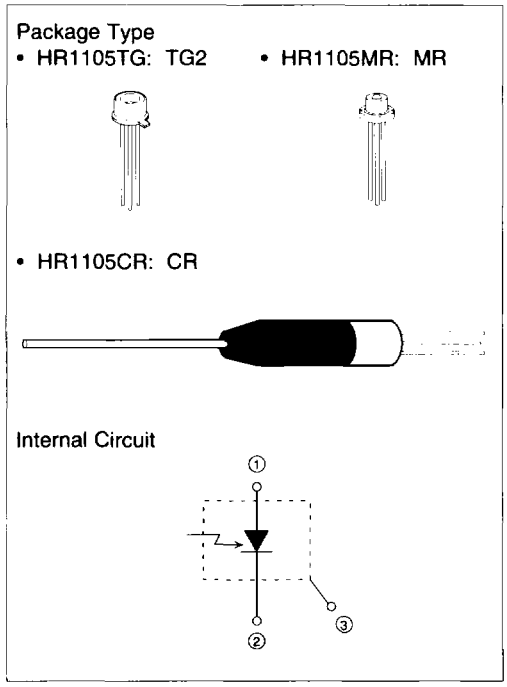
Description

The HR1105TG/MR/CR are InGaAs PIN photodiodes which respond to a 1.0 μm to 1.65 μm band. Their fast pulse response makes them suitable as optical detectors for high-bit-rate optical fiber communication systems.

Features

- Fast pulse response: t_r, t_f = 0.3 ns Typ.
- High sensitivity:
  S = 0.9 mA/mW Typ. (λ_p = 1550 nm,TG/MR)
  S = 0.8 mA/mW Typ. (λ_p = 1550 nm,CR)
- Low dark current: I_{DARK} = 1 nA Typ.
- Low capacitance:
  C_t = 0.8 pF Typ. (TG/MR)
  C_t = 0.9 pF Typ. (CR)
- Photodetectable area: 80 μm Dia.



Fiber Specifications (HR1105CR)

Numerical aperture: 0.2
Core diameter: 50 μm
Outer diameter: 125 μm
Jacket diameter: 900 μm
Refractive index profile: GI
Fiber length: More than 500 mm

Absolute Maximum Ratings (T_C = 25 ±3°C)

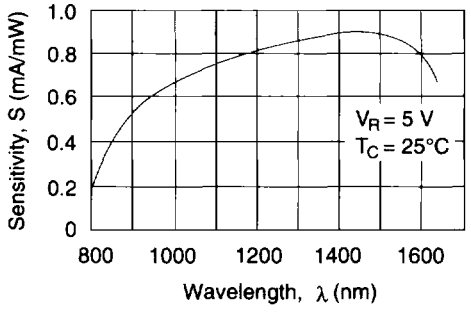
Item		Symbol	Rated Value	Unit
Reverse voltage		V_R	20	V
Forward current		I_F	5.0	mA
Reverse current		I_R	500	μA
Operating temperature	TG/MR	T_{opr}	–40 to +80	°C
	CR		–20 to +75	
Storage temperature	TG/MR	T_{stg}	–45 to +100	°C
	CR		–45 to +80	

Optical and Electrical Characteristics (T_C = 25°C)

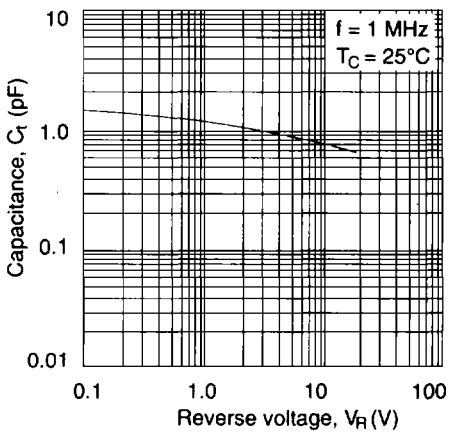
Item		Symbol	Min	Typ	Max	Units	Test Conditions
Dark current	HR1105TG/MR	I_{DARK}	—	1	10	nA	V_R = 5 V
	HR1105CX		—	1	5		
Capacitance	HR1105TG/MR	C_t	—	0.8	1.2	pF	V_R = 5 V, f = 1 MHz
	HR1105CR		—	0.9	1.3		
Sensitivity	HR1105TG/MR	S_1	0.73	0.85	—	mA/mW	V_R = 5 V, λ_p = 1300 nm
	HR1105CR		0.63	0.78	—		
	HR1105TG/MR	S_2	—	0.9	—	mA/mW	V_R = 5 V, λ_p = 1550 nm
	HR1105CR		—	0.8			
Sensitivity saturation bias voltage		$V_{R(S)}$	—	—	2	V	—
Rise time		t_r	—	0.3	—	ns	V_R = 5 V, λ_p = 1300 nm, R_L = 50 Ω
Fall time		t_f	—	0.3	—	ns	V_R = 5 V, λ_p = 1300 nm, R_L = 50 Ω

