Buck B63

5V Step-Down Switching Regulator PCB Module

1. Features

- +8V to +60V operating supply voltage
- 5V output at 300mA current output
- Low ripple due to active ripple filter
- No external components needed
- Compact size: 20.8 x 27.5 mm
- -50°C to +125°C temperature operating range
- Thermal shutdown protection

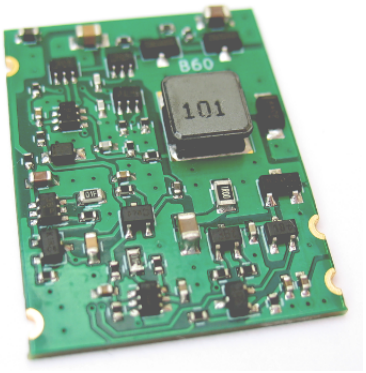
2. Applications

- High Voltage Conversion
- Industrial Power System
- 12V and 48V Power Systems

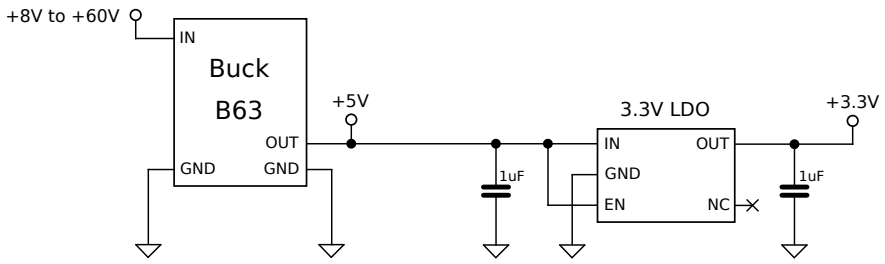
3. Descriptions

Buck B63 is a 5V PCB module requiring no additional components for its operation. It is designed to make it less sensitive to electrostatic discharge and has a broad temperature range.

The output stage consists of an active ripple filter which reduces the output ripple to typically around 5mV.

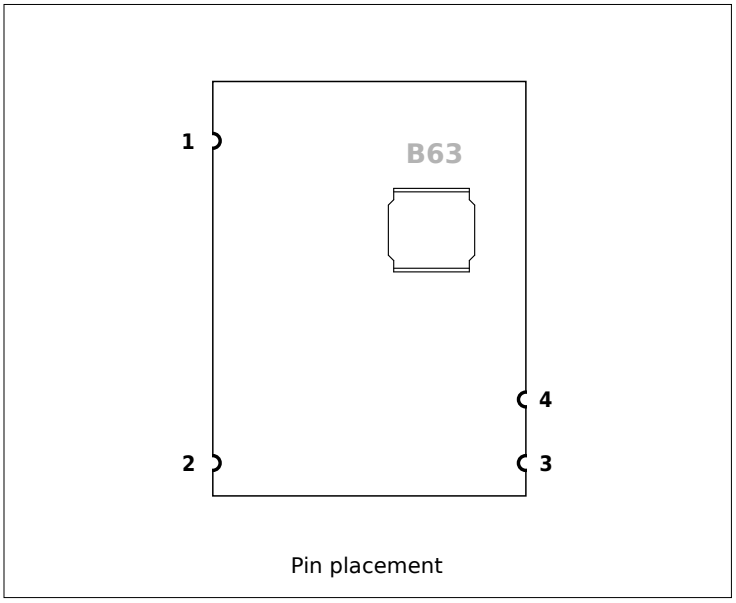


Size: 20.8 x 27.5 mm
0.819 x 1.08 inches



Example with a 3.3V LDO

4.1 Pin Layout



Pin placement

4.2 Pin Assignment

Pin	Name	Description
1	V_{in}	Voltage input to the module (+8 to +60 V)
2	GND [1]	Ground
3	GND [1]	Ground
4	V_{out}	Voltage Output from Module (nominally +5.25V)

[1] Note: Both GND pins need to be soldered to ground plane!

