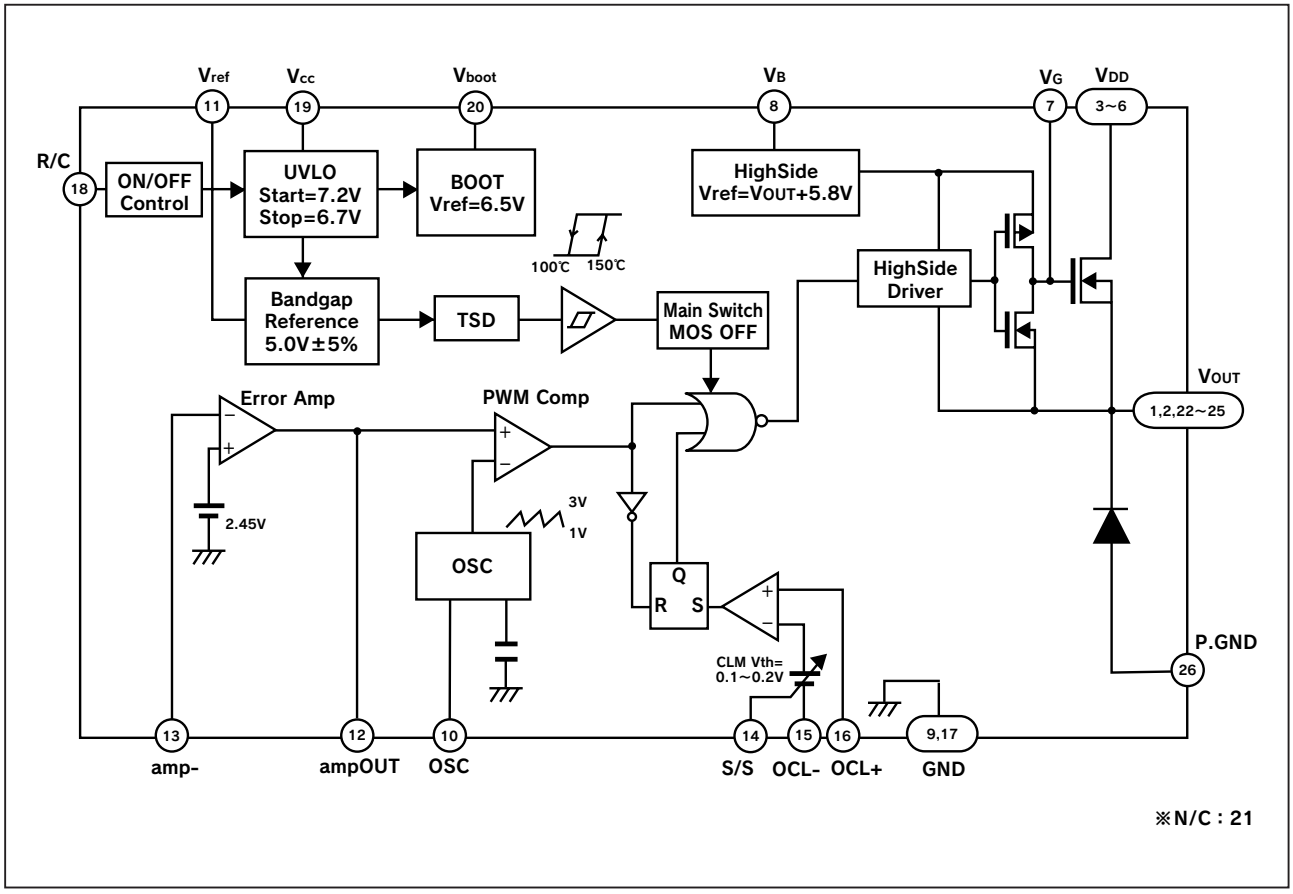
MD1323R

Frequency adjustable | Output adjustable | Small footprint | Remote On/Off

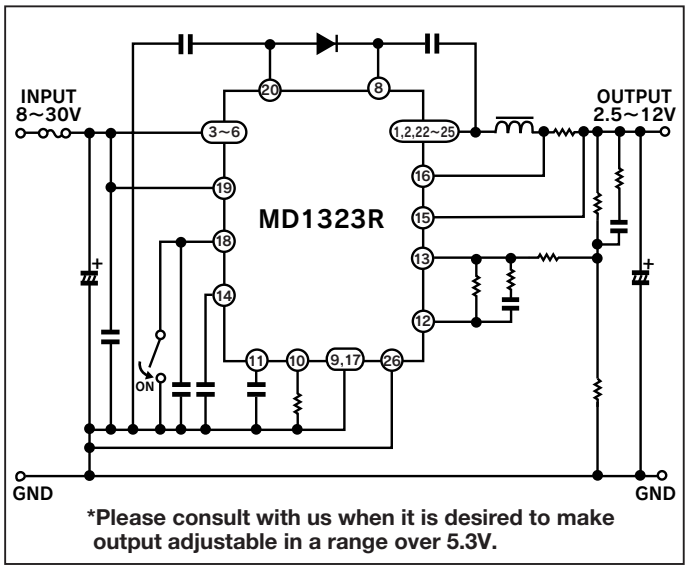
Feature

- Input Voltage range 8V to 30V
- Maximum Output Current 1.8A
- Included main switch MOSFET and fly wheel SBD
- Adjustable output voltage from 2.5V to 12V with external resistors
- Adjustable oscillation frequency from 100kHz to 500kHz with external resistors
- High Efficiency typ. 94% (at:Vin=8V, Vout=5V, Iout=1A, f=100kHz)
- Over Current Protection
- Thermal Shut Down
- Remote On / Off

