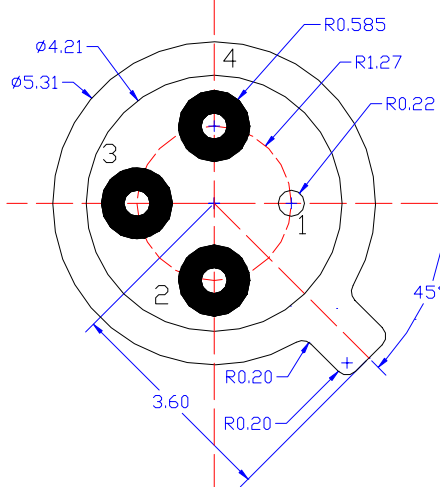
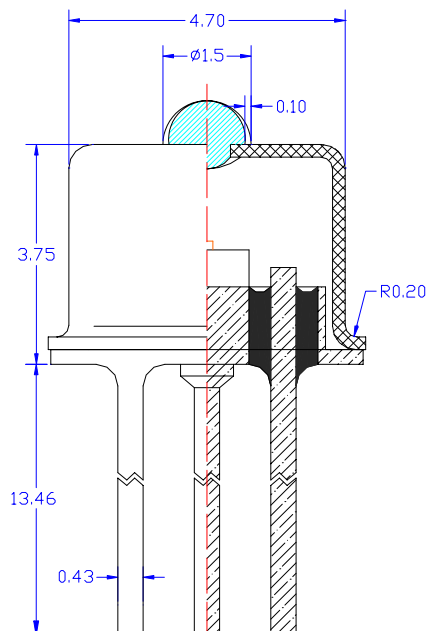




VCSEL/LD Division



Unit:mm

Bottom View

1. Case
2. VCSEL Anode
3. VCSEL Cathode/Photodiode Anode
4. Photodiode Cathode

850nm VCSEL in To-46 Package

1. Feature:

- a. Oxidation process
- b. Ball Lens Window
- c. Monitor Photodiode
- d. High speed $\geq 2.5\text{Gbps}$

2. Application:

- a. High-speed data communications and telecommunications applications
- b. Gigabit Ethernet
- c. Fiber Channel
- e. ATM transceiver modules and system

3. Part Number: **VX-TO11-4BP1**

4. Optical and Electrical Characteristics

Parameter	Symbol	Min.	TYP.	Max.	Unit	Test Condition
Peak Wavelength	λ_p	830	845	860	nm	$I_f = 8\text{mA@RT}$
Spectral Width (RMS)	$\Delta\lambda$			0.85	nm	$I_f = 8\text{mA@RT}$
Beam Divergence	Θ		25	30	Deg	Full width at $1/e^2$; $I_f = 8\text{mA@RT}$
Forward Voltage	V_f	1.7	1.9	2.2	V	$I_f = 8\text{mA@RT}$
Threshold Current	I_{th}		2.2	3	mA	
Slope Efficiency	dP/dI	0.12	0.25	0.36	W/A	$I_f = 8\text{mA@RT}$
Optical output power	P_{out}		1.5		mW	$I_f = 8\text{mA@RT}$
Dynamic Resistance	dV/dI	25	40	65	Ω	$I_f = 8\text{mA@RT}$
Rise / Fall Time	t_r / t_f		50	100	ps	20%-80%
Jitter p-p	t_j		35		ps	
λ_p Temperature Coefficient	$\delta\lambda_p/\delta T$		0.06		nm/ $^{\circ}\text{C}$	$T_A = 0 \sim 70^{\circ}\text{C}$, $I_f = 8\text{mA}$
Monitor Current	I_m	50			μA	$I_f = 8\text{mA@RT}$

5. Maximum Ratings

Parameter	Min.	Max.	Unit	Condition
Storage Temperature	-40	100	$^{\circ}\text{C}$	
Operating Temperature	0	85	$^{\circ}\text{C}$	
Continuous Forward Current		10	mA	
Continuous Reverse Voltage		5	V	@10 μA

3. Monitoring PIN Specs

Parameter	Symbol	Min.	TYP.	Max.	Unit	Test Condition
Dark current	I_r		0.2	1	nA	$V_r = 10\text{V}$
Shunt resistance	P_p	100	200		$\text{G}\Omega$	
Breakdown voltage	V_{br}		50		V	
Junction capacitance	C_p		40		pF	@ $V_r = 10\text{V}$, 10 KHz

Note. These specifications are subject to change without notice.

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