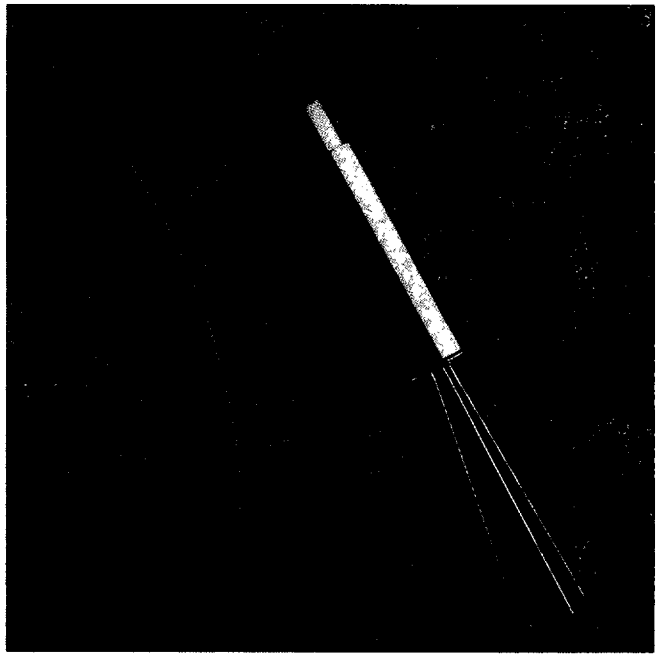
T-41-53

EPITAXX

EPM700

Low Distortion InGaAs PIN Photodiode for CATV / Analog Video



Features

- Low intermodulation distortion
- Low optical back reflection
- Low capacitance
- High responsivity at 1330 nm and 1550 nm
- Planar, passivated photodiode chip

Applications

- Fiber optic CATV
- High speed analog receiver
- Multi-channel fiber optic transmission

Description

The EPM700 is an Indium Gallium Arsenide (InGaAs) photodiode that is designed for use in fiber optic video receivers and other high speed analog applications.The detector is a PIN diode with a photosensitive area that is 75 µm in diameter. The photodiode has high responsivity for receiving transmissions at 1300 nm or 1550 nm from Distributed Feedback (DFB) or Fabry-Perot lasers.

Key features of the EPM700 include low distortion and low optical back reflection. Innovative device design decreases second order intermodulation (IM2) to lower than -80 dBc (EPM700L) at input optical power levels up to 0 dBm and modulation indices as high as 0.7; proprietary optical coupling techniques reduce reflection to below -40 dB. THe EPM700 also has low capacitance for operation up to 2.0 GHz.

The EPM700 is available in three grades of IM2: the economical J grade; the standard K grade; the high performance L grade. The detector is mounted in a rugged coaxial package with a singlemode fiber pigtail. The customer can select between a jacketed and cabled pigtail. In addition, the customer can choose between FC/SPC and Radiall low reflection connector terminations.

Specifications

MODEL	EPM700J			EPM700K			EPM700L			Units
Conditions (Unless noted)	25°C, V_R = 5V			25°C, V_R = 5V			25°C, V_R = 5V			
Parameter	Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	
Active Diameter		75			75			75		µm
Responsivity @ 1300 nm	0.80	0.85		0.80	0.85		0.80	0.85		A/W
Distortion Product[1]			-70			-75			-80	dBc
Back Reflection		-55	-40		-55	-40		-55	-40	dB
Dark Current		0.15	1.0		0.15	1.0		0.15	1.0	nA
Total Capacitance[2]		0.55	0.75		0.55	0.75		0.55	0.75	pF
Bandwidth[3]		2.0			2.0			2.0		GHz
Rise Time[4]		150			150			150		pS

Notes: 1) Second order intermodulation distortion product (IM2)
V_R = 12 V, P_{avg} = 0 dBm, modulation index = 0.7, R_{LOAD} = 50Ω
$f_1 + f_2$ = 324.25 MHz, $f_2 - f_1$ = 54.25 MHz
2) Measured with case grounded
3) -3dB point into a 50Ω load
4) R_{LOAD} = 50Ω

Maximum Ratings

MODEL	EPM700J	EPM700K	EPM700L	Units
Reverse Voltage	25	25	25	V
Reverse Current[A]	10	10	10	mA
Forward Current[B]	10	10	10	mA
Power Dissipation	100	100	100	mW
Operating Temperature	-40/+85	-40/+85	-40/+85	°C
Storage Temperature	-40/+85	-40/+85	-40/+85	°C

