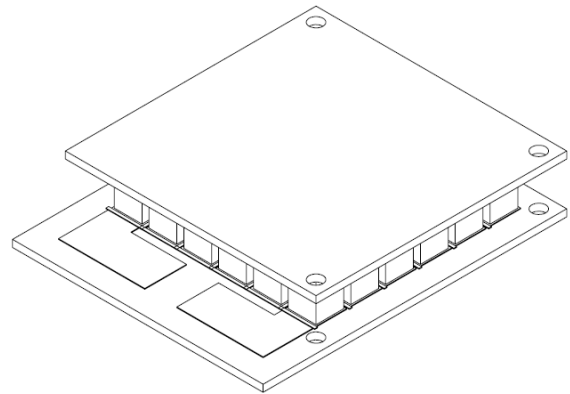
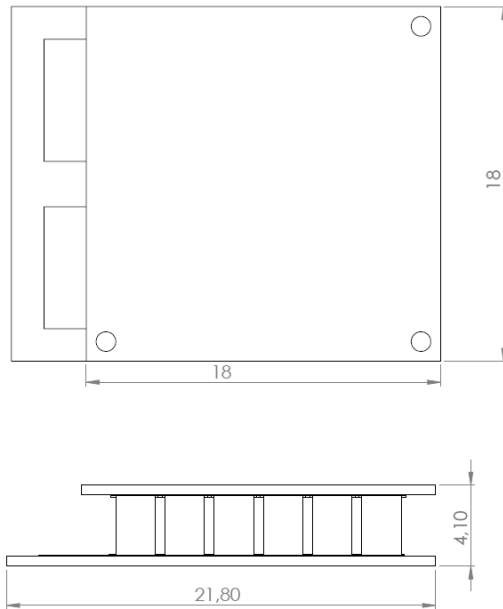


Module. FLIPTEM 36

Physical dimensions (mm)

