SANKEN ELECTRIC CO., LTD.

Selection Guide

- Buck Switching Regulator ICs
- Liner Regulator (LDO) ICs
- Peripheral Diodes

All information in this guide is as of the date of publication.
Please make sure that you are using the latest version of the guide.
If you need more product information, please refer to our data sheets.
https://www.sanken-ele.co.jp/en

Contents

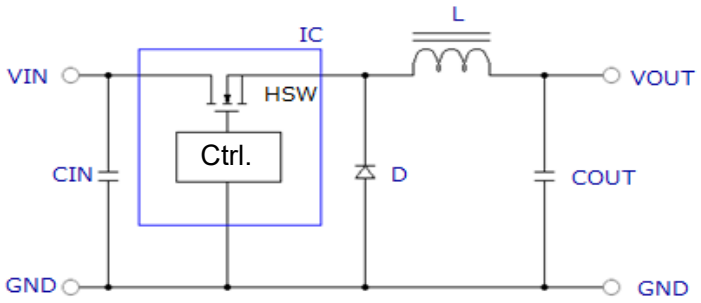
Overview: Sanken's Regulator ICs

Sanken's buck regulators include high-efficiency switching regulators and low-noise linear regulators.
Our regulator ICs incorporate power transistors, enabling smaller PCB designs.

◆Buck Switching Regulator

Asynchronous Switching Regulator

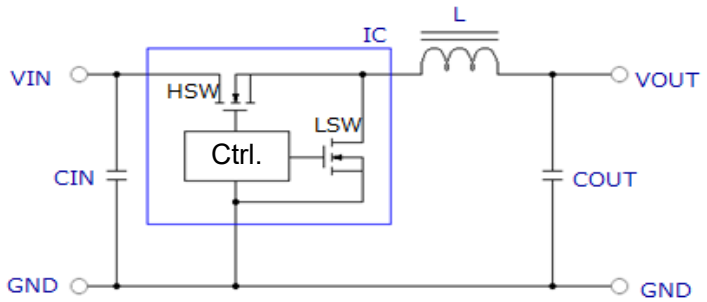
→ p. 5



- ✓ Basic buck switching regulator
- ✓ Simplified control
- ✓ Freewheel diode required (see p. 34)

Synchronous Switching Regulator

→ p. 6

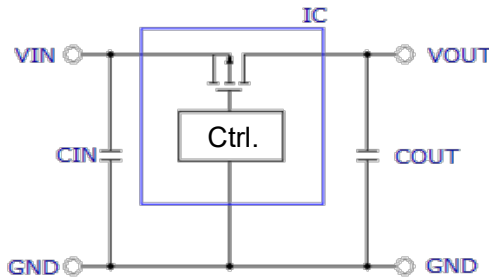


- ✓ No freewheel diode required
- ✓ High-efficiency
- ✓ Higher frequencies than asynchronous switching regulators

◆Linear Regulator

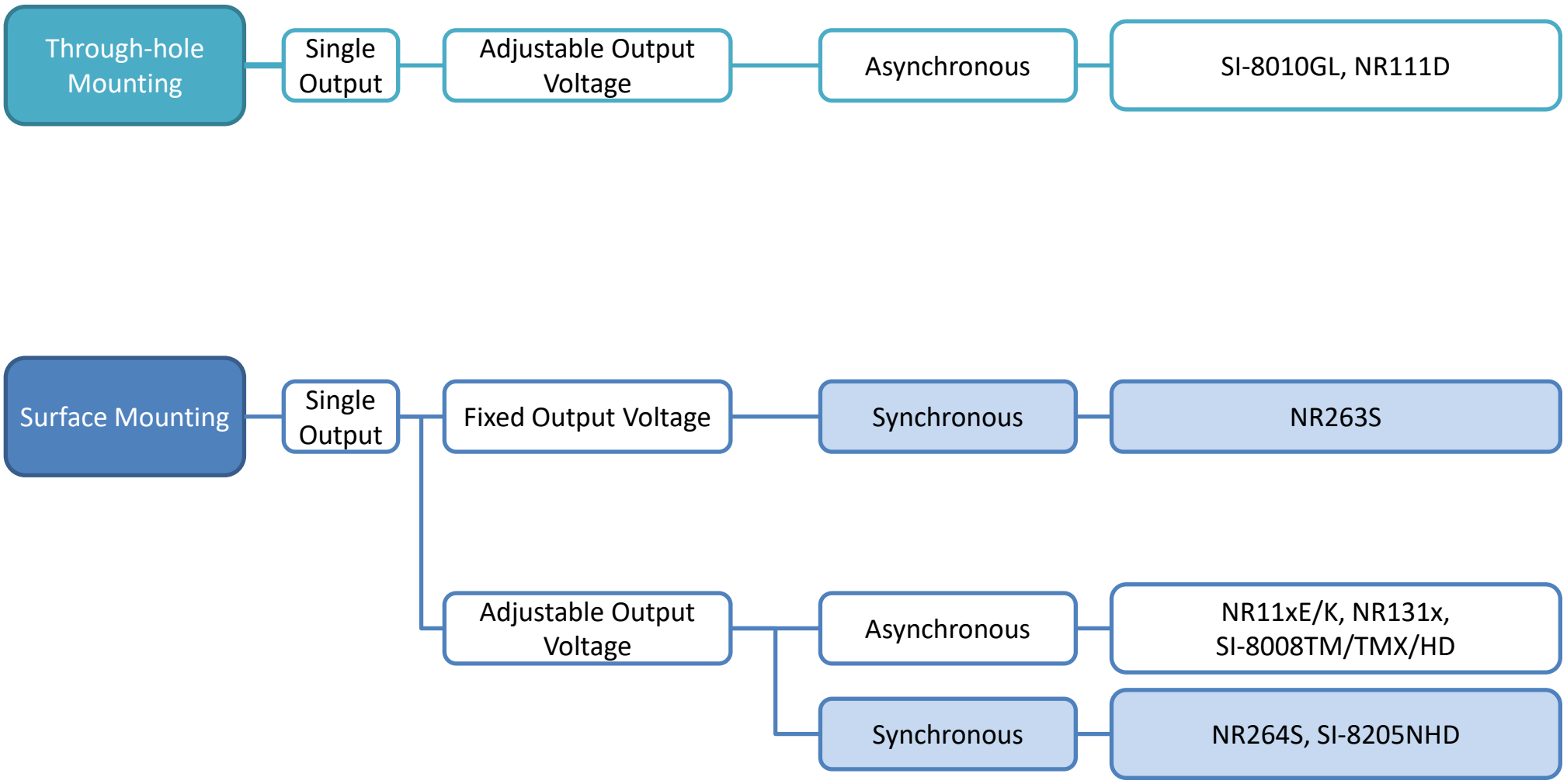
LDO

→ p. 7



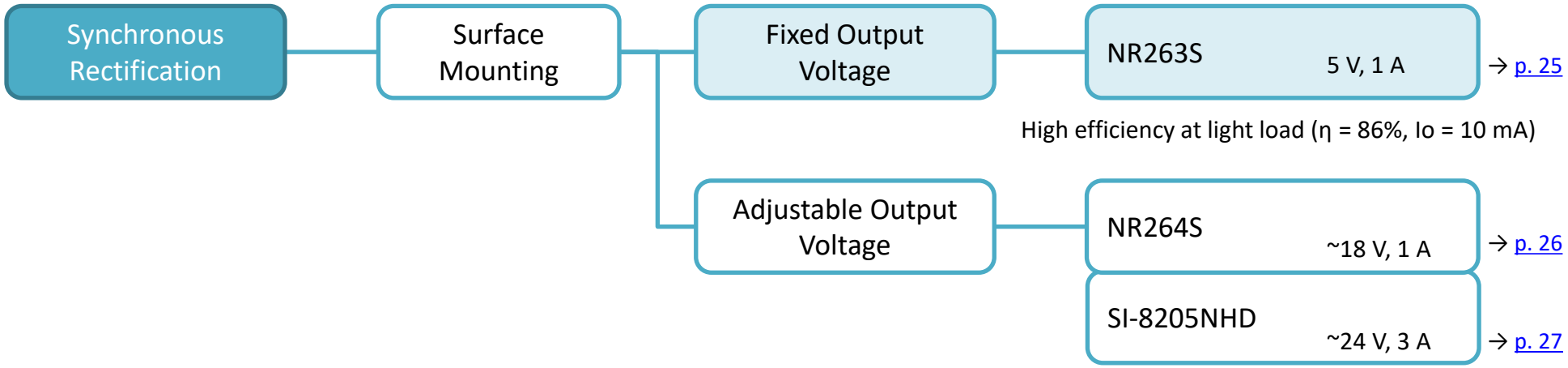
- ✓ Suitable for switching-noise-sensitive applications
- ✓ Fewer external components (fixed output voltage)
- ✓ Lower input-to-output voltage difference (LDO: Low Dropout)

