(Supplemental Datasheet)

HNU- Series ONU Modules

This supplement is applied to all NU-X3Y5-PB, NU-X3Y4-PB ONU, DNU-X3Y5-PB, DNU-X3Y4-PB ONU modules for BPON, GPON and GEPON.

INTRODUCTION

In the PON application, frame signal controls the optical trans mission from the transmitter of the ONU. In general, the frame signal also controls the data to the transmitter as shown in Figure 1.

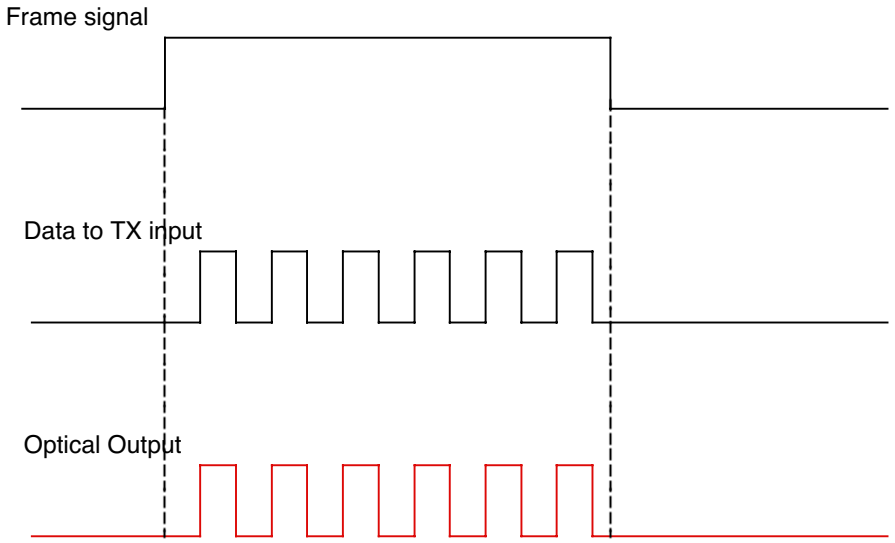

Figure 1: Phase relationship when frame signal controls data input signal to the burst-mode transmitter of ONU.

DESCRIPTION

In the standard NU- Series ONU modules for the PON applications, the frame signal only controls the laser bias (LDB, pin12). In this case, there is no optical transmission when both TX data and LDB are low. However, in some applications, the frame signal does not control the data to the transmitter, that is, data stream is still flowing in to the data input of the transmitter even when the frame signal (LDB) is low. For example, in GE-PON, idle signal is running when valid data is absent. In the NU-Series, LDB (pin12) controls only laser bias and non-biased optical transmission takes place even when the frame signal is low as shown in Fig.2. This situation never occurs if MAC (media access converter) controls the data flow. However, if data flow is not controlled by the frame signal, the ONU module should have capability to stop the non-biased optical transmission. HNU-Series is designed for such case. Figure 3 illustrates the TX data input scheme of HNU-Series ONU module. In HNU-series, the input of the TX is also controlled by the frame signal, where the input to both data and LD bias of the transmitter are forced to low when the frame signal is low.

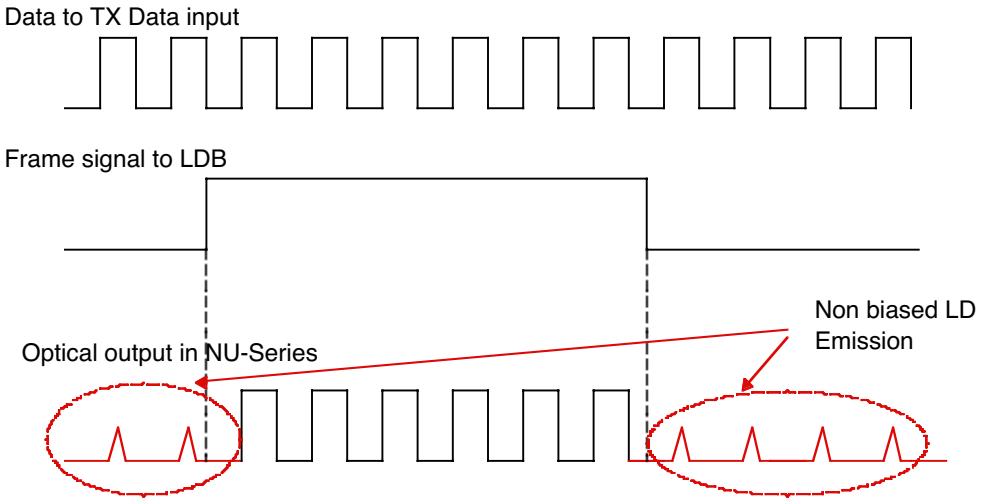

Figure 2: Optical transmission in NU-Seires when frame signal is low but data signal to TX input is still present.