Block Diagram

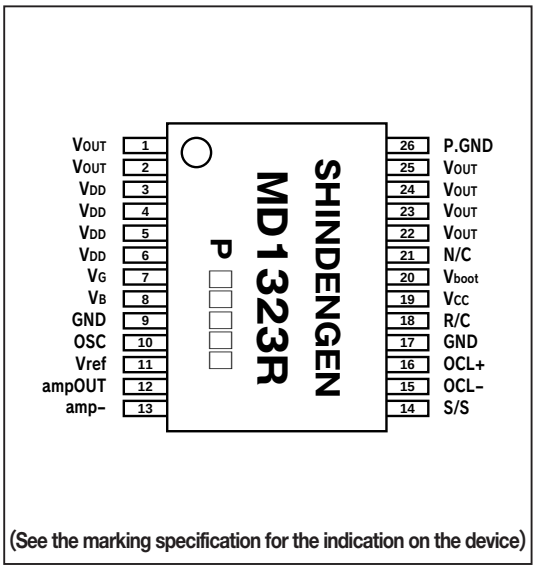


Standard Connection Diagram



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

Pin Assignment (LSSOP26)



(See the marking specification for the indication on the device)

■Absolute Maximum Ratings

Unless otherwise specified : Ta=25ºC

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
R/C input voltage	$V_{R/C}$	5.5	V
Thermal Ratings			
Power dissipation max ※1	PD1 ※3	1.1	W
	PD2 ※3	1.5	W
Operating temperature	Ta−ope	−30 to 85	℃
Storage temperature	Tstg	−40 to 150	℃
Junction temperature	Tj	150	℃
Thermal resistance ※1	θ ja1 ※3	110	℃/W
	θ ja2 ※3	87	℃/W
	θ jc1 ※2,※3	55	℃/W
	θ jc2 ※2,※3	30	℃/W

※1 CEM-3 Board：50.8×50.8㎟, Thickness：1㎜, Copper Pattern：300㎟ (Top Side), There is no through-hole. ※2 The measurement result in the center of case.
※3 PD1, θ ja1, θ jc1 are the values of the power dissipation and thermal registance when electifying to a single internal element.
PD2, θ ja2, θ jc2 are the values of the power dissipation and thermal registance when electifying to two internal element.

■Recommended Operating Conditions

Item	Symbol	Recommendation	Units
Junction temperature	Tj	−30 to 125	℃
Input voltage (Ta=−10℃ to 85℃)	V_i ※4	8 to 30	V
Input voltage (Ta=−30℃ to −10℃)	V_i ※4	8.5 to 30	V
Output voltage setting range	V_O ※5	2.5 to 12	V
Oscillation frequency	frq	100 to 500	kHz

※4 Input voltage at the time of power supply operation. ※5 Output voltage at the time of power supply operation.

■Electrical Characteristics

Unless otherwise specified : Ta=25ºC

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)	Vcc_start	−	6.5	7.2	7.9	V
Undervoltage lockout threshold (stop)	Vcc_stop	−	6.0	6.7	7.4	V
Undervoltage lockout hysteresis	V_{cc_hys}	−	−	0.5	−	V
Supply current	Icc	Vcc=8 to 30V, f=300kHz	−	10	13	mA
Supply current-remote OFF state	Icc_off	Vcc=8 to 30V	−	1.2	1.5	mA
Remote control ON input voltage	V_{RC_on}	Vcc=8 to 30V	−0.2	−	0.45	V
Remote control OFF input voltage	V_{RC_off}	Vcc=8 to 30V	2.5	−	5.3	V
Remote control source current	I_{RC}	Vcc=8 to 30V	−	−	250	μA
Bootstrap voltage	Vboot	Vcc=24V	5.4	6.5	7.6	V
Reference voltage	Vref	Vcc=8 to 30V	4.75	5	5.25	V
Frequency1 accuracy	frq_100	Vcc=24V, R=406.0kΩ	93	100	107	kHz
Frequency2 accuracy	frq_300	Vcc=24V, R=105.1kΩ	279	300	321	kHz
Frequency3 accuracy	frq_500	Vcc=24V, R=49.8kΩ	465	500	535	kHz
Threshold of over current limit	Vth_OCL	Vcc=24V	0.162	0.19	0.218	V
Softstart source current	Is/s	Vcc=24V	−20	−12.5	−5	μA
Error amp reference voltage	Vamp	Vcc=8 to 30V	2.4	2.45	2.5	V
Thermal shutdown temperature	T_TSD	−	−	150	−	℃