✓	✓	✓	−25 to +85	HVSOF6	BDxxIC0WHFV
					1.0 / 1.2 / 1.5 / 1.8 / 2.5 / 3.0 / 3.3										HTSOP-J8	BDxxIC0WEFJ
BDxxIA5		0.5		0.8 to 4.5	1.0 / 1.2 / 1.5 / 1.8 / 2.5 / 3.0 / 3.3										HTSOP-J8	BDxxIA5WEFJ

*1 : xx are placeholders for alphanumeric characters that correspond to the output voltage

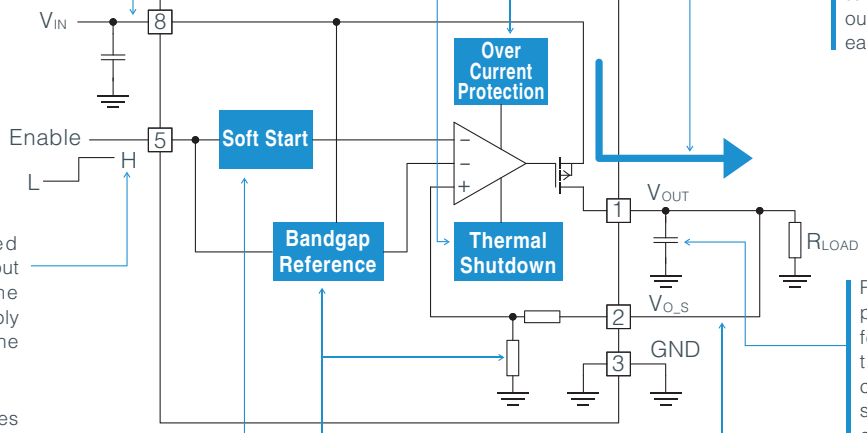
LDOs use a variety of technologies to ensure stable output voltage

The BDxxGxx, BDxxHxx, and BDxxIxx series are designed using the latest BiCDMOS (Bipolar transistor + CMOS FET + DMOS FET) processes. These high-performance LDO regulators are configured by combining DMOSFET power circuits, low power CMOSFET circuits, and high-accuracy bipolar circuits together with processes optimized for each circuit block.

All 3 series, featuring rated inputs of 7V, 10V, or 15V, are produced utilizing the best process rules for each voltage.

Integrated overcurrent protection function prevents IC breakdown (i.e. due output shorts) while the built-in thermal shutdown circuit prevents thermal damage caused by overload conditions.

4 different output currents (1.5A, 1.5A, 1A, and 0.3A) are offered to suit a range of needs. The output transistor is optimized for each output current.



LDO output can be turned ON/OFF using logic level input without turning ON/OFF the main power supply. The supply current is 5μA Max. when the output is OFF.

The soft start circuit operates and the output voltage rises at a constant speed (800μs) when power is turned ON. This prevents inrush current and output overshoot.

Phase compensation is performed using an internal feedback loop that minimizes the effects of external components. This enables support for most types of capacitors at the output, including ceramic, aluminum electrolytic, tantalum, and conductive polymer.

High accuracy output (±1% @ Ta=25˚C) is achieved within the operating temperature range by utilizing a stable bandgap reference voltage source along with laser trimming technology.

A voltage feedback pin makes it possible to correct for voltage drops due to wiring resistance via Kelvin connection. This results in higher voltage accuracy.

Product Lineup for Each Field

			Consumer-Grade			Industrial-Grade			Automotive-Grade			
Series	Rated Input (V)	Output Current (A)	Operating Temperature (˚C)	Package	Series Name *1	Operating Temperature (˚C)	Package	Series Name *1	Operating Temperature (˚C)	AEC-Q100	Package	Series Name *1
BDxxGC0	15	1.0	−25 to +85	HTSOP-J8	BDxxGC0WEFJ	−40 to +105	HTSOP-J8	BDxxGC0MEFJ-LB	−40 to +105	Grade 2	HTSOP-J8	BDxxGC0MEFJ-M
BDxxGA5		0.5		HTSOP-J8	BDxxGA5WEFJ		HTSOP-J8	BDxxGA5MEFJ-LB		Grade 2	HTSOP-J8	BDxxGA5MEFJ-M
BDxxGA3		0.3		HTSOP-J8	BDxxGA3WEFJ		HTSOP-J8	BDxxGA3MEFJ-LB		Grade 2	HTSOP-J8	BDxxGA3MEFJ-M
				VSON008X2030	BDxxGA3WNUX							
BDxxHC5	10	1.5	−25 to +85	HTSOP-J8	BDxxHC5WEFJ	−40 to +105	HTSOP-J8	BDxxHC5MEFJ-LB	−40 to +105	Grade 2	HTSOP-J8	BDxxHC5MEFJ-M
BDxxHC0		1.0		HTSOP-J8	BDxxHC0WEFJ		HTSOP-J8	BDxxHC0MEFJ-LB	−40 to +125	Grade 1	HTSOP-J8	BDxxHC0MEFJ-C
									−40 to +105	Grade 2	HTSOP-J8	BDxxHC0MEFJ-M
BDxxHA5		0.5		HTSOP-J8	BDxxHA5WEFJ		HTSOP-J8	BDxxHA5MEFJ-LB	−40 to +105	Grade 2	HTSOP-J8	BDxxHA5MEFJ-M
BDxxHA3		0.3		HTSOP-J8	BDxxHA3WEFJ		HTSOP-J8	BDxxHA3MEFJ-LB		Grade 2	HTSOP-J8	BDxxHA3MEFJ-M
BDxxIC0	7	1	−25 to +85	HVSOF6	BDxxIC0WHFV	−40 to +105	HTSOP-J8	BDxxIC0MEFJ-LB	−40 to +125	Grade 1	HTSOP-J8	BDxxIC0MEFJ-C
				HTSOP-J8	BDxxIC0WEFJ				−40 to +105	Grade 2	HTSOP-J8	BDxxIC0MEFJ-M
BDxxIA5		0.5		HTSOP-J8	BDxxIA5WEFJ		HTSOP-J8	BDxxIA5MEFJ-LB		Grade 2	HVSOF6	BDxxIA5MHFV-M
											HTSOP-J8	BDxxIA5MEFJ-M

*1 : xx are placeholders for alphanumeric characters that correspond to the output voltage

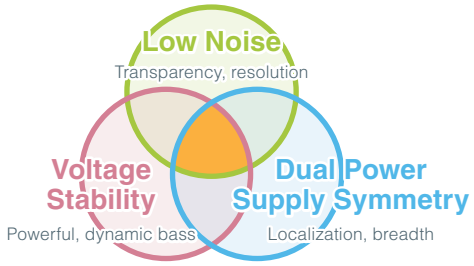
Hi-Fi Audio Power Supplies

Audio Power Supply Solutions

The BD37201NUX series consists of the industry's first* high fidelity power supply ICs developed by combining proprietary audio quality design technology with power supply IC analog design expertise that leverages original power processes. In addition to a newly developed fast response error amp circuit and low noise architecture, ROHM optimized parameters shown to have an effect on sound quality during the development and production processes through listening evaluations to achieve class-leading performance in all of the critical characteristics (voltage stability, noise level, dual power supply symmetry) required for the power supplies of audio equipment. As a result, in the high fidelity audio sector that demands higher quality, extremely clean power is supplied compared to conventional ICs, making it possible to improve the sound quality of audio equipment in terms of sound imaging (sound source position, sense of distance) and resolution (realism and depth) from the power supply line.

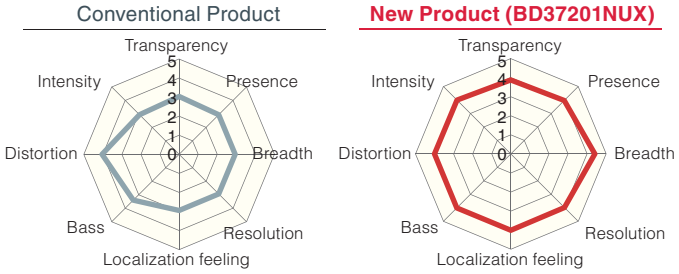
*ROHM October 2018 study

Power Supply CharacteristicsRequired by Hi-Fi Audio



It is important to balance 3 parameters

Sound Quality Comparison Through Auditory Evaluation



The BD37201NUX series delivers less noise while achieving greater realism and depth, allowing listeners to feel the an immersive sound stage (i.e. drum beats, applause).

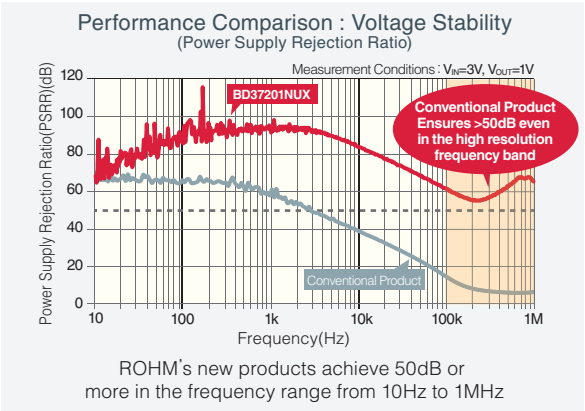
Features

As the industry's first high fidelity audio power supply IC, the BD37201NUX series includes the following features.

Clean power supply improves sound quality in audio equipment.

1) Increases audio quality through voltage stabilization

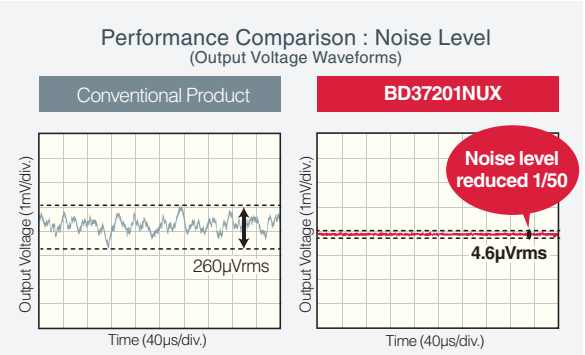
An integrated newly developed error amp circuit capable of fast response over a wide range minimizes the effects of input voltage and output current fluctuations on the output voltage. The result is superior sound quality that does not ignore the dynamic bass and intensity present in audio sources.



ROHM's new products achieve 50dB or more in the frequency range from 10Hz to 1MHz

2) Improves audio quality by minimizing noise

Adopting a low noise architecture that suppresses noise generated from the IC's internal circuit makes it possible to achieve a class-leading low noise of just 4.6μVrms, 1/50 smaller than conventional products. This eliminates the effects of noise on the sound, resulting in clear audio with exceptional transparency.



Effects of noise minimized to just 4.6μVrms

Item	BD37201NUX
Input voltage	2.7V to 5.5V
Output voltage	1.0V to 4.5V
Output current	500mA
Noise level(10Hz to 100kHz)	4.72μVrms
PSRR(1kHz)	90dB
PSRR(10Hz to 1MHz)	≥50dB
Package(mm)	VSON008X2030 2.0×3.0

Single Output Linear Regulators

All Product Selection

Output Current(A)

Rated Input Voltage(V)	0.1 to 0.15	No.	0.2	No.	0.3	No.	0.5	No.	1.0	No.	1.5	No.	2.0	No.
45 to 50			BD7xxL2 ● BD4xxM2 ●	7 10			BD7xxL5 ● BD8xxM5 ● BD4xxM5 ● BD357xY ●	6 8 9 5						
30 to 36	BDxxFA1 ●●	3			BD3650 ●	17	BA178Mxx ●	2	BA178xx ● BAxxCC0 ● BDxxFC0 ● BDxxC0A ●●	1 15 14 16			BAxxDD0 ● BDxxFD0 ● BDxxD0A ●	12 11 13
18									BAxxBC0 ●	19	BAxxJC5 ●	18		
15					BDxxGA3 ●●●	22	BDxxGA5 ●●●	21	BDxxGC0 ●●● BA1117 ●	20 4				
10					BDxxHA3 ●●●	26	BDxxHA5 ●●●	25	BDxxHC0 ●●●	24	BDxxHC5 ●●●	23		
6 to 7	BHxxNB1 ● BHxxPB1 ● BHxxRB1 ● BHxxSA3 ●	38 39 41 40	BUxxJA2 ● BUxxSA4 ● BUxxSD2 ● BUxxTA2 ● BUxxTD2 ● BUxxTD3 ●	37 35 36 34 33 32			BDxxIA5 ●●● BDxxKA5 ● BUxxSA5 ● BUxxSD5 ●	28 29 31 30	BDxxIC0 ●●●	27				

*No. : Indicates the series number within the lineup on pages 11 to 18.