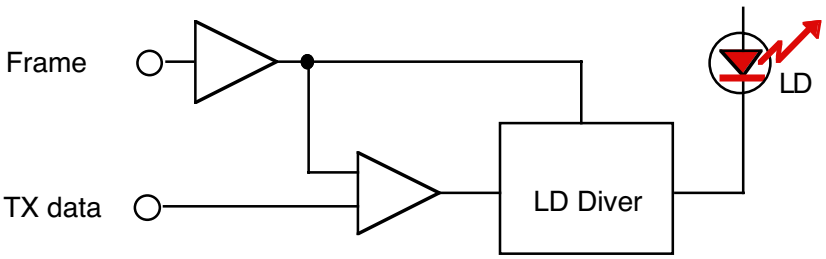

Figure 3: Data input scheme of HNU-Series.Optical transmission in NU-Series where frame signal also controls the data input buffer stage.

Figure 4 illustrates the comparison of the optical ouputs in NU-series and HNU-series when datasignal is present when frame signal is low.

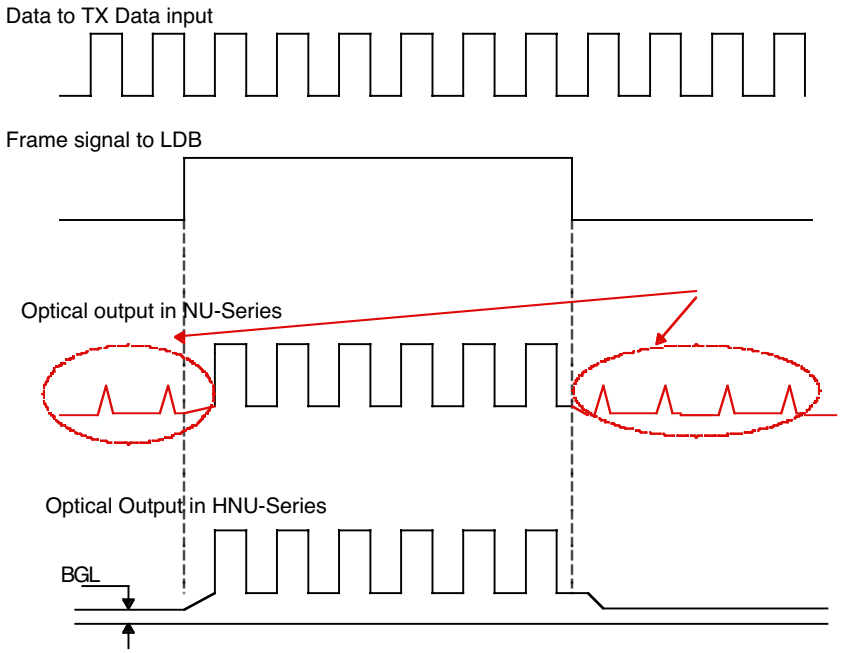

Figure 4: Comparison between optical signals of NU-series and HNU-series.

The table shows the optical turn-on/off characteristic.

Transmitter Optical Turn-on/off Specifications (0°C < Topr < 70°C, 3.135V < Vcc < 3.465V)						
Parameter	**Symbol**	Min.	Typ.	Max.	Units	**Notes**
Optical						
TX DC-Bias Shut-off time	t_{dcoff}			**8**	**ns**	
TX DC-Bias Turn-on time	t_{dcon}			**10**	**ns**	
TX Shut down time	t_{sdwn}		**50**		**us**	

Transmitter Optical Background Light (0°C < Topr < 70°C, 3.135V < Vcc < 3.465V)						
Parameter	**Symbol**	Min.	Typ.	Max.	Units	**Notes**
Optical						
TX Background	**BGL**		**-55**	**-45**	**dBm**	**When pin12 is "Lo".**

Ordering Information:

There is no difference in the electrical and optical characteristics between **NU-** and **HNU-**series ONU modules except the frame signal control scheme as described above. **HNU-** series ONU modules can be ordered by using the standard chart for **NU-**series and **NU-** is replaced with **HNU-** (In case of replacing DNU-, HDNU- should be used).

Zenko Technologies, Inc, Research Center, 647 Bound Brook Road, Middlesex, NJ 08846 USA +1.732.926.0099 Fax +1.732.926.9222
May 2004, support@zenkotech.com