Selection Guide: Buck Switching Regulators

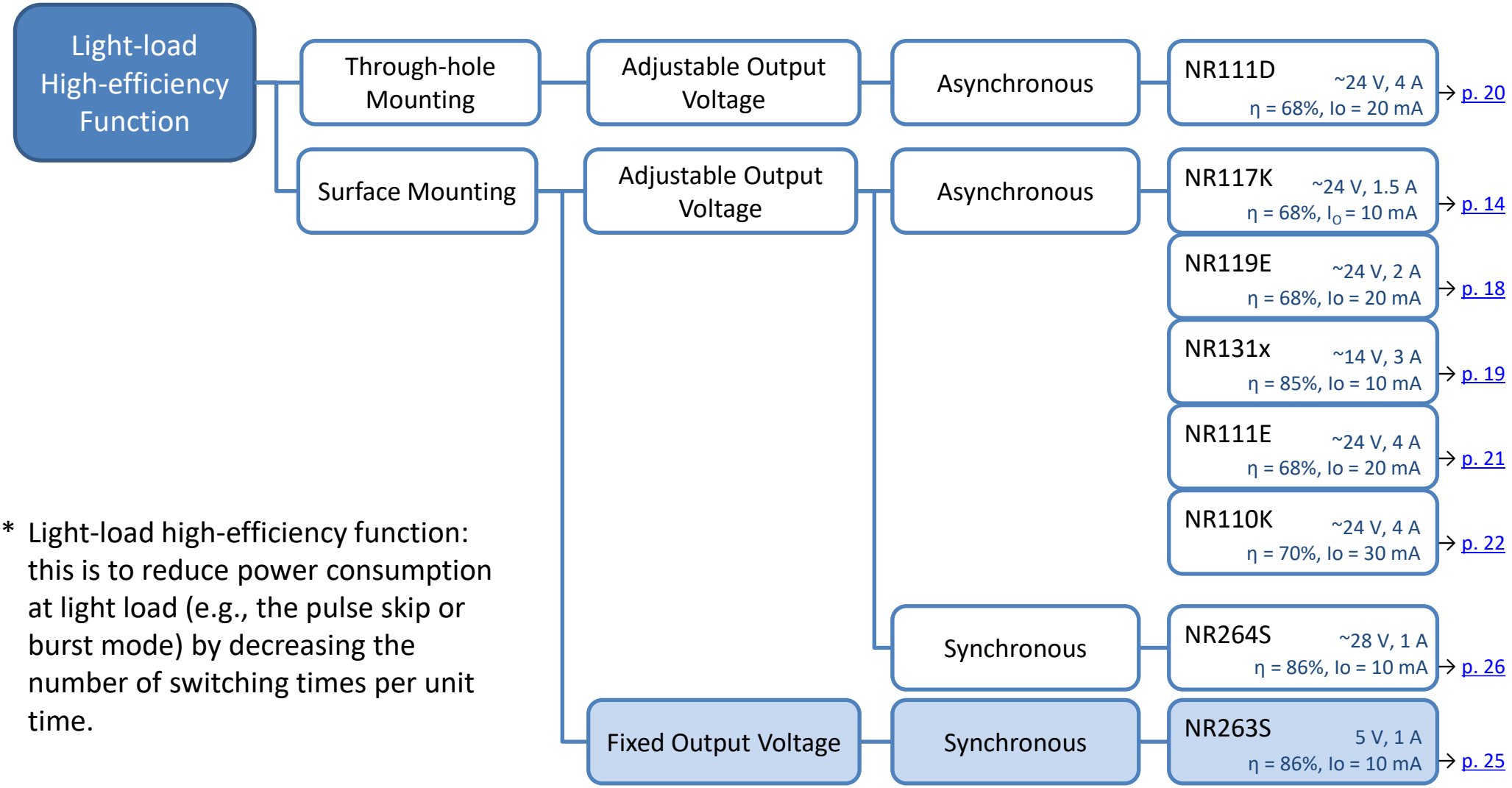


Selection Guide: Synchronous Buck Switching Regulators

A synchronous topology enables high-efficiency and high-frequency operations compared to an asynchronous topology. This helps your application use small inductors, resulting in a reduction in PCB size.



Our buck switching regulators enhance efficiency at light load. The products with the light-load high-efficiency function can achieve a light-load efficiency of η = 68% to 85%. (Products without this function: η = 40% to 50%)

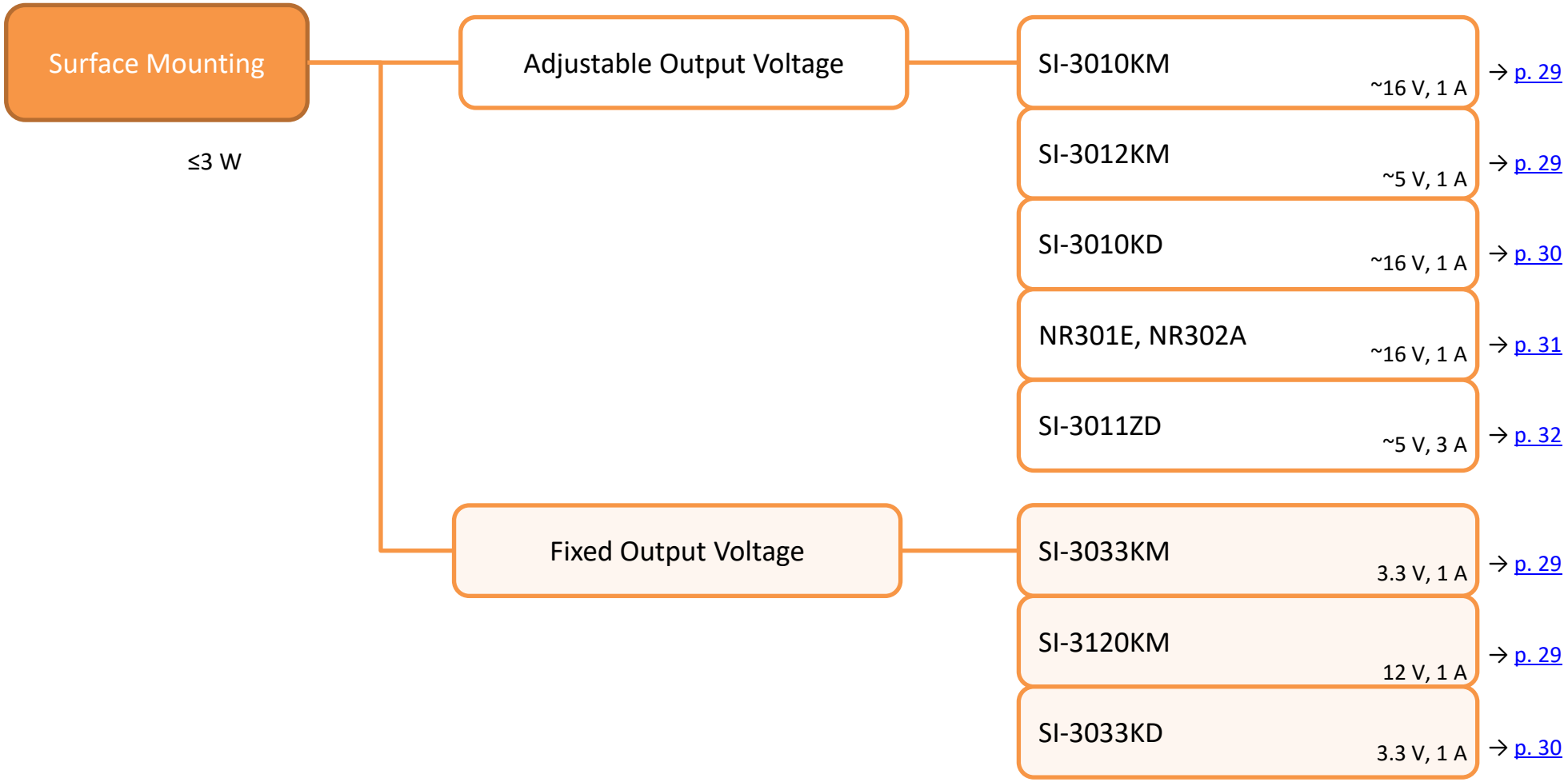


* Light-load high-efficiency function: this is to reduce power consumption at light load (e.g., the pulse skip or burst mode) by decreasing the number of switching times per unit time.

