

TMC-4B28

High power VCSEL TO-46 metal can for general purpose

FEATURES:

- Industry standard TO-46 package with dome lens.
- Very low beam divergence without extra optics.
- CW output power over 10 mW.
- Circularly symmetrical beam.
- Ideal for applications of long-distance sensing.



ELECTRO-OPTICAL CHARACTERISTICS:

PARAMETERS	SYMBOL	MIN	TYP	MAX	UNIT	TEST CONDITIONS ⁽¹⁾
Threshold Current	I _{th}		3	6	mA	
Output Power	P _o	1	2	4	mW	I _F =12 mA ⁽²⁾
Operating Current	I _{OP}		30		mA	Adjustable to establish 10mW output power
Slope Efficiency	η		0.20		mW/mA	I _F =12 mA ⁽³⁾
Wavelength	λ _P	820	850	870	nm	I _F =12 mA
Forward Voltage	V _F	1.70	2.0	2.5	V	I _F =12 mA
Breakdown voltage	V _{BD}	10	15		V	I _R =10 μA
Series Resistance	R _S		30		Ω	I _F =12 mA
Beam Divergence	θ		2		degree	I _F =12 mA ⁽⁴⁾

Notes:

1. All parameters except mentioned are measured at I_F=12 mA, 25°C, CW.
2. Higher power can be provided under request.
3. Slope efficiency is defined as ΔP/(12-I_{th}) at 25°C.
4. Beam divergence is defined as the angle of light intensity at Full Width at Half Maximum (FWHM).

THERMAL CHARACTERISTICS:

PARAMETERS	SYMBOL	MIN	TYP	MAX	UNIT	TEST CONDITIONS
Thermal Resistance	R _{th}		900		°C /W	T _A =25°C
I _{th} Temperature Variation	ΔI _{th}	-1.5		1.5	mA	T _A =0~70°C
V _F Temperature Coefficient	ΔV _F /ΔT		-3.0		mV/°C	T _A =0~70°C, I _F =15 mA
η Temperature Coefficient	Δη/ΔT		-0.20		%/°C	T _A =0~70°C, I _F =15 mA
λ _P Temperature Coefficient	Δλ _P /ΔT		0.06		nm/°C	T _A =0~70°C, I _F =15 mA

ABSOLUTE MAXIMUM RATINGS:

PARAMETERS	MIN	MAX	UNIT	CONDITIONS
Storage Temperature	-40	125	°C	
Operating Temperature	-20	85	°C	
Lead Solder Temperature		260	°C	10 seconds
Continuous Forward Current		40	mA	
Continuous Reverse Voltage		10	V	

Fig. 1 Typical Optical Characteristics

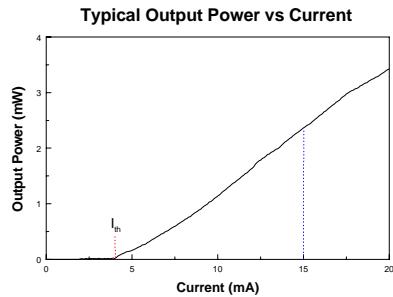


Fig. 2 Typical Electrical Characteristics

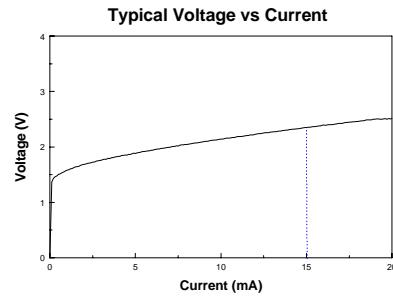
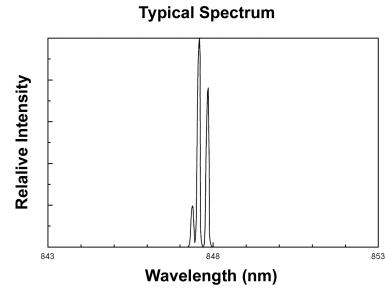
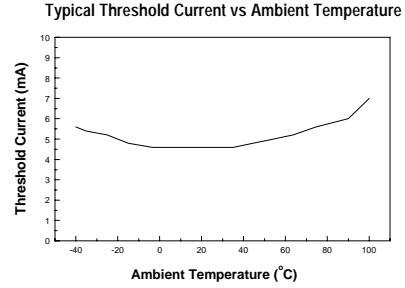


Fig. 3 Spectrum When Driving Current 15 mA



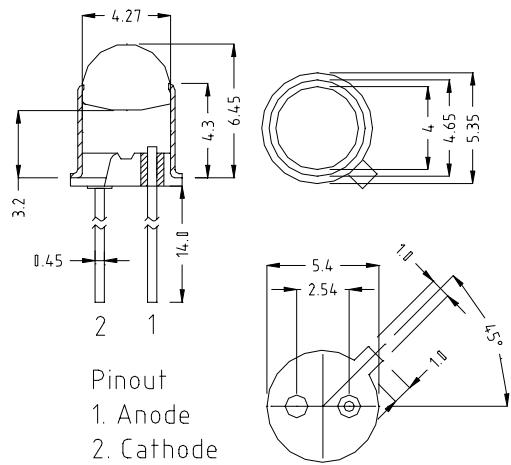
3 transverse modes typically.

Fig. 4 Temperature Dependence of Threshold Current



OUTLINE DIMENSIONS:

- Unit: mm



WARNING:

The VCSEL is a class IIIb laser in the safety standard ANSI Z136.1 and should be treated as a potential eye hazard.

