

LTO

2.4V-
48VDC

3A max.

50W

Turtle Charger (50W) - LTO

Pre-programmed Battery Charger for Lithium Titanate



GENERAL SPECIFICATIONS

Input Voltage	10-75VDC
Input Connector	2.1mm DC jack (enclosure)
Output Voltage	2.4V-48V for battery packs up to: – 20 cells in series (LTO)
Output Current	3A max.
Voltage Accuracy	<1%
Voltage Limit	TBD - Contact us.
Current Accuracy	<5%
Tolerance on Timing	±5%
Temp. Accuracy	Internal: <1°C
	External: <1%, resolution 0.01°C
Dimensions	L112mm x W66mm x H40mm (enclosure)
Weight	140 grams (enclosure)

LED PATTERNS - ROUTINE

Traffic light (red-orange-green):	System reset. Occurs at power on and battery connection.
Slow orange blink:	System waiting. Battery disconnected.
Solid orange:	Constant current phase. (inc. pre-condition if programmed)
Orange with green blink:	Constant voltage phase
Solid green	Charge Complete. Float Charge continues (if programmed)

LED PATTERNS - EXCEPTIONS

Three red flashes:	Charge suspended. Battery volts too low.
Two red flashes:	Charge suspended. Battery volts too high.
Slow red blinking: (1 flash every 5 sec)	Charge suspended. Battery or PCB too hot (PCB self protected to 75°C)
Fast red blinking:	Thermistor Error. (Needs Power Reset)
Orange blinking: (1 flash every ½ sec)	Timeout. Time limit is customisable on request
Solid red:	Fault. (Needs Power Reset)

DESCRIPTION

The TSB002-LTO series offer a wide range of single output DC chargers up to 50 Watts.

It is custom programmed by our engineers to fit specific design requirements for LITHIUM TITANATE.

Pre-programming includes functions setting, charging current and charging voltage, constant current, constant voltage, pre-conditioning, float charging, charge termination methods and setting. Input and output cabling and connector options for all international markets are available upon request.

Features:

- Choice of 50 different models.
- Wide input voltage range.
- Single voltage output up to 50W.
- Constant current limiting overload.
- Proven field reliability and performance.
- Status LED indicator.
- High operating temperature +71°C.

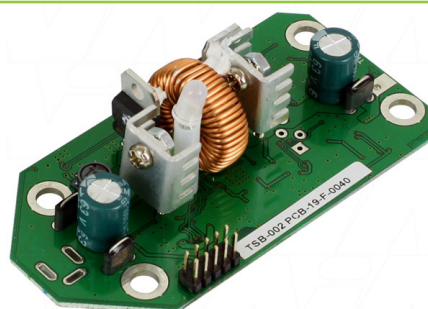
MOUNTING OPTIONS:

Modules available as options below:

PCB: PCB stand-alone charger.

ENCLOSURE: Housed enclosure for environmental protection.

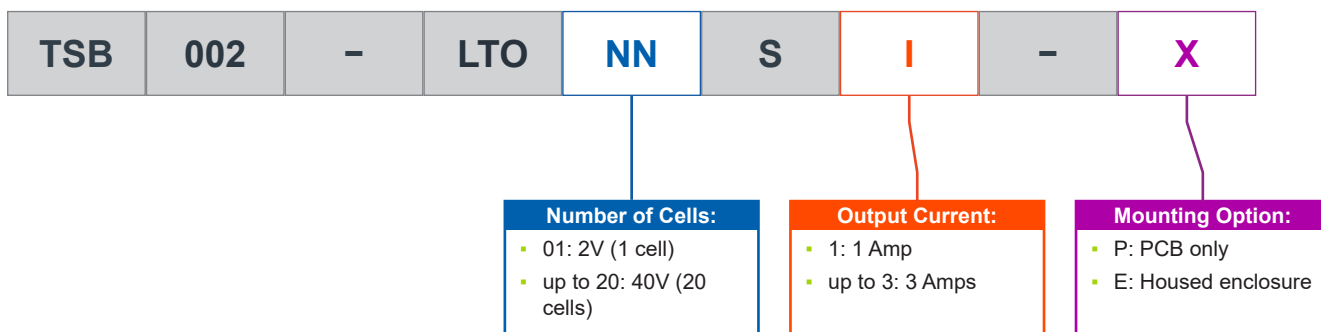
PCB



ENCLOSURE



PART NUMBER SELECTION KEY



*Termination of choice available.

SELECTION TABLE

Part Number	Chemistry	Battery Pack Voltage	Input Voltage	Output Current	Mounting Option
TSB002-LTO01S1	Li-Titanate	2.4VDC (1 cell)	10-75VDC	1A (2.85W)	
TSB002-LTO01S2	Li-Titanate	2.4VDC (1 cell)	10-75VDC	2A (5.7W)	
TSB002-LTO01S3	Li-Titanate	2.4VDC (1 cell)	10-75VDC	3A (8.55W)	
TSB002-LTO02S1	Li-Titanate	4.8VDC (2 cells)	10-75VDC	1A (5.7W)	
TSB002-LTO02S2	Li-Titanate	4.8VDC (2 cells)	10-75VDC	2A (11.4W)	
TSB002-LTO02S3	Li-Titanate	4.8VDC (2 cells)	10-75VDC	3A (17.1W)	
TSB002-LTO03S1	Li-Titanate	7.2VDC (3 cells)	10-75VDC	1A (8.55W)	
TSB002-LTO03S2	Li-Titanate	7.2VDC (3 cells)	10-75VDC	2A (17.1W)	
TSB002-LTO03S3	Li-Titanate	7.2VDC (3 cells)	10-75VDC	3A (25.65W)	
TSB002-LTO04S1	Li-Titanate	9.6VDC (4 cells)	10-75VDC	1A (11.4W)	
TSB002-LTO04S2	Li-Titanate	9.6VDC (4 cells)	10-75VDC	2A (22.8W)	
TSB002-LTO04S3	Li-Titanate	9.6VDC (4 cells)	10-75VDC	3A (34.2W)	
TSB002-LTO05S1	Li-Titanate	12VDC (5 cells)	10-75VDC	1A (14.25W)	
TSB002-LTO05S2	Li-Titanate	12VDC (5 cells)	10-75VDC	2A (28.5W)	
TSB002-LTO05S3	Li-Titanate	12VDC (5 cells)	10-75VDC	3A (42.75W)	
TSB002-LTO06S1	Li-Titanate	14.4VDC (6 cells)	10-75VDC	1A (17.1W)	
TSB002-LTO06S2	Li-Titanate	14.4VDC (6 cells)	10-75VDC	2A (34.2W)	
TSB002-LTO06S3	Li-Titanate	14.4VDC (6 cells)	10-75VDC	2.92A (50W max.)	
TSB002-LTO07S1	Li-Titanate	16.8VDC (7 cells)	10-75VDC	1A (19.95W)	
TSB002-LTO07S2	Li-Titanate	16.8VDC (7 cells)	10-75VDC	2A (39.9W)	
TSB002-LTO07S3	Li-Titanate	16.8VDC (7 cells)	10-75VDC	2.51A (50W max.)	
TSB002-LTO08S1	Li-Titanate	19.2VDC (8 cells)	10-75VDC	1A (22.8W)	
TSB002-LTO08S2	Li-Titanate	19.2VDC (8 cells)	10-75VDC	2A (45.6W)	
TSB002-LTO08S3	Li-Titanate	19.2VDC (8 cells)	10-75VDC	2.19A (50W max.)	
TSB002-LTO09S1	Li-Titanate	21.6VDC (9 cells)	10-75VDC	1A (25.65W)	
TSB002-LTO09S2	Li-Titanate	21.6VDC (9 cells)	10-75VDC	1.95A (50W max.)	
TSB002-LTO10S1	Li-Titanate	24VDC (10 cells)	10-75VDC	1A (28.5W)	
TSB002-LTO10S2	Li-Titanate	24VDC (10 cells)	10-75VDC	1.75A (50W max.)	
TSB002-LTO11S1	Li-Titanate	26.4VDC (11 cells)	10-75VDC	1A (31.35W)	

Select from options above

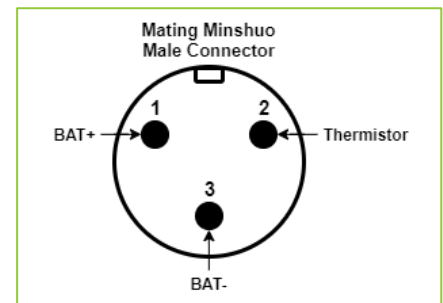
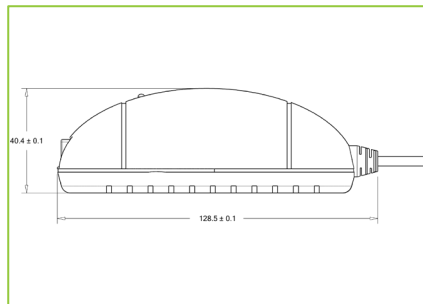
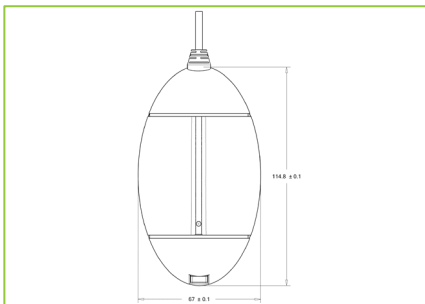
All specifications are correct at time of creation. All specifications and operation conditions contained in this datasheet are subject to change or improvement without prior notice to the user. This data is for evaluation purposes only. No guarantee is intended or implied by this data. For clarification and updated information, please contact us.

Part Number	Chemistry	Battery Pack Voltage	Input Voltage	Output Current	Mounting Option
TSB002-LTO11S2	Li-Titanate	26.4VDC (11 cells)	10-75VDC	1.59A (50W max.)	Select from options above
TSB002-LTO12S1	Li-Titanate	28.8VDC (12 cells)	10-75VDC	1A (34.2W)	
TSB002-LTO12S2	Li-Titanate	28.8VDC (12 cells)	10-75VDC	1.46A (50W max.)	
TSB002-LTO13S1	Li-Titanate	31.2VDC (13 cells)	10-75VDC	1A (37.05W)	
TSB002-LTO13S2	Li-Titanate	31.2VDC (13 cells)	10-75VDC	1.35A (50W max.)	
TSB002-LTO14S1	Li-Titanate	33.6VDC (14 cells)	10-75VDC	1A (39.9W)	
TSB002-LTO14S2	Li-Titanate	33.6VDC (14 cells)	10-75VDC	1.25A (50W max.)	
TSB002-LTO15S1	Li-Titanate	36VDC (15 cells)	10-75VDC	1A (42.75W)	
TSB002-LTO15S2	Li-Titanate	36VDC (15 cells)	10-75VDC	1.17A (50W max.)	
TSB002-LTO16S1	Li-Titanate	38.4VDC (16 cells)	10-75VDC	1A (45.6W)	
TSB002-LTO16S2	Li-Titanate	38.4VDC (16 cells)	10-75VDC	1.1A (50W max.)	
TSB002-LTO17S1	Li-Titanate	40.8VDC (17 cells)	10-75VDC	1A (48.45W)	
TSB002-LTO17S2	Li-Titanate	40.8VDC (17 cells)	10-75VDC	1.03A (50W max.)	
TSB002-LTO18S1	Li-Titanate	43.2VDC (18 cells)	10-75VDC	0.97A (50W max.)	
TSB002-LTO19S1	Li-Titanate	45.6VDC (19 cells)	10-75VDC	0.92A (50W max.)	
TSB002-LTO20S1	Li-Titanate	48VDC (20 cells)	10-75VDC	0.88A (50W max.)	

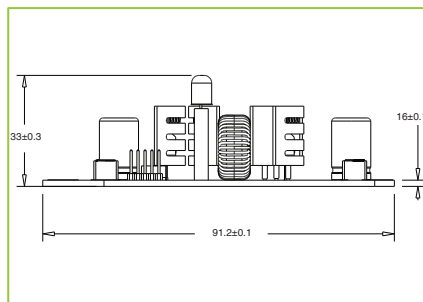
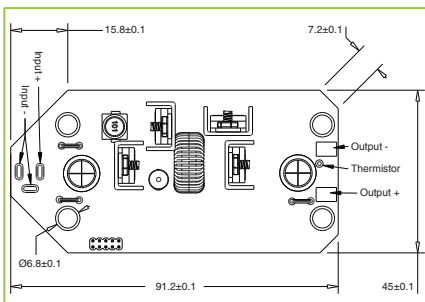
*****IMPORTANT:** The Part Number must have the mounting option code (-P, or -E) your project requires.

TECHNICAL DIAGRAMS (2D)

ENCLOSURE



PCB



All dimensions in millimeters (mm).

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