

Step Down DC - DC Converter Power IC

MD1322N

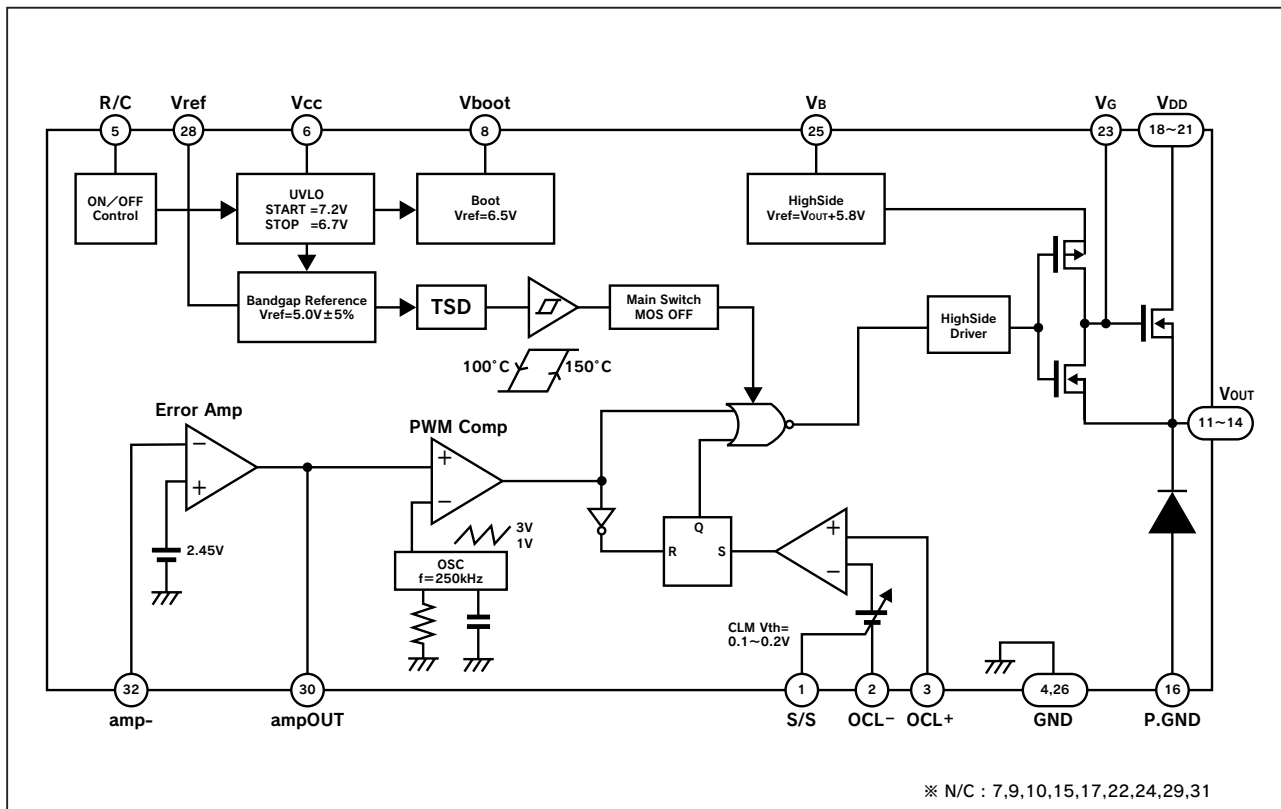
Output adjustable

Remote On/Off

Feature

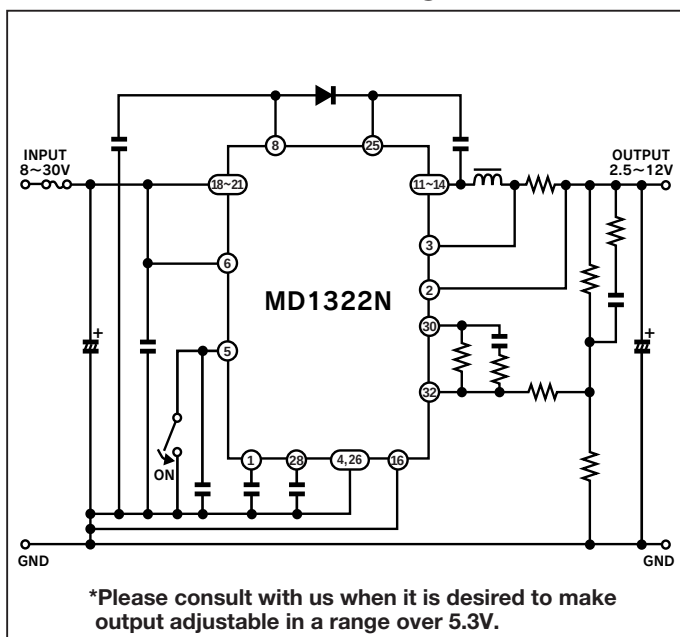
- Input Voltage range 8V to 30V
- Maximum Output Current 1.8A
- Included main switch MOSFET and fly wheel SBD
- Adjustable output from 2.5V to 12V with external resistors
- High Efficiency typ. 92% (at: Vin=8V, Vout=5V, Iout=0.5A)
- Fixed Frequency 250kHz PWM Control
- Over Current Protection
- Under Voltage Lockout
- Thermal Shut Down
- Remote On / Off