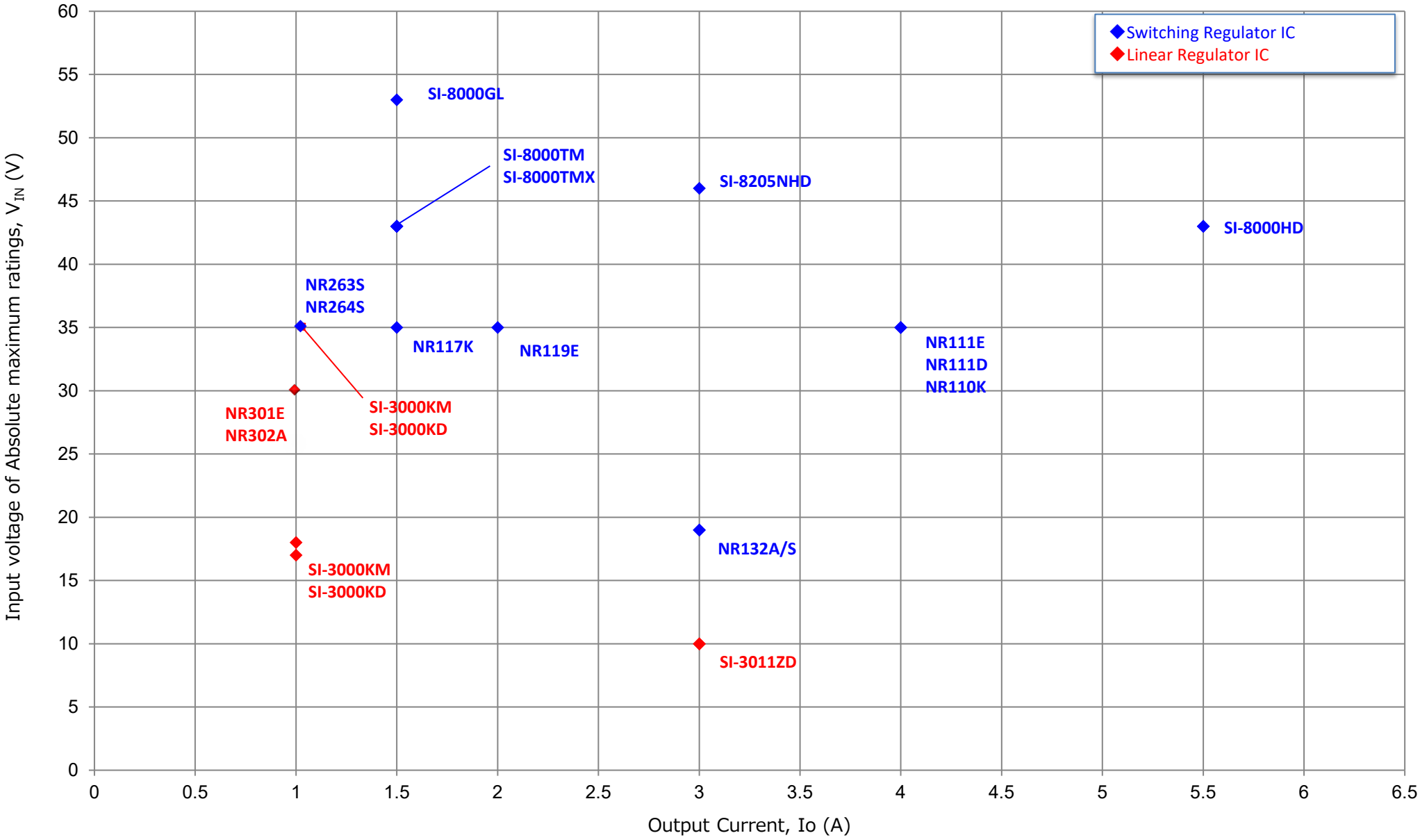
The efficiency (η) is measured at V_{IN} = 12 V, Vo = 5 V.

Overview: LDO Linear Regulators

We offer a wide selection of linear regulators with I_O = 0.25 A to 3 A and P_D = 0.75 W to 3 W.
You will find the LDO linear regulator that best suits your application.



Product Map: Buck Switching Regulators (V_{IN} vs. I_O)



Product List: Asynchronous Switching Regulator ICs (Single-output) 1/2

Io	Part Number	V_{IN} (V)		V_O (V)		Frequencies (kHz)		High Efficiency at Light Load	Phase Compensation	C_{OUT} Ceramic Capacitor	Package	Page
		Min.	Max.	Fixed	Adjustable	Fixed	Adjust-able					
1.5 A	NR117K	8	35	—	0.8 – 24	30	—	✓	Internal	✓	HSOP8	p. 14
	SI-8008TM	4.5	43	—	0.8 – 24	300	—	—	Internal	—	TO-252 -5L	p. 15
	SI-8008TMX	4.5	43	—	0.8 – 24	300	—	Iq(OFF) = 1 µA	Internal	—		p. 16
	SI-8010GL	8	53	—	1 – 14	250	—	—	External	—	DIP8	p. 17
2 A	NR119E	6.5	35	—	0.8 – 24	364	—	✓	Internal	✓	eSOIC8	p. 18

Product List: Asynchronous Switching Regulator ICs (Single-output) 2/2

Io	Part Number	V_{IN} (V)		V_O (V)		Frequencies (kHz)		High Efficiency at Light Load	Phase Compensation	C_{OUT} Ceramic Capacitor	Package	Page
		Min.	Max.	Fixed	Adjustable	Fixed	Adjust-able					
3 A	NR131A	4.5	19	—	0.8 – 14	350	—	✓	Internal	✓	eSOIC8	p. 19
	NR131S	4.5	19	—	0.8 – 14	350	—	✓	Internal	✓	SOIC8	
4 A	NR111D	8	35	—	0.8 – 24	350	—	✓	Internal	✓	DIP8	p. 20
	NR111E	6.5	35	—	0.8 – 24	350	—	✓	Internal	✓	eSOIC8	p. 21
	NR110K	8	35	—	0.8 – 24	350	—	✓	Internal	✓	HSOP8	p. 22
5.5 A	SI-8008HD	4.5	43	—	0.8 – 24	150	—	—	Internal	—	TO-263 -5L	p. 23

Product List: Synchronous Switching Regulator ICs (Multi-output)

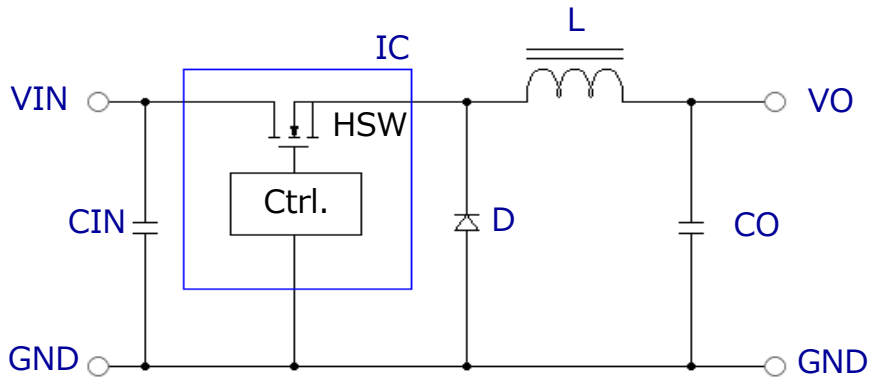
Io	Part Number	V_{IN} (V)		V_O (V)		Frequencies (kHz)		High Efficiency at Light Load	Phase Compensation	C_{OUT} Ceramic Capacitor	Package	Page
		Min.	Max.	Fixed	Adjustable	Fixed	Adjust-able					
1A	NR263S	8	31	5.0	—	500	—	✓	Internal	✓	SOP8	p. 25
	NR264S	8	31	—	3 – 18	500	—	✓	Internal	✓	SOP8	p. 26
3 A	SI-8205NHD	8	46	—	0.5 – 24	—	200 – 1000	—	External	✓	HSOP8	p. 27

Product List: LDO Linear Regulator ICs

Io	Part Number	V_{IN} (V)		V_O (V)		VIN-Vo Minimum Differential Voltage (V)	OCP Operation	ON/OFF by External Signal	Pd (W)	C_{OUT} Ceramic Capacitor	Package	Page
		Min.	Max.	Fixed	Adjustable							
1 A	SI-3033KM	3.9	17	3.3	—	0.6	Drooping	✓	1	✓	TO-252 -5L	p. 29
	SI-3012KM	2.4	17	—	1.28 – 5	0.6	Drooping	✓	1	✓		
	SI-3120KM	12.6	35	12.0	—	0.6	Fold back	✓	1	✓		
	SI-3010KM	2.4	35	—	1.1 – 16	0.6	Fold back	✓	1	✓		
	SI-3033KD	3.9	17	3.3	—	0.6	Drooping	✓	3	—	TO-263 -5L	p. 30
	SI-3010KD	2.4	35	—	1.1 – 16	0.6	Fold back	✓	3	—	TO-263 -5L	
	NR301E	2.7	30	—	1.1 – 16	0.6	Fold back	✓	1.4	✓	eSOIC8	p. 31
	NR302A	2.7	30	—	1.1 – 16	0.6	Fold back	✓	1.4	✓	HSOP8	
3 A	SI-3011ZD	2.4	10	—	1.2 – 5	0.6	Fold back	✓	3	—	TO-263 -5L	p. 32

Asynchronous Buck Switching Regulator ICs
Product Information

- ✓ Simplified Control
- ✓ Integrated Power MOSFET or Bipolar Transistor for Hsw
- ✓ External Freewheel Diode Required (See p. 33)



NR117K

HSOP8

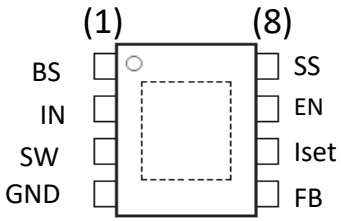
Features

- I_O = 1.5 A
- f_{SW} = 30 kHz
- Adjustable Output Voltage
- High Efficiency by Pulse Skip Operation at Light Load
  Light-load Efficiency: η = 68% max. (I_O = 10 mA , V_{IN} = 12 V, V_O = 5 V)
- Current Mode Control
- Stable with Ceramic Output Capacitors
- Soft-start Function
- Output On/Off Function
- Protections (OCP, TSD, UVLO)
- Component Count Reduced by Internal Phase Compensation