5.1 Absolute Maximum Rating

	Min	Max	Unit
Maximum Supply Voltage, V_{in}	-0.3	+65	V
Storage Temperature Range	-65	+150	°C
Soldering Temperature (reflow)		+260	°C

5.2 Recommended Operating Conditions

	Min	Max	Unit
Operating Supply Voltage, V_{in}	+8	+60	V
Operating Ambient Temperature Range [1]	-50	+125	°C
Maximum Load Temperature		300	mA

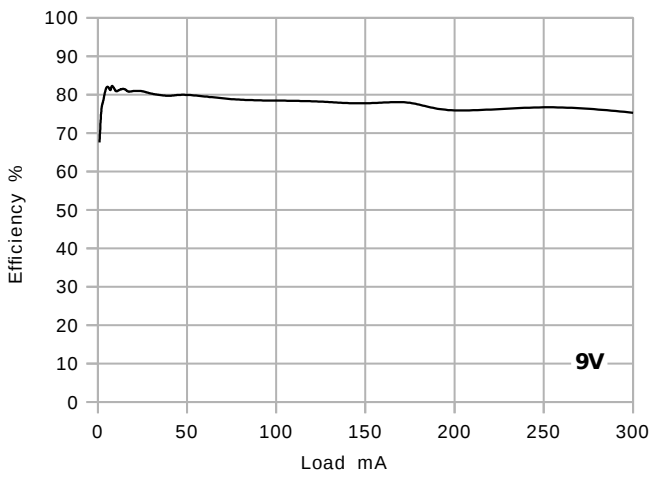
[1] Note: Overheat protection is activated at around +125 °C

5.3 Electrical Characteristic

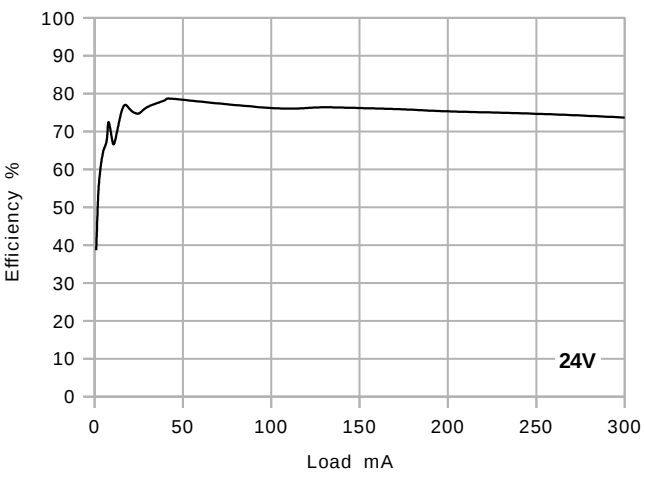
T_A = +25 to +100 °C unless otherwise noted

Parameter	Conditions	Min	Typ	Max	Unit
Supply Current	V_{in}: +8V to +60V, no load	3.8	3.9	4.1	mA
Ripple Voltage	V_{in} = +8V, Load = 300mA		1.0		mV
	V_{in} = +24V, Load = 300mA		5.5		mV
	V_{in} = +60V, Load = 300mA		12		mV
Nominal Switching Frequency	V_{in} = 8V - 60V, Load = 30 - 300mA	230		300	kHz
Output Voltage	V_{in} = 8V - 60[V], No Load			5.40	V
	V_{in} = 8V - 60[V], Load = 300mA	5.00			V

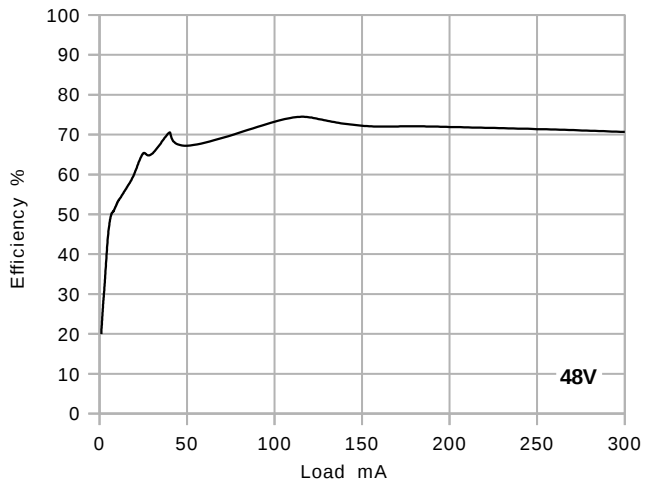
6. Typical Characteristics



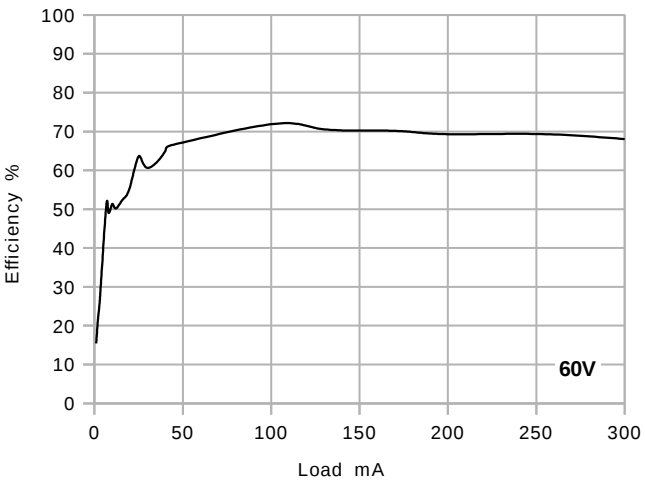
Efficiency vs Load at 9V



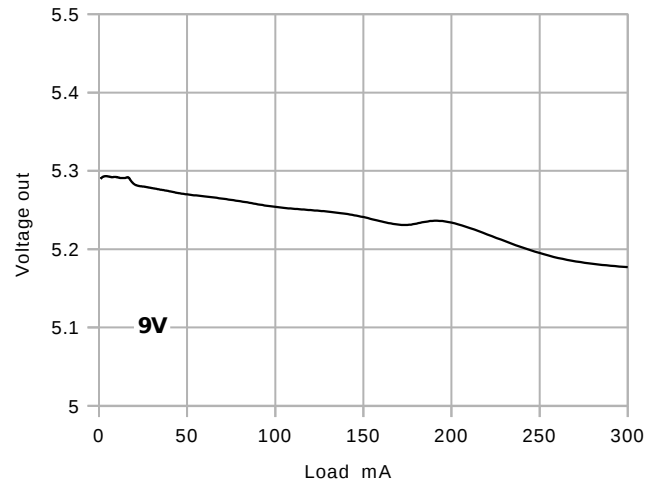
Efficiency vs Load at 24V



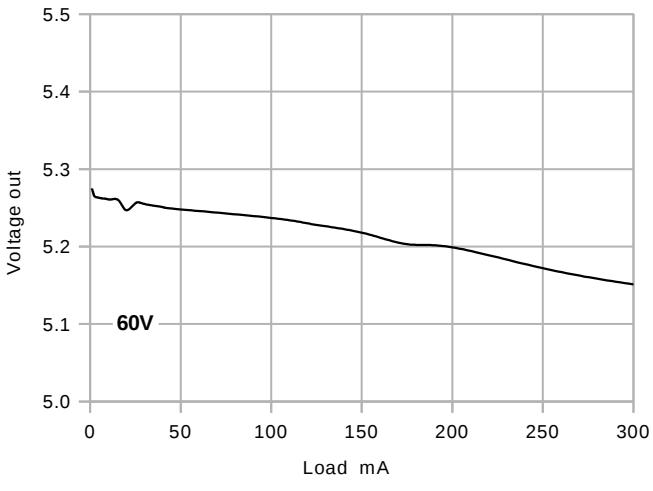
Efficiency vs Load at 48V



Efficiency vs Load at 60V

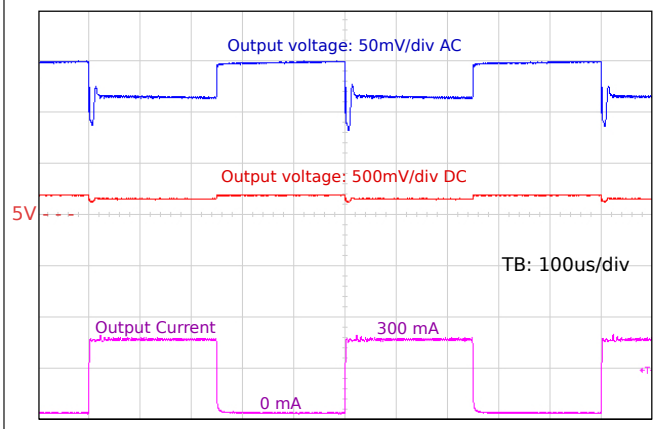


V_{out} vs Load at 9V

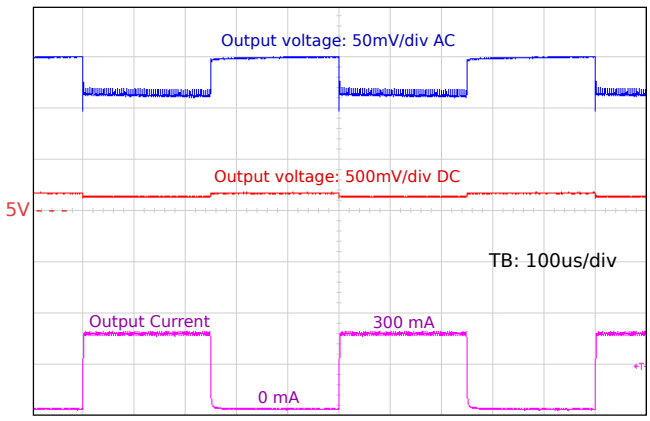


V_{out} vs Load at 60V

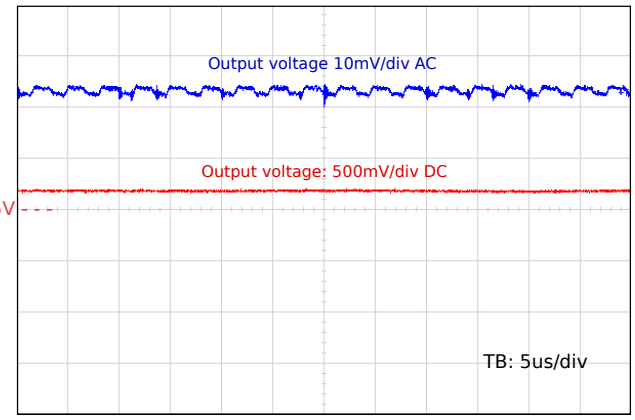
Typical Characteristics (continued)



