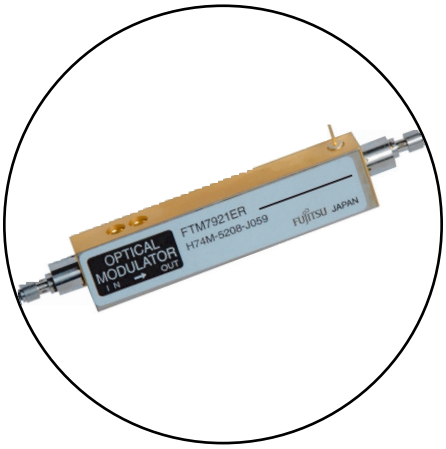
Dual Drive 10Gb/s LN Modulator with Monitor PD — *FTM7921ER*

FEATURES

- Z-Cut Design Supports Low Drive Voltages
- Zero Chirp Differential Input Design
- Integrated Monitor Photodiode
- GPO RF Input Connectors



DESCRIPTION

The FTM7921ER is a Ti:$LiNbO_3$ Dual Drive Mach-Zehnder modulator with a modulation speed of up to 10.7 Gb/s. This optical modulator integrates a monitor PD chip and coupler function for the automatic bias control (ABC) to compensate for DC-drift and other phenomena.

ABSOLUTE MAXIMUM RATINGS (Tc=25°C, Unless otherwise specified)

Parameter	Symbol	Condition	Limits			Unit
			Min.	Typ.	Max.	
Storage Temperature	T_{stg}	Ambient	-40	-	85	°C
Operating Case Temperature	T_{op}	Case	-5	-	70	°C
Storage Relative Humidity	RH_{stg}		5	-	95	%
Operating Relative Humidity	RH_{op}		5	-	85	%
DC Input Voltage	$V_{in(DC)}$		-	-	±16	V
Optical Input Power	$P_{in(opt)}$		-	-	50	mW
Monitor PD Reverse Voltage	V_{RM}		-	-	20	V
Monitor PD Reverse Current	I_{RM}		-	-	1	mA
Monitor PD Forward Current	I_{FM}		-	-	3	mA

ELECTRICAL CHARACTERISTICS (Tc =-5 ~ 70°C, 25 years Unless otherwise specified)

Parameter	Symbol	Condition	Limit			Unit
			Min.	Typ.	Max.	
Operating Bit Rate	-		10.7	-	-	Gb/s
Drive Voltage	$V\pi$	At 10.7 Gb/s, Complementary Drive	-	-	2.6	V
Drive Voltage	V_π	At low frequency, single drive, and at each electrode	-	-	4.0	V
DC Bias Voltage	V_{Bias}	Single Bias	-15	-	15	V
RF Input Impedance	Zin	Internally Terminated	39	50	-	Ω
RF Return Loss	S11	130MHz ~ 5GHz	13	-	-	dB
		5GHz ~ 10GHz	10	-	-	

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OPTICAL SPECIFICATIONS (Tc=-5 ~ 70°C, 25 years)

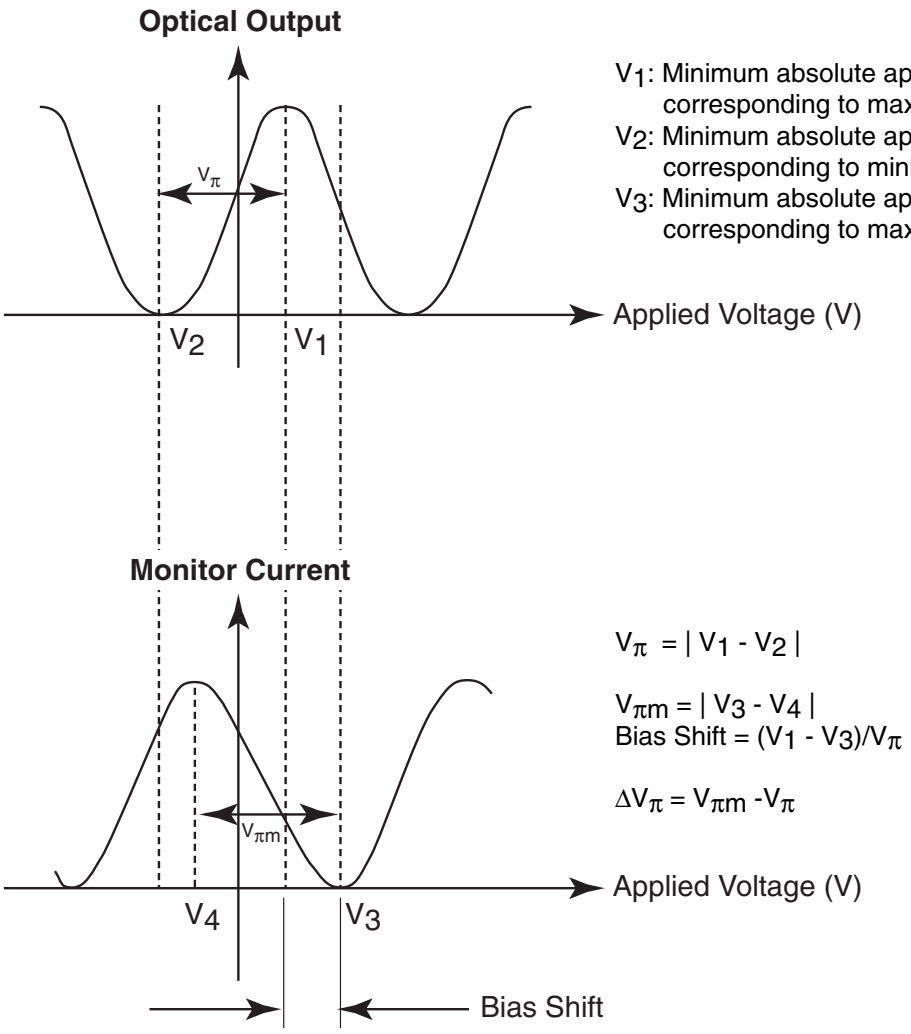
Parameter	Symbol	Condition	Limit			Unit
			Min.	Typ.	Max.	
Optical Bandwidth	BW	3dB Down Relative to 130MHz, Small-signal	8.5	-	-	GHz
Operating Wavelength	λ_{op}	C Band	1530	-	1570	nm
		L Band	1570	-	1608	
On/Off Extinction Ratio	R_{ext}	At Low Frequency	18	-	-	dB
		At 10.7Gb/s Complementary Drive	12	-	-	
Optical Return Loss	ORL	BOL, Input & Output	35	-	-	dB
		EOL, Input & Output	30	-	-	
Optical Insertion Loss	IL	C Band, No Connector	-	-	6.0	dB
		L Band, No Connector	-	-	7.0	
RF Input Timing Skew	T_{skw}		-2.5	-	+2.5	ps
Rise Time	t_r	20-80%	-	-	30	ps
Fall Time	t_f	10-90%	-	-	45	ps
Pulse Overshoot	-		-	-	10	%
Pulse Undershoot	-		-	-	10	%
Alpha Parameter	α	Balanced Input	-0.2	-	+0.2	-

