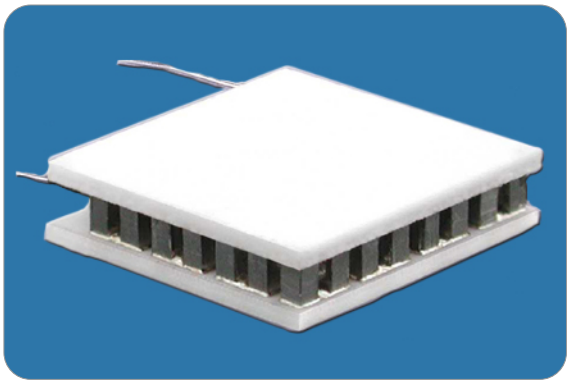
TECHNICAL DATA SHEET



NL1022T

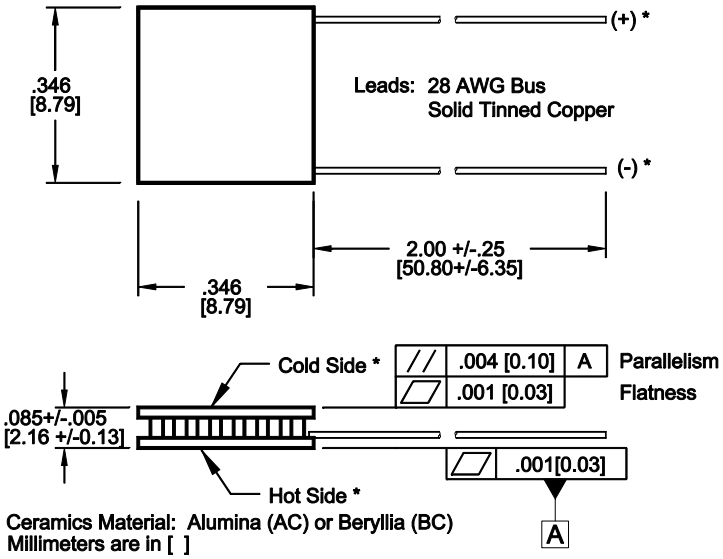
Single-Stage Thermoelectric Module
RoHS EU Compliant

TYPICAL PERFORMANCE VALUES

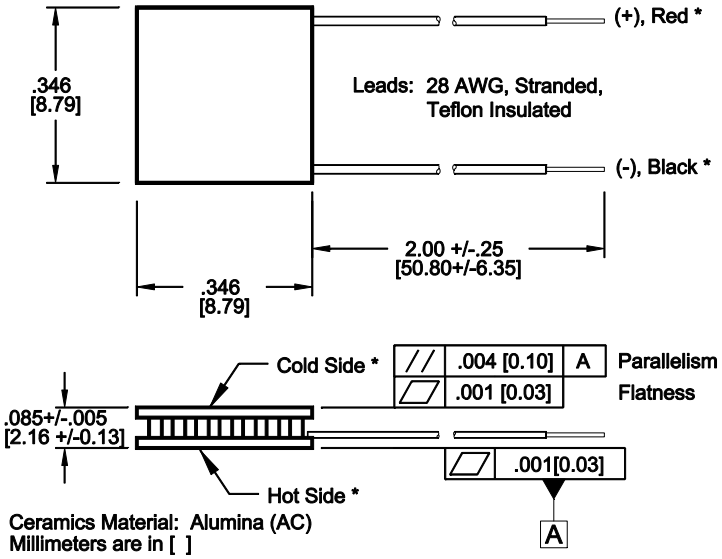
Hot Side Temperature (°C)	27°C	50°C
Δ Tmax (°C-dry N_2):	64	73
Qmax (watts):	4.0	4.6
Imax (amps):	1.8	1.8
Vmax (vdc):	3.5	4.0
AC Resistance (ohms):	1.70	--
Device ZT	0.77	--

MECHANICAL CHARACTERISTICS

Beryllium Oxide Handling Precautions
Beryllium oxide can be toxic only when dust, mist, or fumes containing particles small enough to enter the lungs are inhaled. For the user, precautions required are to avoid grinding, machining or pulverizing the material by mechanical, thermal, or chemical processing.
marlow Industries, Inc.®



