

# 1,550nm MQW-DFB Coaxial Laser Module

# FLD5F8HF/KM/LK

## FEATURES

- Low threshold current and Low operating current
- Long life and high reliability
- High temperature operation up to 75°C

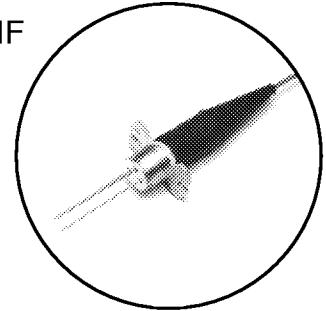
## APPLICATIONS

- Digital Signal Transmission
- Telecommunication
  - Local Loop
  - Interoffice and Intraoffice
- Data communication

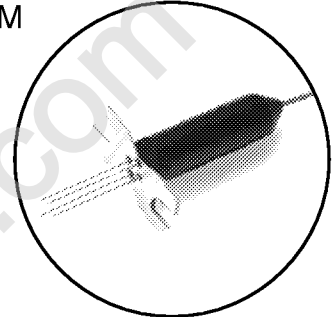
## DESCRIPTION

These Multiple Quantum Well (MQW) DFB Lasers are for use in long haul 156/622 Mb/s transmission systems. The uncooled, coaxial design offers a low cost/simplified design alternative to cooled laser solutions. The module includes a DFB laser and monitor photodiode.

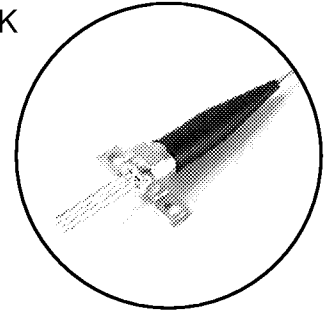
HF



KM



LK



## ABSOLUTE MAXIMUM RATINGS and ENVIRONMENTAL CONDITIONS

Parameter	Symbol	Ratings	Unit
Optical Output Power	P <sub>fmax</sub>	3.0	mW
Forward Current (LD)	I <sub>fmax</sub>	150	mA
Reverse Voltage (LD)	V <sub>Rmax</sub>	2	V
Photodiode Reverse Voltage	V <sub>DRmax</sub>	20	V
Soldering Temperature (t<10sec., d>2.5mm)	T <sub>solder</sub>	260	°C
Storage Temperature	T <sub>stg</sub>	-40 to +90	°C
Operating Case Temperature	T <sub>op</sub>	-25 to +75	°C
Storage Humidity (Note 1)	X <sub>stg</sub>	85	%
Operating Humidity (Note 1)	X <sub>op</sub>	85	%

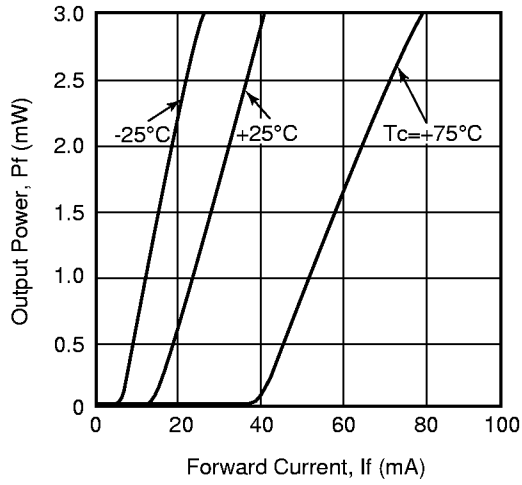
Note 1. Storage or operating within 500 hours maximum

**OPTICAL AND ELECTRICAL CHARACTERISTICS (T<sub>C</sub>=-25°C to +75°C unless otherwise specified)**

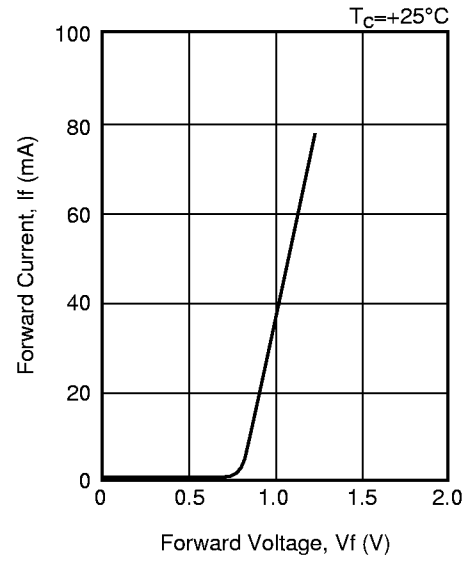
Parameter	Symbol	Conditions	Limits			Unit
			Min.	Typ.	Max.	
Fiber Output Power	P <sub>f</sub>	CW	2.0	-	-	mW
Threshold Current	I <sub>th</sub>	CW	2	-	50	mA
Forward Voltage	V <sub>F</sub>	CW, P <sub>f</sub> =2.0mW	-	1.1	1.5	V
Output Power at Bias	P <sub>b</sub>	CW, I <sub>f</sub> =0.9I <sub>th</sub>	-	-	150	μW
Slope Efficiency	S	CW, P <sub>f</sub> =2.0mW	33	-	200	μW/mA
Slope Efficiency Ratio	-	S(T <sub>c</sub> )/S(25°C)	0.45	-	1.5	-
Linearity of dL/dI	S <sub>var</sub>	CW, 0.2 to 2.4mW	-	-	+/-20	%
Saturation of dL/dI	S <sub>sat</sub>	CW, 0.2 to 2.4mW	-40	-	-	%
Modulation Current	I <sub>mod</sub>	CW, P <sub>f</sub> =2.0mW	10	-	60	mA
Peak Wavelength	λ <sub>p</sub>	CW, P <sub>f</sub> =2.0mW	1,530	-	1,570	nm
Spectral Width (-20dB)	Δλ	CW, P <sub>f</sub> =2.0mW	-	-	1.0	nm
Sidemode Suppression Ratio	SSR	CW, P <sub>f</sub> =2.0mW	30	-	-	dB
Relative Intensity Noise	RIN	CW, P <sub>f</sub> =2.0mW B.W.=45M to 150MHz ORL<-25dB	-	-	-120	dB/Hz
Laser Rise Time	T <sub>r</sub>	I <sub>b</sub> =0.9I <sub>th</sub> , P <sub>pk</sub> =2.0mW 10 to 90%	-	0.1	0.2	ns
Laser Fall Time	T <sub>f</sub>		-	0.2	0.3	ns
Monitor Current	I <sub>m</sub>	CW, P <sub>f</sub> =2.0mW, VDR=5V	0.05	-	1.0	mA
Monitor Dark Current	I <sub>D</sub>	VDR=5V	-	1	500	nA
Monitor Capacitance	C <sub>t</sub>	VDR=5V, f=1 MHz	-	6	10	pF
Monitor Frequency Response	f <sub>c</sub>	VDR=5V, R <sub>L</sub> =50Ω	100	-	-	MHz
Flatness of Photodiode Frequency Response	-	VDR=5V, R <sub>L</sub> =50Ω 0 to 10 MHz	-	-	+/-1.5	dB
Linearity of P <sub>f</sub> -I <sub>m</sub>	-	CW, VDR=5V, 0.2 to 2.4mW,	-	-	+/-10	%
Tracking Error	TE	T <sub>c</sub> =-25 to 75°C P <sub>f</sub> =2.0mW at T <sub>c</sub> =25°C APC with monitor PD	-	-	+/-1.0	dB

Note: The characteristics are guaranteed under optical back reflection of less than -20dB, unless otherwise specified.

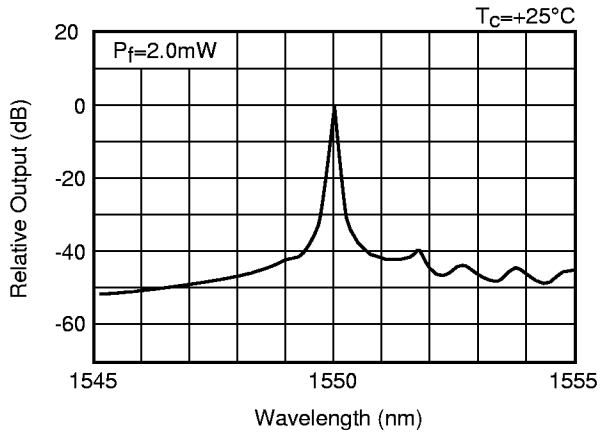
**Fig. 1 Forward Current vs Output Power**



**Fig. 2 Forward Voltage vs Forward Current**



**Fig. 3 Spectrum**



**Fig. 4 Temperature Dependence of Threshold Current**

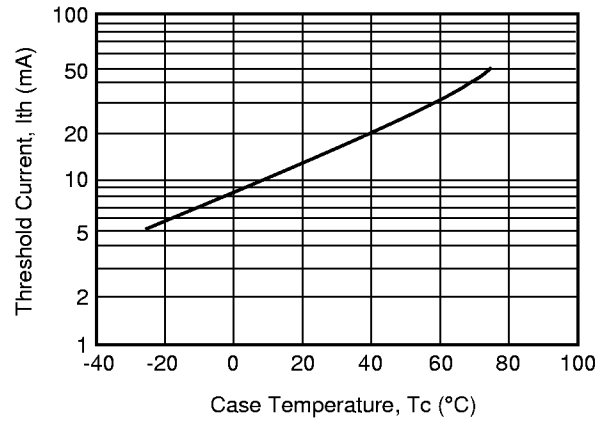


Fig. 5 Temperature Dependence of Wavelength

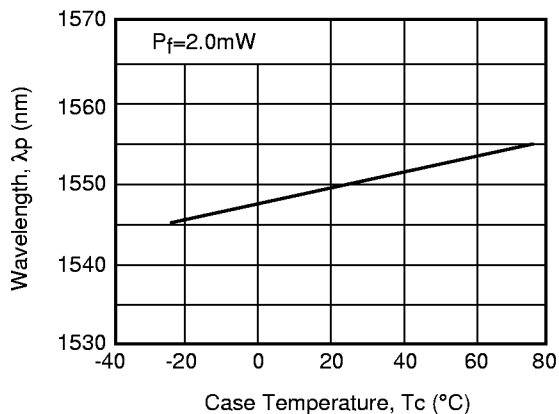


Fig. 6 Temperature Dependence of Slope Efficiency

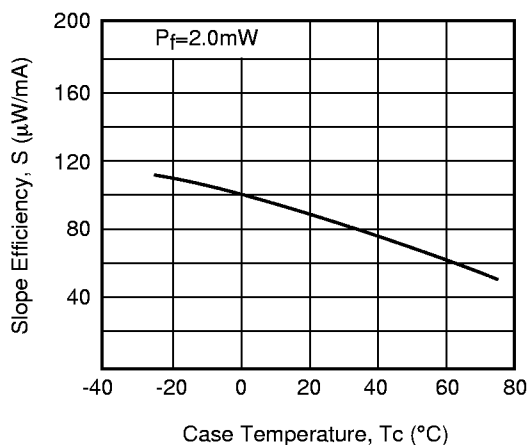


Fig. 7 Tracking

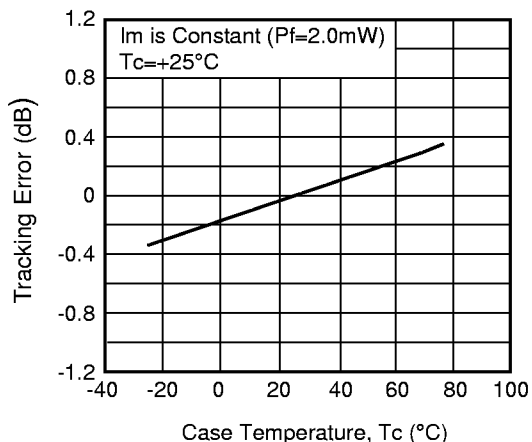
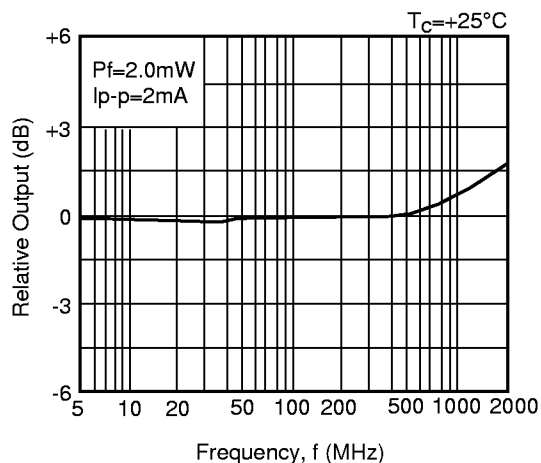
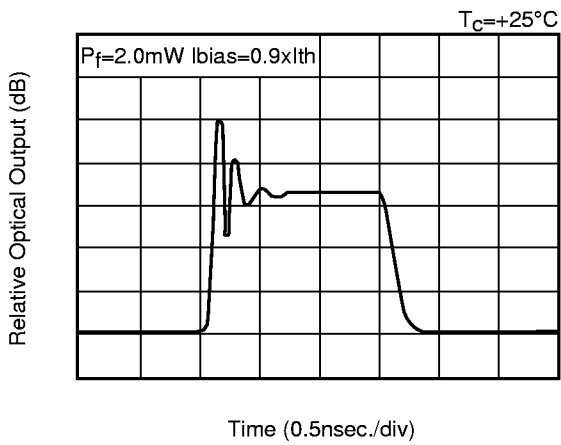