Target Applications ● Consumer
● Industrial equipment
● Automotive

Low Quiescent Current (I_Q) Product Selection

Output Current(A)

Rated Input Voltage(V)	0.1 to 0.15	No.	0.2	No.	0.3	No.	0.5	No.	1.0	No.	1.5	No.	2.0	No.
45 to 50			BD7xxL2 6μA BD4xxM2 40μA	7 10			BD7xxL5 6μA BD8xxM5 20μA BD4xxM5 38μA BD357xY 30μA	6 8 9 5						
30 to 36	BDxxFA1 300μA	3			BD3650 500μA	17			BDxxFC0 500μA BDxxC0A 500μA	14 16			BDxxFD0 500μA BDxxD0A 500μA	11 13
18														
15					BDxxGA3 600μA	22	BDxxGA5 600μA	21	BDxxGC0 600μA	20				
10					BDxxHA3 600μA	26	BDxxHA5 600μA	25	BDxxHC0 600μA	24	BDxxHC5 600μA	23		
6 to 7	BHxxNB1 60μA BHxxPB1 2μA BHxxRB1 34μA BHxxSA3 40μA	38 39 41 40	BUxxJA2 33μA BUxxSA4 40μA BUxxSD2 33μA BUxxTA2 40μA BUxxTD2 35μA BUxxTD3 35μA	37 35 36 34 33 32			BDxxIA5 250μA BUxxSA5 33μA BUxxSD5 33μA	28 31 30	BDxxIC0 250μA	27				

*No. : Indicates the series number within the lineup on pages 11 to 18.

Single Output Linear Regulators

Small-size Product Selection

Output Current(A)

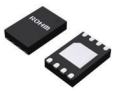
Rated Input Voltage(V)	0.1 to 0.15	No.	0.2	No.	0.3	No.	0.5	No.	1.0	No.	1.5	2.0
45 to 50												
30 to 36												
18												
15					BDxxGA3 #B	22						
10												
6 to 7	BHxxNB1 #D BHxxPB1 #D BHxxRB1 #H BHxxSA3 #I	38 39 41 40	BUxxJA2 #A,#G BUxxSA4 #J BUxxSD2 #A BUxxTA2 #D,#E BUxxTD2 #F BUxxTD3 #A	37 35 36 34 33 32			BDxxIA5 #C BUxxSA5 #K BUxxSD5 #A	28 31 30	BDxxIC0 #C	27		

*No. : Indicates the series number within the lineup on pages 11 to 18.

Smaller

#A SSOP5 (SOT-23-5)*
2.9mm×2.8mm×1.25mm
*JEDEC

#B VSON008X2030
2.0mm×3.0mm×0.6mm



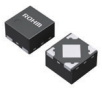
#C HVSOF6
1.6mm×3.0mm×0.75mm

#D HVSOF5
1.6mm×1.6mm×0.6mm

#E SSON004X1216
1.2mm×1.6mm×0.6mm

Smaller

#F SSON004X1010
1.0mm×1.0mm×0.6mm



#G SSON004R1010
1.0mm×1.0mm×0.6mm

#H VCSP60N1 WL-CSP
1.0mm×1.04mm×6mm
Pitch：0.5mm

#I VCSP60N1 WL-CSP
0.96mm×0.96mm×0.6mm
Pitch：0.5mm

#J UCSP50L1 WL-CSP
0.8mm×0.8mm×0.5mm
Pitch：0.4mm

#K UCSP30L1 WL-CSP
0.8mm×0.8mm×0.33mm
Pitch：0.4mm

WL-CSP：Wafer level chip size package
W(Typ)×D(Typ)×H(Max)

High Accuracy Product Selection

Output Current(A)

Rated Input Voltage(V)	0.1 to 0.15	No.	0.2	No.	0.3	No.	0.5	No.	1.0	No.	1.5	No.	2.0	No.
45 to 50			BD7xxL2 ±2%*1 BD4xxM2±2%*1	7 10			BD7xxL5 ±2%*1 BD8xxM5±2%*1 BD4xxM5±2%*1 BD357xY ±2%*1	6 8 9 5						
30 to 36	BDxxFA1 ±2%*1 ±1%*2	3			BD3650 ±2%*1	17			BDxxFC0±1%*2	14			BAxxDD0 ±1%*2 BDxxFD0 ±1%*2 BDxxD0A ±1%*2	12 11 13
18											BAxxJC5±1%*2	18		
15					BDxxGA3 ±3%*1 ±1%*2	22	BDxxGA5 ±3%*1 ±1%*2	21	BDxxGC0 ±3%*1 ±1%*2 BA1117 +1.6, −2%*1	20 4				
10					BDxxHA3 ±3%*1 ±1%*2	26	BDxxHA5 ±3%*1 ±1%*2	25	BDxxHC0 ±3%*1 ±1%*2	24	BDxxHC5 ±3%*1 ±1%*2	23		
6 to 7	BHxxNB1±1%*2 BHxxPB1±1%*2 BHxxRB1±1%*2 BHxxSA3±1%*2	38 39 41 40	BUxxJA2 ±2%*1 BUxxSA4 ±0.6%*2 BUxxSD2±2%*1 BUxxTA2 ±1%*2 BUxxTD2±1%*2 BUxxTD3±1%*2	37 35 36 34 33 32			BDxxIA5 ±3%*1 ±1%*2 BDxxKA5 ±1%*2 BUxxSA5 ±1%*2	28 29 31	BDxxIC0 ±3%*1 ±1%*2	27				

*No. : Indicates the series number within the lineup on pages 11 to 18.
*1 : Output voltage tolerance over the entire temperature range
*2 : Output voltage tolerance at +25℃

Low Saturation Selection

Output Current(A)

Rated Input Voltage(V)	0.1 to 0.15	0.2	No.	0.3	0.5	No.	1.0	No.	1.5	No.	2.0	No.
45 to 50					BD8xxM5 67mV BD4xxM5 67mV	8 9						
30 to 36							BDxxFC0 60mV BDxxC0A 60mV	14 16			BDxxFD0 40mV BDxxD0A 40mV	11 13
18												
15							BDxxGC0 60mV	20				
10							BDxxHC0 60mV	24	BDxxHC5 40mV	23		
6 to 7		BUxxJA2 85mV BUxxSA4 80mV BUxxSD2 85mV	37 35 36		BDxxIA5 80mV BDxxKA5 60mV BUxxSA5 80mV BUxxSD5 85mV	28 29 31 30	BDxxIC0 40mV	27				

*No. : Indicates the series number within the lineup on pages 11 to 18.
*Input/output voltage tolerance when I_O=0.1A Please increase the value by 5x when I_O=0.5A. Please note that these values are approximate.

AEC-Q100 qualified

Output Current(A)

Rated Input Voltage(V)	0.1 to 0.15	No.	0.2	No.	0.3	No.	0.5	No.	1.0	No.	1.5	No.	2.0
45 to 50			BD7xxL2 Grade1 BD4xxM2Grade1	7 10			BD7xxL5 Grade1 BD8xxM5 Grade1 BD4xxM5 Grade1	6 8 9					
30 to 36	BDxxFA1 Grade2	3							BDxxC0A Grade1	16			
18													
15					BDxxGA3 Grade2	22	BDxxGA5 Grade2	21	BDxxGC0 Grade2	20			
10					BDxxHA3 Grade2	26	BDxxHA5 Grade2	25	BDxxHC0 Grade1 Grade2	24	BDxxHC5 Grade2	23	
6 to 7			BUxxJA2 Grade1 BUxxSD2 Grade2	37 36			BDxxIA5 Grade2	28	BDxxIC0 Grade1 Grade2	27			

*No. : Indicates the series number within the lineup on pages 11 to 18.
Grade1 : −40℃ to +125℃
Grade2 : −40℃ to +105℃

Single Output 3-Terminal Linear Regulator Lineup

Series No.	Series	Rated Input (V)	Output Current (A)	Input Voltage (V)	Output Voltage(V)		Output Voltage Accuracy (%)	V_{REF} (V)	Current Consumption (mA)	Enable
					Variable	Fixed				
1	**BA178xx/ BA78xx**	35	1.0	7.5 to 33	—	5.0 / 6.0 / 7.0 / 8.0 / 9.0 / 10 / 12 / 15 / 18 / 20 / 24	±4	—	4.5	—
2	**BA178Mxx/ BA78Mxx**	35	0.5	7.5 to 33	—	5.0 / 6.0 / 7.0 / 8.0 / 9.0 / 10 / 12 / 15 / 18 / 20 / 24	±4	—	4.5	—
3	**BDxxFA1**	30	0.1	(Vo+3) to 25	3.0 to 12	—	±1	0.8	0.3	✓
					—	3.3 / 5.0 / 5.4 / 12	±1	—	0.3	—
					—	5.0	±2*1	—	0.3	✓
4	**BA1117**	15	1.0	2.65 to 10	1.25 to 8.6	—	+1.6 −2*1	1.25	1.7	—

*1 : Accuracy over the entire temperature range
*2 : xx are placeholders for alphanumeric characters that correspond to the output voltage

Functions						Other	Operating Temperature Ta (˚C)	Package	Target Applications			Series Name*2
Output Ceramic Capacitor Compatibility	Soft Start	Output Discharge	Overcurrent Protection	Thermal Shutdown	Overvoltage Protection				Consumer	Industrial Equipment	Automotive	
✓	—	—	✓	✓	✓	—	−40 to +85	TO220CP-3	✓	—	—	BA178xxCP/ BA78xxCP
								TO252-3	✓	—	—	BA178xxFP/ BA78xxFP
✓	—	—	✓	✓	✓	—	−40 to +85	TO220CP-3	✓	—	—	BA178MxxCP/ BA78MxxCP
								TO252-3	✓	—	—	BA178MxxFP/ BA78MxxFP
✓	✓	—	✓	✓	—	—	−25 to +85	HTSOP-J8	✓	—	—	BD00FA1WEFJ
✓	✓	—	✓	✓	—	—	−25 to +85	SOT89-3K	✓	—	—	BDxxFA1FP3
✓	✓	—	✓	✓	—	AEC-Q100	−40 to +105	SSOP5	—	—	✓	BDxxFA1MG-M
✓	—	—	✓	✓	—	—	−20 to +105	TO252-3	✓	—	—	BA1117FP

Single Output LDO-type Linear Regulator Lineup

30V to 50V Rated Input

Series No.	Series	Rated Input (V)	Output Current (A)	Input Voltage (V)	Output Voltage(V)		Output Voltage Accuracy (%)	V_{REF} (V)	Current Consumption		
					Variable	Fixed				Enable	Output Ceramic Capacitor Compatibility
5	BD357xY	50	0.5	4.5 to 36	—	3.3 / 5.0	±2*1	—	30μA	—	✓
					2.8 to 12	3.3 / 5.0	±2*1	1.26	30μA	✓	✓
					2.8 to 12	3.3 / 5.0	±2*1	1.26	30μA	✓	✓
6	BD7xxL5	50	0.5	4.17 to 45	—	3.3 / 5.0	±2*1	—	6μA	—	✓
7	BD7xxL2	50	0.2	4.37 to 45	—	3.3 / 5.0	±2*1	—	6μA	—	✓
8	BD8xxM5	45	0.5	3.3 to 42	1.2 to 16	—	±2*1	0.65	20μA	✓	✓
9	BD4xxM5	45	0.5	4.0 to 42	—	3.3 / 5.0	±2*1	—	38μA	—	✓
										✓	✓
10	BD4xxM2	45	0.2	3.9 to 42	—	3.3 / 5.0	±2*1	—	40μA	—	✓
										✓	✓
11	BDxxFD0	35	2.0	4.0 to 32	1.5 to 16	1.5 / 1.8 / 2.5 / 3.0 / 3.3 / 5.0 / 8.0 / 9.0 / 12 / 15 / 16	±1	0.75	0.5mA	✓	✓
12	BAxxDD0	35	2.0	3.0 to 25	—	—	±1	—	0.9mA	—	—
					1.5 to 16	—	±1	1.27	0.9mA	✓	—
					—	1.5 / 1.8 / 2.5 / 3.0 / 3.3 / 5.0 / 9.0 / 12 / 16	±1	—	0.9mA	✓	—
					1.5 to 16	1.5 / 1.8 / 2.5 / 3.0 / 3.3 / 5.0 / 9.0 / 12 / 16	±1	1.27	0.9mA	✓	—
13	BDxxD0A	35	2.0	4.0 to 25	3.0 to 15	—	±1	0.75	0.5mA	✓	✓
14	BDxxFC0	35	1.0	4.0 to 26.5	—	3.3 / 5.0	±1	—	0.5mA	—	✓
					1.0 to 15	3.0 / 3.3 / 5.0 / 6.0 / 7.0 / 8.0 / 9.0 / 10 / 12 / 15	±1	0.75	0.5mA	✓	✓
15	BAxxCC0	35	1.0	4.0 to 25	—	3.0 / 3.3 / 5.0 / 6.0 / 7.0 / 8.0 / 9.0 / 10 / 12 / 15	±2	—	2.5mA	—	—
					3.0 to 15	—	±2	1.225	2.5mA	✓	—
					3.0 to 15	3.0 / 3.3 / 5.0 / 7.0 / 8.0 / 9.0 / 10 / 12	±2	1.225	2.5mA	✓	—
						3.3 / 5.0 / 6.0 / 7.0 / 8.0 / 9.0 / 12	±2	1.225	2.5mA	✓	—
16	BDxxC0A	35	1.0	(Vo+1.0) to 26.5	—	8.0 / 9.0	±1	—	0.5mA	—	✓
					—	8.0	±3*1	—	0.5mA	—	✓
					—	3.3 / 5.0 / 8.0 / 9.0	±3*1	—	0.5mA	—	✓
					—	3.3 / 5.0	±1	—	0.5mA	✓	✓
					1.0 to 15	3.3 / 5.0 / 8.0 / 9.0	±3*1	0.75	0.5mA	✓	✓
17	BD3650	36	0.3	5.6 to 30	—	5.0	±2*1	—	0.5mA	—	✓
3	BDxxFA1	30	0.1	(Vo+3) to 25	3.0 to 12	—	±1	0.8	0.3mA	✓	✓
					—	3.3 / 5.0 / 5.4 / 12	±1	—	0.3mA	—	✓
					—	5.0	±2*1	—	0.3mA	✓	✓

*1 : Accuracy over the entire temperature range
*2 : xx are placeholders for alphanumeric characters that correspond to the output voltage

Functions					Other	Operating Temperature Ta (˚C)	Package	Target Applications			Series Name*2
Soft Start	Output Discharge	Overcurrent Protection	Thermal Shutdown	Overvoltage Protection				Consumer	Industrial Equipment	Automotive	
—	—	✓	✓	—	—	−40 to +125	TO252-3	—	—	✓	BD357xYFP-M
—	—	✓	✓	—	—	−40 to +125	TO252-5	—	—	✓	BD357xYFP-M
—	—	✓	✓	—	—	−40 to +125	HRP5	—	—	✓	BD357xYHFP-M
—	—	✓	✓	—	AEC-Q100	−40 to +125	TO252-3	—	—	✓	BD7xxL5FP-C
—	—	✓	✓	—	AEC-Q100	−40 to +125	HTSOP-J8	—	—	✓	BD7xxL2EFJ-C
							TO252-3	—	—	✓	BD7xxL2FP-C
							SOT223-4	—	—	✓	BD7xxL2FP3-C
—	—	✓	✓	—	AEC-Q100	Tj −40 to +150	TO252-5	—	—	✓	BD800M5WFP-C
—	—	✓	✓	—	AEC-Q100	Tj −40 to +150	TO252-3	—	—	✓	BD4xxM5FP-C
							TO263-3	—	—	✓	BD4xxM5FP2-C
—	—	✓	✓	—	AEC-Q100	Tj −40 to +150	TO252-J5	—	—	✓	BD4xxM5WFPJ-C
							TO263-5	—	—	✓	BD4xxM5WFP2-C
—	—	✓	✓	—	AEC-Q100	Tj −40 to +150	SOT223-4	—	—	✓	BD4xxM2FP3-C
							HTSOP-J8	—	—	✓	BD4xxM2EFJ-C
—	—	✓	✓	—	AEC-Q100	Tj −40 to +150	SOT223-4	—	—	✓	BD4xxM2WFP3-C
							HTSOP-J8	—	—	✓	BD4xxM2WEFJ-C
—	—	✓	✓	—	—	−25 to +105	HRP5	✓	—	—	BDxxFD0WHFP
							TO263-5	✓	—	—	BDxxFD0WFP2
—	—	✓	✓	✓	—	−40 to +125	TO220FP-3	✓	—	—	BAxxDD0T
—	—	✓	✓	✓	—	−40 to +125	TO220CP-V5	✓	—	—	BA00DD0WCP-V5
—	—	✓	✓	✓	—	−40 to +125	TO220FP-5	✓	—	—	BAxxDD0WT
—	—	✓	✓	✓	—	−40 to +125	HRP5	✓	—	—	BAxxDD0WHFP
—	—	✓	✓	—	—	−40 to +105	HRP5	✓	—	—	BD00D0AWHFP
—	—	✓	✓	—	—	−25 to +85	TO252-3	✓	—	—	BDxxFC0FP
—	—	✓	✓	—	—	−25 to +85	HTSOP-J8	✓	—	—	BDxxFC0WEFJ
							TO252-5	✓	—	—	BDxxFC0WFP
—	—	✓	✓	✓	—	−40 to +125	TO220FP-3	✓	—	—	BAxxCC0T
							TO252-3	✓	—	—	BAxxCC0FP
—	—	✓	✓	✓	—	−40 to +125	TO220CP-V5	✓	—	—	BA00CC0WCP-V5
							TO220FP-5(V5)	✓	—	—	BA00CC0WT-V5
—	—	✓	✓	✓	—	−40 to +125	TO220FP-5	✓	—	—	BAxxCC0WT
—	—	✓	✓	✓	—	−40 to +125	TO252-5	✓	—	—	BAxxCC0WFP
—	—	✓	✓	—	—	−40 to +105	TO252S-3	✓	—	—	BDxxC0AFPS
—	—	✓	✓	—	AEC-Q100	−40 to +125	TO252S-3	—	—	✓	BD80C0AFPS-C
—	—	✓	✓	—	AEC-Q100	−40 to +125	TO252-3	—	—	✓	BDxxC0AFP-C
							HRP5	—	—	✓	BDxxC0AHFP-C
							TO263-3	—	—	✓	BDxxC0AFP2-C
—	—	✓	✓	—	—	−40 to +105	TO252-5	✓	—	—	BDxxC0AWFP
—	—	✓	✓	—	AEC-Q100	−40 to +125	TO252-5	—	—	✓	BDxxC0AWFP-C
							HRP5	—	—	✓	BDxxC0AHFP-C
							TO263-5	—	—	✓	BDxxC0AWFP2-C
—	—	✓	✓	—	—	−40 to +125	TO252-3	—	—	✓	BD3650FP-M
✓	—	✓	✓	—	—	−25 to +85	HTSOP-J8	✓	—	—	BD00FA1WEFJ
✓	—	✓	✓	—	—	−25 to +85	SOT89-3K	✓	—	—	BDxxFA1FP3
✓	—	✓	✓	—	AEC-Q100	−40 to +105	SSOP5	—	—	✓	BDxxFA1MG-M

Single Output LDO-type Linear Regulator Lineup

7V to 18V Rated Input

Series No.	Series	Rated Input (V)	Output Current (A)	Input Voltage (V)	Output Voltage(V)		Output Voltage Accuracy (%)	V_{REF} (V)	Current Consumption		
					Variable	Fixed				Enable	Output Ceramic Capacitor Compatibility
18	BAxxJC5	18	1.5	3.0 to 16	—	1.5 / 1.8 / 2.5 / 3.0 / 3.3 / 5.0 / 6.0 / 6.3 / 8.0 / 9.0 / 12	±1	—	0.5	—	—
					1.5 to 12	—	±1	1.25	0.5	✓	—
19	BAxxBC0	18	1.0	3.0 to 16	—	1.5 / 1.8 / 2.5 / 3.0 / 3.3 / 5.0 / 6.0 / 7.0 / 8.0 / 9.0 / 10	±2	—	0.5	—	—
					1.5 to 12	1.5 / 1.8 / 2.5 / 3.0 / 3.3 / 5.0 / 6.0 / 7.0 / 8.0 / 9.0 / 10	±2	1.25	0.5	✓	—
						1.5 / 1.8 / 2.5 / 3.3 / 5.0 / 9.0	±2	1.25	0.5	✓	—
						—	±2	1.25	0.5	✓	—
20	BDxxGC0	15	1.0	4.5 to 14	1.5 to 13	1.5 / 1.8 / 2.5 / 3.0 / 3.3 / 5.0 / 6.0 / 7.0 / 8.0 / 9.0 / 10 / 12	±1	0.8	0.6	✓	✓
							±3*1	0.8	0.6	✓	✓
							±3*1	0.8	0.6	✓	✓
21	BDxxGA5	15	0.5	4.5 to 14	1.5 to 13	1.5 / 1.8 / 2.5 / 3.0 / 3.3 / 5.0 / 6.0 / 7.0 / 8.0 / 9.0 / 10 / 12	±1	0.8	0.6	✓	✓
							±3*1	0.8	0.6	✓	✓
							±3*1	0.8	0.6	✓	✓
22	BDxxGA3	15	0.3	4.5 to 14	1.5 to 13	1.5 / 1.8 / 2.5 / 3.0 / 3.3 / 5.0 / 6.0 / 7.0 / 8.0 / 9.0 / 10 / 12	±1	0.8	0.6	✓	✓
							±3*1	0.8	0.6	✓	✓
							±3*1	0.8	0.6	✓	✓
23	BDxxHC5	10	1.5	4.5 to 8.0	1.5 to 7.0	1.5 / 1.8 / 2.5 / 3.0 / 3.3 / 5.0 / 6.0 / 7.0	±1	0.8	0.6	✓	✓
							±3*1	0.8	0.6	✓	✓
							±3*1	0.8	0.6	✓	✓
24	BDxxHC0	10	1.0	4.5 to 8.0	0.8 to 7.0	1.5 / 1.8 / 2.5 / 3.0 / 3.3 / 5.0 / 6.0 / 7.0	±1	0.8	0.6	✓	✓
					1.5 to 7.0		±3*1	0.8	0.6	✓	✓
					1.5 to 7.0	5.0	±3*1	0.8	0.6	✓	✓
					1.5 to 7.0	1.5 / 1.8 / 2.5 / 3.0 / 3.3 / 5.0 /6.0 / 7.0	±3*1	0.8	0.6	✓	✓
25	BDxxHA5	10	0.5	4.5 to 8.0	1.5 to 7.0	1.5 / 1.8 / 2.5 / 3.0 / 3.3 / 5.0 / 6.0 / 7.0	±1	0.8	0.6	✓	✓
							±3*1	0.8	0.6	✓	✓
							±3*1	0.8	0.6	✓	✓
26	BDxxHA3	10	0.3	4.5 to 8.0	1.5 to 7.0	1.5 / 1.8 / 2.5 / 3.0 / 3.3 / 5.0 / 6.0 / 7.0	±1	0.8	0.6	✓	✓
							±3*1	0.8	0.6	✓	✓
							±3*1	0.8	0.6	✓	✓
27	BDxxIC0	7	1.0	2.4 to 5.5	0.8 to 4.5	1.0 / 1.2 / 1.25 / 1.5 / 1.8 / 2.5 / 2.6 / 3.0 / 3.3	±1	0.8	0.25	✓	✓
						1.0 / 1.2 / 1.5 / 1.8 / 2.5 / 3.0 / 3.3	±1	0.8	0.25	✓	✓
							±3*1	0.8	0.25	✓	✓
						3.3	±3*1	0.8	0.25	✓	✓
						1.0 / 1.2 / 1.5 / 1.8 / 2.5 / 3.0 / 3.3	±3*1	0.8	0.25	✓	✓
28	BDxxIA5	7	0.5	2.4 to 5.5	0.8 to 4.5	1.0 / 1.2 / 1.5 / 1.8 / 2.5 / 3.0 / 3.3	±1	0.8	0.25	✓	✓
							±3*1	0.8	0.25	✓	✓
							±3*1	0.8	0.25	✓	✓
						—	±3*1	0.8	0.25	✓	✓
29	BDxxKA5	7	0.5	2.3 to 5.5	—	1.0 / 1.2 / 1.5 / 1.8 / 2.5 / 3.0 / 3.3	±1	—	0.35	—	✓
					1.0 to 4.0	1.0 / 1.2 / 1.5 / 1.8 / 2.5 / 3.0 / 3.3	±1	0.75	0.35	✓	✓