Notes: A) Under reverse bias, current at which device may be damaged.
B) Under forward bias, current at which device may be damaged

Figure 1

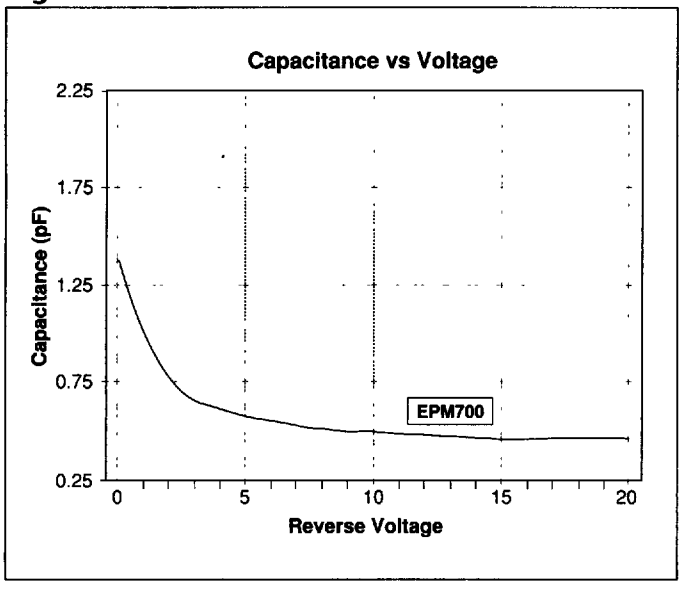


Figure 2

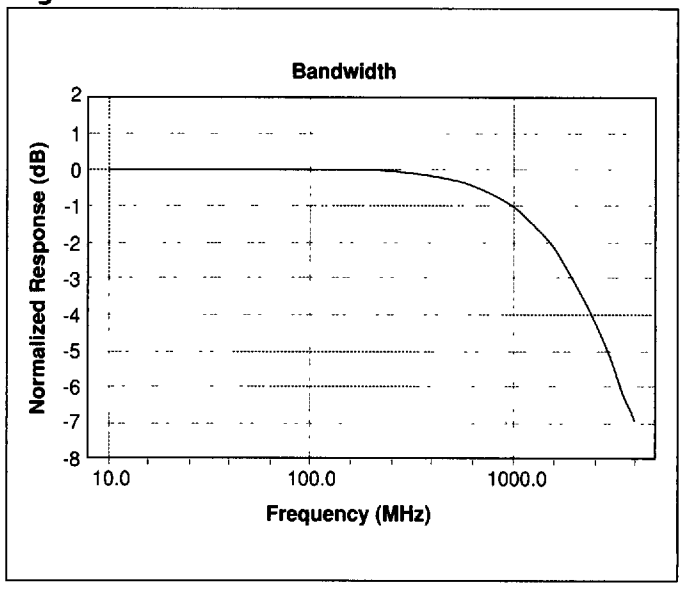


Figure 3

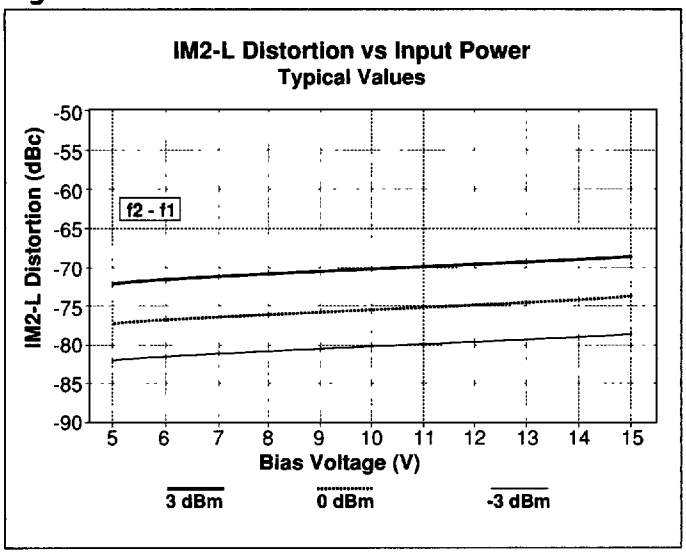


Figure 4

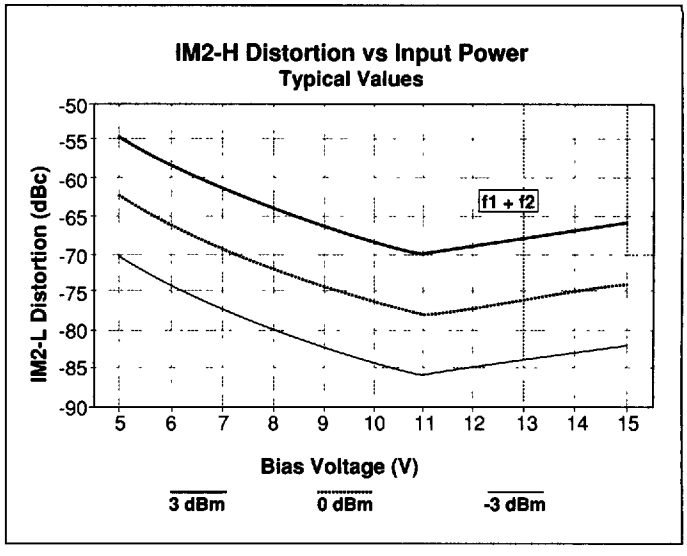


Figure 5

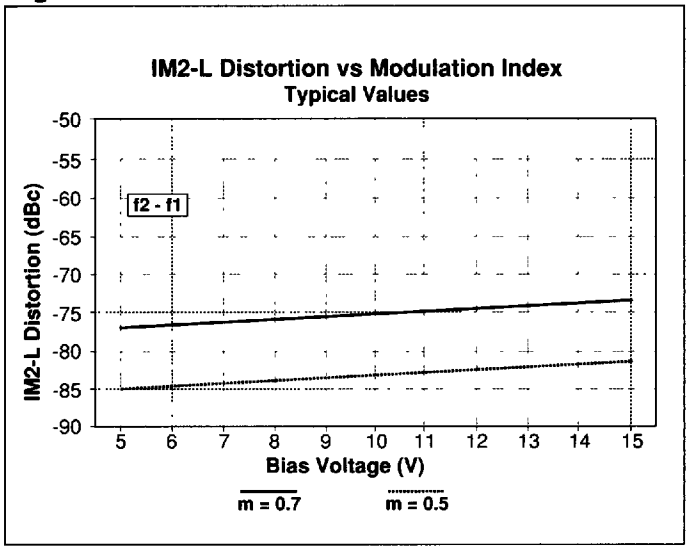


Figure 6

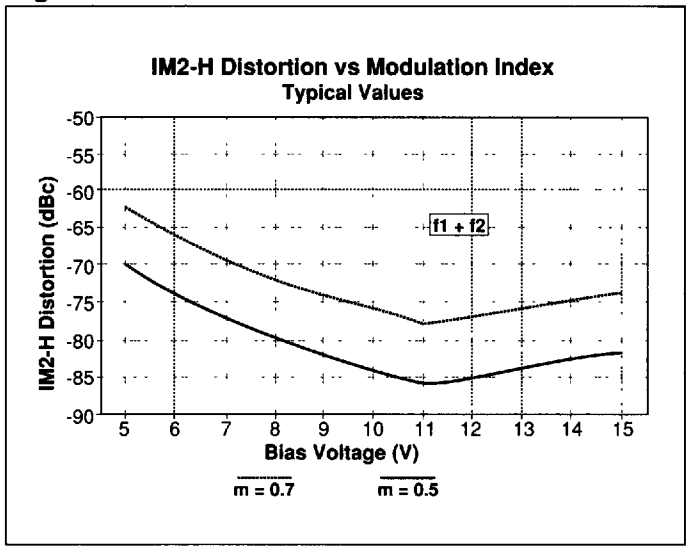


Figure 7

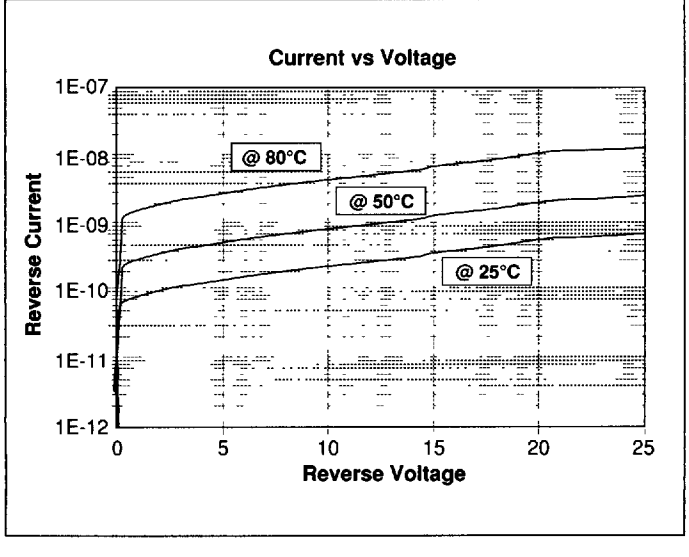
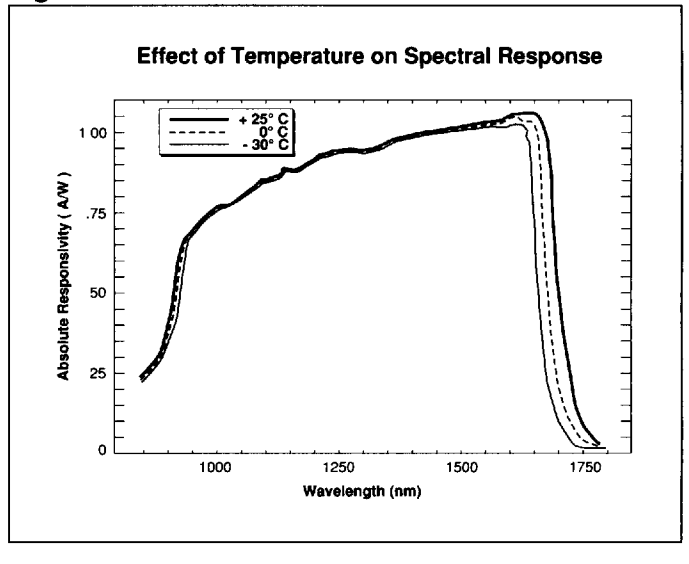


Figure 8