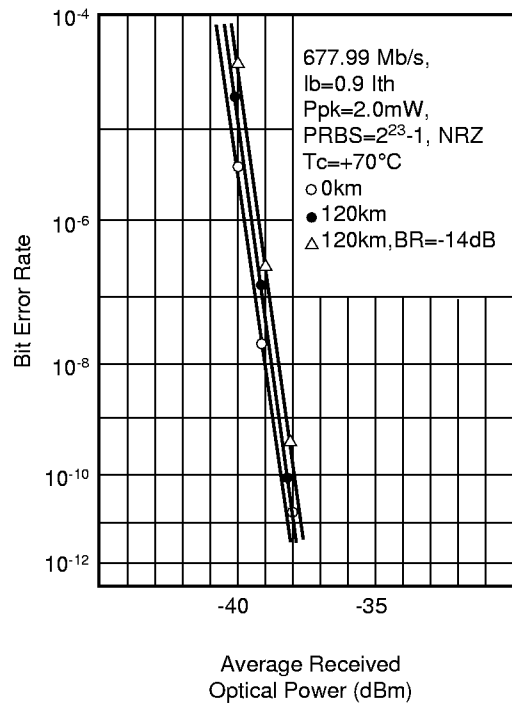
Fig. 8 Frequency Response



**Fig. 9 Pulse Response**

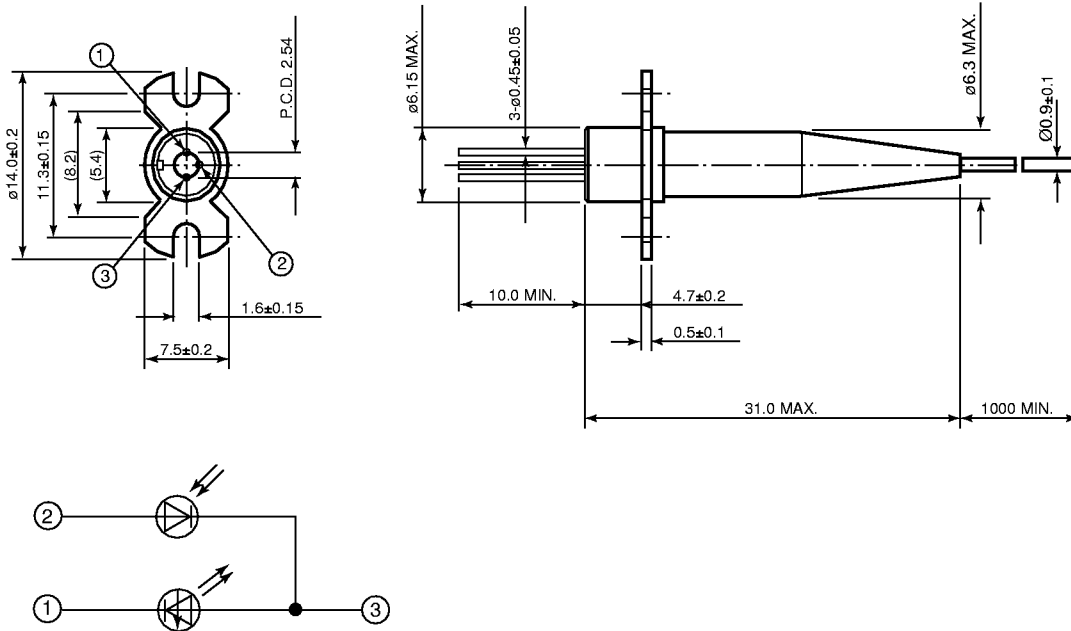


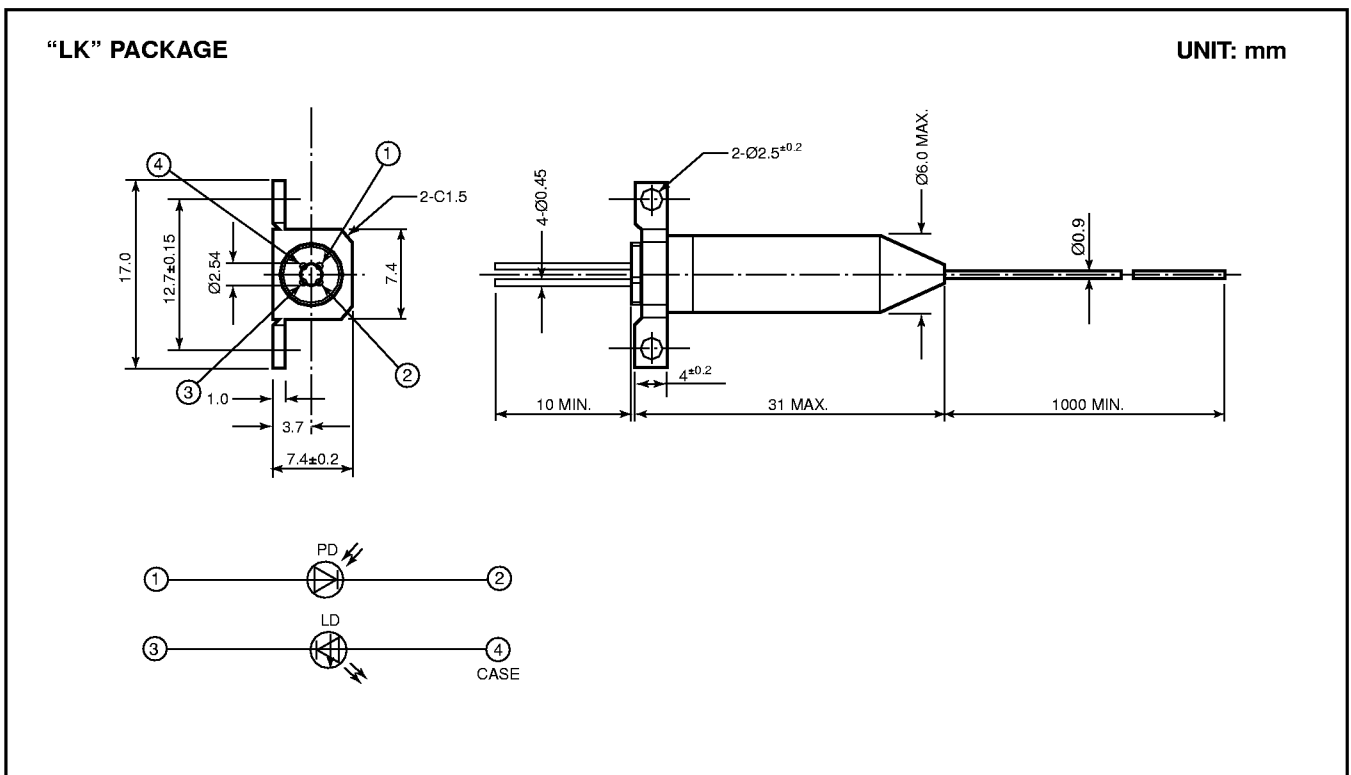
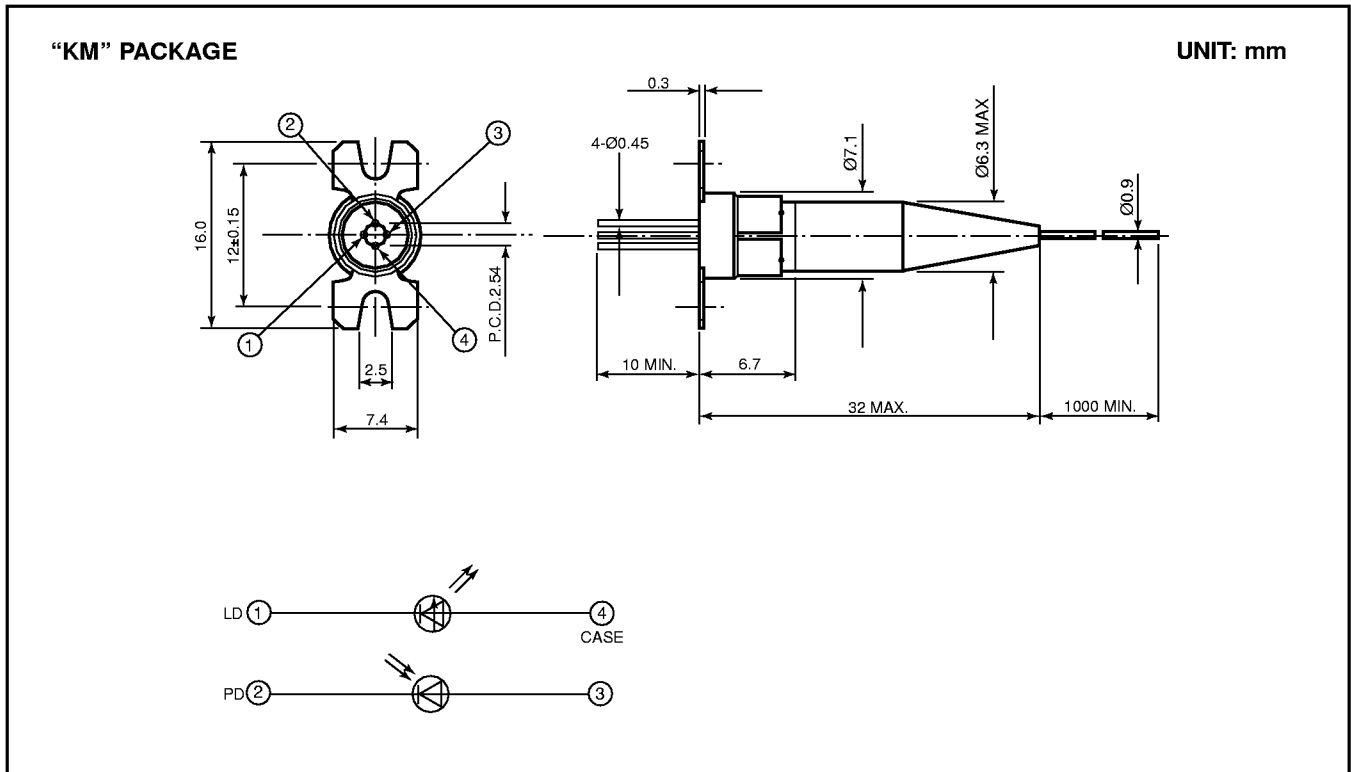
**Fig. 10 Transmission Characteristics**



**"HF" PACKAGE**

UNIT: mm





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# 1,550nm MQW-DFB FLD5F8HF/KM/LK Coaxial Laser Module

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