*1 : Accuracy over the entire temperature range
*2 : xx are placeholders for alphanumeric characters that correspond to the output voltage

Functions					Other	Operating Temperature Ta (˚C)	Package	Target Applications			Series Name*2
Soft Start	Output Discharge	Overcurrent Protection	Thermal Shutdown	Overvoltage Protection				Consumer	Industrial Equipment	Automotive	
—	—	✓	✓	—	—	−40 to +105	TO220FP-3	✓	—	—	BAxxJC5T
—	—	✓	✓	—	—	−40 to +105	TO220FP-5	✓	—	—	BA00JC5WT
—	—	✓	✓	—	—	−40 to +105	TO252-3	✓	—	—	BAxxBC0FP
							TO220FP-3	✓	—	—	BAxxBC0T
—	—	✓	✓	—	—	−40 to +105	TO252-5	✓	—	—	BAxxBC0WFP
							TO220FP-5	✓	—	—	BAxxBC0WT
—	—	✓	✓	—	—	−40 to +105	TO220FP-5(V5)	✓	—	—	BAxxBC0WT-V5
—	—	✓	✓	—	—	−40 to +105	TO220CP-V5	✓	—	—	BAxxBC0WCP-V5
✓	—	✓	✓	—	—	−25 to +85	HTSOP-J8	✓	—	—	BDxxGC0WEFJ
✓	—	✓	✓	—	—	−40 to +105	HTSOP-J8	—	✓	—	BDxxGC0MEFJ-LB
✓	—	✓	✓	—	AEC-Q100	−40 to +105	HTSOP-J8	—	—	✓	BDxxGC0MEFJ-M
✓	—	✓	✓	—	—	−25 to +85	HTSOP-J8	✓	—	—	BDxxGA5WEFJ
✓	—	✓	✓	—	—	−40 to +105	HTSOP-J8	—	✓	—	BDxxGA5MEFJ-LB
✓	—	✓	✓	—	AEC-Q100	−40 to +105	HTSOP-J8	—	—	✓	BDxxGA5MEFJ-M
✓	—	✓	✓	—	—	−25 to +85	HTSOP-J8	✓	—	—	BDxxGA3WEFJ
							VSON008X2030	✓	—	—	BDxxGA3WNUX
✓	—	✓	✓	—	—	−40 to +105	HTSOP-J8	—	✓	—	BDxxGA3MEFJ-LB
✓	—	✓	✓	—	AEC-Q100	−40 to +105	HTSOP-J8	—	—	✓	BDxxGA3MEFJ-M
✓	—	✓	✓	—	—	−25 to +85	HTSOP-J8	✓	—	—	BDxxHC5WEFJ
✓	—	✓	✓	—	—	−40 to +105	HTSOP-J8	—	✓	—	BDxxHC5MEFJ-LB
✓	—	✓	✓	—	AEC-Q100	−40 to +105	HTSOP-J8	—	—	✓	BDxxHC5MEFJ-M
✓	—	✓	✓	—	—	−25 to +85	HTSOP-J8	✓	—	—	BDxxHC0WEFJ
✓	—	✓	✓	—	—	−40 to +105	HTSOP-J8	—	✓	—	BDxxHC0MEFJ-LB
✓	—	✓	✓	—	AEC-Q100	−40 to +125	HTSOP-J8	—	—	✓	BDxxHC0MEFJ-C
✓	—	✓	✓	—	AEC-Q100	−40 to +105	HTSOP-J8	—	—	✓	BDxxHC0MEFJ-M
✓	—	✓	✓	—	—	−25 to +85	HTSOP-J8	✓	—	—	BDxxHA5WEFJ
✓	—	✓	✓	—	—	−40 to +105	HTSOP-J8	—	✓	—	BDxxHA5MEFJ-LB
✓	—	✓	✓	—	AEC-Q100	−40 to +105	HTSOP-J8	—	—	✓	BDxxHA5MEFJ-M
✓	—	✓	✓	—	—	−25 to +85	HTSOP-J8	✓	—	—	BDxxHA3WEFJ
✓	—	✓	✓	—	—	−40 to +105	HTSOP-J8	—	✓	—	BDxxHA3MEFJ-LB
✓	—	✓	✓	—	AEC-Q100	−40 to +105	HTSOP-J8	—	—	✓	BDxxHA3MEFJ-M
✓	—	✓	✓	—	—	−25 to +85	HVSOF6	✓	—	—	BDxxIC0WHFV
✓	—	✓	✓	—	—	−25 to +85	HTSOP-J8	✓	—	—	BDxxIC0WEFJ
✓	—	✓	✓	—	—	−40 to +105	HTSOP-J8	—	✓	—	BDxxIC0MEFJ-LB
✓	—	✓	✓	—	AEC-Q100	−40 to +125	HTSOP-J8	—	—	✓	BDxxIC0MEFJ-C
✓	—	✓	✓	—	AEC-Q100	−40 to +105	HTSOP-J8	—	—	✓	BDxxIC0MEFJ-M
✓	—	✓	✓	—	—	−25 to +85	HTSOP-J8	✓	—	—	BDxxIA5WEFJ
✓	—	✓	✓	—	—	−40 to +105	HTSOP-J8	—	✓	—	BDxxIA5MEFJ-LB
✓	—	✓	✓	—	AEC-Q100	−40 to +105	HTSOP-J8	—	—	✓	BDxxIA5MEFJ-M
✓	—	✓	✓	—	AEC-Q100	−40 to +105	HVSOF6	—	—	✓	BD00IA5MHFV-M
—	—	✓	✓	—	—	−40 to +105	TO252-3	✓	—	—	BDxxKA5FP
—	—	✓	✓	—	—	−40 to +105	TO252-5	✓	—	—	BDxxKA5WFP
							SOP8	✓	—	—	BDxxKA5WFP

Single Output LDO-type Linear Regulator Lineup

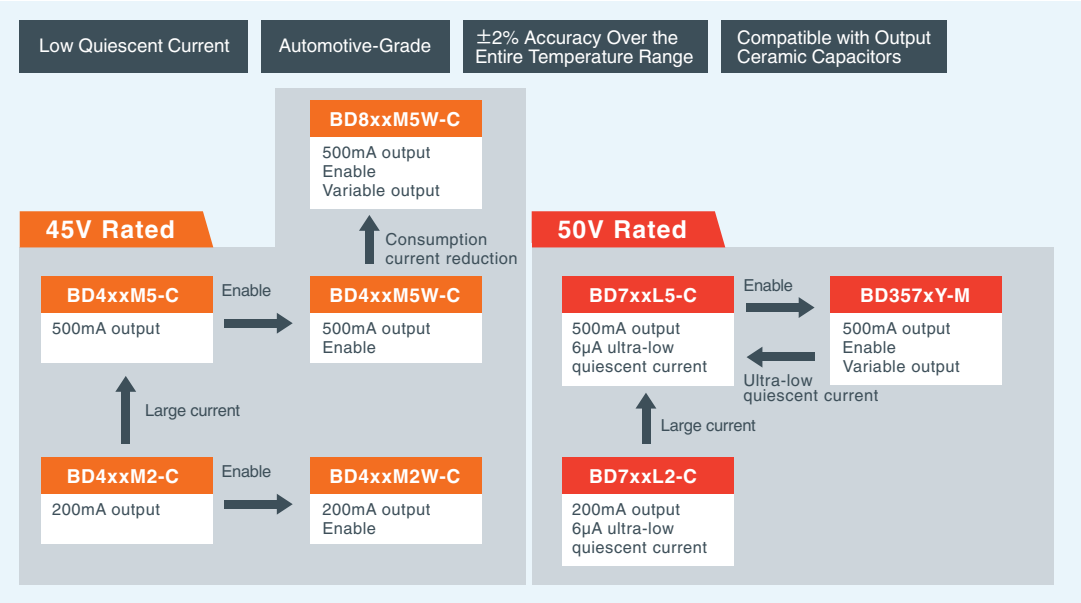
5.5V to 6.5V Rated Input

Series No.	Series	Rated Input (V)	Output Current (A)	Input Voltage (V)	Output Voltage(V)		Output Voltage Accuracy (%)	V_{REF} (V)	Current Consumption (μA)		
					Variable	Fixed				Enable	Output Ceramic Capacitor Compatibility
30	**BUxxSD5**	6.5	0.5	1.7 to 6.0	—	1.8 / 3.3	±2	—	33	✓	✓
31	**BUxxSA5**	5.5	0.5	1.8 to 5.0	—	3.0 / 3.3	±1	—	33	✓	✓
32	**BUxxTD3**	6.5	0.2	1.7 to 6.0	—	1.0 / 1.1 / 1.2 / 1.25 / 1.3 / 1.5 / 1.8 / 1.85 / 1.9 / 2.0 / 2.1 / 2.5 / 2.6 / 2.7 / 2.8 / 2.85 / 2.9 / 3.0 / 3.1 / 3.2 / 3.3	±1	—	35	✓	✓
33	**BUxxTD2**	6.5	0.2	1.7 to 6.0	—	1.0 / 1.05 / 1.1 / 1.15 / 1.2 / 1.25 / 1.3 / 1.5 / 1.8 / 1.85 / 1.9 / 2.0 / 2.05 / 2.1 / 2.3 / 2.5 / 2.6 / 2.7 / 2.75 / 2.8 / 2.85 / 2.9 / 3.0 / 3.1 / 3.2 / 3.3	±1	—	35	✓	✓
34	**BUxxTA2**	6.5	0.2	2.5 to 5.5	—	1.5 / 1.8 / 2.5 / 2.6 / 2.7 / 2.8 / 2.85 / 2.9 / 3.0 / 3.1 / 3.2 / 3.3	±1	—	40	✓	✓
35	**BUxxSA4**	6.5	0.2	1.7 to 5.5	—	1.8 / 2.5 / 2.55 / 2.8 / 3.0 / 3.3	±0.6	—	40	✓	✓
36	**BUxxSD2**	6.5	0.2	1.7 to 6.0	—	1.2 / 1.5 / 1.8 / 2.5 / 2.8 / 3.0 / 3.3	±2*1	—	33	✓	✓
37	**BUxxJA2**	6.5	0.2	1.7 to 6.0	—	1.0 / 1.1 / 1.2 / 1.25 / 1.5 / 1.8 / 2.5 / 2.8 / 2.85 / 2.9 / 3.0 / 3.3 / 3.4	±2*1	—	35	✓	✓
						1.0 / 1.2 / 1.25 / 1.5 / 1.8 / 2.5 / 2.8 / 2.85 / 3.0 / 3.3	±2*1	—	33	✓	✓
						1.0 / 1.2 / 1.25 / 1.5 / 1.8 / 2.5 / 2.8 / 2.85 / 3.0 / 3.3	±2*1	—	33	✓	✓
38	**BHxxNB1**	6	0.15	2.5 to 5.5	—	2.5 / 2.8 / 2.85 / 2.9 / 3.0 / 3.1 / 3.3	±1	—	60	✓	✓
39	**BHxxPB1**	6.5	0.15	1.7 to 5.5	—	1.2 / 1.5 / 1.8 / 2.5 / 2.8 / 2.9 / 3.0 / 3.1 / 3.3	±1	—	2	✓	✓
40	**BHxxSA3**	6.5	0.15	2.2 to 5.5	—	1.8 / 2.8 / 3.0	±1	—	40	✓	✓
41	**BHxxRB1**	6.5	0.15	2.5 to 5.5	—	1.5 / 1.8 / 2.5 / 2.8 / 2.9 / 3.0 / 3.1 / 3.3	±1	—	34	✓	✓

