

LTO

2.4V-
48VDC

5A max.

100W

Turtle Charger (100W) - LTO

Pre-programmed Battery Charger for Lithium Titanate



DESCRIPTION

The TSB003-LTO Series offer a wide range of single output DC **LITHIUM TITANATE** battery chargers up to 100 Watts.

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

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 100W.
- Constant current limiting overload.
- Proven field reliability and performance.
- Status LED indicator (NOT available in DIN-V version).
- Chassis and DIN rail mounting options.
- High operating temperature +71°C.

MOUNTING OPTIONS:

Modules available as PCB stand-alone or DIN mounting case. See options below.

PCB: PCB stand-alone charger with 5 (five) electric isolated screw terminals for panel mounting.

ENCLOSURE: Housed enclosure for environmental protection.

DIN-V: DIN Rail mounting case in vertical format. Suitable for Top hat IEC/EN 60715 and G section rail types.

DIN-H: DIN Rail mounting case in horizontal format. Suitable for Top hat IEC/EN 60715 and G section rail types.

GENERAL SPECIFICATIONS

Input Voltage	10-75VDC
Output Voltage	2.4V-48V for battery packs up to: – 20 cells in series (LTO)
Output Current	5A (Buck) 60W (Boost)
Voltage Accuracy	<1%
Voltage Limit	TBD
Current Accuracy	<5%
Tolerance on Timing	±5%
Temp. Accuracy	Internal: <1°C
	External: <1%, resolution 0.01°C
Dimensions	L80mm x W61mm x H14.5mm (PCB only)
Weight	60 grams (PCB only)

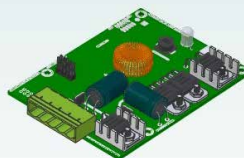
LED PATTERNS - ROUTINE

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)

PCB



ENCLOSURE



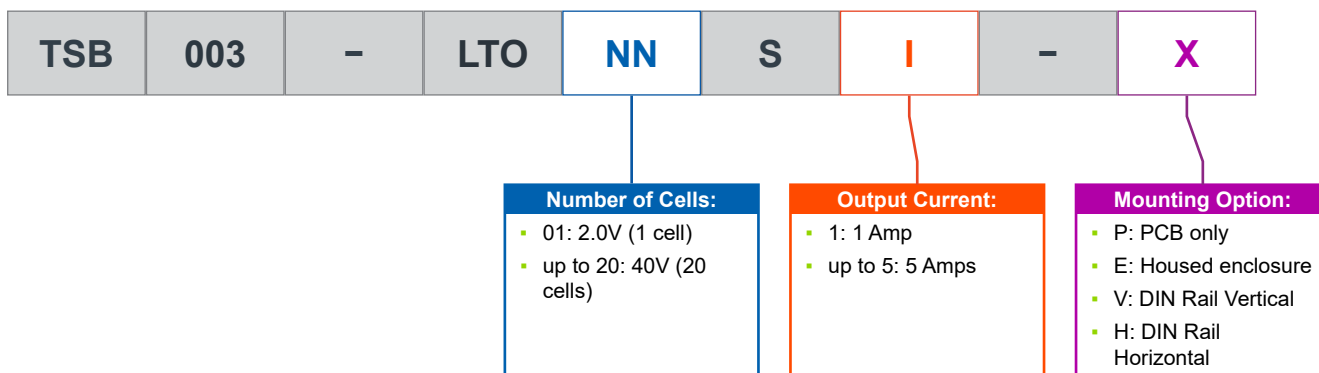
DIN-V



DIN-H



PART NUMBER SELECTION KEY



*Termination of choice available.