Ordering Options

The EPM700 is available with either a jacketed or cabled singlemode fiber pigtail. In addition, the customer can order a low reflection connector. The standard options are available below.

Standard Pigtail Configurations

Name	Description
EPM700X/FJ-S/XX	Low distortion detector; J,K, or L grade; singlemode jacketed fiber; XX connector option.
EPM700X/FC-S/XX	Low distortion detector, J,K, or L grade; singlemode cabled fiber; XX connector option.

Standard Connector Options

Name (XX)	Description
FC/SPC	FC super polished, physical contact connector.
RAD	Radiall low reflection connector.

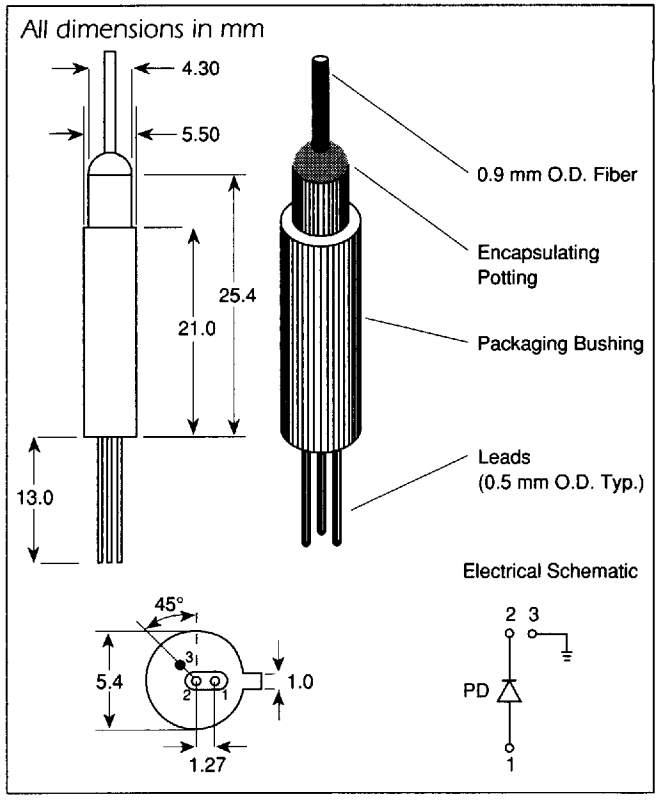
Precautions for Use

ESD PROTECTION IS IMPERATIVE. Use of grounding straps, anti-static mats, and other standard ESD protective equipment is recommended when handling or testing an InGaAs PIN or any other junction photodiode.

Fiber pigtails should be handled with less than 10N pull and with bending radius over 1".

Soldering temperature of the leads should not exceed 260°C for no more than 10 seconds.

Mechanical Dimensions



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