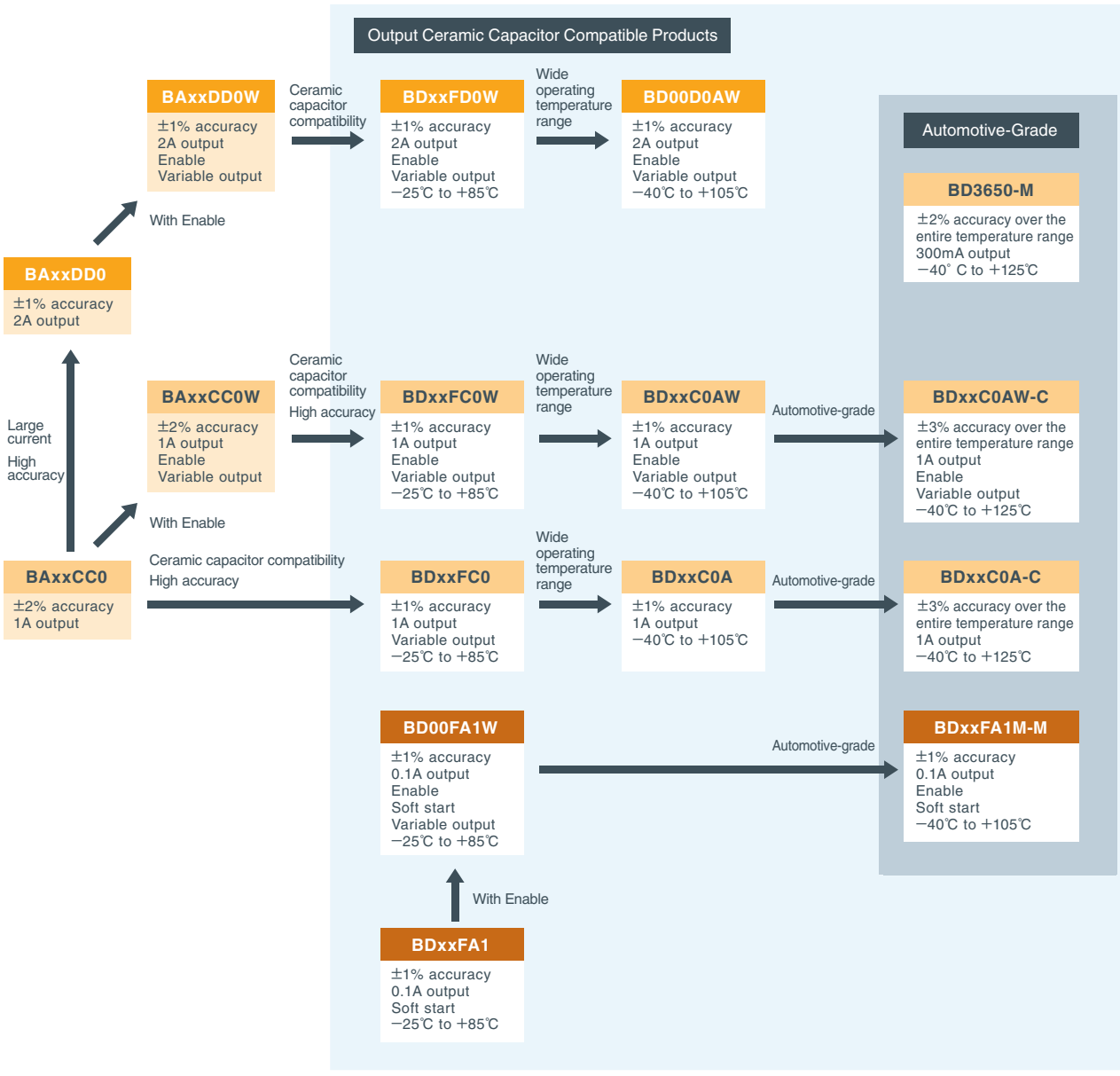
*1 : Accuracy over the entire temperature range
*2 : xx are placeholders for alphanumeric characters that correspond to the output voltage

Functions					Other	Operating Temperature Ta (˚C)	Package	Target Applications			Series Name*2
Soft Start	Output Discharge	Overcurrent Protection	Thermal Shutdown	Overvoltage Protection				Consumer	Industrial Equipment	Automotive	
—	✓	✓	✓	—	—	−40 to +105	SSOP5	✓	—	—	BUxxSD5WG
—	—	✓	✓	—	—	−40 to +105	UCSP30L1 (0.8×0.8×0.33)	✓	—	—	BUxxSA5WGWZ
—	✓	✓	✓	—	—	−40 to +85	SSOP5	✓	—	—	BUxxTD3WG
—	✓	✓	✓	—	—	−40 to +85	SSON004X1010	✓	—	—	BUxxTD2WNVX
—	✓	✓	✓	—	—	−40 to +85	SSON004X1216	✓	—	—	BUxxTA2WNVX
							HVSOF5	✓	—	—	BUxxTA2WHFV
—	—	✓	✓	—	—	−40 to +85	UCSP50L1 (0.8×0.8×0.55)	✓	—	—	BUxxSA4WGWL
—	—	✓	✓	—	AEC-Q100	−40 to +105	SSOP5	—	—	✓	BUxxSD2MG-M
—	✓	✓	✓	—	AEC-Q100	−40 to +125	SSON004R1010	—	—	✓	BUxxJA2MNVX-C
—	—	✓	✓	—	AEC-Q100	−40 to +125	SSOP5	—	—	✓	BUxxJA2VG-C
—	✓	✓	✓	—	AEC-Q100	−40 to +125	SSOP5	—	—	✓	BUxxJA2DG-C
—	—	✓	✓	—	—	−40 to +85	HVSOF5	✓	—	—	BUxxNB1WHFV
✓	✓	✓	✓	—	Light load mode	−40 to +85	HVSOF5	✓	—	—	BUxxPB1WHFV
—	—	✓	✓	—	—	−40 to +85	VCSP60N1 (0.96×0.96×0.675)	✓	—	—	BUxxSA3WGUT
—	—	✓	✓	—	—	−40 to +85	VCSP60N1 (1.04×1.0×0.675)	✓	—	—	BUxxRB1WGUT

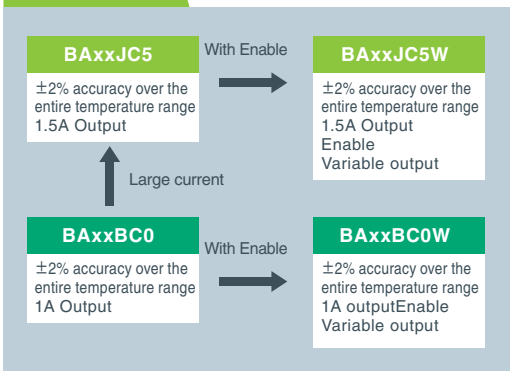
Single Output LDO-type Linear Regulator Selection Charts



35V Rated



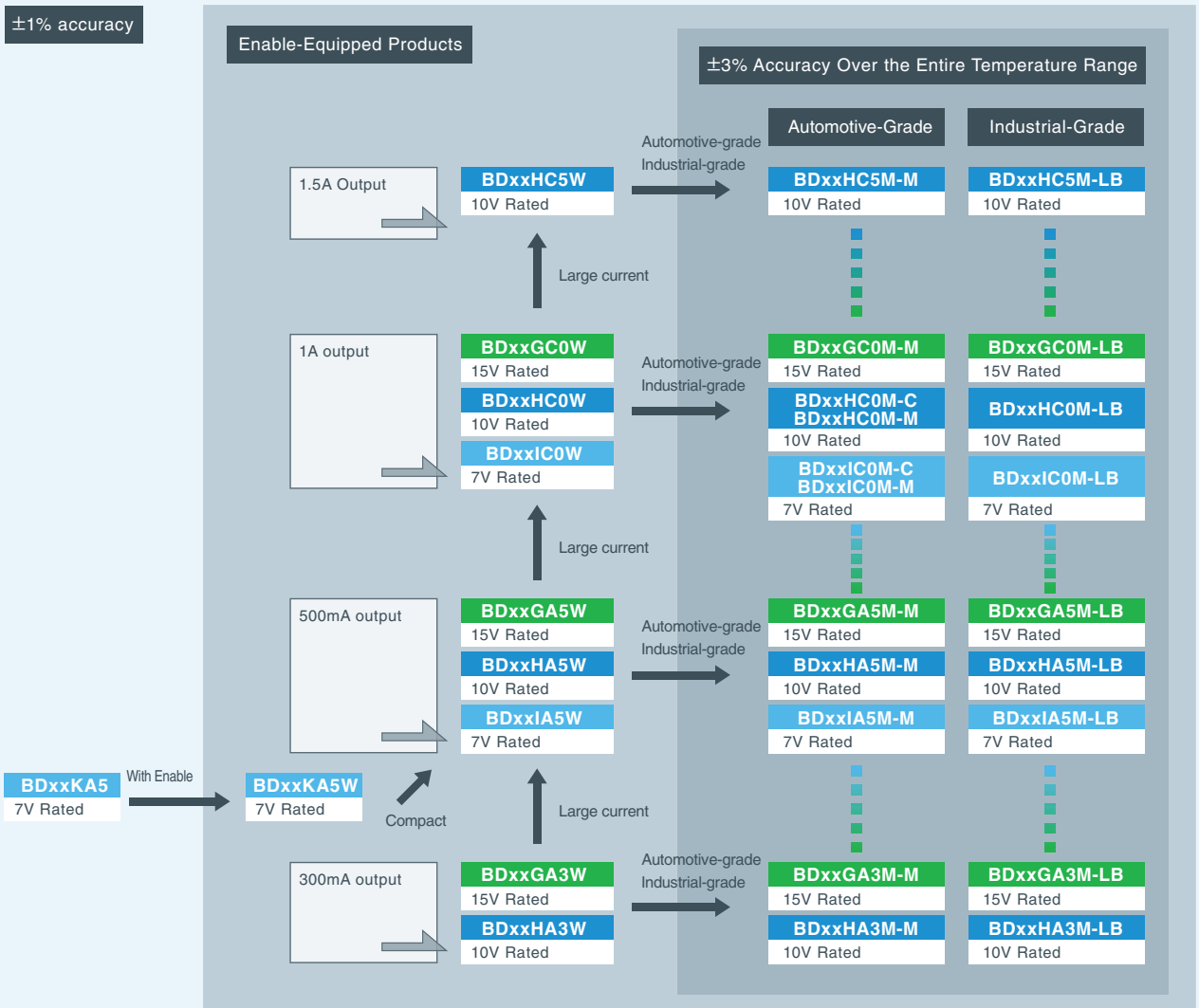
18V Rated



15V Rated 10V Rated 7V Rated

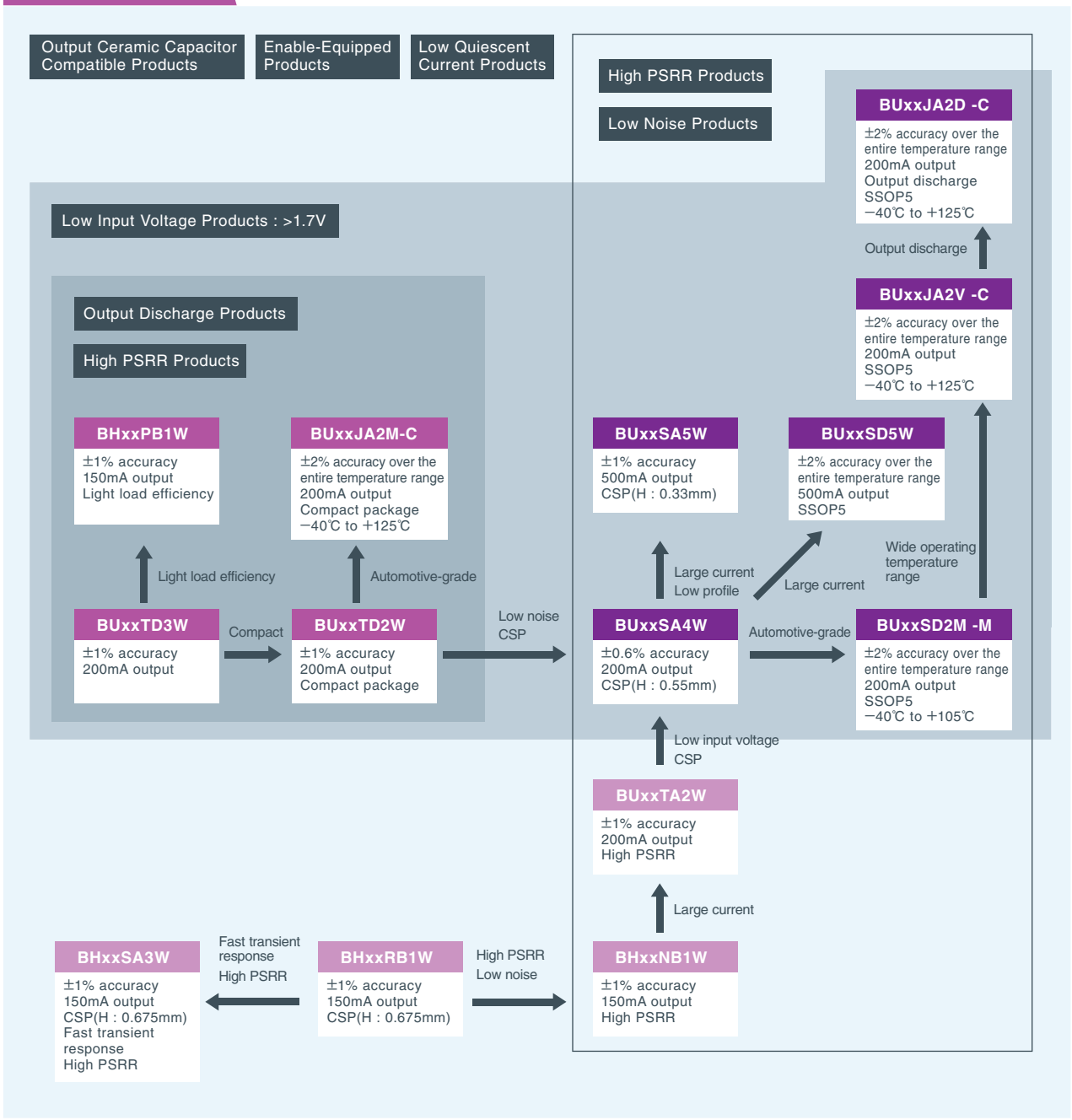
Output Ceramic Capacitor Compatible Products