Specifications

Part Number	I_O	Frequencies		Ref. Voltage	V_O	V_{IN}*	Efficiency	Protection Functions	
		Light Load	Full Load					OCP	TSD
NR117K	1.5 A	Pulse skip	30 kHz	0.8 V	0.8 V to 24 V	8 V to 31 V	87%	Drooping	Auto-restart

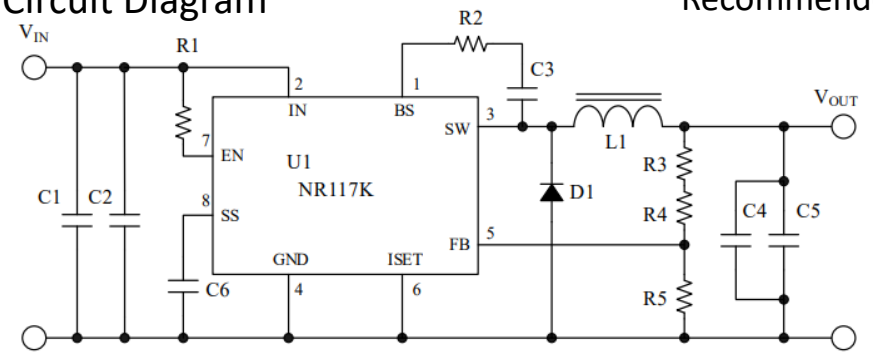
Pin Assignment



(1) BS : Supply Voltage for Gate Drive
(2) IN : Voltage Input
(3) SW : Switching Output
(4) GND : Ground
(5) FB : Feedback Signal Input
(6) Iset : External OCP Adjustment
(7) EN : Vo ON/OFF Control
(8) SS : Soft-start

Circuit Diagram

* Recommended value



SI-8008TM

TO-252-5L

Features

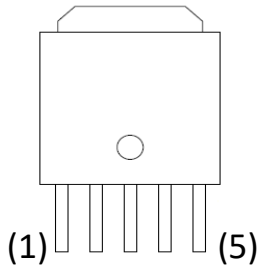
- I_O = 1.5 A
- f_{OSC} = 300 kHz
- Adjustable Output Voltage
- Soft-start Function
- Output On/Off Function
- Protections (OCP, TSD)

Specifications

* Recommended value

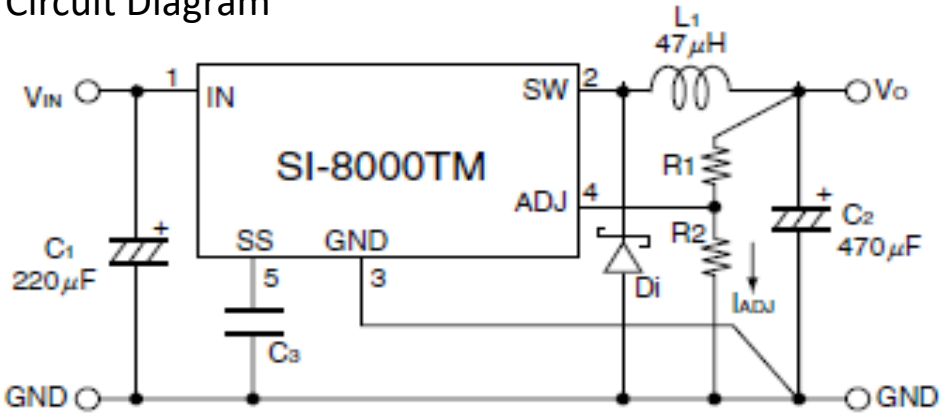
Part Number	I_O	Frequencies		Ref. Voltage	V_O	V_{IN}*	Efficiency	Protection Functions	
		Light Load	Full Load					OCP	TSD
SI-8008TM	1.5 A	—	300 kHz	0.8 V	0.8 V to 24 V	Vo+3 V or 4.5 V to 40 V	81%	Drooping	Auto-restart

Pin Assignment



(1) IN : Voltage Input
(2) SW : Switching Output
(3) GND : Ground
(4) ADJ : Feedback Signal Input
(5) SS : Soft-start and Vo ON/OFF Control

Circuit Diagram



SI-8008TMX

TO-252-5L

Features

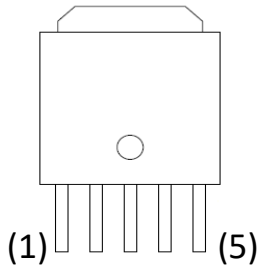
- I_O = 1.5 A
- f_{OSC} = 300 kHz
- Adjustable Output Voltage
- Output On/Off Function ($I_{q(OFF)}$ = 1 µA)
- Protections (OCP, TSD)

Specifications

* Recommended value

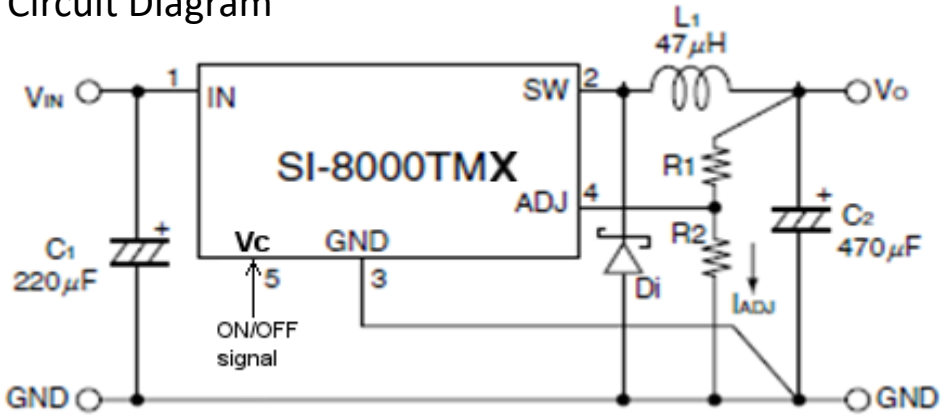
Part Number	I_O	Frequencies		Ref. Voltage	V_O	V_{IN}*	Efficiency	Protection Functions	
		Light Load	Full Load					OCP	TSD
SI-8008TMX	1.5 A	—	300 kHz	0.8 V	0.8 V to 24 V	Vo+3 V or 4.5 V to 40 V	81%	Drooping	Auto-restart

Pin Assignment



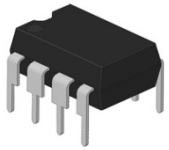
(1) IN : Voltage Input
(2) SW : Switching Output
(3) GND : Ground
(4) ADJ : Feedback Signal Input
(5) Vc : Vo ON/OFF Control

Circuit Diagram



SI-8010GL

DIP8



Features

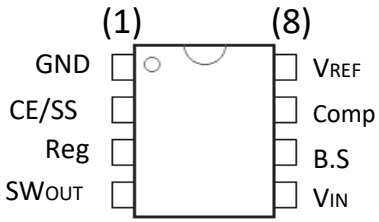
- V_{IN} = 53 V (max.)
- I_O = 20 mA to 1.5 A
- f_{OSC} = 250 kHz
- Adjustable Output Voltage
- Soft-start Function
- Output On/Off Function
- Protections (OCP, TSD)

Specifications

* Recommended value

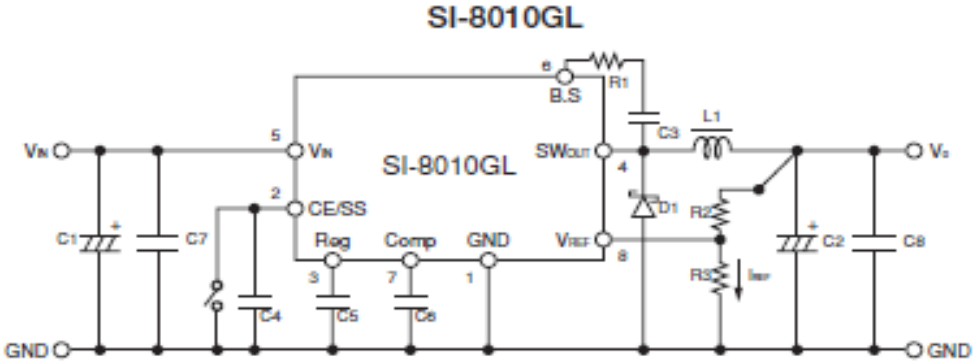
Part Number	I_O	Frequencies		Ref. Voltage	V_O	V_{IN}*	Efficiency	Protection Functions	
		Light Load	Full Load					OCP	TSD
SI-8010GL	20 mA to 1.5 A	—	250 kHz	1.00 V	1.0 V to 14 V	V_O+3 V or 8 V to 50 V	86%	Fold back	Auto-restart

Pin Assignment



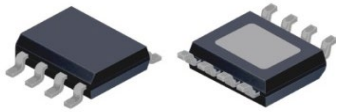
(1) GND : Ground
(2) CE/SS : Vo ON/OFF and Soft-start
(3) Reg : Internal Regulator Output
(4) SWOUT : Switching Output
(5) VIN : Voltage Input
(6) B.S : Supply Voltage for Gate Drive
(7) Comp : External Phase Compensation
(8) VREF : Feedback Signal Input

