



# DC-DC Switching Regulator and Controller Selector Guide

## Step-Down Buck Switching Regulator - Internal Switch

Device	Vin (V)		Vout Options (Adj Range)	Iout	Fsw (kHz)	Mode	Enable	Soft-Start	Comments	Temp Range (°C)	Package
	Min	Max									
CS51411	4.5	40	Down to 1.276 V	1.5 A	260	Voltage	✓	✓	Sync capability; Pin-Compatible with LT1375 and LT1376	-40 to 85	SO-8, DFN-8
CS51412	4.5	40	Down to 1.276 V	1.5 A	260	Voltage	✓	✓	External Bias; Pin-Compatible with LT1375 and LT1376	-40 to 85	SO-8, DFN-8
CS51413	4.5	40	Down to 1.276 V	1.5 A	520	Voltage	✓	✓	Sync capability; Pin-Compatible with LT1375 and LT1376	-40 to 85	SO-8, DFN-8
CS51414	4.5	40	Down to 1.276 V	1.5 A	520	Voltage	✓	✓	External Bias; Pin-Compatible with LT1375 and LT1376	-40 to 85	SO-8, DFN-8
NCV51411	4.5	40	Down to 1.276 V	1.5 A	260	Voltage	✓	✓	Automotive version	-40 to 125	SO-8, DFN-8
LM2574	4.75	40	3.3, 5, 12, 15, Adj (1.23 to 37 V)	0.5 A	52	Voltage	✓		No external compensation required	-40 to 125	D2PAK, TO-220
LM2575	4.75	40	3.3, 5, 12, 15, Adj (1.23 to 37 V)	1.0 A	52	Voltage	✓		No external compensation required	-40 to 125	D2PAK, TO-220
LM2576	4.75	40	3.3, 5, 12, 15, Adj (1.23 to 37 V)	3.0 A	52	Voltage	✓		No external compensation required	-40 to 125	D2PAK, TO-220
NCP1595A	4.0	5.5	Down to 0.8 V	1.5 A	1200	Current	✓	✓	DFN ; Internal compensation; Synchronous Rectification	0 to 85	DFN-6
MC34166	7.5	40	Down to 5.0 V	3.0 A	72	Voltage			Cycle-by-Cycle current limit	0 to 70	D2PAK, TO-220
MC33166	7.5	40	Down to 5.0 V	3.0 A	72	Voltage			Internal thermal shutdown	-40 to 85	D2PAK, TO-220
MC33167	7.0	40	Down to 5.0 V	5.0 A	72	Voltage			Large 5.0 A output capability	-40 to 85	D2PAK, TO-220
MC34167	7.0	40	Down to 5.0 V	5.0 A	72	Voltage			Standby Mode < 36 µA	0 to 70	D2PAK, TO-220
NCP1500	2.7	5.4	1.0, 1.3, 1.5, 1.8 V	300 mA	270 - 630	Current			PWM or Linear mode. Can be programmed to work in Linear LDO Regulator mode. External Sync.	-40 to 85	Micro8™
NCP1501	2.7	5.2	1.05, 1.35, 1.57, 1.8 V	300 mA	500-1000	Current			Synchronous Rectification. Can be programmed to work in Linear LDO Regulator mode. External Sync.	-40 to 85	Micro8™
NCP1526	2.7	5.5	PWM - 1.2V; LDO - 2.8 V Other options available	PWM: 400 mA LDO: 150 mA	3000	Voltage	✓	✓	Dual output: PWM + LDO. Synchronous Rectification	-40 to 85	Thin DFN-10
NCP1510	2.5	5.2	1.05, 1.35, 1.57, 1.8 V	300 mA	450-1000	Current	✓	✓	Synchronous Rectification. Can be programmed to work in Low Iq (14 uA) Pulsed mode at light loads. External Sync.	-40 to 85	MicroBump-9
NCP1530	2.7	5	2.5, 2.7, 3.0, 3.3 V	600 mA	600 - 1200	Current	✓	✓	Automatic PWM/PFM mode. External Synchronization Up to 1.2 MHz	-40 to 85	Micro8™
NCP1521B	2.7	5.5	0.9 - 3.9 V	600 mA	1500	Current	✓	✓	Auto PWM/PFM mode. Synchronous Rectification	-40 to 85	Thin SOT-23-5, Thin DFN-6
NCP1522B	2.7	5.5	0.9 - 3.3 V	600 mA	3000	Voltage	✓	✓	Auto PWM/PFM mode. Synchronous Rectification	-40 to 85	Thin SOT-23-5, Thin DFN-6
NCP1523B	2.7	5.5	0.9 - 3.3 V	600 mA	3000	Voltage	✓	✓	PWM mode. Synchronous Rectification	-40 to 85	MicroBump-8
NCP1529	2.7	5.5	1.2, 1.8, Adj (0.9-3.3 V)	1 A	1700	Current	✓	✓	Auto PWM/PFM mode. Synchronous Rectification	-40 to 85	Thin SOT-23-5

## Step-Up Boost Switching Regulator - Internal Switch

Device	Vin (V)		Vout Options (Adj Range)	Iout	Fsw (kHz)	Mode	Enable	Soft-Start	Comments	Temp Range (°C)	Package
	Min	Max									
NCP1403	1.2	5.5	Up to 15 V	50 mA	300	Current	✓	✓	PFM mode	-40 to 85	SOT-23-5
NCP1406	1.4	5.5	Up to 25 V	50 mA	1000	Current	✓	✓	PFM mode	-40 to 85	SOT-23-5
NCP1400	0.8	5.5	1.9 - 5.0 V	100 mA	180	Voltage	✓	✓	PWM mode	-40 to 85	SOT-23-5
NCP1402	0.8	5.5	1.8 - 5.0 V	200 mA	180	Voltage	✓	✓	PFM mode	-40 to 85	SOT-23-5
NCP1410	1.0	5.5	Vin to 5.5 V	250 mA	600	Current	✓		PFM mode. Synchronous Rectification, Low-battery detect	-40 to 85	Micro8™
NCP1423	0.8	Vout	1.8 - 5.5 V	400 mA	600	Current	✓	✓	PFM mode. Synchronous Rectification, True-cutoff, Low-battery detect	-40 to 85	Micro-10
NCP1421	1.0	5.0	1.5 - 5.0 V	600 mA	1200	Current	✓	✓	PFM Sync-rect, True-cutoff, Low-battery detect	-40 to 85	Micro8
NCP1422	1.0	5.0	1.5 - 5.0 V	800 mA	1200	Current	✓	✓	PFM mode. Synchronous Rectification, True-cutoff, Low-battery detect	-40 to 85	DFN-10
NCP5030	2.7	5.5	2.2 - 5.5 V	1.2 A	1000	Current	✓	✓	Buck/ Boost Converter - can supply either regulated current or regulated output voltage	-40 to 85	DFN-12
CS5171	2.7	30	1.276 to 40 V	1.5 A	280	Current		✓	LT1372/1373 Compatible	-40 to 85	S0-8
CS5172	2.7	30	-2.5 to 40 V	1.5 A	280	Current		✓	Flyback & SEPIC	-40 to 85	S0-8
CS5173	2.7	30	1.276 to 40 V	1.5 A	560	Current		✓	Easy External Synchronization	-40 to 85	S0-8
CS5174	2.7	30	-2.5 to 40 V	1.5 A	560	Current		✓	Negative feedback polarity	-40 to 85	S0-8