±1% accuracy



Single Output LDO-type Linear Regulator Selection Charts

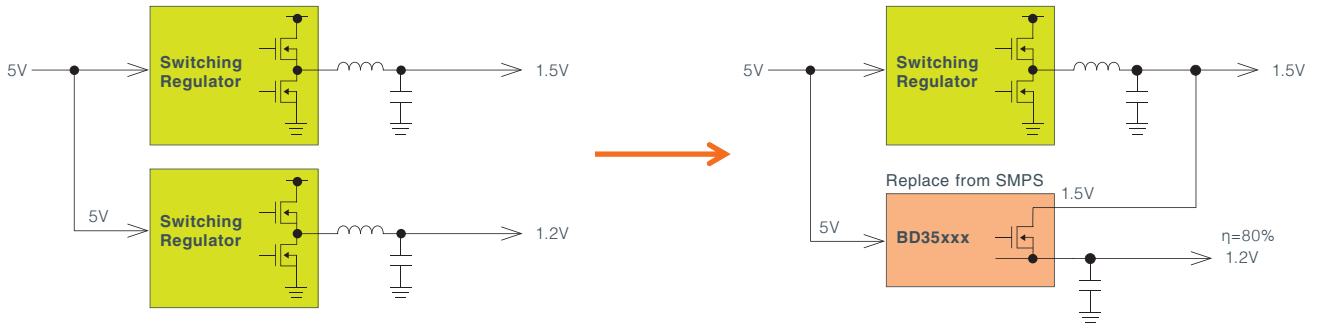
5.5 to 6.5V Rated



Single Output Ultra-Low LDO-type Linear Regulators

Low Power Supply Solutions

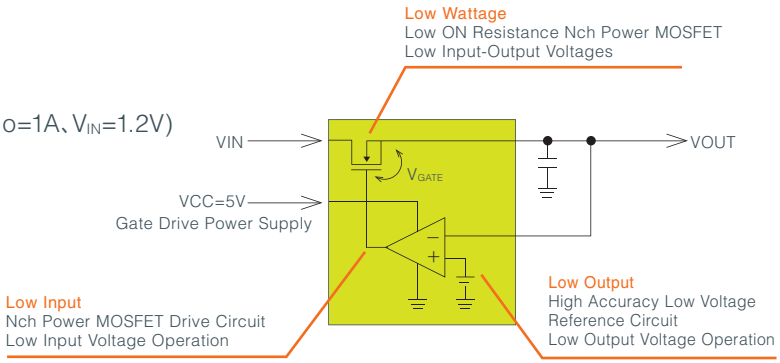
This series of ultra-low LDO-type linear regulators with built-in low ON resistance transistors provides the optimum solution for power supply systems requiring multiple low voltages, such as those using digital signal processing ICs. Ultra-low-LDO-type linear regulators deliver superior low input-output voltage characteristics and low input voltage operation while achieving efficiency comparable to that of switching regulators. This makes it possible to reduce the number of external parts, including the inductor.



Product Example BD3512MUV

- Input voltage : 0.7V to (V_{CC}−1)V
- Output voltage : 0.65V to 2.7V
- Output current : 3A
- High accuracy reference voltage circuit : 0.65V±1%
- Nch power MOSFET ON resistance : 65mΩ
- Minimum dropout voltage : 100mV Max(Io=1A、V_{IN}=1.2V)
- Soft start prevents inrush current during power ON
- Power Good output with adjustable delay setting
- Enable function
- Under Voltage Lock Out circuit(UVLO)
- Thermal Shutdown circuit(TSD)
- Overcurrent Protection circuit(OCP)

Ultra-Low LDO-type Linear Regulator



Part No.	Output Current (A)	Input Voltage(V)		Output Voltage (V)	Voltage Accuracy (%)	Dropout Voltage (mV) Io=0.1A	Power Good	Variable Soft Start	UVLO	OCP	TSD	Operating Temperature Ta (°C)	Package
		V_{CC}	V_{IN}										
BD3550HFN	0.5	4.3 to 5.5	0.95 to (V_{CC}−1)	0.65 to 2.7	±1	40	—	✓	✓	Recovery	Recovery	−10 to +100	HSON8
BD3507HFV	0.55	4.5 to 5.5	1.2 to (V_{CC}−1)	0.65 to 2.7		30							HVSOF6
BD3551HFN	1.0	4.3 to 5.5	0.95 to (V_{CC}−1)	0.65 to 2.7		20							HSON8
BD3506F	2.5	4.3 to 5.5	1.2 to (V_{CC}−1)	0.65 to 2.5		12							SOP8
BD3552HFN	2.0	4.3 to 5.5	0.95 to (V_{CC}−1)	0.65 to 2.7		10							HSON8
BD3508MUV	3.0	4.3 to 5.5	0.75 to (V_{CC}−1)	0.65 to 2.7		6.5							VQFN020V4040
BD3540NUV	0.5	3.0 to 5.5	0.95 to (V_{CC}−1)	0.65 to 2.7	±1	40	✓	✓	✓	Recovery	Recovery	−10 to +100	VSON010V3030
BD3541NUV	1.0	3.0 to 5.5	0.95 to (V_{CC}−1)	0.65 to 2.7		20					Recovery		VSON010V3030
BD3512MUV	3.0	4.3 to 5.5	0.7 to (V_{CC}−1)	0.65 to 2.7		6.5					Latch		VQFN020V4040
BD3509MUV	4.0	4.3 to 5.5	0.7 to (V_{CC}−1)	0.65 to 2.7		2.8					Recovery		VQFN020V4040
BD3504FVM	External FET	4.5 to 5.5	V_O+(I_O×R_O) to (V_{CC}−1)	0.65 to 2.5	±1	—	—	✓	✓	SCP Latch	Latch	−10 to +100	MSOP8
BD3521FVM	External FET	4.5 to 5.5		1.5		—							MSOP8

UVLO : Under Voltage Lock Out
OCP : Overcurrent Protection
TSD : Thermal Shutdown

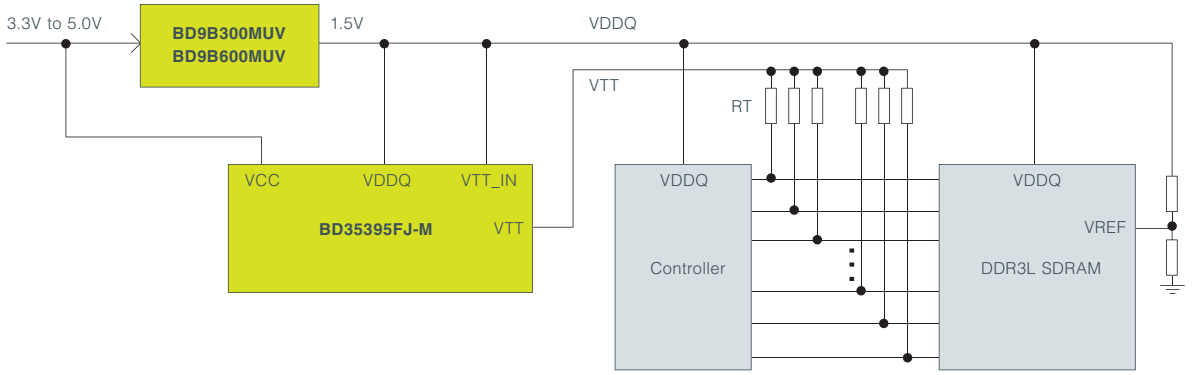
Multi-Output LDOs

Part No.	No. of Outputs	Rated Input (V)	ch	Output Current (A)	Input Voltage (V)	Output Voltage (V)	Output Voltage Accuracy (%)	V_{REF} (V)	Current Consumption	Functions						Other Features	Operating Temperature Ta (°C)	Package (mm)
										Enable	Output Ceramic Capacitor Compatibility	Output Discharge	UVLO	Overcurrent Protection	Thermal Shutdown			
BA30E00WHFP	2	18	1	0.6	4.1 to 16	3.3	±2	—	0.7mA	✓	—	—	—	✓	✓	—	−25 to +105	HRP7
			2	0.6	2.8 to V_{cc}1	Variable 0.8 to 3.3	±2	0.8										
BA33D15HFP	2	18	1	0.5	4.1 to 16	3.3	±2	—	0.7mA	—	✓	—	—	✓	✓	—	−25 to +105	HRP5
			2	0.5		1.5	±2	—										
BA33D18HFP	2	18	1	0.5	4.1 to 16	3.3	±2	—	0.7mA	—	✓	—	—	✓	✓	—	−25 to +105	HRP5
			2	0.5		1.8	±2	—										
BD7003NUX	2	7	1	0.3	2.5 to 5.5	1.5/1.8/2.6/2.8/2.9	±1.8	—	55µA	✓	✓	✓	✓	✓	✓	Programmable output	−40 to +85	VSON008X2020
			2	0.3		2.7/2.8/2.9/3.3	±1.8	—										
BD7004NUX	2	7	1	0.3	2.5 to 5.5	1.2/1.8/2.8/3.0/3.3	±1.8	—	55µA	✓	✓	✓	✓	✓	✓	Programmable output	−40 to +85	VSON008X2020
			2	0.3		1.5/1.8/3.0/3.3	±1.8	—										
BD7602GUL	2	7	1	0.1	2.7 to 5.5	3	±2	—	10µA	✓	✓	✓	✓	—	✓	I²C control GPO	−35 to +85	VCSP50L1C (1.6×1.6×0.57)
			2	0.15		Variable 2.8 to 3.3	±2	—										
BU6650NUX	3	6	1	0.2	2.5 to 5.5	2.8	±1	—	120µA	✓	✓	✓	—	✓	✓	—	−40 to +85	VSON008X2030
			2	0.2		2.8	±1	—										
			2	0.2		1.8	±25mV	—										
BU6651NUX	3	6	1	0.2	2.5 to 5.5	2.8	±1	—	120µA	✓	✓	✓	—	✓	✓	—	−40 to +85	VSON008X2030
			2	0.2		1.8	±25mV	—										
			2	0.2		1.5	±25mV	—										
BU6652NUX	3	6	1	0.2	2.5 to 5.5	2.8	±1	—	120µA	✓	✓	✓	—	✓	✓	—	−40 to +85	VSON008X2030
			2	0.2		2.8	±1	—										
			2	0.2		1.5	±25mV	—										
BU6653NUX	3	6	1	0.2	2.5 to 5.5	2.8	±1	—	120µA	✓	✓	✓	—	✓	✓	—	−40 to +85	VSON008X2030
			2	0.2		1.8	±25mV	—										
			2	0.2		1.8	±25mV	—										
BU6654NUX	3	6	1	0.2	2.5 to 5.5	3.3	±1	—	120µA	✓	✓	✓	—	✓	✓	—	−40 to +85	VSON008X2030
			2	0.2		1.8	±25mV	—										
			2	0.2		1.5	±25mV	—										
BU6655NUX	3	6	1	0.2	2.5 to 5.5	3.3	±1	—	120µA	✓	✓	✓	—	✓	✓	—	−40 to +85	VSON008X2030
			2	0.2		2.8	±1	—										
			2	0.2		1.8	±25mV	—										

Termination Regulators for DDR SDRAM

DDR SDRAM Power Supply Solutions

DDR memory requires 3 power supplies. The power supply that drives memory cells is VDDQ, which requires fast transient response and high voltage accuracy to ensure reliable memory operation. The input of the memory cell is determined based the VREF voltage which is 1/2 of VDDQ. Although the required current is small, voltage accuracy is required and it is necessary to follow changes in the VDDQ voltage. VTT is the termination voltage of the memory output, and terminates the memory output via the termination resistor RT. Like VREF, this voltage is half of VDDQ and it is also necessary to follow changes in the VDDQ voltage. As the memory output switches between High and Low the output current must be able to quickly follow Source or Sink operation.