Circuit Diagram



NR119E

eSOIC8



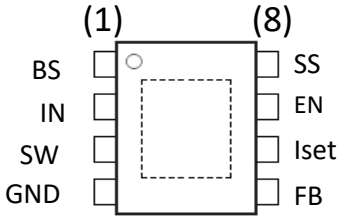
Features

- I_O = 2 A
- f_{SW} = 364 kHz
- Adjustable Output Voltage
- High Efficiency by Pulse Skip Operation at Light Load
  Light-load Efficiency: η = 68% max. (I_O = 20 mA , V_{IN} = 12 V, V_O = 5 V)
- Current Mode Control
- Stable with Ceramic Output Capacitors
- Soft-start Function
- Output On/Off Function
- Protections (OCP, TSD, UVLO)
- Component Count Reduced by Internal Phase Compensation

Specifications

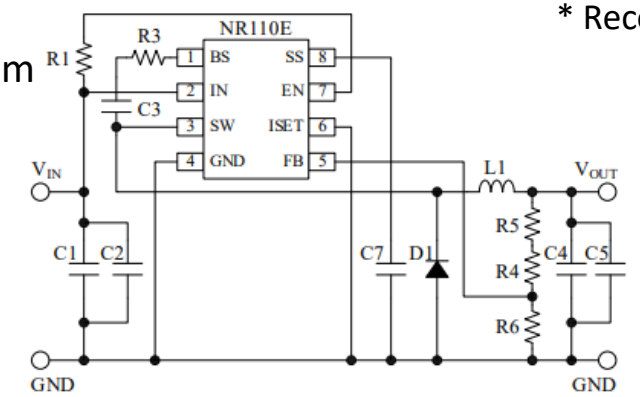
Part Number	I_O	Frequencies		Ref. Voltage	V_O	V_{IN}*	Efficiency	Protection Functions	
		Light Load	Full Load					OCP	TSD
NR119E	2 A	Pulse skip	364 kHz	0.8 V	0.8 V to 24 V	6.5 V to 31 V	94%	Drooping	Auto-restart

Pin Assignment



(1) BS : Supply Voltage for Gate Drive
(2) IN : Voltage Input
(3) SW : Switching Output
(4) GND : Ground
(5) FB : Feedback Signal Input
(6) Iset : External OCP Adjustment
(7) EN : Vo ON/OFF
(8) SS : Soft-start

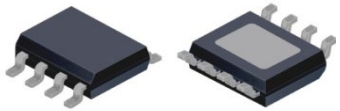
Circuit Diagram



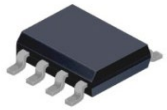
* Recommended value

NR131x Series

NR131A
eSOIC8



NR131S
SOIC8



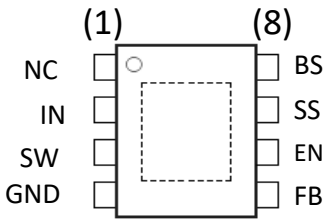
Features

- I_O = 3 A
- f_{SW} = 350 kHz
- Adjustable Output Voltage
- High Efficiency by Pulse Skip Operation at Light Load
  Light-load Efficiency: η = 85% max. (I_O=10 mA, V_{IN} = 12 V, V_O = 5 V)
- Current Mode Control
- Stable with Ceramic Output Capacitors
- Soft-start Function
- Output On/Off Function
- Protections (OCP, TSD, UVLO)
- Component Count Reduced by Internal Phase Compensation

Specifications

Part Number	I_O	Frequencies		Ref. Voltage	V_O	V_{IN}*	Efficiency	Protection Functions	
		Light Load	Full Load					OCP	TSD
NR131A	3 A	Pulse skip	350 kHz	0.8 V	0.8 V to 14 V	4.5 V to 17 V	95%	Drooping	Auto-restart
NR131S									

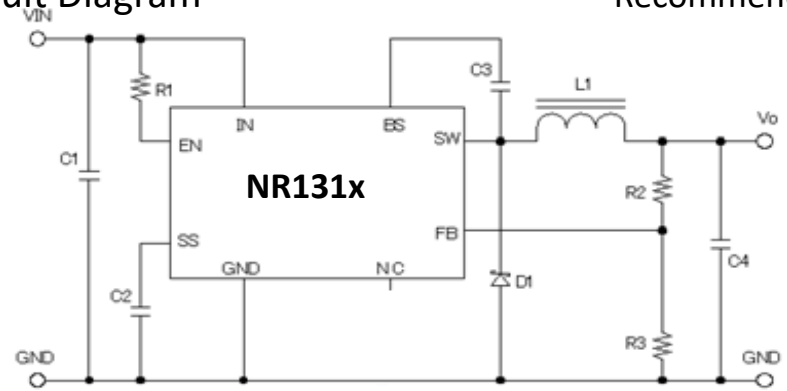
Pin Assignment



(1) NC : No Connection
(2) IN : Voltage Input
(3) SW : Switching Output
(4) GND : Ground
(5) FB : Feedback Signal Input
(6) EN : Vo ON/OFF Control
(7) SS : Soft-start
(8) BS : Supply Voltage for Gate Drive

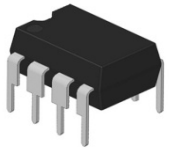
Circuit Diagram

* Recommended value



NR111D

DIP8



Features

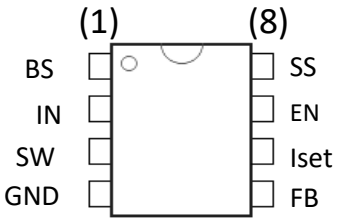
- I_O = 4 A
- f_{SW} = 350 kHz
- Adjustable Output Voltage
- High Efficiency by Pulse Skip Operation at Light Load
  Light-load Efficiency: η = 68% max. (I_O = 20 mA , V_{IN} = 12 V, V_O = 5 V)
- Current Mode Control
- Stable with Ceramic Output Capacitors
- Soft-start Function
- Output On/Off Function
- Protections (OCP, TSD, UVLO)
- Component Count Reduced by Internal Phase Compensation

Specifications

Part Number	I_O	Frequencies		Ref. Voltage	V_O	V_{IN}*	Efficiency	Protection Functions	
		Light Load	Full Load					OCP	TSD
NR111D	4 A	Pulse skip	350 kHz	0.8 V	0.8 V to 24 V	6.5 V to 31 V	94%	Drooping	Auto-restart

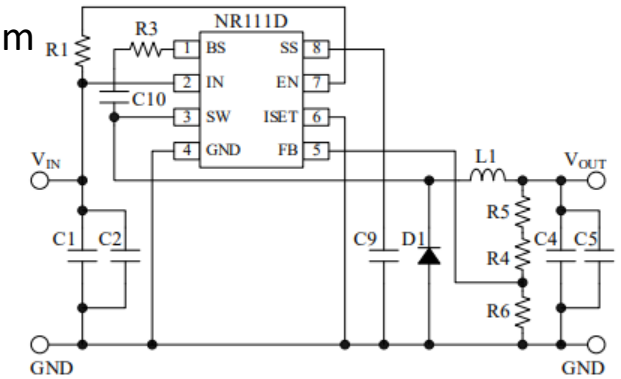
* Recommended value

Pin Assignment



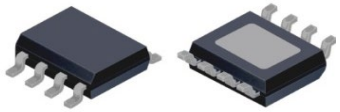
(1) BS : Supply Voltage for Gate Drive
(2) IN : Voltage Input
(3) SW : Switching Output
(4) GND : Ground
(5) FB : Feedback Signal Input
(6) Iset : External OCP Adjustment
(7) EN : Vo ON/OFF Control
(8) SS : Soft-start

Circuit Diagram



NR111E

eSOIC8



Features

- I_O = 4 A
- f_{SW} = 350 kHz
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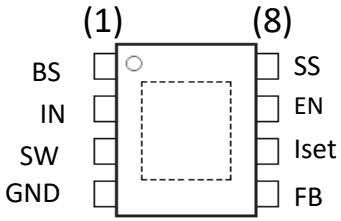
- High Efficiency by Pulse Skip Operation at Light Load
  Light-load Efficiency: η = 68% max.(I_O = 20 mA, V_{IN} = 12 V, V_O = 5 V)
- Current Mode Control
- Stable with Ceramic Output Capacitors
- Soft-start Function
- Output On/Off Function
- Protections (OCP, TSD, UVLO)
- Component Count Reduced by Internal Phase Compensation

Specifications

Part Number	I_O	Frequencies		Ref. Voltage	V_O	V_{IN}*	Efficiency	Protection Functions	
		Light Load	Full Load					OCP	TSD
NR111E	4 A	Pulse skip	350 kHz	0.8 V	0.8 V to 24 V	6.5 V to 31 V	94%	Drooping	Auto-restart

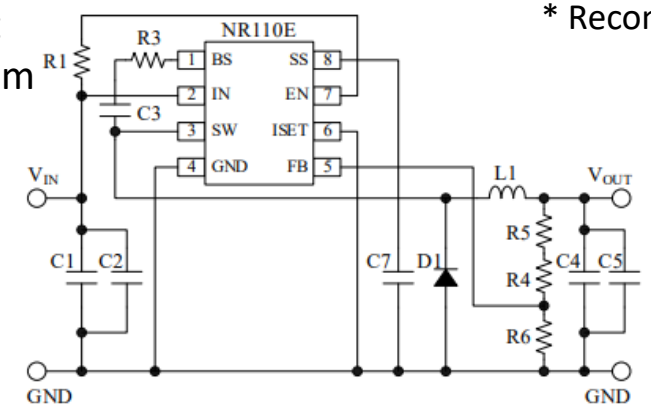
* Recommended value

Pin Assignment



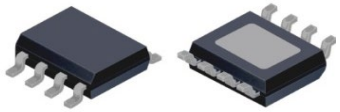
(1) BS : Supply Voltage for Gate Drive
(2) IN : Voltage Input
(3) SW : Switching Output
(4) GND : Ground
(5) FB : Feedback Signal Input
(6) Iset : External OCP Adjustment
(7) EN : Vo ON/OFF
(8) SS : Soft-start

Circuit Diagram



NR110K

HSOP8



Features

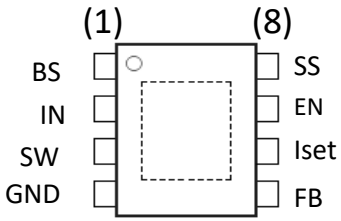
- I_O = 4 A
- f_{SW} = 350 kHz
- Adjustable Output Voltage
- High Efficiency by Pulse Skip Operation at Light Load
  Light-load Efficiency: η = 70% max. (I_O = 30 mA, V_{IN} = 12 V, V_O = 5 V)
- Current Mode Control
- Stable with Ceramic Output Capacitors
- Soft-start Function
- Output On/Off Function
- Protections (OCP, TSD, UVLO)
- Component Count Reduced by Internal Phase Compensation

Specifications

Part Number	I_O	Frequencies		Ref. Voltage	V_O	V_{IN}*	Efficiency	Protection Functions	
		Light Load	Full Load					OCP	TSD
NR110K	4 A	Pulse skip	350 kHz	0.8 V	0.8 V to 24 V	8 V to 31 V	94%	Drooping	Auto-restart

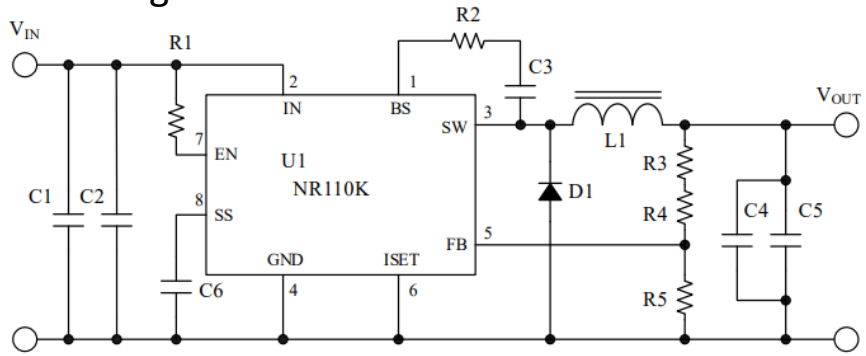
* Recommended value

Pin Assignment



(1) BS : Supply Voltage for Gate Drive
(2) IN : Voltage Input
(3) SW : Switching Output
(4) GND : Ground
(5) FB : Feedback Signal Input
(6) Iset : External OCP Adjustment
(7) EN : Vo ON/OFF
(8) SS : Soft-start

Circuit Diagram



SI-8008HD

TO-263-5L

Features

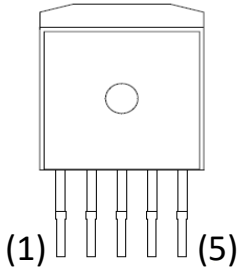
- I_O = 5.5 A
- f_{OSC} = 150 kHz
- Adjustable Output Voltage
- Soft-start Function
- Output On/Off Function
- Protections (OCP, TSD)

Specifications

* Recommended value

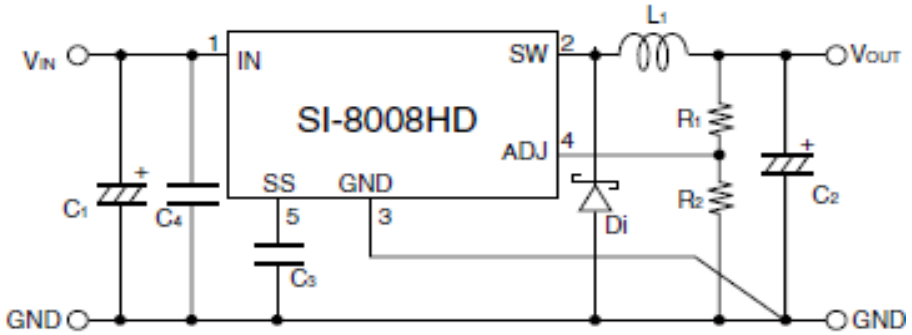
Part Number	I_O	Frequencies		Ref. Voltage	V_O	V_{IN}*	Efficiency	Protection Functions	
		Light Load	Full Load					OCP	TSD
SI-8008HD	5.5 A	—	150 kHz	0.8 V	0.8 V to 24 V	V_O+3 V or 4.5 V to 40 V	83%	Drooping	Auto-restart

Pin Assignment



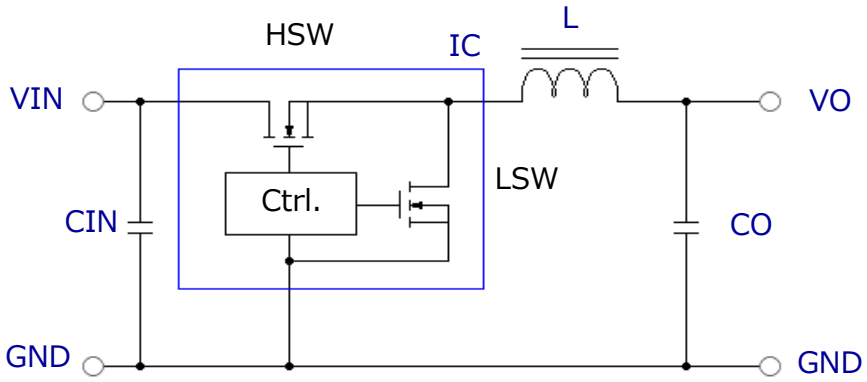
(1) IN : Voltage Input
(2) SW : Switching Output
(3) GND : Ground
(4) ADJ : Feedback Signal Input
(5) SS : Soft-start and Vo ON/OFF Control

Circuit Diagram



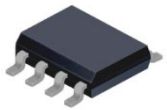
Synchronous Buck Switching Regulator ICs Product Information

- ✓ Higher Efficiency by Synchronous Rectification
- ✓ No External Freewheel Diode Required
- ✓ Integrated Power MOSFETs for Hsw and Lsw
- ✓ Space-saving (PCB Size Reduction)
- ✓ Smaller Inductors for Higher Frequencies



NR263S

SOP8



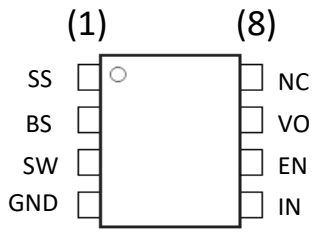
Features

- I_O = 1 A
- f_{SW} = 500 kHz
- Fixed Output Voltage
- High Efficiency by Pulse Skip Operation at Light Load
  Light-load Efficiency: η = 86% max. (I_O = 10 mA, V_{IN} = 12 V, V_O = 5 V)
- Synchronous Rectification
- Current Mode Control
- Stable with Ceramic Output Capacitors
- Soft-start Function
- Output On/Off Function
- Protections (OCP, TSD)
- Component Count Reduced by Internal Phase Compensation

Specifications

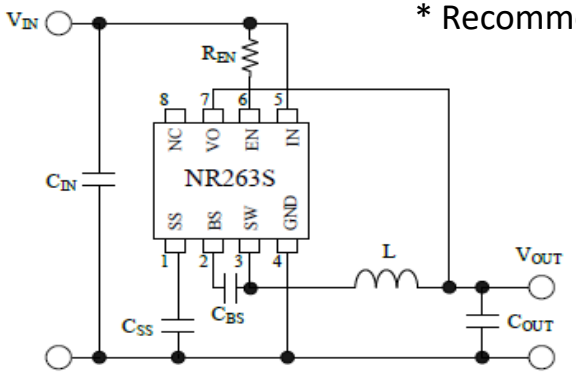
Part Number	I_O	Frequencies		Ref. Voltage	V_O	V_{IN}*	Efficiency	Protection Functions	
		Light Load	Full Load					OCP	TSD
NR263S	1 A	Pulse skip	500 kHz	–	5.0 V	8 V to 31 V	92%	Drooping	Auto-restart

Pin Assignment



(1) SS : Soft-start
(2) BS : Supply Voltage for Gate Drive
(3) SW : Switching Output
(4) GND : Ground
(5) IN : Voltage Input
(6) EN : Vo ON/OFF Control
(7) FB : Feedback Signal Input
(8) NC : No Connection

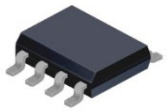
Circuit Diagram



* Recommended value

NR264S

SOP8



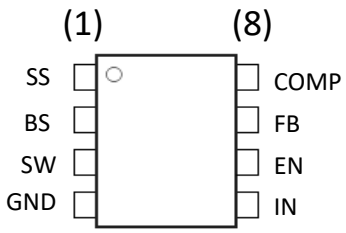
Features

- I_O = 1 A
- f_{SW} = 500 kHz
- Adjustable Output Voltage
- High Efficiency by Pulse Skip Operation at Light Load
  Light-load Efficiency: η = 86% max. (I_O = 10 mA, V_{IN} = 12 V, V_O = 5 V)
- Synchronous Rectification
- Current Mode Control
- Stable with Ceramic Output Capacitors
- Soft-start Function
- Output On/Off Function
- Protections (OCP, TSD)

Specifications

Part Number	I_O	Frequencies		Ref. Voltage	V_O	V_{IN}*	Efficiency	Protection Functions	
		Light Load	Full Load					OCP	TSD
NR264S	1 A	Pulse skip	500 kHz	0.8 V	3 V to 18 V	8 V to 31 V	94%	Drooping	Auto-restart

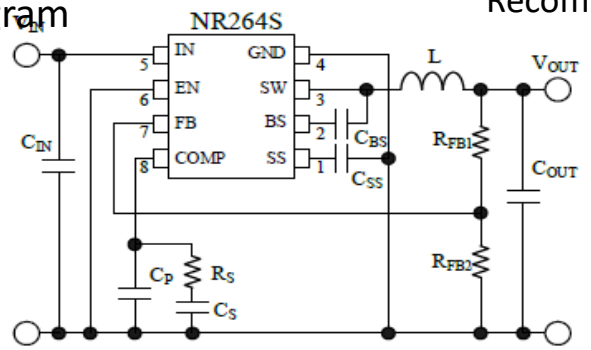
Pin Assignment



(1) SS : Soft-start
(2) BS : Supply Voltage for Gate Drive
(3) SW : Switching Output
(4) GND : Ground
(5) IN : Voltage Input
(6) EN : Vo ON/OFF Control
(7) FB : Feedback Signal Input
(8) COMP : External Phase Compensation

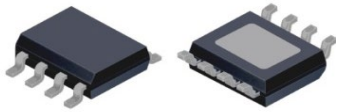
Circuit Diagram

* Recommended value



SI-8205NHD

HSOP8



Features

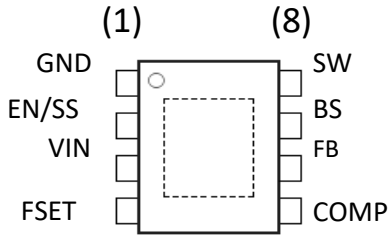
- I_O = 3 A
- Adjustable Switching Frequency: f_{OSC} = 200 kHz to 1 MHz
- Adjustable Output Voltage
- Synchronous Rectification
- Current Mode Control
- Stable with Ceramic Output Capacitors
- Soft-start Function
- Output On/Off Function
- Protections (OCP, TSD, UVLO)

Specifications

Part Number	I_O	Frequencies		Ref. Voltage	V_O	V_{IN}*	Efficiency	Protection Functions	
		Light Load	Full Load					OCP	TSD
SI-8205NHD	3 A	—	200 kHz to 1MHz, Adjustable	0.8 V ±1%	0.5 V to 24 V	V_O+3 V or 8 V to 43 V	90%	Drooping	Auto-restart

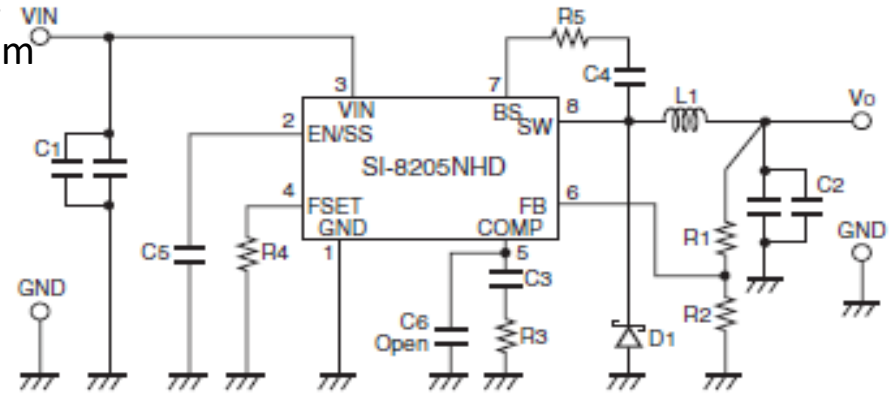
* Recommended value

Pin Assignment



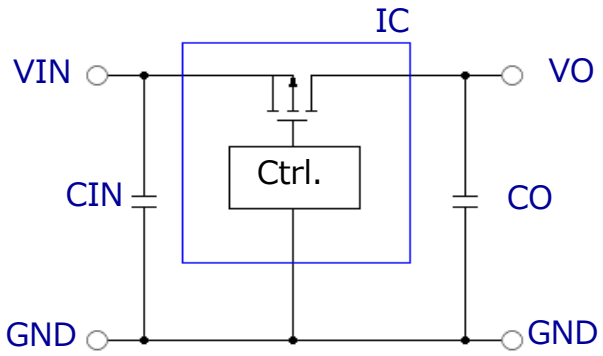
(1) GND : Ground
(2) EN/SS : Vo ON/OFF Control and Soft-start
(3) VIN : Voltage Input
(4) FSET : Frequency Adjustment
(5) COMP : External Phase Compensation
(6) FB : Feedback Signal Input
(7) BS : Supply Voltage for Gate Drive
(8) SW : Switching Output

Circuit Diagram



LDO Linear Regulator ICs
Product Information

- Suitable for Switching-noise-sensitive Applications
- Fewer External Components
- Integrated Power MOSFET or Bipolar Transistor for Series Pass Switch
- Low-dropout (Lower Input-to-Output Voltage Difference)



SI-3000KM Series

TO-252-5L

Features

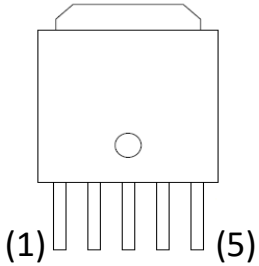
- I_O = 1 A
- V_{DIF} (= V_{IN} - V_O) ≤ 0.6 V (I_O = 1 A)
- Output On/Off Function ($Iq_{(OFF)}$ ≤ 1 μA)
- Protections (OCP, TSD)

Specifications

* Recommended value

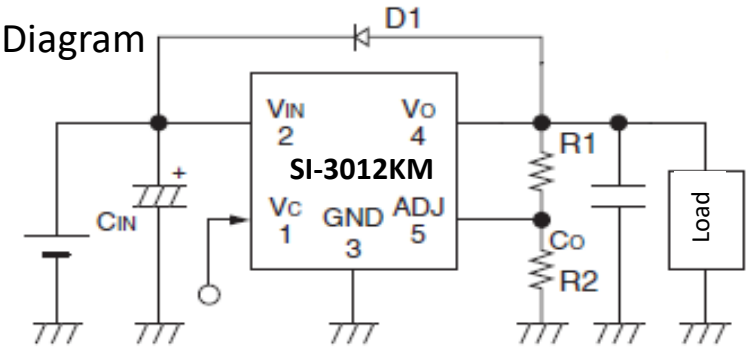
Part Number	I_O	V_{DIF} (I_O ≤ 1 A)	Ref. Voltage	V_O	V_{IN} (Maximum rating)	V_{IN}*	C_{OUT} Ceramic Capacitor	Protection Functions	
								OCP	TSD
SI-3033KM	1 A	0.6 V	—	3.3 V	17 V	Vo+1 V	✓	Drooping	Auto-Restart
SI-3012KM			1.28 V	1.28 V to 5 V		2.4 V to Vo+1 V			
SI-3120KM	1 A	0.6 V	—	12 V	35 V	≤15 V	—	Fold back	Auto-restart
SI-3010KM			1.1 V	1.1 V to 16 V		2.4 V to 27 V			

Pin Assignment



(1) V_C : Vo ON/OFF Control
(2) V_{IN} : Voltage Input
(3) GND : Ground
(4) V_O : Output
(5) Sense(ADJ) : Output Voltage Detection/ Feedback Signal Input

Circuit Diagram



SI-3000KD Series

TO-263-5L

Features

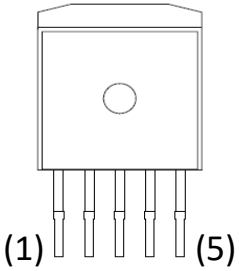
- I_O = 1 A
- V_{DIF} (= V_{IN} - V_O) ≤ 0.6 V (I_O = 1 A)
- Stable with Ceramic Output Capacitors
- Output On/Off Function ($Iq_{(OFF)}$ ≤ 1 μA)
- Protections (OCP, TSD)

Specifications

* Recommended value

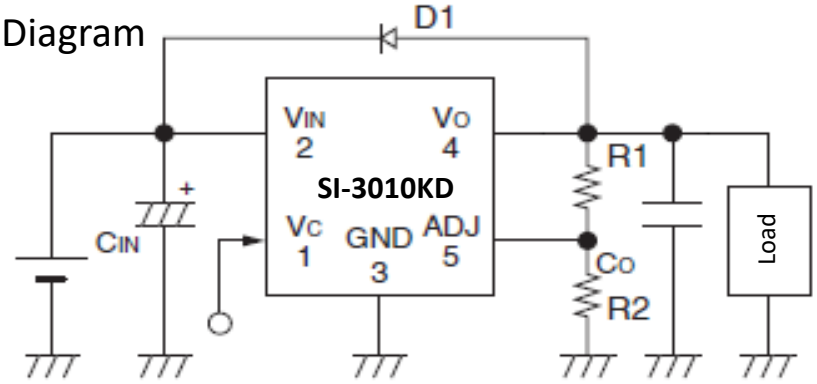
Part Number	I_O	V_{DIF} (I_O ≤ 1 A)	Ref. Voltage	V_O	V_{IN} (Maximum Rating)	V_{IN}*	C_{OUT} Ceramic Capacitor	Protection Functions	
								OCP	TSD
SI-3033KD	1 A	0.6 V	—	3.3 V	17 V	Vo+1 V	✓	Drooping	Auto-Restart
SI-3010KD	1 A	0.6 V	1.0 V	1.1 V to 16 V	35 V	2.4 V to 27 V	—	Fold back	Auto-restart

Pin Assignment



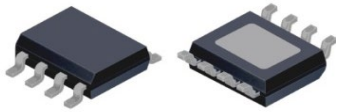
(1) V_C : Vo ON/OFF Control
(2) V_{IN} : Voltage Input
(3) GND : Ground
(4) Vo : Output
(5) Sense(ADJ) : Output Voltage Detection/ Feedback Signal Input

Circuit Diagram



NR301E, NR302A

NR301E: eSOIC8
NR302A: HSOP8



Features

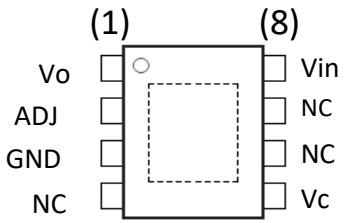
- I_O = 1 A
- V_{DIF} (= V_{IN} - V_O) ≤ 0.6 V (I_O = 1 A)
- Adjustable Output Voltage
- Stable with Ceramic Output Capacitors
- Output On/Off Function
- Protections (OCP, TSD, UVLO)

Specifications

* Recommended value

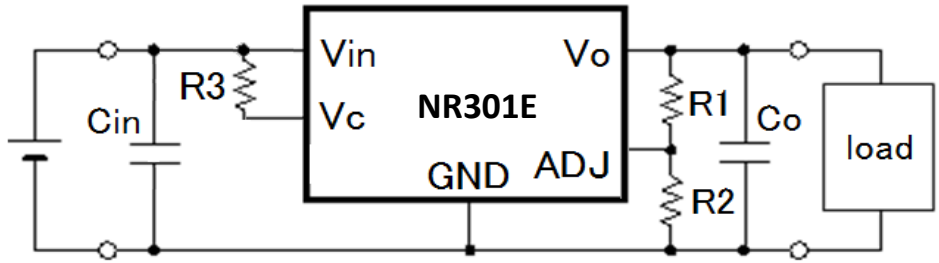
Part Number	I_O	V_{DIF} (I_O ≤ 1 A)	Ref. Voltage	V_O	V_{IN} (Maximum rating)	V_{IN}*	C_{OUT} Ceramic Capacitor	Protection Functions	
								OCP	TSD
NR301E	1 A	0.6 V	1.0 V	2.5 V to 15 V	30 V	≤27 V	✓	Fold Back	Auto-restart
NR302A									

Pin Assignment



(1) Vo : Output
(2) ADJ : Feedback Signal Input
(3) GND : Ground
(4) NC : No Connection
(5) Vc : Vo ON/OFF Control
(6) NC : No Connection
(7) NC : No Connection
(8) Vin : Voltage Input

Circuit Diagram



SI-3011ZD

TO-263-5L

Features

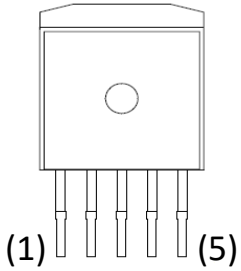
- I_O = 3 A
- V_{DIF} (= V_{IN} - V_O) ≤ 0.6 V (I_O = 3 A)
- Output On/Off Function ($Iq_{(OFF)}$ ≤ 1 μA)
- Protections (OCP, TSD)

Specifications

* Recommended value

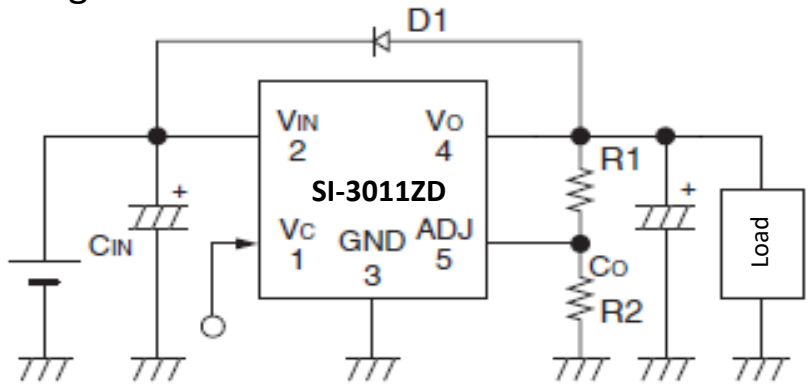
Part Number	I_O	V_{DIF} (I_O ≤ 3 A)	Ref. Voltage	V_O	V_{IN} (Maximum rating)	V_{IN}*	C_{OUT} Ceramic Capacitor	Protection Functions	
								OCP	TSD
SI-3011ZD	3 A	0.6 V	1.1 V	1.2 V to 5 V	10 V	2.4 V to 6 V	—	Drooping	Auto-restart

Pin Assignment

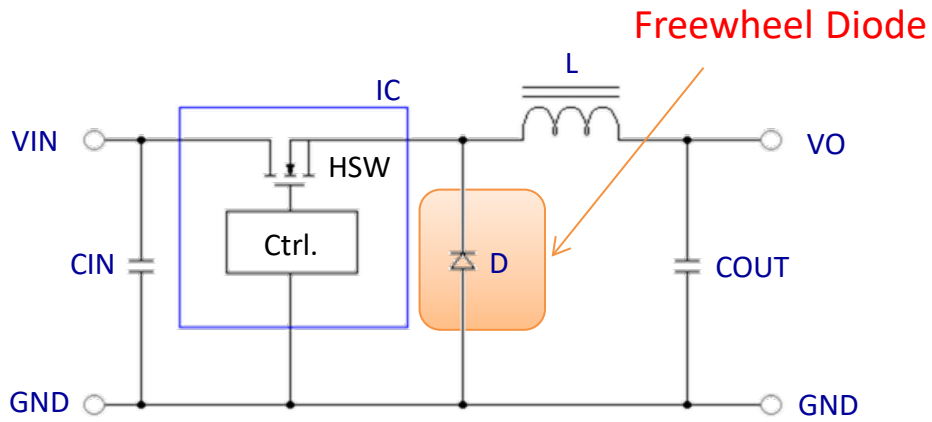


(1) V_C : Vo ON/OFF Control
(2) V_{IN} : Voltage Input
(3) GND : Ground
(4) Vo : Output
(5) Sense(ADJ) : Output Voltage Detection/ Feedback Signal Input

Circuit Diagram

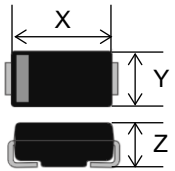


Freewheel Diodes for Buck Switching Regulator ICs



- Schlocky Diodes
- V_{RM} = 40 V to 60 V
- I_F = 1 A to 5 A

Package: SJP



X / Y / Z = 4.5 : 2.6 : 2.15 (mm)

Part Number	V_{RM}	I_F	V_F
SJPB-D4	40 V	1.0 A	0.55 V
SJPB-H4		2.0 A	0.55 V
SJPE-H4			0.60 V
SJPB-L4		3.0 A	0.55 V
SJPW-T4		5.0 A	0.55 V
SJPB-D6	60 V	1.0 A	0.68 V
SJPB-H6		2.0 A	0.69 V
SJPB-L6		3.0 A	0.70 V

Power Supply Design Examples

Our power supply design examples for DC/DC converters are available on our website.
You can also apply for an evaluation board from our online form.

DC/DCコンバータ 評価基板

搭載IC	評価基板	概要・主な特徴	ドキュメント
NR111E データシート	 DEJ0015	V_{OUT} = 5 V、$I_{OUT(MAX)}$ = 4 A ・位相補償回路内蔵 ・低ESRコンデンサ対応	5V, 4A 設計例
NR263S データシート	 DEJ0016	V_{OUT} = 5 V、$I_{OUT(MAX)}$ = 1 A ・位相補償回路内蔵 ・低ESRコンデンサ対応 ・軽負荷時パルススキップ動作	5V, 1A 設計例

Power Supply Design Examples
Special Page

Japanese page only

Important Notes

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