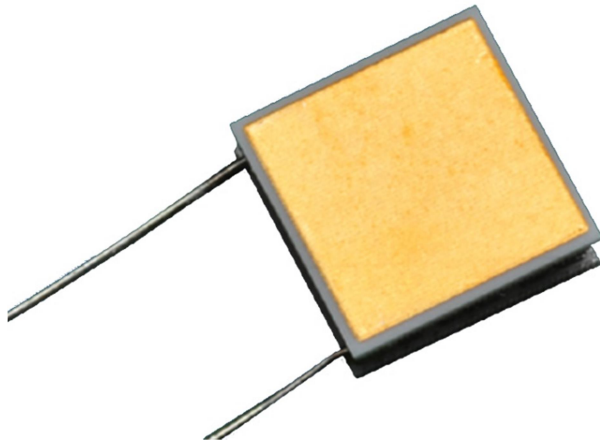




# Technical Data Sheet for NL1012T

## Single-Stage Thermoelectric Module



### NOMINAL PERFORMANCE IN NITROGEN

Hot Side Temperature (°C)	27	50
$\Delta T_{max}$ (°C):	61	68
Qmax (watts):	2.1	2.4
I <sub>max</sub> (amps):	1.0	1.0
V <sub>max</sub> (vdc):	3.7	4.2
AC Resistance (ohms):	3.24	--
Device ZT	0.77	--

### PRODUCT FEATURES

- RoHS EU Compliant
- Rated operating temperature of 85°C
- Maximum process temperature is 120°C.
- Ceramic Material: Aluminum Oxide
- 01AC, -02AC: Metallized Exterior Surfaces are Au flash, suitable for soldering.
- -04AC: Height dimension includes metallization and excludes solder.

### ORDERING OPTIONS

Model Number	Description
NL1012T-01AC	TEM, Top and Base Metallized Exterior
NL1012T-02AC	TEM, Base Metallized Exterior
NL1012T-03AC	TEM, No Metallized Exterior
NL1012T-04AC	TEM, Top and Base Pre-Tinned with 117°C Solder.

### 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.

### INSTALLATION

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

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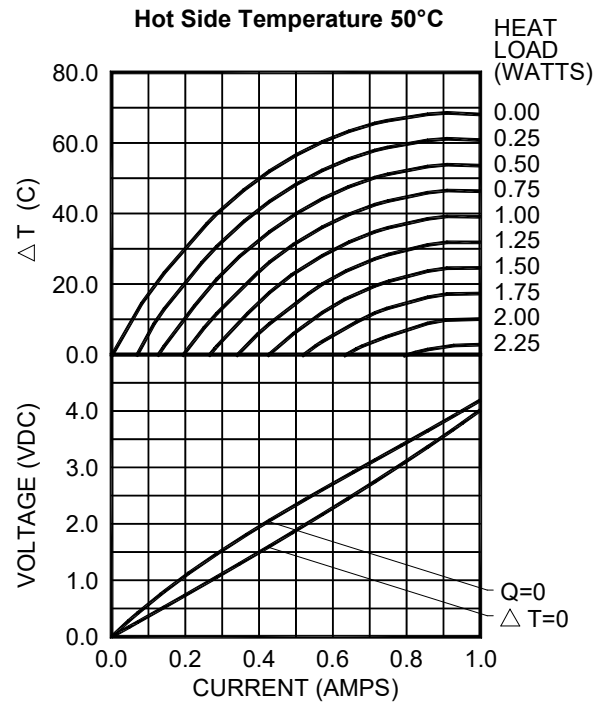
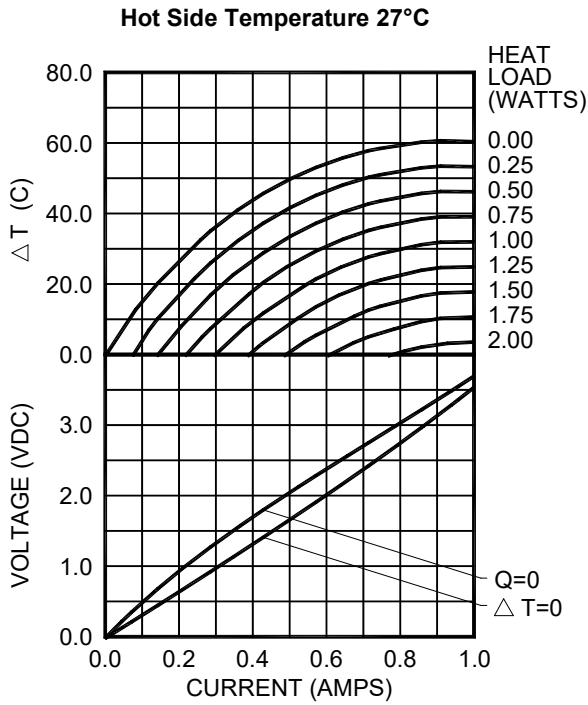
II-VI Japan Inc.  
81 43 297 2693 (tel)  
center@ii-vi.co.jp  
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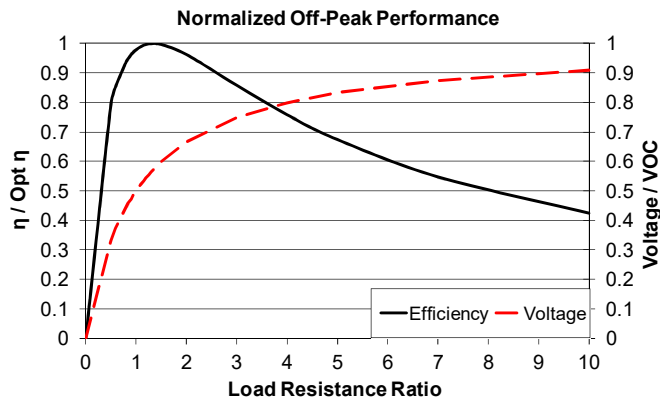
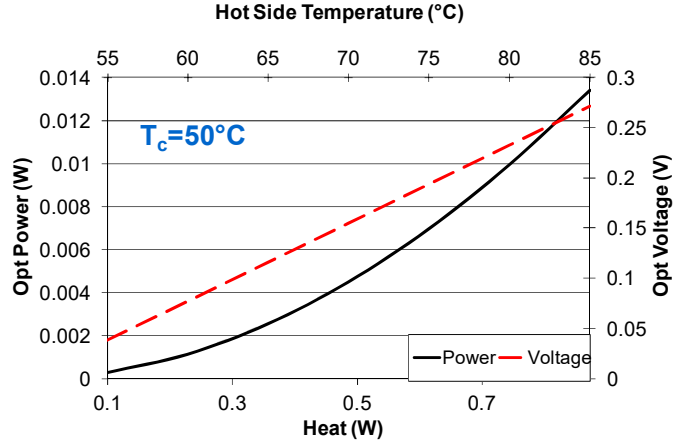
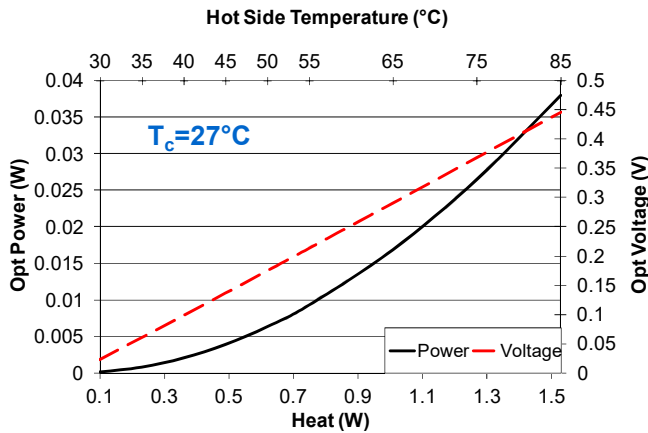
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ENVIRONMENT: ONE ATMOSPHERE DRY NITROGEN