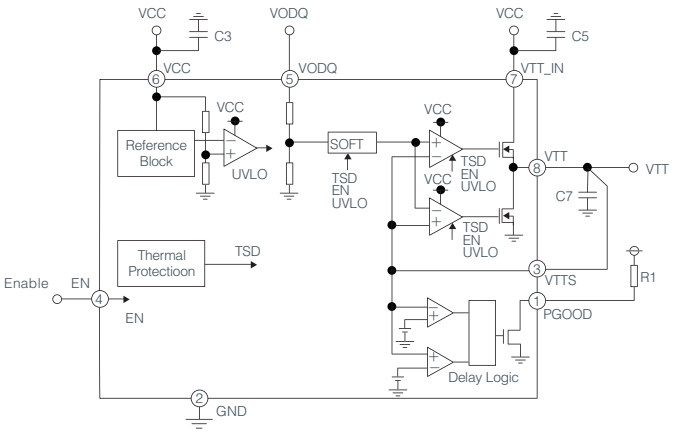
JEDEC Compliant DDR1/2/3/3L Support

The BD35395FJ-M is a termination regulator optimized for JEDEC-compliant DDR 1/2/3/3L SDRAM. VTT, one of the 3 power supplies required for DDR memory, is built in. The VTT output is a linear power supply with Nch MOSFETs capable of providing up to 1A to the Sink/Source. High-speed op amps are built in that deliver superior transient response characteristics. A 3.3V or 5.0V bias power supply is required to drive the internal Nch MOSFETs. In order to maintain with the voltage accuracy specified by JEDEC, independent reference input (VDDQ) and feedback (VTTS) pins are provided that achieve excellent output voltage accuracy and load regulation.

Product Example **BD35395FJ-M**

- Input voltage : 2.7V to 5.5V
- Output current : ±1A
- Compatible with DDR1/2/3/3L SDRAM
- Built-in termination push-pull power supply(VTT)
- Supports output ceramic capacitors
- Enable function
- Power Good output
- Thermal Shutdown(TSD)
- Under Voltage Lock Out(UVLO)

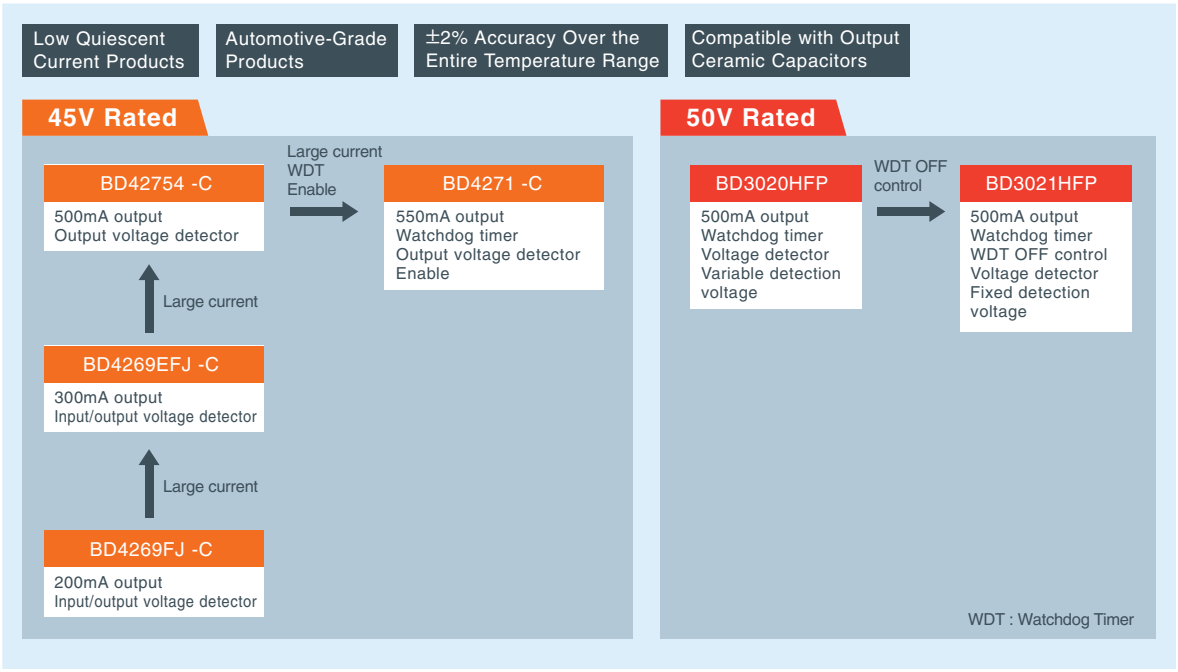
BD35395FJ-M Application Circuit Diagram



Part No.	VCC Input Voltage (V)	VTT_IN Termination Input Voltage (V)	VDDQ Reference Input Voltage (V)	VTT Output Voltage (V)	VTT Voltage Accuracy (mV)	VTT Output Current (A)	VREF Output Current (mA)	Functions															Operating Temperature Ta (°C)	Package
								Enable	Soft Start	Power Good	UVLO	Output Ceramic Capacitor Compatibility	Thermal Shutdown	DDR(VDDQ) DDR1(2.5V/2.6V)	DDR2(1.8V)	DDR2L(1.5V)	LPDDR2(1.2V)	DDR3(1.5V)	DDR3L(1.35V)	DDR3U(1.25V)	LPDDR3(1.2V)	DDR4(1.2V)		
BD3533F/ BD3533FVM/ BD3533HFN	2.7 to 5.5	1.0 to 5.5	1.0 to 2.75	0.75 to 1.25	±30	±1.0	±20	✓	✓	—	✓	—	Recovery	✓	✓	—	—	—	—	—	—	—	−20 to +100	SOP8/ MSOP8/ HSON8
BD3539FVM/ BD3539NUX	2.7 to 5.5	1.0 to 5.5	1.0 to 2.75	0.75 to 1.25	±15	±1.0	±25	✓	✓	—	✓	✓	Recovery	✓	✓	✓	—	✓	—	—	—	—	−30 to +100	MSOP8/ VSON008X2030
BD35390FJ	2.7 to 5.5	1.0 to 5.5	1.0 to 2.75	0.75 to 1.25	±15	±1.0	—	✓	✓	✓	✓	✓	Recovery	✓	✓	✓	—	✓	—	—	—	—	−30 to +100	SOP-J8
BD35395FJ-M	2.7 to 5.5	1.0 to 5.5	1.0 to 2.75	0.5 to 1.375	±13.5	±1.0	—	✓	✓	✓	✓	✓	Recovery	✓	✓	✓	—	✓	✓	—	—	—	−40 to +105	SOP-J8

LDO+(Plus)

The BD4269FJ, BD4269EFJ, and BD42754 with built-in voltage detection function are ideal for abnormal voltage monitoring.
At the same time, the BD4271, BD3020HFP, and BD3021HFP equipped with a watchdog timer and voltage detection circuit support the detection of abnormal voltages and MCU malfunctions.

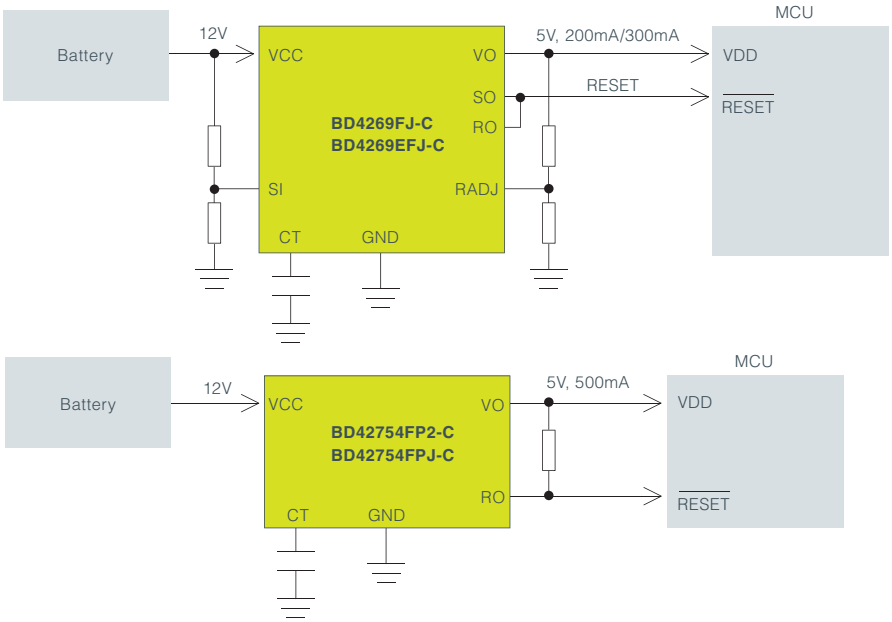


Part No.	Rated Input (V)	Output Current (A)	Input Voltage (V)	Output Voltage (V)	Output Voltage Accuracy (%)	V_{REF} (V)	Current Consumption (μA)	Functions						Other Features	Operating Temperature Ta (˚C)	Package
								Enable	Output Ceramic Capacitor Compatibility	Watchdog Timer	Voltage Detector	Overcurrent Protection	Thermal Shutdown			
BD3020HFP	50	0.5	5.6 to 36	5.0	±2*1	—	80	—	✓	✓	Variable	✓	✓	—	−40 to +125	HRP7
BD3021HFP	50	0.5	5.6 to 36	5.0	±2*1	—	80	—	✓	✓	Fixed	✓	✓	WDT*2 OFF Control	−40 to +125	HRP7
BD4271HFP-C/ BD4271FP2-C	45	0.55	6.0 to 45	5.0	±2*1	—	75	✓	✓	✓	Fixed	✓	✓	AEC-Q100	Tj −40 to +150	HRP7/ TO263-7
BD42754FPJ-C/ BD42754FP2-C	45	0.5	5.5 to 45	5.0	±2*1	—	75	—	✓	—	Fixed	✓	✓	AEC-Q100	Tj −40 to +150	TO252-J5/ TO263-5
BD4269EFJ-C/ BD4269FJ-C	45	0.3 0.2	6.0 to 45	5.0	±2*1	—	70	—	✓	—	Variable	✓	✓	AEC-Q100	Tj −40 to +150	HTSOP-J8/ SOP-J8

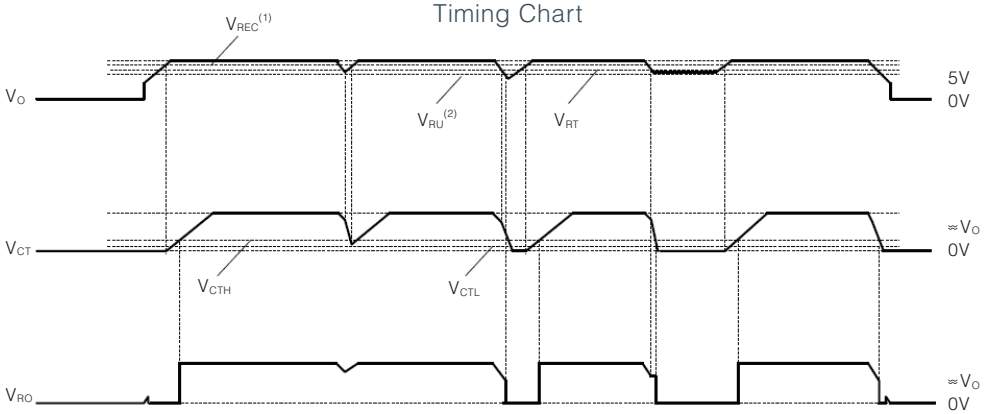
*1 : Accuracy over the entire temperature range
*2 : Watchdog timer

Power Supply Monitoring Solutions

The BD4269FJ-C, BD4269EFJ-C, BD42754FP2-C, and BD42754FPJ-C are AEC-Q100 qualified 45V rated 200mA to 500mA output regulators that integrate a power supply voltage monitoring reset circuit on a single chip.



