

## Description

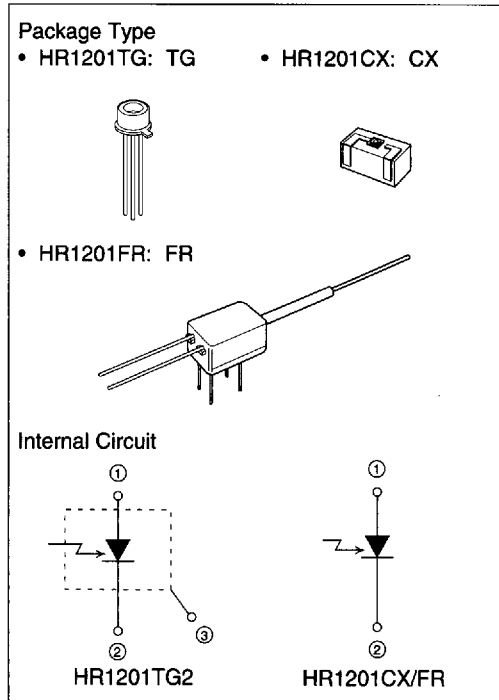
The HR1201TG/CX/FR are InGaAs avalanche photodiodes which respond to a 1.0  $\mu\text{m}$  to 1.65  $\mu\text{m}$ . Their fast pulse response makes them suitable as optical detectors for high-bit-rate optical fiber communication systems.

## Features

- High sensitivity:  
 $S = 0.9 \text{ mA/mW}$  (TG/CX)  
 $S = 0.8 \text{ mA/mW}$  (FR) at  $\lambda_p = 1550 \text{ nm}$  Typ.
- Low dark current:  $I_{\text{DARK}} = 2 \text{ nA}$  Typ.
- Small capacitance:  
 $C_t = 0.5 \text{ pF}$  (TG)  
 $C_t = 0.7 \text{ pF}$  (CX/FR)
- Photodetectable area: 50  $\mu\text{m}$  Dia.
- High multiplication ratio:  $M = 40$  Typ.
- Excellent frequency characteristics:  
 $G.B. = 30$  (TG/CX)  
 $G.B. = 20$  (FR) (G.B. product Typ.)
- Slim package with multi mode fiber (FR)

## Fiber Specifications (HR1201FR)

Numerical aperture: 0.2  
 Core diameter: 50  $\mu\text{m}$   
 Outer diameter: 125  $\mu\text{m}$   
 Jacket diameter: 900  $\mu\text{m}$   
 Refractive index profile: GI  
 Fiber length: More than 500 mm



## Absolute Maximum Ratings ( $T_C = 25 \pm 3^\circ\text{C}$ )

Item	Symbol	Rated Value	Unit
Reverse voltage	$V_R$	10	V
Forward current	$I_F$	500	$\mu\text{A}$
Reverse current	$I_R$	500	$\mu\text{A}$
Operating temperature	TG/CX $T_{\text{opr}}$	-40 to +80	$^\circ\text{C}$
	FR	-20 to +75	
Storage temperature	TG/CX $T_{\text{stg}}$	-45 to +100	$^\circ\text{C}$
	FR	-40 to +85	

Note: The HR1201CX is intended for use in hermetically sealed packages. When using this product, please consult the "Handling Instructions" section in this book for more information.

# HR1201TG/CX/FR

## Optical and Electrical Characteristics ( $T_C = 25^\circ\text{C}$ )

Item	Symbol	Min	Typ	Max	Units	Test Conditions
Dark current	$I_{\text{DARK}}$	—	1	20	nA	$V_R = 0.9 V_B$
Multiplied dark current	$I_{\text{DM}}$	—	0.5	5	nA	$M = 1$
Capacitance	(TG)	$C_t$	—	0.5	0.8	pF $V_R = 0.9 V_B, f = 1 \text{ MHz}$
	(CX/FR)		—	0.7	1.0	
Sensitivity	(TG/CX)	$S_1$	0.73	0.85	—	mA/mW $\lambda_p = 1300 \text{ nm}$
	(FR)		0.7	0.75	—	
	(TG/CX)	$S_2$	—	0.9	—	mA/mW $\lambda_p = 1550 \text{ nm}$
	(FR)		—	0.8	—	
Breakdown voltage	$V_B$	60	80	100	V	$I_{\text{DARK}} = 100 \mu\text{A}$
Cutoff frequency	(TG/CX/FR)	$f_c$	1	—	—	GHz $M = 5$ $\lambda_p = 1300 \text{ nm}$
			1	—	—	
	(FR)		—	0.4	—	$M = 30$ 500 kHz to -3 dB
	(TG/CX)		—	1	—	
Excess noise factor	F	—	5	—	—	$\lambda_p = 1300 \text{ nm}, M = 10,$ $f = 30 \text{ MHz}, B = 1 \text{ MHz},$
	$x$	—	0.7	—	—	$I_{p0} = 2 \mu\text{A}$
Maximum multiplication ratio	M	30	40	—	—	$\lambda_p = 1300 \text{ nm}, I_{p0} = 2 \mu\text{A}$