Typical Characteristic Curves

Sensitivity vs. Wavelength



Capacitance vs. Reverse Voltage



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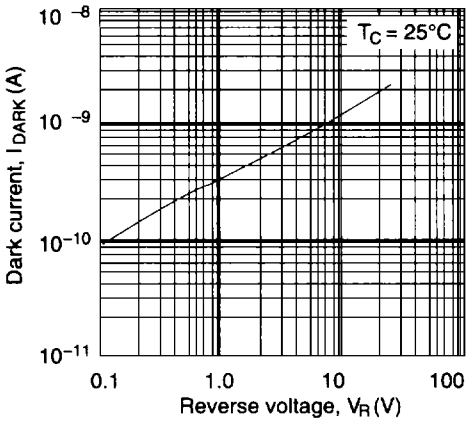
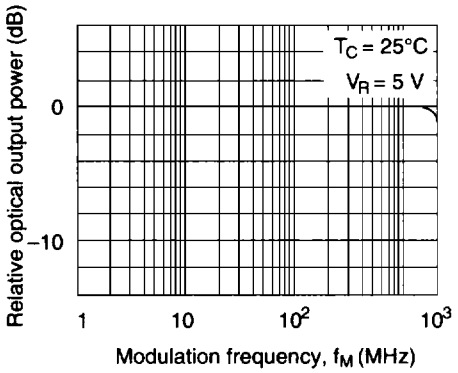
Typical Characteristic Curves (cont.)

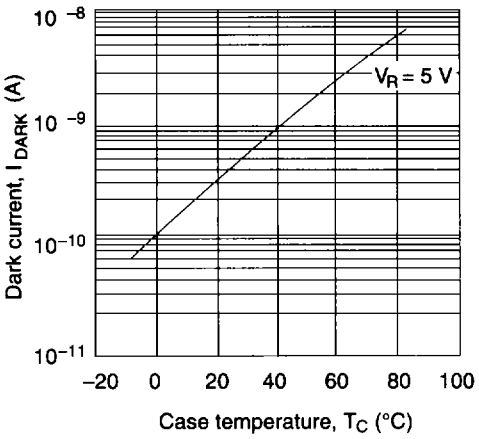
Dark Current vs. Reverse Voltage



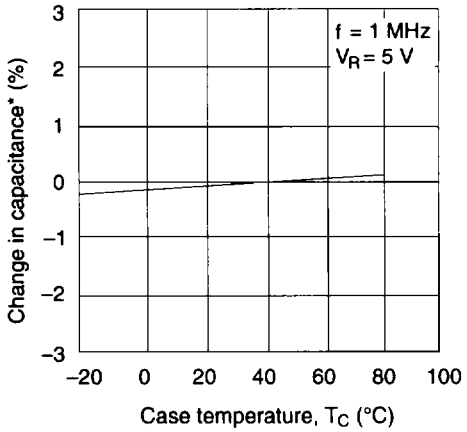
Frequency Response



Dark Current Temperature Dependence



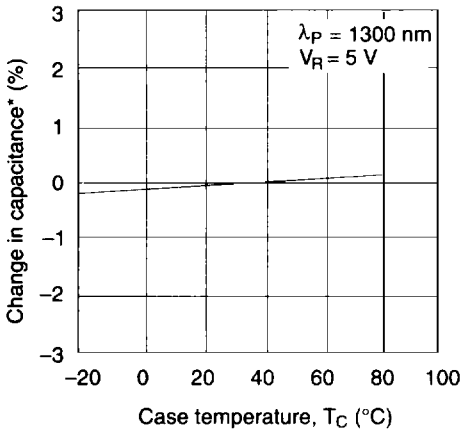
Capacitance Temperature Dependence



(* Across terminal pins, relative to T_C = 25°C)

Typical Characteristic Curves (cont.)

Sensitivity Temperature Dependence



(* Across terminal pins, relative to T_C = 25°C)