Timing Chart



(1)$V_{REC}=V_{RT}+V_{RHY}$
(2)V_{RU}=2V to 3.5V

Product Example BD4269FJ-C/BD4269EFJ-C/BD42754FP2-C/BD42754FPJ-C

- Ultra-low quiescent current : 70μA(BD4269)/65μA(BD42754)
- Output transistor : Pch DMOS low saturation type
- Max rated voltage : 45V
- Output current : 200mA(BD4269FJ), 300mA(BD4269EFJ), 500mA(BD42754)
- Output voltage : 5.0V±2%(over entire temp. range)
- Supports low ESR ceramic capacitors at the output
- Integrated output low voltage reset circuit(power ON reset) enables setting of startup delay time
- Built-in power supply voltage detection reset circuit makes it possible to monitor the input power supply voltage or voltage of other power supplies(BD4269)
- Enables adjustment of the detection voltage of the power supply voltage detection reset circuit and output low voltage reset via external resistance(BD4269)
- Internal output current limiter circuit prevents IC damage(i.e. due to output shorts)
- Thermal shutdown circuit incorporated to prevent thermal damage to the IC caused by overload conditions

BD4269FJ-C
Io=200mA
SOP-J8

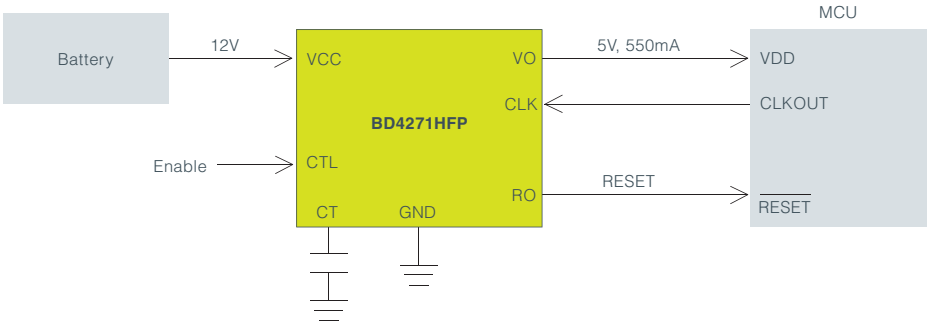
BD4269EFJ-C
Io=300mA
HTSOP-J8

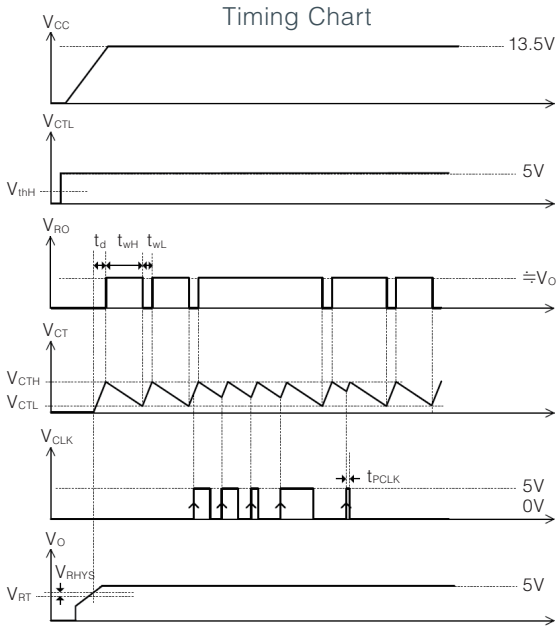
BD42754FP2-C
Io=500mA
TO263-5

BD42754FPJ-C
Io=500mA
TO252-J5

MCU Monitoring Power Supply Solution

The BD4271HFP-C and BD4271FP2-C are AEC-Q100 qualified 45V rated 550mA output regulators that integrate a power supply voltage monitoring reset circuit and watchdog timer (WDT) capable of detecting MCU malfunctions on a single chip.





Product Example **BD4271HFP-C/BD4271FP2-C**

- Ultra-low quiescent current : 75μA(Typ)
- Output transistor : Pch DMOS low saturation type
- Max rated voltage : 45V
- Output current : 550mA
- Output voltage : 5.0V±2%(over entire temp. range)
- Supports low ESR ceramic capacitors for output phase compensation
- Built-in watchdog timer detects MCU hangups and performs reset to enable system restart
- Enables adjustment of the watchdog monitoring time using an external capacitor
- Integrated output low voltage reset circuit (power ON reset) enables adjustable startup delay time setting
- Output ON/OFF control possible using the CTL pin
- Built-in overcurrent protection circuit prevents IC damage (i.e. due to output shorts)
- Integrated thermal shutdown circuit prevents IC damage (i.e. due to overload conditions)

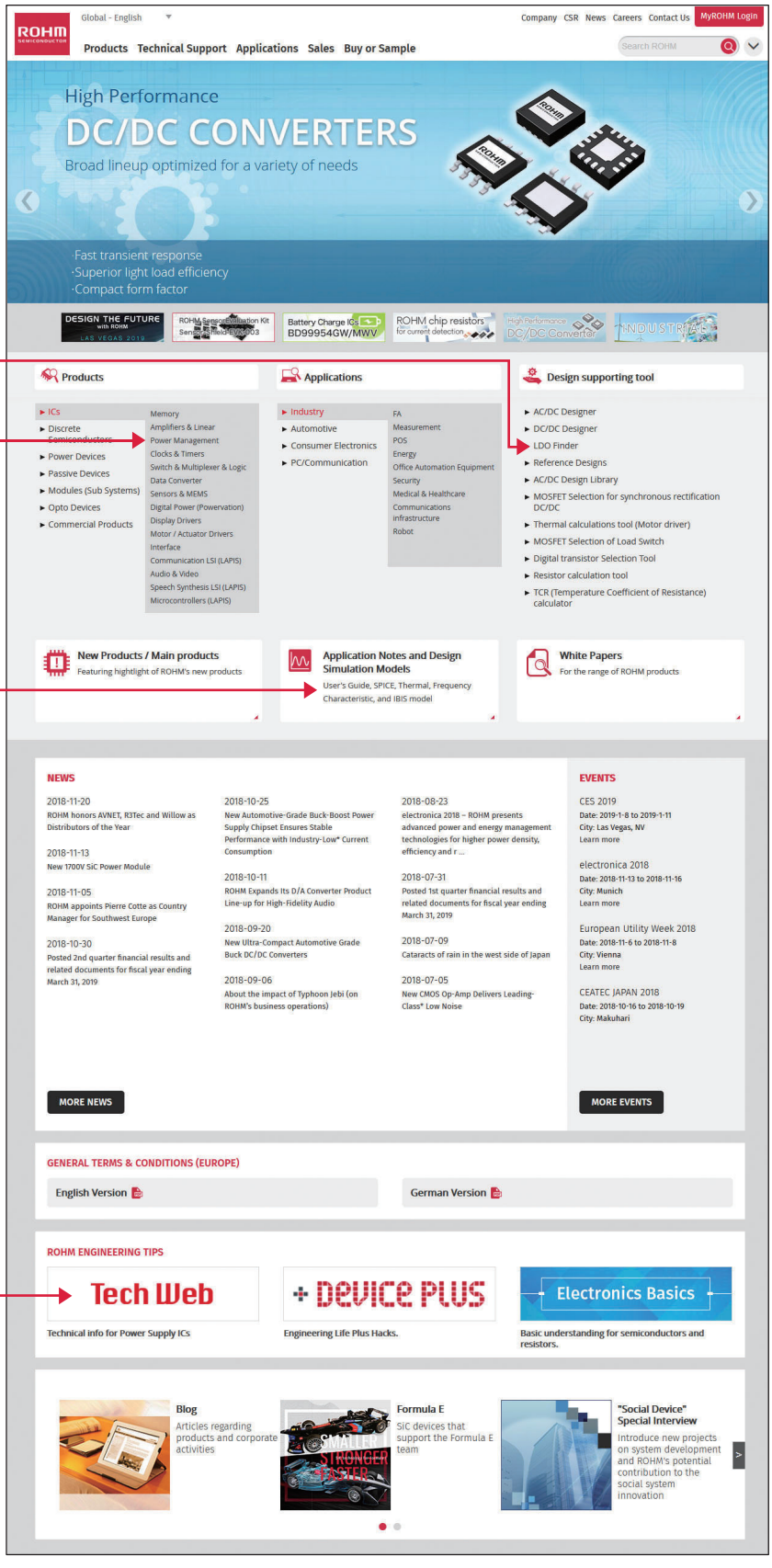
BD4271HFP-C
HRP7
9.395mm×10.54mm×2.005mm

BD4271FP2-C
TO263-7
10.16mm×15.10mm×4.70mm

Guide to ROHM's Website https://www.rohm.com

For the full lineup of power supply ICs, please visit ROHM's website.

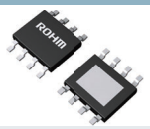
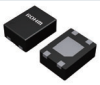
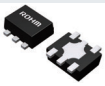
Technical materials and tools are available, including datasheets, application notes, reference circuits, evaluation boards, and Spice models.



Tech Web, a dedicated technical site for power supply ICs, provides technical information useful for designers seeking basic knowledge on power ICs along with seminar information.

Package List

Surface Mount Packages

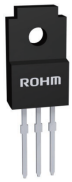
Surface Mount Packages	External Image	Package Code	Size(mm) W(Typ)×D(Typ)×H(Max)
HTSOP-J8		EFJ	4.90×6.00×1.00
SOP-J8		FJ	4.90×6.00×1.65
SOP8		F	5.00×6.20×1.71
SSOP-B20		FV	6.50×6.40×1.45
SSON004X1010		NVX	1.00×1.00×0.60
SSON004R1010		NVX	1.00×1.00×0.60
SSON004X1216		NVX	1.20×1.60×0.60
HVSOF5		HFV	1.60×1.60×0.60
HVSOF6		HFV	1.60×3.00×0.75
VSON008X2030		NUX	2.00×3.00×0.60
VSON010V3030		NUV	3.00×3.00×1.00
VSON010X3030		NUX	3.00×3.00×0.60
VQFN020V4040		MUV	4.00×4.00×1.00
SSOP5(SOT-23-5*)		G	2.90×2.80×1.25
SOT89-3K		FP3	4.50×4.095×1.60
SOT223-4F		FP3	6.53×7.00×1.80
TO252-3		FP	6.50×9.50×2.50
TO252S-3		FPS	6.50×9.50×1.30
TO252-5		FP	6.50×9.50×2.50

*JEDEC code

Surface Mount Packages

Surface Mount Packages	External Image	Package Code	Size(mm) W(Typ)×D(Typ)×H(Max)
TO252-J5/ TO252-J5F		FPJ	6.60×10.10×2.38
TO263-3(F)		FP2	10.16×15.10×4.70
TO263-5(F)		FP2	10.16×15.10×4.70
TO263-7		FP2	10.16×15.10×4.70
HRP5		HFP	9.395×10.54×2.005
HRP7		HFP	9.395×10.54×2.005

Through-Hole Packages

Surface Mount Packages	External Image	Package Code	Size(mm) W(Typ)×D(Typ)×H(Max)
TO220CP-3		CP	10.00×20.81×4.60
TO220FP-3		T	10.00×30.50×4.60
TO220CP-V5		CP	10.00×20.12×4.60
TO220FP-5		T	10.00×30.50×4.60

Wafer Level Chip Scale Packages

Surface Mount Packages	External Image	Package Code	Size(mm) W(Typ)×D(Typ)×H(Max)
VCSP60N1	Please refer to the individual product datasheets	GUT	Please refer to the individual product datasheets
UCSP30L1		GWZ	
UCSP50L1		GWL	

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