



MaxTC High-Power Temperature Forcing System

Ultimate cooling power 52W@-40°C/185W@0°C
From -60°C to +200°C

A Hi-tech Breakthrough in Fluid Free Operation

- Greatest cooling power of any product in its field
- Temperature range from -60°C to +200°C
- Temperature accuracy of $\pm 0.5^\circ\text{C}$
- Maintenance free system
- Rapid temperature cycling rates (100°C/min max., not over entire range)
- Cost effective and low power consumption
- Compact for any lab environment
- Ultra quiet operation (45 dBA)
- Self-contained system - external chiller and compressed air **not** required
- Fluid free operation
- Software calibrated
- Suitable for testing socketed and soldered devices
- Integrates with all socket brands on the market
- Packages supported: BGA, FCBGA, LGA, QFN, QFP, CSP, WLCSP, bare die
- Environmentally friendly operation
- Maximum cooling power: 25° to -40°C in <2min
- Maximum heating power: 25° to 125°C in <1min
- Seamless integration with handlers and ATE testers

MaxTC system stimulates DUT to the required temperature from -60°C to 200°C by direct conduction between a thermal head's plunger and the DUT, both in soldered-down and soldered-in socket applications.

Fast and Powerful Cooling Capacity

MaxTC system provides an extended temperature range and is able to reach -40°C at T-junction of the DUT. MaxTC can be used to test multi-site DUTs with a 4"x4" thermal plate. It can also be used as a thermal chuck with probe stations. MaxTC is well integrated with handlers in test engineering and production.

FlexTC Laboratory Benchtop Temperature Forcing System

From -55°C to +155°C

A Hi-tech Breakthrough in Fluid Free Operation

- High performance and fast transition rates
- Temperature accuracy of $\pm 0.2^\circ\text{C}$
- Compact and portable design
- No compressed air required
- Ultra quiet operation
- Low cost of ownership
- Maintenance free
- Vibration free
- State of the art frost free solution

Developed for laboratory environments, the FlexTC was designed to meet the strict standards of failure analysis and device characterization required by integrated semiconductor companies working with chip debugging, testing laboratories, semiconductor startups and fabless companies. Cooling and heating is achieved via direct contact conduction which is extremely efficient ($4000 \text{ W}\cdot\text{K}^{-1}\cdot\text{m}^{-2}$). FlexTC is high-performing, reliable, self-contained, compact, and extremely economical system. The FlexTC operates at 50/60Hz, single phase, 10A max wall outlet, and it requires only clean dry air/nitrogen for frost and humidity free operation. The system is a perfect solution for office buildings as well since it does not require compressed air and is maintenance free. The FlexTC system can be remotely controlled via an ethernet communication port.

Fast and Powerful Cooling Capacity

FlexTC cools and heats the DUT to the chosen temperature by direct conduction between the thermal head's plunger and the DUT. FlexTC's cooling power of 21W@-40C achieves temperature drop of 25°C to -40°C in 2-4min. FlexTC maintains the set temperature at tight tolerance for an extended period of time. FlexTC can operate 24/7.

Benefits of Fluid Free Operation

The biggest advantage of MaxTC/FlexTC is their fluid free operation (no chiller). By eliminating the need for coolant fluid the risk of fluid leakages is also eliminated which might potentially damage expensive test equipment. The systems perform condensation free during cold test.

Savings/Cost Effectiveness

- Low cost and high performance
- Low energy consumption – only 2.2KW/h
- Maintenance FREE • Non-magnetic and vibration FREE contact
- The system requires only 208VAC 20A wall outlet and clean dry air/nitrogen

Specifications: MaxTC System

System General

Maximum Temperature	200°C
Minimum Temperature	-60°C
Temperature Accuracy	±0.5°C
Typical Transition Rates	25°C to -40°C in <2min 125°C to 25°C in <2min
Temperature Sensor	Tcase PT100 Thermistor K-type thermocouple Thermal-diode through ethernet port Thermal-diode through analog port
Remote Interface Ports	Ethernet (TCP/IP)
System Indicators and Fail-safes	Thermal head over-temperature, fan operation, cooling unit operation
DUT Pressure Force	2 - 100 Kg/Force
DUT Dimensions	≥ 2 x 2 mm
DB Rating	40 dBA
MTBF	70,000 hr

Mechanical Dimensions

System Enclosure mm / inch	(L) 555mm x (W) 450mm x (H) 300mm (L) 21.8" x (W) 17.7" x (H) 11.8"
System Weight	55 kg
Thermal Head (mm)	80mm diameter
Thermal Head Hose	2 meter (6.5ft) standard 3 meter (10ft) max

System Requirements

Electrical	220/230/240 VAC ±10% 50/60 Hz, single phase, 10A max.
Purge	0.2-0.6[BAR] dry air/ dry Nitrogen
Ambient Temperature	5°C to 35°C (40°F to 95°F)
Ambient Humidity	20% to 95% RH

Specifications: FlexTC System

System General

Maximum Temperature	155 °C
Minimum Temperature	-55°C
Temperature Accuracy	±0.2°C
Typical Transition Rates	25°C to -40°C in <2min -40°C to 125°C in <3min 125°C to 25°C in <2min
Temperature Sensor	Tcase PT100 Thermistor K-type thermocouple Thermal-diode through ethernet port Thermal-diode through analog port
Remote Interface Ports	Ethernet (TCP/IP)
System Indicators and Fail-safes	Thermal head over-temperature fan operation, cooling unit operation
DUT Pressure Force	2 - 100 Kg/Force
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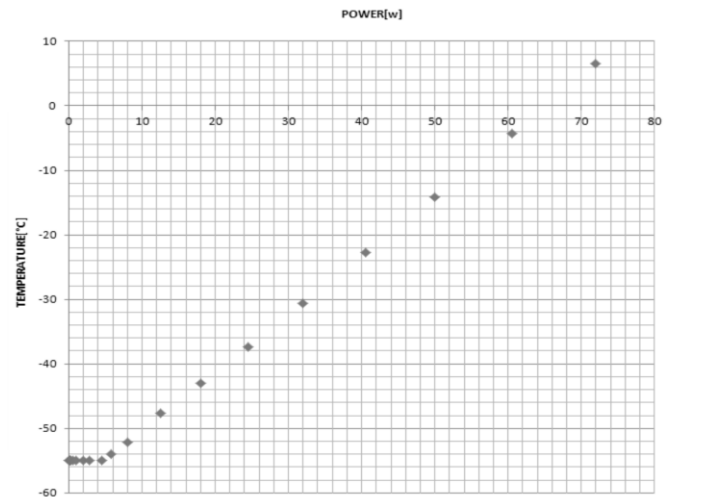
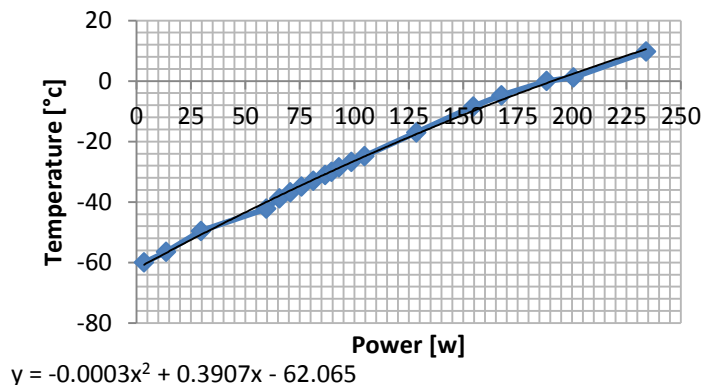
Mechanical Dimensions

System Enclosure mm / inch	(L) 420mm x (W)320mm x (H)220mm (L) 16.5" x (W) 12.5" x (H) 8.5"
System Weight	22 kg
Thermal Head (mm)	80mm diameter
Thermal Head Hose	2 meter (6.5ft) standard 3 meter (10ft) max

System Requirements

Electrical	100/115/120/220/230/240 VAC ±10% 50/60 Hz, single phase, 10A max.
Purge	0.2-0.6[BAR] dry air/ dry Nitrogen
Ambient Temperature	5°C to 35°C (40°F to 95°F)
Ambient Humidity	20% to 95% RH

Cold side



Note: The performance curve is based on adiabatic thermal conditions. DUT parasitic power dissipations varies from 2 to 7 Watt and is a function of the test board dimensions and construction. Please consult the factory for appropriate thermal analysis of your application.

Operational Interface

MaxTC / FlexTC is operated by a 7" color PLC touch screen with graphical interface that is user friendly and includes easy to use temperature set points.

Screen interface features

- Preset temperature key buttons
- Ramp/Soak/Cycle profile programming, save and upload
- Offset profile programming T case – T junction
- Ramp rate increment controls
- Stand-by operation mode
- Temperature display and recording
- Temperature overshooting control
- LabVIEW/C++/MATLAB/Visual Basic/Perl/Tickle drivers



MaxTC / FlexTC interface options

The thermal head establishes direct mechanical contact with the DUT using one of the following interface options:

1. Universal adapter plate for socketed or soldered device applications
2. Custom adapter plate for socketed or soldered device applications
3. Thermocouple inserted lids for socketed applications
4. Open frame thermal lids for socketed and soldered device applications
5. Pneumatic Tabletop Station (PTS) for quick replacement of devices in sockets
6. Boom Stand Arm for soldered device applications
7. Vacuum System for quick replacement of devices in sockets



Pneumatic system



Vacuum system



Boom stand



Open frame thermal lid

Interchangeable (NG) Device Plungers

- Device plungers are made of copper or aluminum and are exchangeable to fit the required setup
- Device plungers include a PT100 embedded sensor to guarantee accurate Tcase
- Each device plunger is designed for reliability and robust performance



FlexTC plunger



MaxTC plunger



Installing plunger into a thermal head