-01, -02, -03, -04



-05AC

***NOTE: Cold side, Hot Side, and positive and negative leads are valid only for thermoelectric cooling. For power generation, refer to page 3.**

ORDERING OPTIONS

Model Number	Description
NL1022T-01	Both Surfaces are Metallized, Buss Wires
NL1022T-02	Hot Side Exterior is Metallized, Buss Wires
NL1022T-03	No Metallization, Buss Wires
NL1022T-04	No Metallization, RTV Sealed, Buss Wires
NL1022T-05AC	No Metallization, RTV Sealed, Insulated Wires, Alumina Only

AVAILABLE MODIFICATIONS

- Pretinned metallized ceramic surface(s) with 117°C solder.
- Thermistor mounted on edge of cold side ceramic. (Calibration available.)
- Elevated temperature burn-in with test data provided.

For customer support or general questions please contact a local office or visit our website at www.marlow.com

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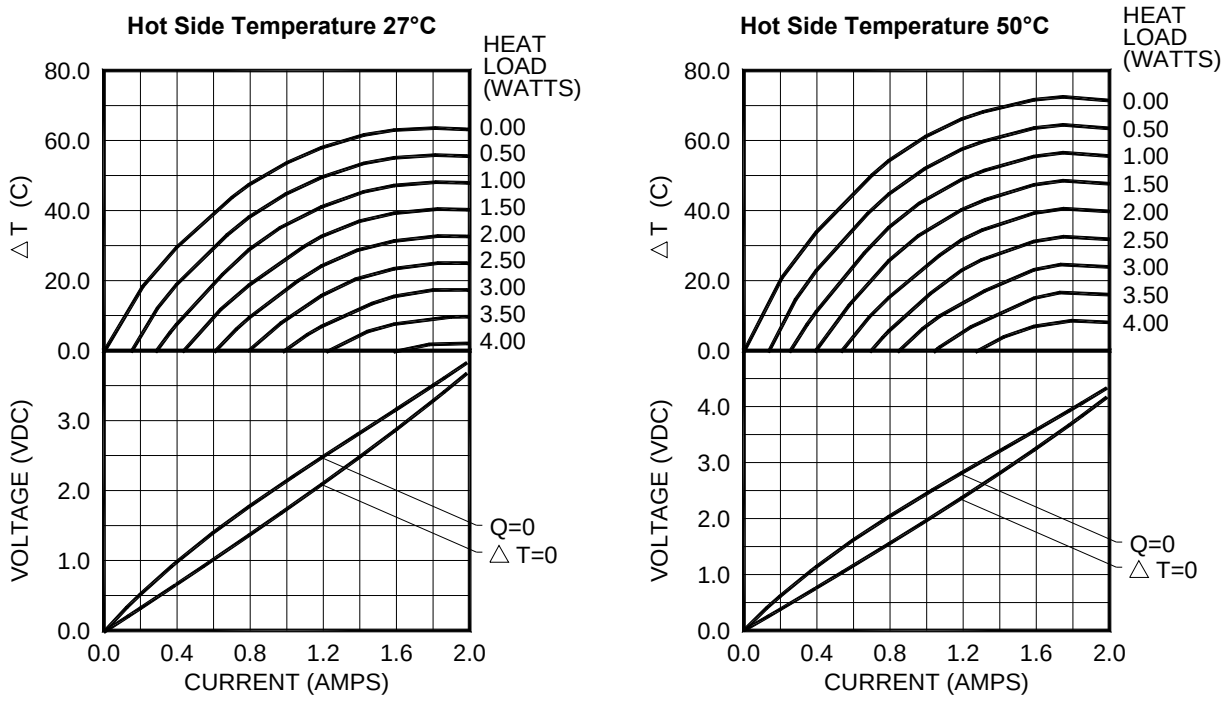
COOLING PERFORMANCE CURVES

ENVIRONMENT: ONE ATMOSPHERE DRY NITROGEN



For performance information in a vacuum or with hot side temperatures other than 27°C or 50°C, contact one of our Applications Engineers at 877-627-5691.

Installation
Recommended mounting methods: Bonding with thermal epoxy or soldering with metallized ceramics. For additional information, please refer to our TEC Installation Guide.

