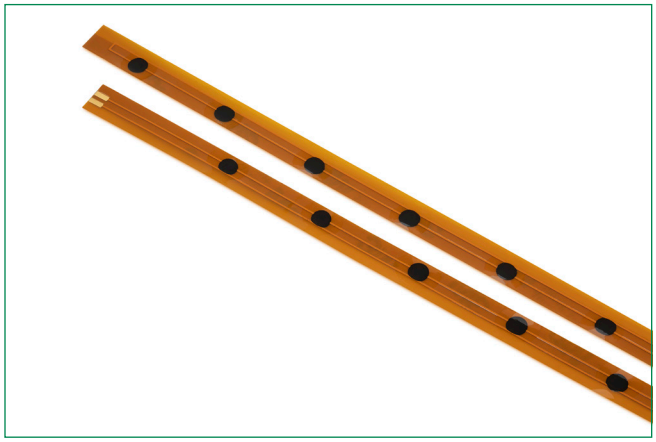
TTP Series
Distributed Temperature Monitoring Technology

RoHS HF



Additional Information

Resources | Accessories | Samples

Description

The TTape™ platform is a distributed temperature monitoring technology for battery packs that helps to improve the detection of localized cell overheating. This device helps to increase the lifetime of batteries and provides thermal runaway protection.

Features

- Simple integration with existing BMS solutions complementing NTCs
- No calibration or temperature look-up tables needed
- Pressure sensitive adhesive for simple and quick installation
- AEC-Q200 qualified

Benefits

- Over-temperature monitoring of many cells or large area with single MCU input
- Helps the MCU to wake from sleep mode at overtemperature events
- <1s response for temperature monitoring
- Extremely thin device suitable for conformal installation
- Increased spatial resolution of temperature monitoring

Applications

- Li-ion battery packs
- Large area, distributed, temperature monitoring

Electrical Specifications

Recommended operating conditions

Name	Description	Value	Units
V_{DD}	Power supply range	3.3 to 5.5	V
Rp	Pull up resistor value when V_{DD} = 3 to 5.5 V	200 (±5%)	kΩ
	Pull up resistor value when V_{DD} = 2.5 to 5.5 V	100 (±5%)	kΩ

Absolute minimum ratings

Name	Description	Value	Units
V_{max}	Voltage	6	V
I_{max}	Current	6	mA
	Dielectric withstand. Tested per MIL-STD-202 Test Method 301	2500	V

Operating Conditions

Device continues to meet all specifications and performance criteria
System capable of detecting T_{L1}

Specification	Value	Units
Operating temperature	-40 to +85	°C
Storage temperature	-40 to +55	°C

Revised: BT. 11/07/23

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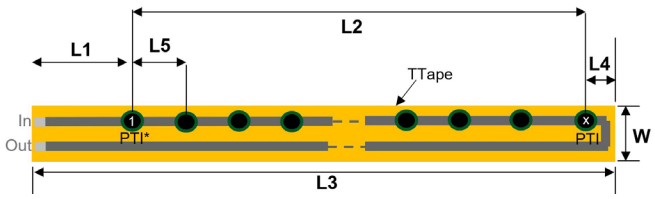
Dimensions

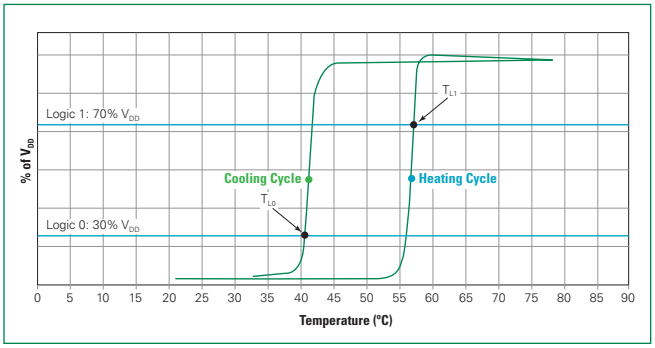
Part Number: TTP0335F010
Measurement: mm

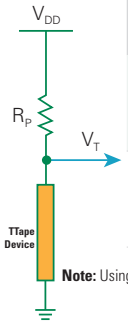


Note:
* Printed Temperature Indicator (Monitoring Point or Individual Sensing Element on TTape device)

Parameter		Dimensions for customer/ application specific design	TTP 0335 F 010 sample design
Number of Printed Thermal Indicators (PTIs)		≤50	10
Position of the first thermal indicator from the tape edge	L1	≥15 mm	45.7 mm
Distance between first and last thermal indicator	L2	depending on design	274.5 mm
TTape device total length	L3	<1 m (typical) < 8 m (stitching option available)	337.5 mm
Distance between the last thermal indicator and the end of the tape	L4	≥10 mm	17.3 mm
Pitch between Printed Thermal Indicators (PTIs) (can vary from PTI to PTI)	L5	≥10 mm	30.5 mm
Tape width	W	10 mm/8 mm	10 mm
Diameter of Printed Thermal Indicators (PTIs)		≤5 mm	≤5 mm

Temperature Indication Characteristics





Note: Using 10-bit or better A/D recommended

Name	Temperature (°C) *		
	Typical [1,2]	Tolerance	Description
T_{L1}	58	± 3	Logic value one occurs when temperature is equal or higher than this value during heating
T_{L0}	42	± 3	Logic value zero occurs when cooling

Notes:
1. Specification applies when less than 11 monitoring Points are heated and cooled simultaneously. Typical values for T_{L1} and T_{L0} decrease approximately 3 °C when simultaneously heating and cooling between 11 and 25 Monitoring Points.
2. After performing AEC-Q200 'Biased Humidity' test, which applies 85 °C at 85% relative humidity for 1000 hours, trip temperature will decrease. T_{L1} will be greater than 45 °C and T_{L0} will be greater than 30 °C.

Part Numbering System

TTP 0335 F 010

Series
TTape

Tape Length
Measurement in mm

Tape Width
E = 8 mm
F = 10 mm

Number of Monitoring Points

Note:
Part number and dimensions are for standard sample devices.
TTape device will be customized to the geometrical needs of the application.

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