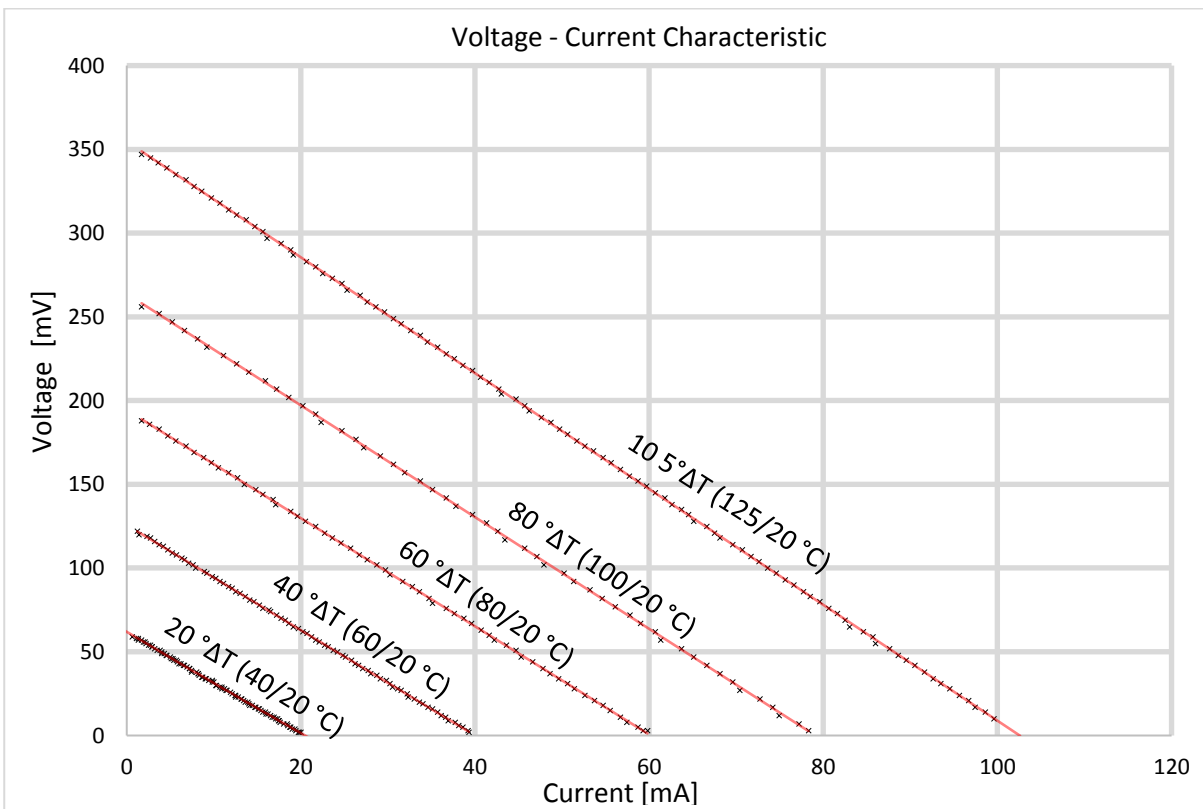
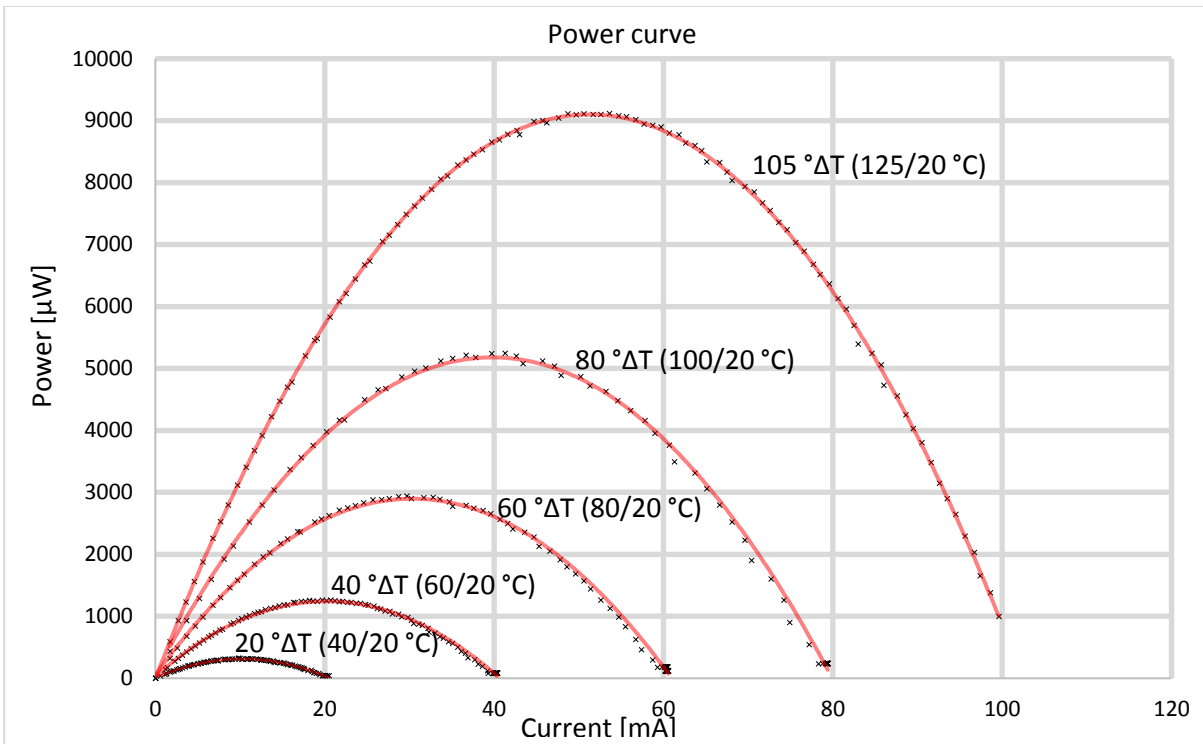