Operation Cautions
For maximum reliability, storage and operation below 85°C in a non-condensing environment is recommended. To minimize thermal stress when operating in cooling mode, use linear/proportional temperature control or a similar method rather than an ON/OFF method.

CONTACT US:

For customer support or general questions please contact a local office below or visit our website at www.marlow.com.

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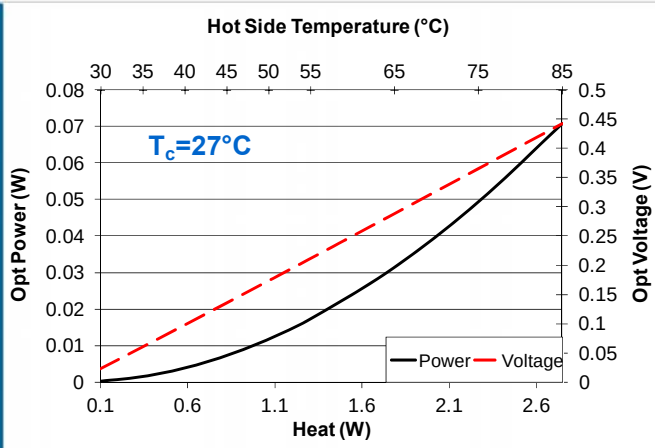
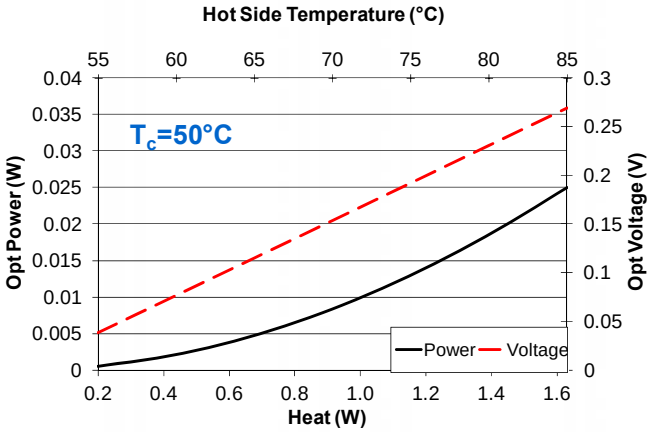
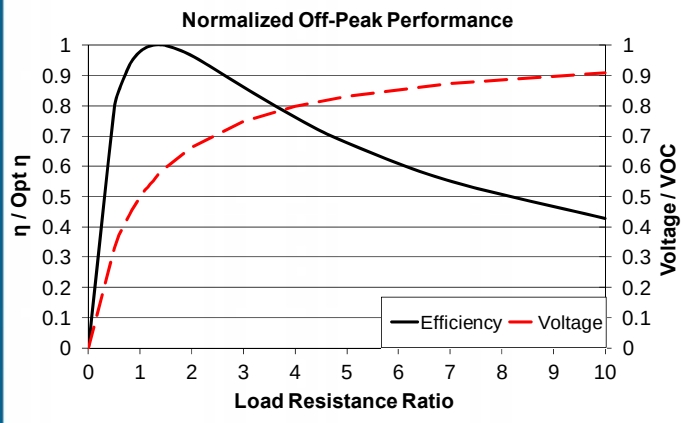
POWER GENERATION PERFORMANCE CURVES







Hot Side Temperature (°C)	85	55	35
Cold Side Temperature (°C)	27	27	27
Optimum Efficiency, η (%)	2.53	1.28	0.37
Optimum Power (W)	0.071	0.017	0.001
Optimum Voltage (V)	0.442	0.211	0.059
Load Resistance for Opt η (Ω)	2.76	2.58	2.45
Open Circuit Voltage, VOC (V)	0.77	0.37	0.10
Short Circuit Current (A)	0.37	0.19	0.06
Thermal Resistance (°C/W)	20.77	20.77	20.72

Power Generation performance information is given in a nitrogen environment and cold side temperatures of 27°C and 50°C. Module temperature does not include thermal resistance of heat sinks. For performance information in vacuum, other cold side temperatures, or specific heat sinks, consult one of our applications engineers.

TYPICAL POWER GENERATION CONFIGURATION

EXAMPLE: