



Sumitomo Electric
Part No.: ERA2316HY Series
Rev. No.: A
Date of issue: Feb. 10, 2011

Technical Specification of 2.5Gb/s APD + TIA Receiver

ERA2316HY Series

RoHS Compliant



0. Features

- 5pins co-axial pigtail type package
- APD with +3.3V pre-amplifier
- Bandwidth: 2.0GHz typ.
- High sensitivity: -35dBm typ.
- Differential output
- Operating case temperature: -40°C to 85°C

1. Absolute maximum ratings

(Tc=25°C, unless otherwise specified)

Parameter	Symbol	Ratings		Units
		Min.	Max.	
Storage Temperature	Tstg	-40	+85	°C
Operating Temperature	Top	-40	+85	°C
Supply Voltage	Vdd	0	4.5	V
APD Reverse Voltage	VR	0	VB (Note1)	V
APD Reverse Current	IR	-	3 peak (Note2)	mA

Note.1: VB differs from devices. VB data is attached to each device.

Note.2: at 2.48832Gb/s, NRZ, Duty=50%, Mark density=50%

2. Optical and electrical characteristics

(Tc=25°C, λ =1550nm, Vdd=+3.3V, unless otherwise specified)

Parameter	Symbol	Test Conditions			Limits			Units
					Min.	Typ.	Max.	
APD Responsivity	R	λ =1310nm, M=1			0.75	0.80	-	A/W
		λ =1550nm, M=1			0.80	0.85	-	
		λ =1610nm, M=1			-	0.70	-	
APD Breakdown Voltage	VB	ID=10uA			40	50	65	V
Temperature Coefficient of VB	Γ	(Note.3)			0.08	0.12	0.15	V/°C
AC Transimpedance	Zt	Pin=-30dBm, f=100MHz, Single-end			1800	2600	-	ohm
Bandwidth	BW	Pin=-30dBm, M=10,			1.8	2.0	-	GHz
Lower Cut-off Frequency	fcl	-3dB from 1MHz			-	50	75	kHz
Peaking	dpk	Pin=-30dBm, M=10, from 1MHz			-	-	+2	dB
Output Return Loss	S22	up to 1.75GHz			10	-	-	dB
Minimum Sensitivity	Pr	2.48832Gb/s, NRZ, PRBS=2 ²³ -1, BER=10 ⁻¹⁰ , VR=Optimum (Note.4)	Rext =14dB	25°C	-	-35	-34	dBm
				-40°C ~ 85°C	-	-34	-32	
			Rext=10dB, 25°C		-	-34	-	
Maximum Overload	Pmax	2.48832Gb/s, NRZ, PRBS=2 ²³ -1, BER=10 ⁻¹⁰ , M=3			-5	-	-	dBm
Maximum Output Voltage Swing	Vclip	Saturated Output Voltage			-	400	800	mV
Optical Return Loss	ORL	-			30	-	-	dB
Power Supply Current	Idd	-			-	45	70	mA
Power Supply Voltage	Vdd	-			+3.15	+3.30	+3.45	V

Note.3: $\Gamma = dVB/dTc$

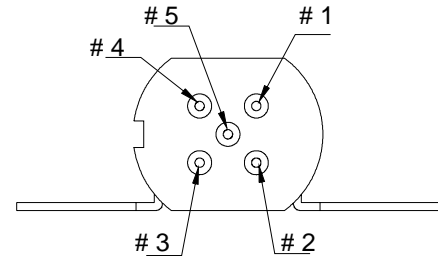
Note.4: with fc=1866MHz Bessel filter

Note.5: All the parameters are measured with 50ohm AC-coupled.

3. Mechanical

- Co-axial 5 Pins "HY" package
- Outline Drawing Number: FPD-DR170
- PIN description:

#1 VR : PD bias
#2 OUT+ : Positive output
#3 OUT- : Negative output
#4 Vdd : Preamp bias
#5 GND : Case ground



- Fiber Type: non-flammable single mode fiber

Parameter	Limits	Unit
Mode Field Diameter	9.3+/-0.5	um
Cladding Diameter	125+/-2	um
Core Non-circularity	10 max.	%
Cladding Non-circularity	2 max.	%
Eccentricity Mode Field/Cladding	1.6 max.	%
Cutoff Wavelength	1.27 max.	um
Difference of Refractive Index	0.30+/-0.04	-
Primary Coating Material	UV Cured Acrylate	-
Secondary Coating Material	Polyester Elastomer	-
Outer Diameter of Secondary coating	0.9+/-0.1	mm
Minimum Bending Radius	20	mm
Fiber Length	1000 mm min from the end of the device body to the end of fiber.	mm
Secondary Coating Color	Blue	-

4. Accompanied data

Each module shall be accompanied with following data measured under above optical and electrical characteristics.

(Tc=25°C, unless otherwise specified)

Parameter	Symbol	Conditions	Units
Breakdown Voltage	VB	ID=10uA	V
Reverse Voltage	VR	M=3	V
Responsivity	R15	$\lambda=1550\text{nm}$	A/W

5. Marking

On the device: Part number of “ERA2316HY” and serial number.

6. Option

The following option is available:

- Part number:
 - ERA2316HYS (with SC connector)
 - ERA2316HYF (with FC connector)
 - ERA2316HYL (with LC connector)
 - ERA2316HYM (with MU Plug connector)
 - ERA2316HYK (with MU Jack (J-Plug) connector)
 - MU Plug type: for back panel side
 - MU Jack (J-Plug) type: for package side
- Optical connector (Unless otherwise specified at -40°C to 85°C):
 - Insertion Loss: $\leq 0.5\text{dB}$
 - Return Loss: $\geq 40\text{dB}$
- Fiber Length:
 - 1000~1200mm from the end of the device body to tip of connector.

7. Precaution

- (1) The receiver should be handled in the same manner as ordinary semiconductor devices to prevent the electro-static damages. For safe keeping and carrying, the modules should be packaged with ESD proof material. To assemble the modules on PCB, the workbench, the soldering iron and the human body should be grounded.
- (2) Please pay special attention to the atmosphere condition because the dew on the module may cause some electrical damages.
- (3) Under such a strong vibration environment as in automobile, the performance and reliability are not guaranteed.

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Revision Record

	Date of issue	Description
Rev. A	Feb. 10,2011	First issue.

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