POWER GENERATION PERFORMANCE CURVES

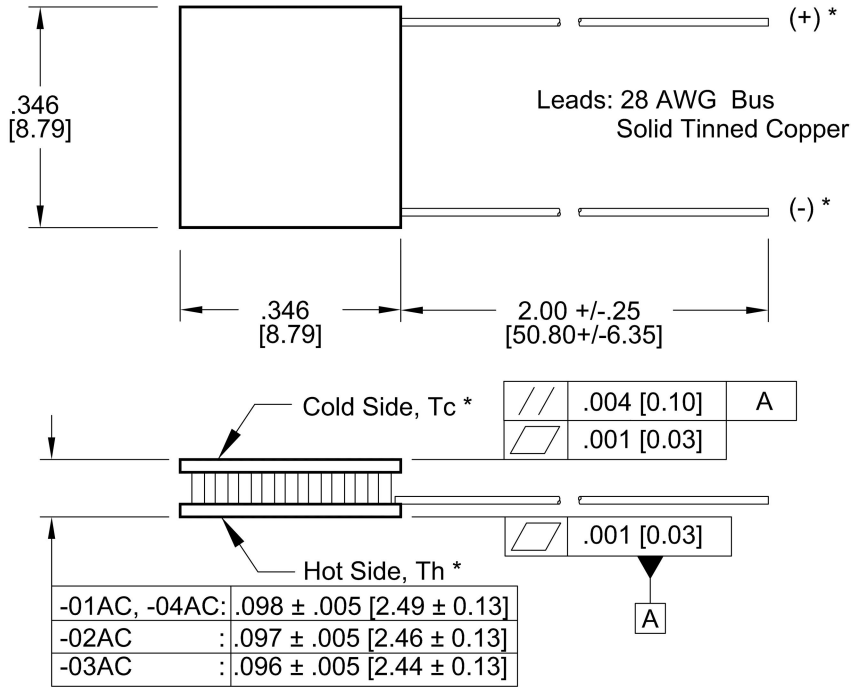


Hot Side Temperature (°C)	85	55	35
Cold Side Temperature (°C)	27	27	27
Optimum Efficiency, $\eta$ (%)	2.52	1.28	0.37
Optimum Power (W)	0.038	0.009	0.001
Optimum Voltage (V)	0.446	0.213	0.060
Load Resistance for Opt $\eta$ ( $\Omega$ )	5.23	4.88	4.65
Open Circuit Voltage, VOC (V)	0.78	0.37	0.11
Short Circuit Current (A)	0.20	0.10	0.03
Thermal Resistance (°C/W)	38.51	38.56	38.50

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.



**MECHANICAL CHARACTERISTICS**



Dimensions are in inches, and millimeters are in [ ].

**\* NOTE: Cold Side, Hot Side, and Positive and Negative Leads are valid only for thermoelectric cooling. For power generation, refer to figure below.**

For customer support or general questions please contact a local office or visit our website at [www.marlow.com](http://www.marlow.com).  
Marlow reserves the right to make product changes without notice.

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:

