

DC-DC Regulator Lineup

High Current Step Down

	NN30195	NN30196	NN30295	NN30297	NN30310	NN30320	NN30321	NN30312	NN30421	NN30331	NN30332	
Input voltage (VREG)	4.5 - 5.6V	4.5 - 5.6V	4.5 - 5.6V	4.0 - 5.6V	6.0 - 30V	4.5 - 28V	4.5 - 28V	4.5 - 30V	4.75 - 24V (4.5 - 5.5V)	4.5 - 24V (4.5 - 5.5V)	4.5 - 24V (4.5 - 5.5V)	
Absolute max. rating	6V	6V	6V	6V	33V	30V	30V	33V	30V	30V	30V	
Output voltage	0.6 - 3.5V	0.6 - 3.5V	0.6 - 3.5V*	0.6 - 3.5V*	0.75 - 5.5V	0.75 - 5.5V	0.75 - 5.5V	0.75 - 5.5V	0.75 - 3.6V	0.75 - 5.5V	0.75 - 5.5V	
Output current	6A	9A	6A	6A	3A	3A	6A	10A	8A	8A	10A	
DC-DC	Hysteretic step-down, 1 channel											
Power MOS FET	Built-in high-side NMOS, low-side NMOS											
Ron (Ω) Hi/Lo	25m/25m	9m/9m	25m/25m	28m/25m	25m/25m	20m/20m	20m/10m	9m/9m	20m/10m	20m/6m	20m/6m	
I ² C control	No	No	Yes	Yes	No	No	No	No	No	No	No	
Synchronous rectification	Yes											
PKG	Type	HQFN24	HQFN40	HQFN24	HQFN24	HQFN24	HQFN24	HQFN24	HQFN40	HQFN24	HQFN24	HQFN24
	Size	4.0x4.0mm	6.0x6.0mm	4.0x4.0mm	4.0x4.0mm	4.0x4.0mm	4.0x4.0mm	4.0x4.0mm	6.0x6.0mm	4.0x4.0mm	4.0x4.0mm	4.0x4.0mm
	Pin-pitch	0.5mm										
Selectable Frequency	0.5/1.0/ 2.0 MHz	0.5/1.0/2.0 MHz	0.5 - 2.0 MHz*	0.5 - 2.0 MHz*	0.25/0.75/ 1.25 MHz	0.21/0.43/ 0.65 MHz	0.21/0.43/ 0.65 MHz	0.25/0.75/ 1.25 MHz	0.22/0.41/ 0.58 MHz	0.43/0.63 MHz	0.43/0.63 MHz	
Function	OCP, OVD, SHP, UVLO, TSD											
Function	MP	MP	MP	MP : '13/04 ES : NOW	MP	MP : '13/06 ES : NOW	MP	MP	MP	MP : '13/04 ES : NOW	MP : '13/04 ES : NOW	

Multi Power Supply Step Down

	AN30180A	AN30180AA	AN30181A	AN30185A	AN30183A	AN30182A	
Vin range	2.5V - 5.5V		2.9V - 5.5V		2.5V - 5.5V		
Vin (max)	6V						
Channel Count	Buck DC-DC	1ch	1ch	2ch	2ch	1ch	2ch
	LDO	-	-	-	-	4ch	6ch
	I ² C-I/F	-	-	-	-	yes	yes
DC-DC	Vout	1.15V/1.3V 1.8V/2.8V	1.2V/1.35V 1.85V/3.3V	1.2V/1.8V	1.0V/1.8V	0.8V - 2.4V(16step)	
	Iout	1200mA	1200mA	800mA	800mA	600mA	600mA
	Ctrl Mode	Hysteretic Control					
	Frequency	3MHz		1.5MHz		3MHz	
External Value	L=1μH, Cout=4.7μF		L=2.2 μH, Cout=10μF	L=2.2μH, Cout=10μF	L=1uH, Cout=4.7μF		
LDO	Vout	-	-	-	-	1.0V - 3.3V(16step)	
	Iout	-	-	-	-	300mA	
	External	-	-	-	-	Cout=1μF	
Package	Type	WLCSPP	WLCSPP	HQFN24	HQFN24	WLCSPP	WLCSPP
	Size	1.5x1.5mm	1.5x1.5mm	4x4mm	4x4mm	1.6x2.1mm	2.2x2.2mm
	Pin-pitch	0.5mm	0.5mm	0.5mm	0.5mm	0.4mm	0.4mm
Status	MP		MP	MP	MP	MP	MP

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Please ask for the latest Product Standards to guarantee the satisfaction
of your product requirements.

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Mid Voltage Range Step Down

Product	AN33012UA	AN33013UA	AN33014UA	AN33016UA	AN33017UA
Number of Channel	2ch(Buck)	1ch (Buck)	1ch (Buck)	1ch (Buck)	1ch (Buck)
Operating Voltage Range (Absolute Maximum)	5V - 25V (50V)	5V - 25V (40V)	5V - 25V (40V)	5V - 39V (60V)	5V - 39V (60V)
Power FET	External FET (External SBD)	Internal FET (External SBD)	Internal FET (External SBD)	Internal FET (External SBD)	Internal FET (External SBD)
Basic Voltage Accuracy (FB terminal)	±2%	±2%	±2%	±1%	±1%
Output Voltage Range	1.2 - 9V	1.2 - 9V	1.2 - 9V	1.2 - 9V	1.2 - 9V
Current FB	-	-	3 - 7V	-	3 - 7V
Current FB Correction (External Resistance)	-	-	Output Current Monitor	-	Output Current Monitor
Oscillation Frequency	200k - 2MHz(±10%)			200k - 2MHz(±5%)	
Over Current Detection Voltage accuracy	28%	20%	20%	12%	12%
Maximum output current	More than 3.0A (depend on externally)	1.5A	1.5A	1.5A	2.1A
Over Current Detection (External Resistance)	Input Current Detection	Input Current Detection	Output Current Detection	Input Current Detection	Output Current Detection
Control Type	Voltage mode				
Operational ambient Temp	-40 °C - +85 °C				
Package	Type	SSOP024			HQFP048
	Size	8.1mm x 7.8mm			9mm x 9mm
	Pin-pitch	0.65mm			0.5mm
Status	MP	MP	MP	MP	MP

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