## Multi-Topology (Step-Up, Step-Down, Inverting) Switching Regulator - Internal Switch

Device	Vin (V)		Vout Options (Adj Range)	Iout (A)	Fsw (kHz)	Enable	Mode	Step Up	Step Down	Step Up/Down	Inv	Comments	Temp Range (°C)	Package
	Min	Max												
MC34063	3.0	40	Down to 2.5 V	1.5	Up to 100	✓	Hysteretic	✓	✓	✓	✓	Simple & Flexible regulator	0 to 70	S0-8, PDIP-8
MC33063	3.0	40	Down to 2.5 V	1.5	Up to 100	✓	Hysteretic	✓	✓	✓	✓	Minimal number of external components	-40 to 85	S0-8, PDIP-8
NCV33063	3.0	40	Down to 2.5 V	1.5	Up to 100	✓	Hysteretic	✓	✓	✓	✓	Automotive version	-40 to 125	S0-8
NCP3063	3.0	40	Down to 2.5 V	1.5	Up to 250	✓	Hysteretic	✓	✓	✓	✓	Higher Fsw for optimized size & efficiency	-40 to 85	PDIP, S0-8, DFN
CS5171	2.7	30	1.276 to 40 V	1.5	280		Current	✓			✓	LT1372/1373 Compatible	-40 to 85	S0-8
CS5172	2.7	30	-2.5 to 40 V	1.5	280		Current	✓			✓	Flyback & SEPIC	-40 to 85	S0-8
CS5173	2.7	30	1.276 to 40 V	1.5	560		Current	✓			✓	Easy External Synchronization	-40 to 85	S0-8
CS5174	2.7	30	-2.5 to 40 V	1.5	560		Current	✓			✓	Negative feedback polarity	-40 to 85	S0-8
MC34166	7.5	40	Down to 5.0 V	3.0	72		Voltage		✓	✓	✓	Cycle-by-Cycle current limit	0 to 70	D2PAK, TO-220
MC33166	7.5	40	Down to 5.0 V	3.0	72		Voltage		✓	✓	✓	Internal thermal shutdown	-40 to 85	D2PAK, TO-220
MC34163	2.5	40	Down to 1.25 V	3.4	Up to 100	✓	Hysteretic	✓	✓	✓	✓	Simple & Flexible regulator	0 to 70	S0-16W, PDIP
MC33163	2.5	40	Down to 1.25 V	3.4	Up to 100	✓	Hysteretic	✓	✓	✓	✓	Minimal number of external components	-40 to 85	S0-16W, PDIP
NCP3163	2.5	40	Down to 1.25 V	3.4	Up to 300	✓	Hysteretic	✓	✓	✓	✓	Higher Fsw for optimized size & efficiency	-40 to 85	S0-16WEP
MC34167	7.0	40	Down to 5.0 V	5.0	72		Voltage		✓	✓	✓	Large 5.0A output capability	0 to 70	D2PAK, TO-220
MC33167	7.0	40	Down to 5.0 V	5.0	72		Voltage		✓	✓	✓	Standby Mode < 36 µA	-40 to 85	D2PAK, TO-220

## Switching Controllers for Step-Down Non-Isolated Topologies

Device	Vin (V)		Vout Options (Adj Range)	Vout Accuracy	Fsw (kHz)	Mode	Enable	Soft-Start	Sync	Comments	Temp Range (°C)	Package
	Min	Max										
NCP5211	4.5	14	Down to 1.0 V	1.5%	150 - 750	Voltage	✓	✓	✓	1.5 A drive capability	0 to 70	S0-14
NCP5211B	4.5	14	Down to 1.0 V	1.5%	150 - 750	Voltage	✓	✓	✓	1.5 A drive capability	-40 to 85	S0-14
CS51031	4.5	16	Down to 1.25 V	2%	200 - 700	Hysteretic		✓		No compensation required; PFET	-40 to 85	S0-8
CS51033	3.3	5.0	Down to 1.25 V	2%	200 - 700	Hysteretic		✓		No compensation required; PFET	-40 to 85	S0-8
SG3525	8.0	35	Down to 5.1 V	1%	100 - 400	Voltage	✓	✓		Flexible configurations; ST Compatible	0 to 70	S0-16W, PDIP-16
NCP1580	4.5	15	Down to 0.8 V	1.5%	350	Voltage		✓	✓	1.5 A gate drive; 90% duty cycle	-40 to 85	S0-8
NCP1582/A	4.5	15	Down to 0.8 V	1.5%	350	Voltage	✓	✓	✓	0.7 A gate drive; Short Circuit Protection	-40 to 85	S0-8
NCP1583	4.5	15	Down to 0.8 V	1.5%	300	Voltage	✓	✓	✓	0.7 A gate drive; Short Circuit Protection	-40 to 85	S0-8
NCP1571	2.0	12	Down to 0.980 V	1.0%	200	Voltage	✓	✓	✓	12 V bias supply	0 to 125	S0-8
NCP1575	2.0	12	Down to 0.980 V	1.0%	200 - 500	Voltage		✓	✓	12 V bias supply	0 to 125	S0-8
NCP1550	2.5	5.5	1.8 - 3.3 V (factory prefixed)	2.0%	600	Voltage	✓	✓		Auto PWM/ PFM mode; 2 A drive capability	-40 to 85	SOT-23-5