## Performance

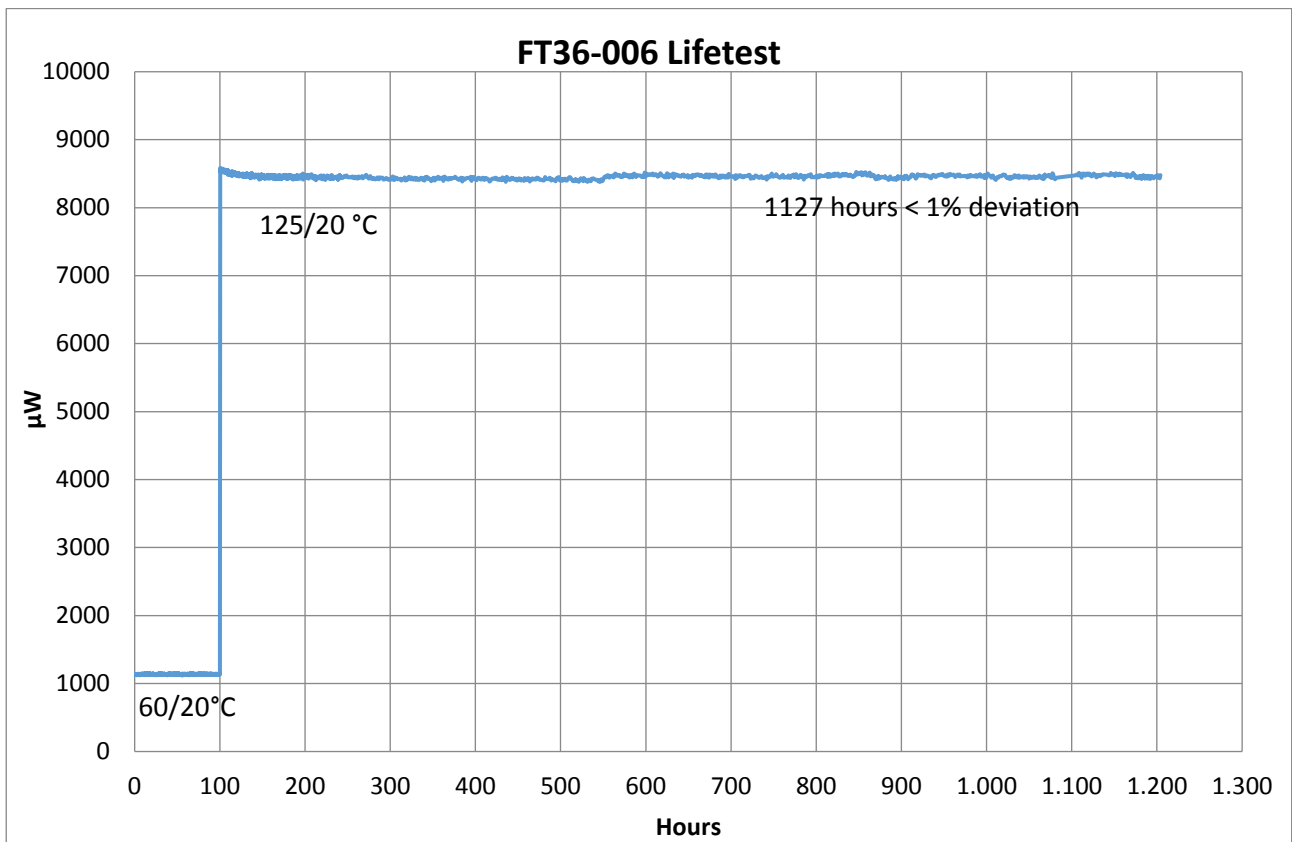
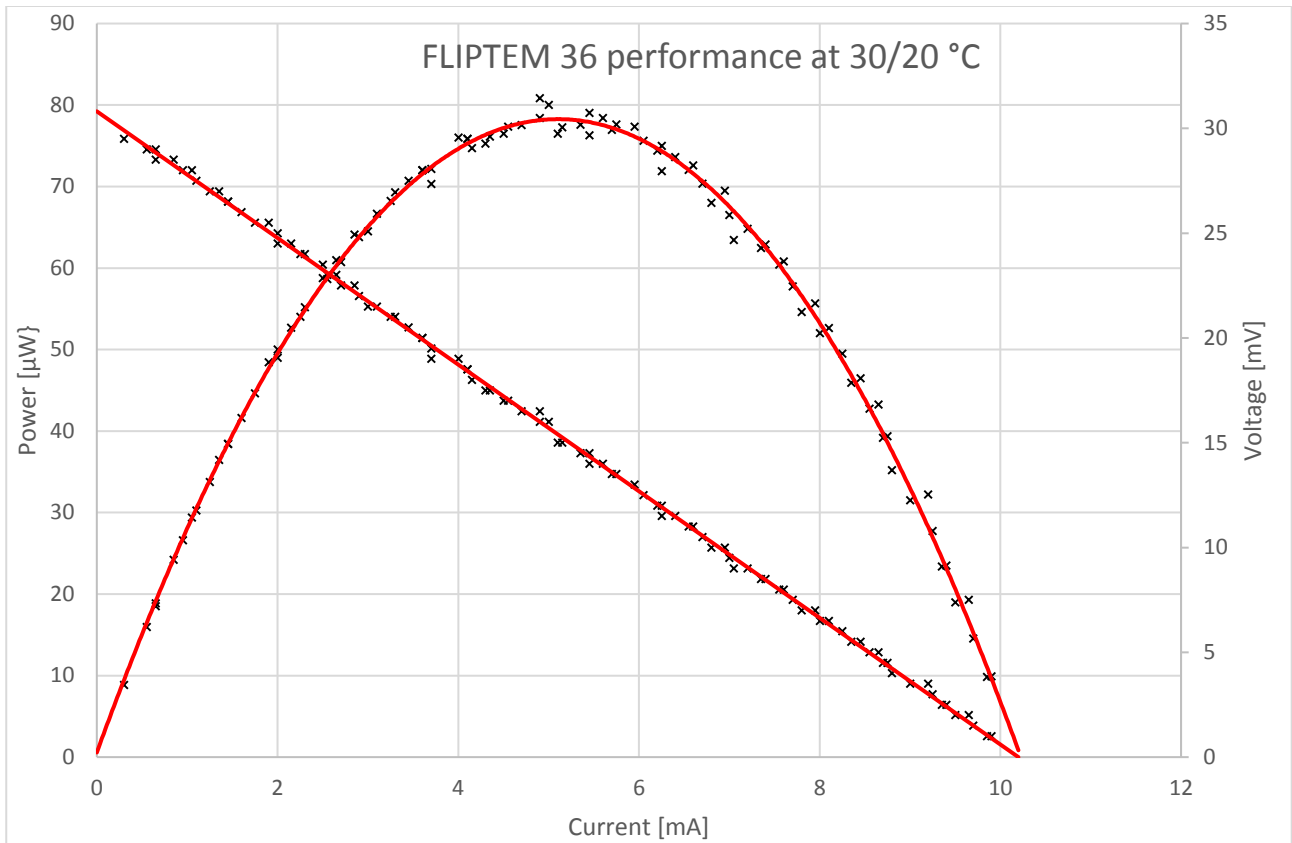
Nominal power output at 40 ° ΔT (60/20 °C)	1200 μW at maximum power point
Nominal power output at 105 ° ΔT (125/20 °C)	9000 μW at maximum power point
Nominal active area	1.4 cm <sup>2</sup>
Nominal module area	3.2 cm <sup>2</sup>
Termination	Supplied with 15 cm wire attached
Fill factor	44 %
Maximum hot side temperature, air	125 °C
Maximum cold side temperature, air	125 °C
Minimum cold side temperature, air	Do not recommend below -20 °C
Thermal resistance	15 - 20 k/W.
Load impedance	3 Ω
Operating environment	Dry, non-condensing
Open circuit potential	120 mV @ 60 / 20 °C
Closed circuit current	40 mA @ 60 / 20 °C

**Note.** All tests carried out in air. Hot side temperature measured at surface of heating block, cold temperature is cooling water temperature. Output measured at ends of wires. Module clamped with 50 Kg. Graphite paper placed between module and heating / cooling surfaces.