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Part

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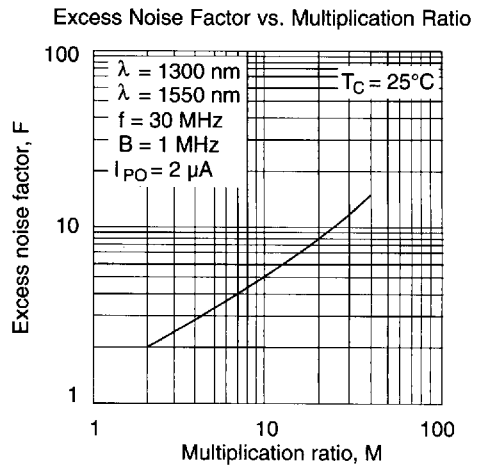
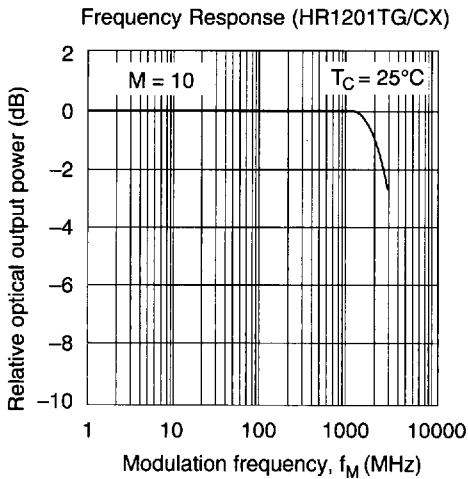
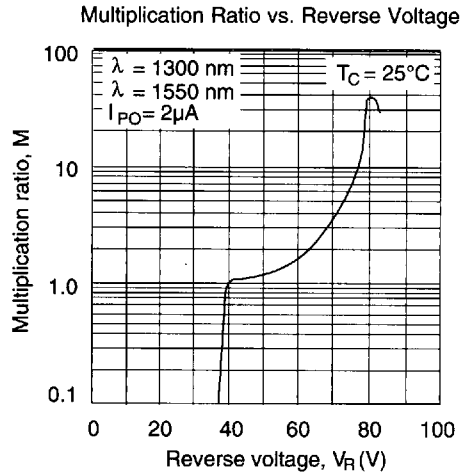
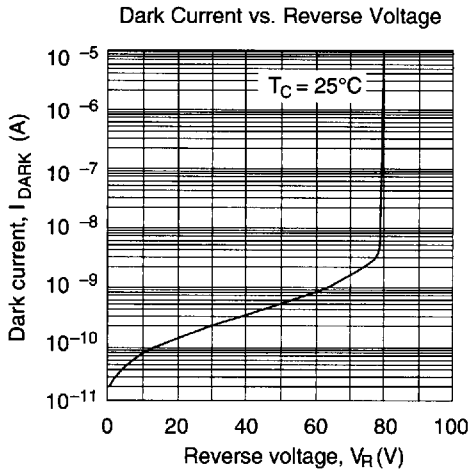
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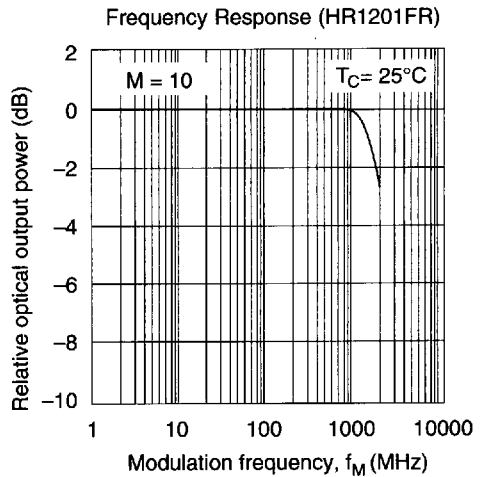
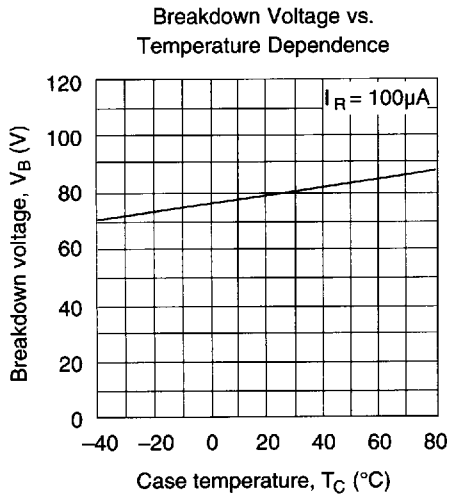
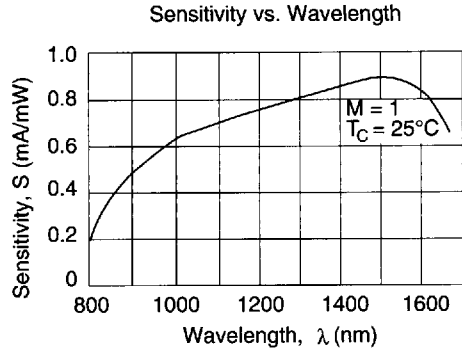
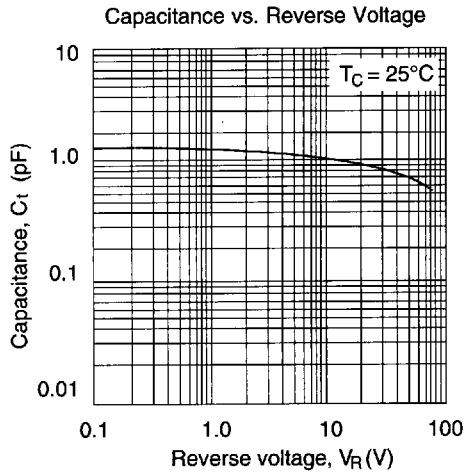
Typical Characteristic Curves

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# HR1201TG/CX/FR

## Typical Characteristic Curves (cont.)



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