## Dual Switching Controllers for Step-Down Non-Isolated Topologies

Device	Vin (V)		Vout Options (Adj Range)	Vout Accuracy	Fsw (kHz)	Mode	Enable	Soft-Start	Sync	Comments	Temp Range (°C)	Package
	Min	Max										
NCP5422	10.8	13.2	Down to 1.0 V	2.0%	150 - 600	Voltage	✓	✓	✓	Hiccup mode overcurrent protection	0 to 70	S0-16
NCP5423	10.8	13.2	Down to 1.0 V	1.0%	150 - 600	Voltage	✓	✓	✓	1% Voltage reference	0 to 70	S0-16
NCP5424	10.8	13.2	Down to 1.0 V	2.0%	150 - 600	Voltage	✓	✓	✓	Hiccup & cycle-by-cycle overcurrent	0 to 70	S0-16
NCP5425	4.6	13.2	Down to 0.8 V	1.0%	150 - 750	Voltage	✓	✓	✓	1.5A peak drive capability	0 to 125	TSSOP-20
TL494	7.0	40	0.3 V Ext Adj	5.0%	Up to 200	Voltage				Buck, boost, forward, flyback	-40 to 125	S0-16, PDIP-16
TL594	7.0	40	0.3 V Ext Adj	1.5%	Up to 300	Voltage				Buck, boost, forward, flyback	-40 to 85	S0-16, PDIP-16, TSSOP-16

## Switching Controllers for Step-Up Non-Isolated Topologies

Device	Vin (V)		Vout Options (Adj Range)	Vout Accuracy	Fsw (kHz)	Mode	Enable	Soft-Start	Sync	Comments	Temp Range (°C)	Package
	Min	Max										
NCP1450	0.9	5.5	1.9 - 5.0 V (factory prefixed)	2.5%	180	Voltage	✓	✓		PWM mode	-40 to 85	SOT-23-5

## Switching Controllers for Step-Down Isolated Topologies

Device	Vin (V)		Vout Options (Adj Range)	Vout Accuracy	Fsw (kHz)	Mode	Enable	Soft-Start	Sync	Comments	Temp Range (°C)	Package
	Min	Max										
CS5124	7.7	75	External	-	400	Current	✓	✓		Small PCB footprint; Bias for startup	-40 to 105	S0-8
CS51221	3.3	72	Down to 1.26V	2%	Up to 1000	Voltage		✓		Programmable features; Bias for startup	-40 to 85	S0-16, TSSOP-16
CS51021	3.3	72	Down to 5.0V	1%	200 - 1000	Current		✓		Synch; Bias for startup	-40 to 85	S0-16, TSSOP-16
CS51022	3.3	72	Down to 5.0V	1%	200 - 1000	Current		✓		Sleep mode; Bias for startup	-40 to 85	S0-16, TSSOP-16
NCP1030	10	200	2.5 Up to Vin	2%	Up to 1000	Voltage	✓	✓		PoE applications; Integrated Switch	-40 to 125	Micro8™
NCP1031	10	200	2.5 Up to Vin	2%	Up to 1000	Voltage	✓	✓		PoE applications; Integrated Switch	-40 to 125	S0-8

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