SELECTION TABLE

Part Number	Chemistry	Battery Pack Voltage	Input Voltage	Output Current	Mounting Option
TSB003-LTO01S5	Li-Titanate	2.4VDC (1 cell)	10-75VDC	5A max.(14.25W)	<i>Select from options above</i>
TSB003-LTO01S4	Li-Titanate	2.4VDC (1 cell)	10-75VDC	4A (11.4W)	
TSB003-LTO01S3	Li-Titanate	2.4VDC (1 cell)	10-75VDC	3A (8.55W)	
TSB003-LTO01S2	Li-Titanate	2.4VDC (1 cell)	10-75VDC	2A (5.7W)	
TSB003-LTO01S1	Li-Titanate	2.4VDC (1 cell)	10-75VDC	1A (2.85W)	
TSB003-LTO02S5	Li-Titanate	4.8VDC (2 cells)	10-75VDC	5A max.(28.5W)	
TSB003-LTO02S4	Li-Titanate	4.8VDC (2 cells)	10-75VDC	4A (22.8W)	
TSB003-LTO02S3	Li-Titanate	4.8VDC (2 cells)	10-75VDC	3A (17.1W)	
TSB003-LTO02S2	Li-Titanate	4.8VDC (2 cells)	10-75VDC	2A (11.4W)	
TSB003-LTO02S1	Li-Titanate	4.8VDC (2 cells)	10-75VDC	1A (5.7W)	
TSB003-LTO03S5	Li-Titanate	7.2VDC (3 cells)	10-75VDC	5A max.(42.75W)	
TSB003-LTO03S4	Li-Titanate	7.2VDC (3 cells)	10-75VDC	4A (34.2W)	
TSB003-LTO03S3	Li-Titanate	7.2VDC (3 cells)	10-75VDC	3A (25.65W)	
TSB003-LTO03S2	Li-Titanate	7.2VDC (3 cells)	10-75VDC	2A (17.1W)	
TSB003-LTO03S1	Li-Titanate	7.2VDC (3 cells)	10-75VDC	1A (8.55W)	
TSB003-LTO04S5	Li-Titanate	9.6VDC (4 cells)	10-75VDC	5A max.(57W)	
TSB003-LTO04S4	Li-Titanate	9.6VDC (4 cells)	10-75VDC	4A (45.6W)	
TSB003-LTO04S3	Li-Titanate	9.6VDC (4 cells)	10-75VDC	3A (34.2W)	
TSB003-LTO04S2	Li-Titanate	9.6VDC (4 cells)	10-75VDC	2A (22.8W)	
TSB003-LTO04S1	Li-Titanate	9.6VDC (4 cells)	10-75VDC	1A (11.4W)	
TSB003-LTO05S5	Li-Titanate	12VDC (5 cells)	10-75VDC	5A max.(71.25W)	
TSB003-LTO05S4	Li-Titanate	12VDC (5 cells)	10-75VDC	4A (57W)	
TSB003-LTO05S3	Li-Titanate	12VDC (5 cells)	10-75VDC	3A (42.75W)	
TSB003-LTO05S2	Li-Titanate	12VDC (5 cells)	10-75VDC	2A (28.5W)	
TSB003-LTO05S1	Li-Titanate	12VDC (5 cells)	10-75VDC	1A (14.25W)	
TSB003-LTO06S5	Li-Titanate	14.4VDC (6 cells)	10-75VDC	5A max.(85.5W)	
TSB003-LTO06S4	Li-Titanate	14.4VDC (6 cells)	10-75VDC	4A (68.4W)	
TSB003-LTO06S3	Li-Titanate	14.4VDC (6 cells)	10-75VDC	3A (51.3W)	
TSB003-LTO06S2	Li-Titanate	14.4VDC (6 cells)	10-75VDC	2A (34.2W)	
TSB003-LTO06S1	Li-Titanate	14.4VDC (6 cells)	10-75VDC	1A (17.1W)	