All details are preliminary and subject to change without notice



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## Description

The FLIPTEM-36 is a small thermoelectric module intended for low power applications such as wireless temperature sensors or thermostats. Together with correctly designed circuitry it can replace, or extend the life of a primary battery. Important considerations are:

### Establish a heat flow.

To operate, the device requires a heat flow. Typically this will be taken from a hot surface such as a hot water pipe, through the device and returned to the cold side, typically the surrounding air via a cooling fin, or a cold water return pipe. The amount of energy the device produces is dependent on both the maximum hot temperature and the temperature difference. A higher temperature will produce more energy.

### Mounting. (Figure 1)

It is important to ensure good thermal contact. TEGnology recommends the use of graphite paper. Thermal grease / heat sink compound may dry out over time resulting in reduced energy production. We recommend a mounting force of approximately 50 Kg. When mounting, take care to apply force evenly, otherwise module damage may result.

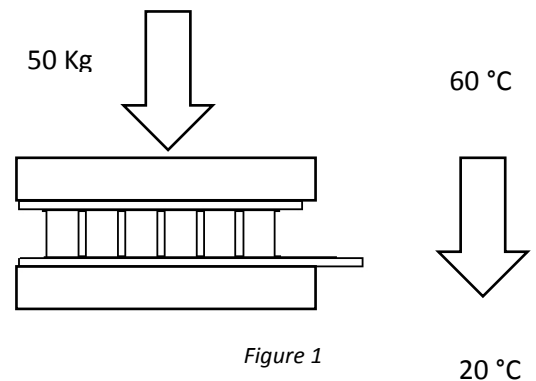


Figure 1

### Electrical interface. (Figure 2)

To obtain the best performance, please refer to the electrical characteristics in the data sheet.

Maximum power output is obtained when the load impedance matched the device, at  $3\Omega$ . This can be fixed as the device impedance is largely independent of temperature. If a higher voltage is required, the device may be operated at a high voltage by increasing the load impedance. This can be used, for example, to start the electrical interface from cold. Other applications may require a higher current, in which case a lower load impedance may be chosen. In many energy harvesting applications, energy from the TEM is stored on a capacitor. Design of this interface is the responsibility of the customer who should, if necessary, consult the necessary literature.

### Electrical connection.

The device is provided with teflon insulated terminating wires, 15 cm long. Red is positive when the temperature on the "hot" side is higher than on the "cold" side. The FLIPTEM 36 is symmetrical and can be operated with hot / cold reversed.

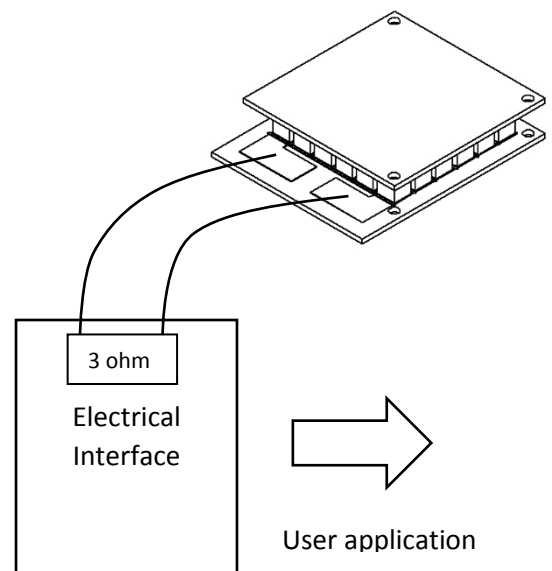


Figure 2

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