ELECTRO-OPTICAL SPECIFICATIONS OF MONITOR PD (Tc=-5 ~ 70°C, 25 years)

Parameter	Symbol	Condition	Limit			Unit
			Min.	Typ.	Max.	
Responsivity	RmAC	-	0.0023	-	0.022	A/W
Bias Shift	-	Note (1)	-20	-	+20	%
Monitor PD Vπ Difference	$\Delta V\pi$	Difference at Low Frequency	-0.3	-	0.3	V

Note 1. Reference Table 1 for explanation

Table 1



V_1: Minimum absolute applied voltage corresponding to maximum optical output
V_2: Minimum absolute applied voltage corresponding to minimum monitor current
V_3: Minimum absolute applied voltage corresponding to maximum monitor current

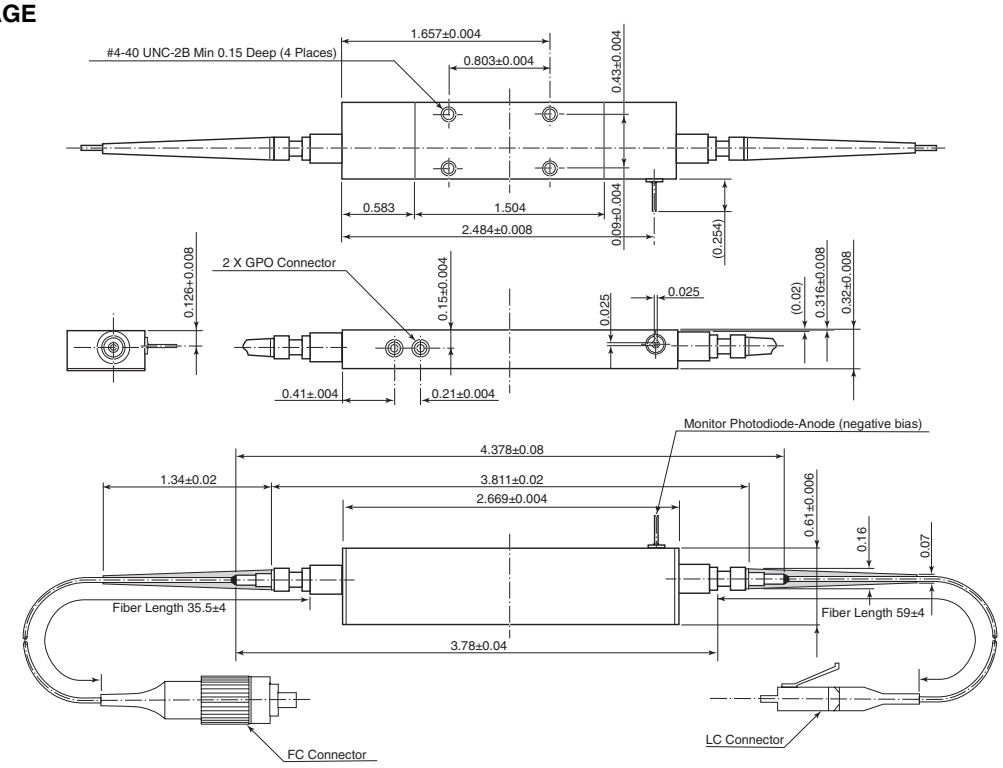
$V_\pi = | V_1 - V_2 |$

$V_{\pi m} = | V_3 - V_4 |$
Bias Shift = $(V_1 - V_3)/V_\pi$

$\Delta V_\pi = V_{\pi m} - V_\pi$

Note: These measurements are performed at a low frequency of ≤100Hz.

"ER" PACKAGE **UNIT: inch**



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- **Observe government laws and company regulations when discarding this product. This product must be discarded in accordance with methods specified by applicable hazardous waste procedures.**

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