

## Discrete Mode Laser Diode FEBP-689-2.5S-DM-TP39

The FEBP-689-2.5S-DM-TP39 custom laser diode module is a cost effective, highly coherent laser source. A strained multi-quantum well Discrete Mode (DM) laser diode chip is packaged in an industry standard hermetically sealed TO39 can with integrated thermo-electric cooler (TEC) and thermistor.

### Key Features

Excellent Reliability  
 Mode-Hop Free Tuning >2nm  
 SMSR 35dB Typical  
 Industry Standard TO39 Package  
 Narrow Linewidth 4MHz Typical

### Applications

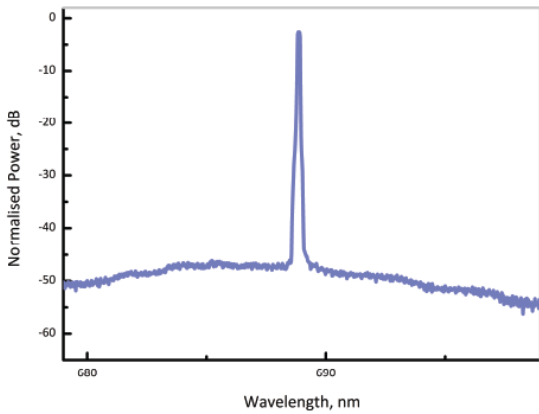
High Performance Gas Sensing  
**Strontium (Sr)**  
 Atomic Clocks

### Optical and Electrical Characteristics: (T = 25°C)

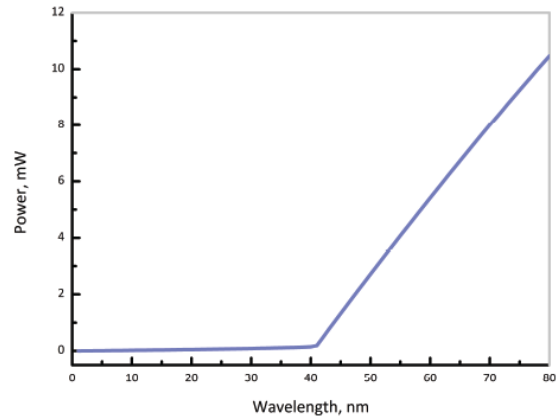
Parameter	Symbol	Min	Typ.	Max	Unit
<b>Laser Diode</b>					
Centre Wavelength	$\lambda_{cen}$	688	689	690	nm
Output Power (at 70mA)	$P_{op}$	1.5	2.5	-	mW
Threshold Current	$I_{th}$	-	40	-	mA
Operating Current	$I_{op}$	-	-	80	mA
Forward Voltage	$V_f$	-	-	2.7	V
Reverse Voltage	$V_r$	-	-	2.0	V
Side Mode Suppression Ratio	SMSR	30	35	-	dB
Optical Linewidth	$\Delta f$	-	4	-	MHz
Temperature Tuning Coefficient		-	0.06	-	nm/K
Current Tuning Coefficient		-	6	-	pm/mA
Slope Efficiency	$\eta$	0.15	0.25	-	mW/mA
Beam Divergence Perpendicular	$\theta_{\perp}$	-	18	-	deg.
Beam Divergence Parallel	$\theta_{\parallel}$	-	10	-	deg.

Parameter	Symbol	Min	Typ.	Max	Unit
<b>Thermistor</b>					
Thermistor Resistance	$R_T$	9.7	10	10.3	kW
Thermistor Temp. Coefficient		-	-4.4	-	%/°C
<b>Thermoelectric Cooler</b>					
TEC Forward Current	$I_C$	-	-	0.7	A
TEC Forward Voltage	$V_C$	-	-	2.5	V
<b>Temperature Conditions</b>					
Case Temperature	$T_{case}$	-20	-	+65	°C
Storage Temperature	$T_{stg}$	-40	-	+85	°C

**Typical Performance**

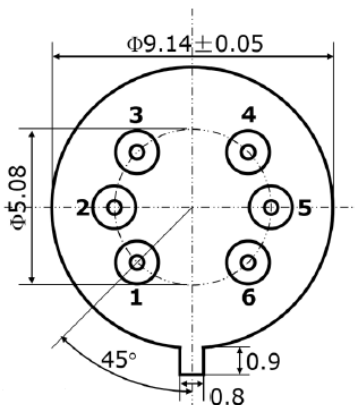


Optical Spectrum at 25°C



Output power as a function of bias current

**Package Specification**



TO39 schematic - outside bottom view

PIN NO	DESCRIPTION
1	TEC+
2	LD+
3	Thermistor
4	Thermistor
5	LD-
6	TEC-

Standard "Pinout 01" option