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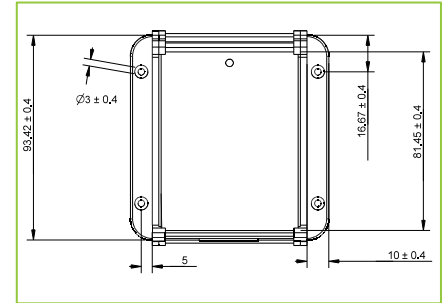
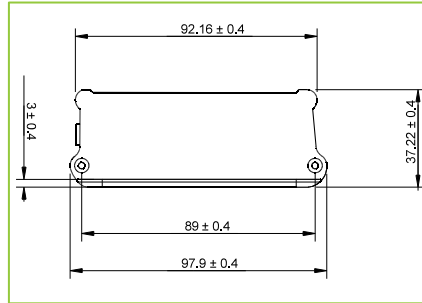
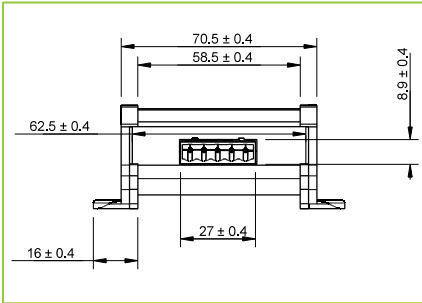
Part Number	Chemistry	Battery Pack Voltage	Input Voltage	Output Current	Mounting Option
TSB003-LTO07S5	Li-Titanate	16.8VDC (7 cells)	10-75VDC	5A max.(99.75W)	
TSB003-LTO07S4	Li-Titanate	16.8VDC (7 cells)	10-75VDC	4A (79.8W)	
TSB003-LTO07S3	Li-Titanate	16.8VDC (7 cells)	10-75VDC	3A (59.85W)	
TSB003-LTO07S2	Li-Titanate	16.8VDC (7 cells)	10-75VDC	2A (39.9W)	
TSB003-LTO07S1	Li-Titanate	16.8VDC (7 cells)	10-75VDC	1A (19.95W)	
TSB003-LTO08S5	Li-Titanate	19.2VDC (8 cells)	10-75VDC	4.39A (100W max.)	
TSB003-LTO08S4	Li-Titanate	19.2VDC (8 cells)	10-75VDC	4A (91.2W)	
TSB003-LTO08S3	Li-Titanate	19.2VDC (8 cells)	10-75VDC	3A (68.4W)	
TSB003-LTO08S2	Li-Titanate	19.2VDC (8 cells)	10-75VDC	2A (45.6W)	
TSB003-LTO08S1	Li-Titanate	19.2VDC (8 cells)	10-75VDC	1A (22.8W)	
TSB003-LTO09S4	Li-Titanate	21.6VDC (9 cells)	10-75VDC	3.9A (100W max.)	
TSB003-LTO09S3	Li-Titanate	21.6VDC (9 cells)	10-75VDC	3A (76.95W)	
TSB003-LTO09S2	Li-Titanate	21.6VDC (9 cells)	10-75VDC	2A (51.3W)	
TSB003-LTO09S1	Li-Titanate	21.6VDC (9 cells)	10-75VDC	1A (25.65W)	
TSB003-LTO10S4	Li-Titanate	24VDC (10 cells)	10-75VDC	3.51A (100W max.)	
TSB003-LTO10S3	Li-Titanate	24VDC (10 cells)	10-75VDC	3A (85.5W)	
TSB003-LTO10S2	Li-Titanate	24VDC (10 cells)	10-75VDC	2A (57W)	
TSB003-LTO10S1	Li-Titanate	24VDC (10 cells)	10-75VDC	1A (28.5W)	
TSB003-LTO11S4	Li-Titanate	26.4VDC (11 cells)	10-75VDC	3.2A (100W max.)	
TSB003-LTO11S3	Li-Titanate	26.4VDC (11 cells)	10-75VDC	3A (94.05W)	
TSB003-LTO11S2	Li-Titanate	26.4VDC (11 cells)	10-75VDC	2A (62.7W)	
TSB003-LTO11S1	Li-Titanate	26.4VDC (11 cells)	10-75VDC	1A (31.35W)	
TSB003-LTO12S3	Li-Titanate	28.8VDC (12 cells)	10-75VDC	2.92A (100W max.)	Select from options above
TSB003-LTO12S2	Li-Titanate	28.8VDC (12 cells)	10-75VDC	2A (68.4W)	
TSB003-LTO12S1	Li-Titanate	28.8VDC (12 cells)	10-75VDC	1A (34.2W)	
TSB003-LTO13S3	Li-Titanate	31.2VDC (13 cells)	10-75VDC	2.7A (100W max.)	
TSB003-LTO13S2	Li-Titanate	31.2VDC (13 cells)	10-75VDC	2A (74.1W)	
TSB003-LTO13S1	Li-Titanate	31.2VDC (13 cells)	10-75VDC	1A (37.05W)	
TSB003-LTO14S3	Li-Titanate	33.6VDC (14 cells)	10-75VDC	2.51A (100W max.)	
TSB003-LTO14S2	Li-Titanate	33.6VDC (14 cells)	10-75VDC	2A (79.8W)	
TSB003-LTO14S1	Li-Titanate	33.6VDC (14 cells)	10-75VDC	1A (39.9W)	
TSB003-LTO15S3	Li-Titanate	36VDC (15 cells)	10-75VDC	2.34A (100W max.)	
TSB003-LTO15S2	Li-Titanate	36VDC (15 cells)	10-75VDC	2A (85.5W)	
TSB003-LTO15S1	Li-Titanate	36VDC (15 cells)	10-75VDC	1A (42.75W)	
TSB003-LTO16S3	Li-Titanate	38.4VDC (16 cells)	10-75VDC	2.19A (100W max.)	
TSB003-LTO16S2	Li-Titanate	38.4VDC (16 cells)	10-75VDC	2A (91.2W)	
TSB003-LTO16S1	Li-Titanate	38.4VDC (16 cells)	10-75VDC	1A (45.6W)	
TSB003-LTO17S2	Li-Titanate	40.8VDC (17 cells)	10-75VDC	2A (100W max.)	
TSB003-LTO17S1	Li-Titanate	40.8VDC (17 cells)	10-75VDC	1A (48.45W)	
TSB003-LTO18S2	Li-Titanate	43.2VDC (18 cells)	10-75VDC	1.95A (100W max.)	
TSB003-LTO18S1	Li-Titanate	43.2VDC (18 cells)	10-75VDC	1A (51.3W)	
TSB003-LTO19S2	Li-Titanate	45.6VDC (19 cells)	10-75VDC	1.85A (100W max.)	
TSB003-LTO19S1	Li-Titanate	45.6VDC (19 cells)	10-75VDC	1A (54.15W)	
TSB003-LTO20S2	Li-Titanate	48VDC (20 cells)	10-75VDC	1.75A (100W max.)	
TSB003-LTO20S1	Li-Titanate	48VDC (20 cells)	10-75VDC	1A (57W)	

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

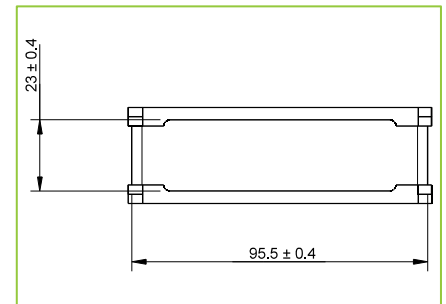
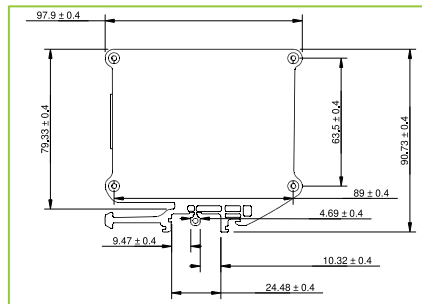
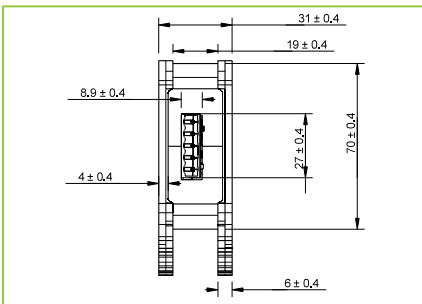
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TECHNICAL DIAGRAMS (2D)

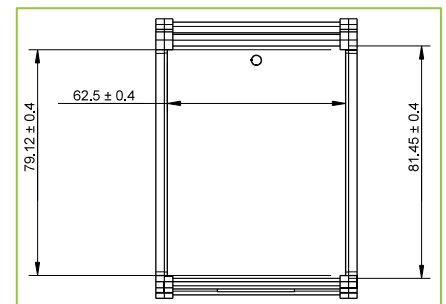
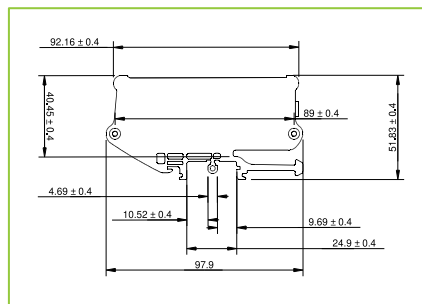
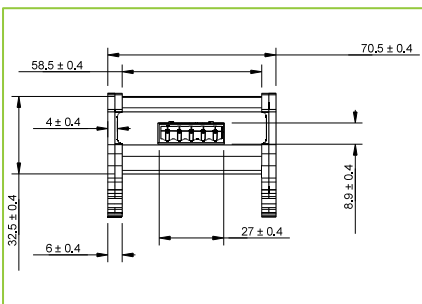
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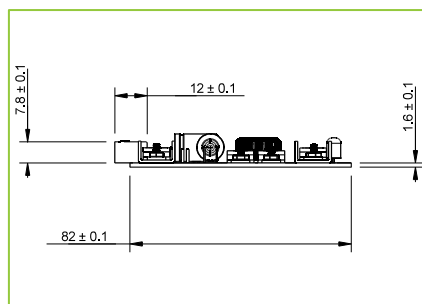
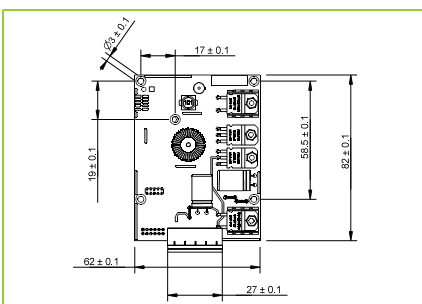
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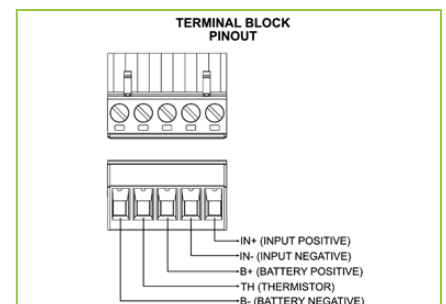
DIN-H



PCB



TERMINAL BLOCK PINOUT



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