Block Diagram



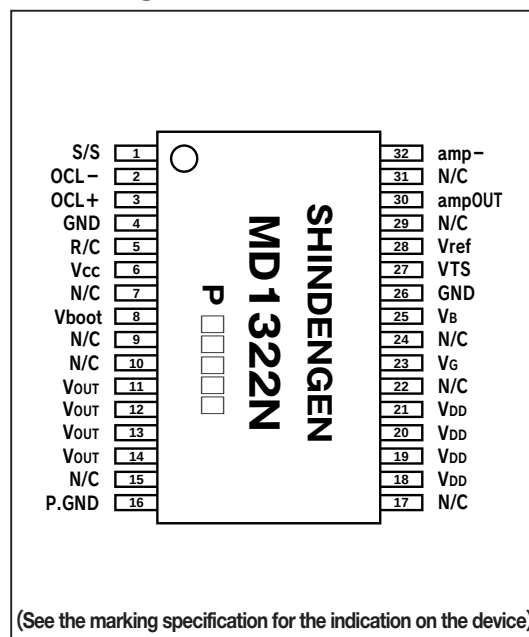
※ N/C : 7,9,10,15,17,22,24,29,31

Standard Connection Diagram



*Please consult with us when it is desired to make output adjustable in a range over 5.3V.

Pin Assignment (SSOP32)



Absolute Maximum Ratings

Unless otherwise specified : Ta=25°C

Item	Symbol	Ratings	Units
Input/Output Ratings			
Input voltage	V _{CC}	32	V
Main MOSFET input voltage	V _{DD}	32	V
Output current (ave)	I _{OUTave}	1.8	A
Output current (peak)	I _{OUTpeak}	2.3	A
OCL-, OCL+ input voltage	V _{OCL}	5.5	V
Remote control voltage	V _{RC}	5.5	V
Thermal Ratings			
Power dissipation max ※1	PD	2.5	W
Operating temperature	Ta-ope	-30 to 85	°C
Storage temperature	Tstg	-40 to 150	°C
Junction temperature	Tj	150	°C
Thermal resistance ※1	θ_{ja}	50	°C/W
	θ_{jc} ※2	20	°C/W

※1 Glass-Epoxy Board : 56×39mm², Thickness : 1mm, Copper Pattern Rate : 87.1% (Top Side), 82.1% (Bottom Side), Those with through-hole.

※2 The measurement result in the center of case.

Recommended Operating Conditions

Item	Symbol	Recommendation	Units
Junction temperature	Tj	-30 to 125	°C
Input voltage (Ta=-10°C to 85°C)	V _i ※3	8 to 30	V
Input voltage (Ta=-30°C to -10°C)	V _i ※3	8.5 to 30	V
Output voltage setting range	V _O ※4	2.5 to 12	V

※3 Input voltage at the time of power supply operation.

※4 Output voltage at the time of power supply operation.

Electrical Characteristics

Unless otherwise specified : Ta=25°C

Item	Symbol	Condition	MIN	TYP	MAX	Units
High Side MOSFET						
Drain-source breakdown voltage	V _{DSS_H}	I _D =1mA, V _{GS} =0V	32	—	—	V
Zero gate voltage drain current	I _{DSS_H}	V _{DS} =32V, V _{GS} =0V	—	—	10	μA
Static drain-source on-state resistance	R _{ON_H}	I _D =1.2A, V _{GS} =4V	—	140	250	mΩ
Source-drain diode forward voltage	V _{SD_H}	I _S =1.2A, V _{GS} =0V	—	—	1.5	V
Low Side SBD						
Maximum reverse voltage	V _{RM}	—	40	—	—	V
Forward voltage	V _F	I _F =1.2A	—	—	0.55	V
Reverse current	I _R	V _R =V _{RM}	—	—	2	mA
Control IC						
Undervoltage lockout threshold (start)	V _{cc_start}	—	6.5	7.2	7.9	V
Undervoltage lockout threshold (stop)	V _{cc_stop}	—	6.0	6.7	7.4	V
Undervoltage lockout hysteresis	V _{cc_hys}	—	—	0.5	—	V
Supply current	I _{cc}	V _{cc} =8 to 30V	—	10	13	mA
Supply current-remote OFF state	I _{cc_off}	V _{cc} =8 to 30V	—	1.2	1.5	mA
Remote control ON input voltage	V _{RC_on}	V _{cc} =8 to 30V	-0.2	—	0.45	V
Remote control OFF input voltage	V _{RC_off}	V _{cc} =8 to 30V	2.5	—	5.3	V
Remote control source current	I _{RC}	V _{cc} =8 to 30V	—	—	250	μA
Bootstrap voltage	V _{boot}	V _{cc} =24V	5.4	6.5	7.6	V
Reference voltage	V _{ref}	V _{cc} =8 to 30V	4.75	5	5.25	V
Initial frequency accuracy	f _{osc}	V _{cc} =24V	212.5	250	287.5	kHz
Threshold of over current limit	V _{th_OCL}	V _{cc} =24V	0.162	0.19	0.218	V
Softstart source current	I _{s/s}	V _{cc} =24V	-20	-12.5	-5	μA
Error amp reference voltage	V _{amp}	V _{cc} =8 to 30V	2.4	2.45	2.5	V
Thermal shutdown temperature	T _{TSD}	—	—	150	—	°C