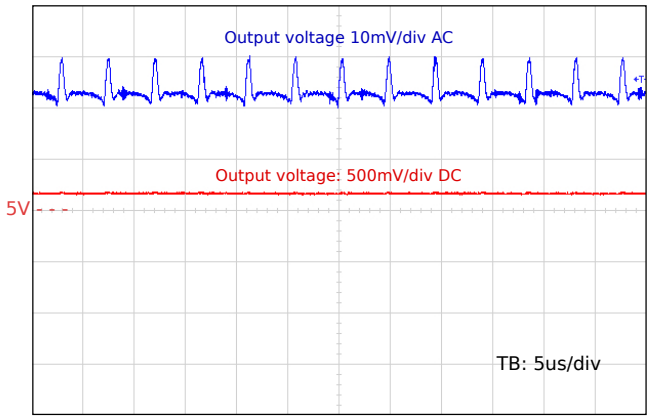
Transient Load (0 to 300mA) at 9V



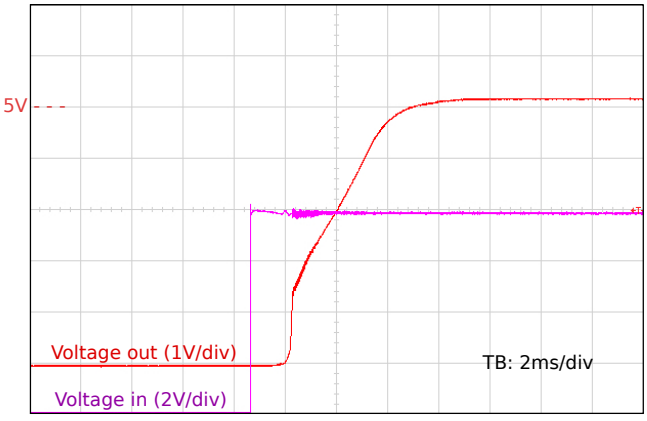
Transient Load (0 to 300mA) at 60V



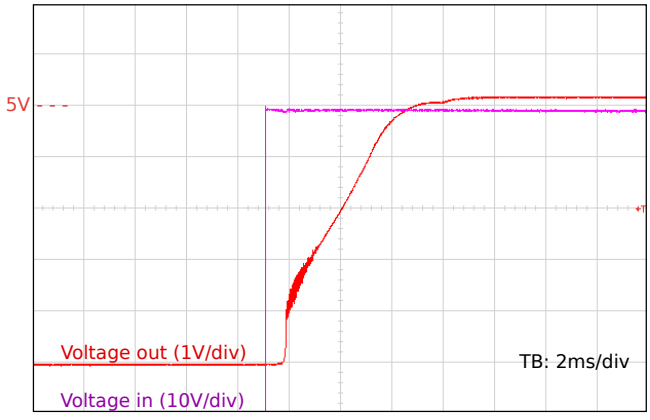
Ripple Voltage @ 300 mA, 12V in



Ripple Voltage @ 300 mA, 60V in

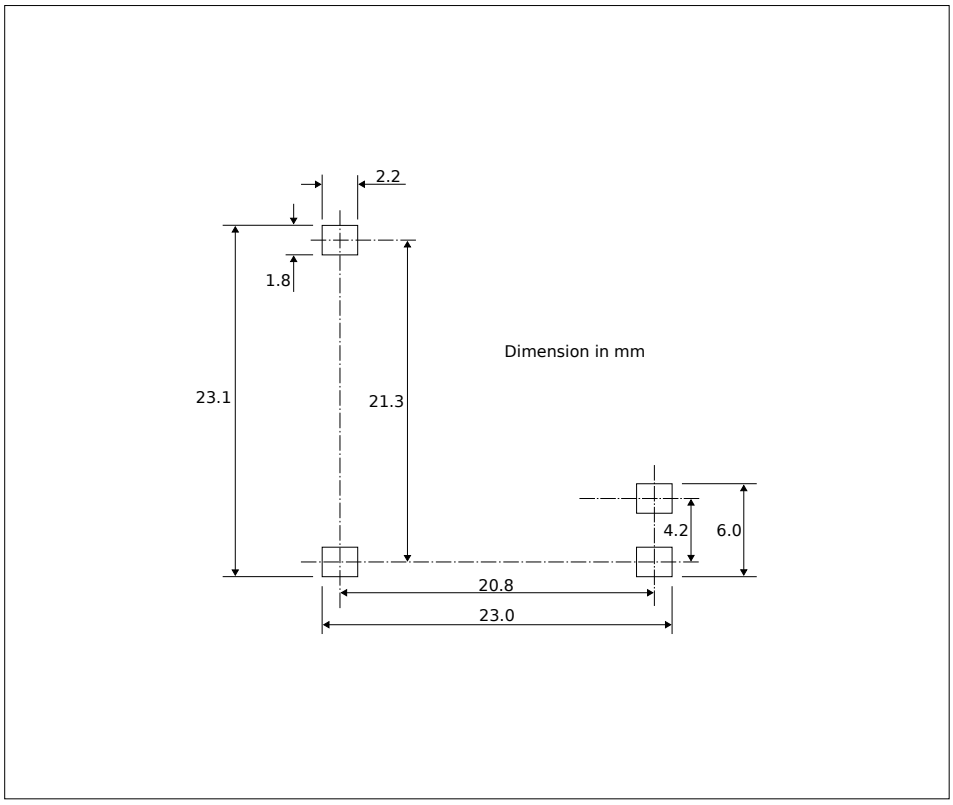


Start-Up Sequence, 8V in, 200mA load

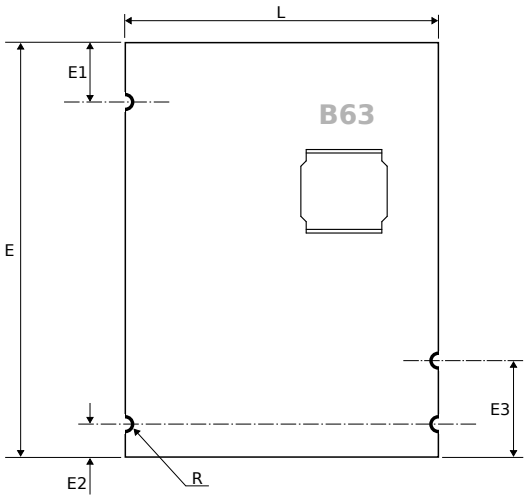


Start-Up Sequence, 60V in, 200mA load

7. Recommended Footprint



8. Mechanical Data



Drawings not to scale

Symbol	Millimeters			Inches[1]		
	Min	Typ	Max	Min	Typ	Max
A1	0.9	1.0	1.1	0.0354	0.0394	0.0433
A2		2.8	3		0.1102	0.1181
L	20.6	20.8	21.0	0.8110	0.8189	0.0433
B		6.5			0.2559	
E	27.3	27.5	27.7	1.0748	1.0827	1.0906
E1		4.0			0.1575	
E2		2.2			0.0866	
E3		6.4			0.2520	
R		0.6			0.0236	

[1] Values in inches are converted from millimeters

9. Revision history

Date	Revision	Changes
10 Oct. 2020	0.2	Initial release
31 Mar. 2021	0.3	Example schematic added
2 Apr. 2021	0.4	Oscilloscope screenshots added

Please note:

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