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| Data Sheet | **FO - Transceiver SCRJ 1300nm** |
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SCRJ-Transceiver 1300nm 125MBit/s

1 General _____

The SCRJ Transceiver is designed to suit applications with 50/125µm graded index optical fiber. A fast 1310nm LED with high optical power output and a high bandwidth optical receiver makes this transceiver a good choice for fiber optic systems using 50 or 62.5µm optical fiber.
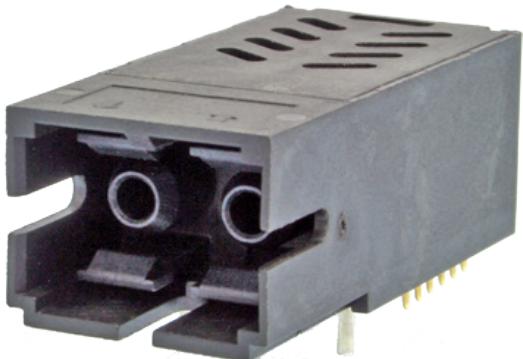

Fig. 1 SCRJ Transceiver

2 Application _____

Due to the max. data rate of 125MBit/s, the good optical properties and the easy optical fiber termination, the transceiver may be used in many applications:

- Optical networks
- Fast-Ethernet
- Industrial electronics
- Power electronics
- Consumer electronics

5 Features _____

- 1310nm Wavelength
- -19dBm optical power output (50/125µm GI)
- -30dBm receiver sensitivity
- 125MBit/s
- +3.3V power supply
- PECL in-/outputs
- Signal Detect (SD) output
- I²C Managment Interface
- Conductive plastic case

3 Ordering Information _____

| Specification	Part Number
1310nm SCRJ	905TR130SR001
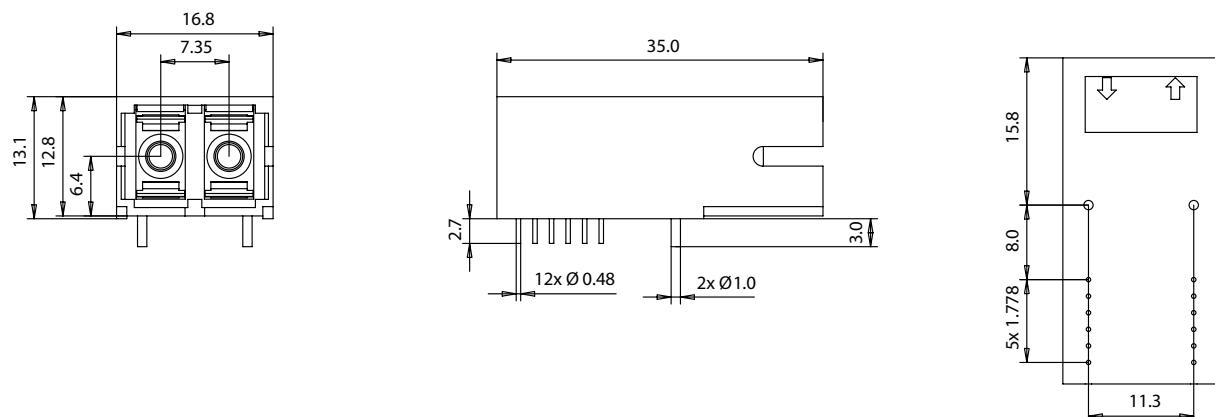
4 Drawings _____

Fig. 2 drawing

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6   Maximum Ratings

Stresses beyond those listed under ´Maximum Ratings´ may cause permanent damage to the device. Listed values are stress limits only and functional operation of the device at these conditions is not recommended. Exposure to maximum rating conditions for extended periods may affect the device reliability.

Parameter	Value	Unit
operating temperature	-40...+80	°C
storage temperature	-40...+100	°C
power supply	4	V
input voltage	-0.5..VCC	V
differential input voltage	1.4	V
output current	50	mA

7   Technical Data

Parameter	Value	Unit
power supply	3.3	V
transmitter current consumpion	90	mA
receiver current consumption	70	mA
tr, tf, optical output	2.5	ns
fiber coupled power P_{out} into 50/125µm GI FO	12	µW
wavelength λ	1310	nm
spectral bandwidth $\Delta\lambda$	25	nm
reciever sensitivity $P_{in\ min}$	1	µW
tr, tf data output	2.2	ns
signal-detect hysteresis	2.5	dB
signal jitter max	4.2	ns p-p

8   Pin Assignment

SDA	6	7	Sclk
RxGnd	5	8	TD-
RxVcc	4	9	TD+
SD	3	10	TxDis
RD-	2	11	TxGnd
RD+	1	12	TxVcc
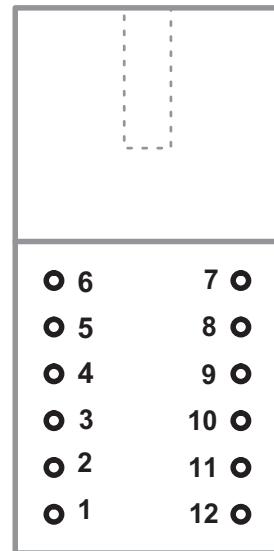
Fig. 3 Pin assignment

PIN	Name	Function
1	RD+	receive data out+
2	RD-	receive data out-
3	SD	signal detect
4	RxVcc	+3.3V receiver
5	RxGnd	Gnd receiver
6	SDA	I²C serial data IO
7	Sclk	I²C serial clock input
8	TD-	transmit data in-
9	TD+	transmit data in+
10	TxDis	disable transmitter input
11	TxGnd	transmitter Gnd
12	TxVcc	+3.3V transmitter

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9   Application hints _____

The transceiver is designed for applications using standard 50/125µm GI-fiber. Max. link length is 2500m.

11 Block diagram_____

RD+ 1
RD- 2
SD 3
RxGnd 5
RxVcc 4

PRE-AMP POST-AMP Quantizer

SDA 6
SCLK 7

Management

TxDisable 10

TxVcc 12
TxGnd 11
TD+ 9
TD- 8

LED Driver

Fig. 5 Block diagram

10 External Circuitry _____

To receive an optimum performance of the transceiver a good power supply decoupling and signal line termination as shown in pic.4 is mandatory. Place decoupling capacitors and termination resistors as close as possible to the inputs. Resitor values shown in table below.

Ferrite
Impedance typ. 120Ω @ 100MHz
DC resistor max 0.15Ω @ 200mA

VCC = 3.3V
Ra = 82 Ohm
Rb = 130 Ohm

Transceiver

Vcc

Ferrit-Bead

R_A R_A

1µF   100nF

○ 4 RX Vcc

LVPECL Receiver

R_B R_B

○ 1 DOUT +

○ 2 DOUT -

○ 5 RX GND

Ferrit-Bead   1µF 100nF

Vcc

R_A R_A

○ 12 TX Vcc

LVPECL Driver

R_B R_B

○ 8 DIN -

○ 9 DIN +

○ 11 TX GND
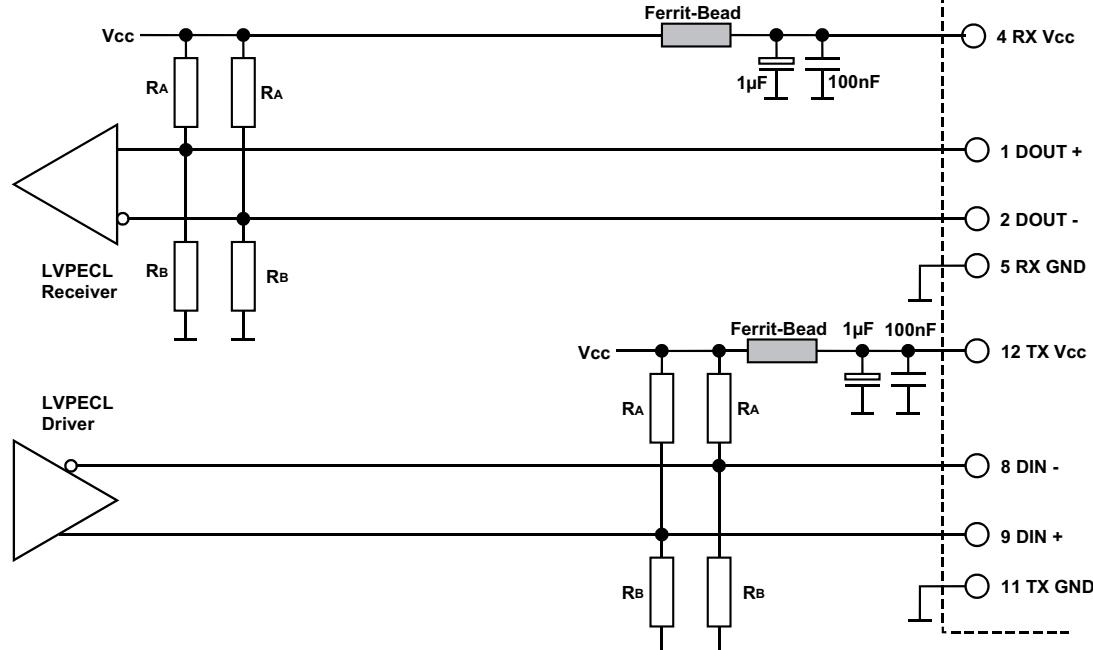
Fig. 4 Parallel Termination
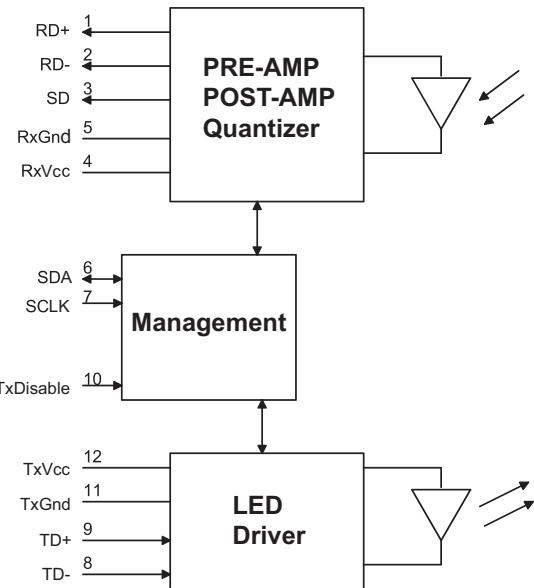
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12 I²C Address _____

Serial Address = A0 (HEX)			
Address (HEX)	**Field Size (Byte)**	**Name**	**Description**
00-5F	96	Serial ID	GP NVRAM; R/W under valid OEM password
60-7F	32	Vendor Specific	Vendor specific EEPROM
80-FF	128	Reserved	Reserved for future use

Serial Address = A2 (HEX)			
Address (HEX)	**Field Size (Byte)**	**Name**	**Description**
00-27	40	Alarm and Warning Threshold	High/Low limits for warning and alarms
28-37	16	Reserved	Reserved - do not write; reads undefined
38-5B	36	Calibration Constants	Numerical constants for external calibration
5C-5E	3	Reserved	Reserved - do not write; reads undefined
5F	1	Checksum	GP NVRAM; R/W under valid OEM password
60-69	10	Analog Data	Real time analog parameter data
6A-6D	4	Reserved	Reserved - do not write; reads undefined
6E	1	Control/Status Bits	Control and status bits
6F	1	Reserved	Reserved - do not write; reads undefined
70-71	2	Alarm Flags	Alarm status bits; read only
72-73	2	Reserved	Reserved - do not write; reads undeined
74-75	2	Warning Flags	Warning status bits; read only
76-77	2	Reserved	Reserved - do not write; reads undefined
78-7B	4	OEMPW	OEM password entry field
7C-7F	4	Reserved	Reserved - do not write; reads undefined
80-F7	120	User Scatchpad	User writeable EEPROM
F8-F9	2	Reserved	Reserved - do not write; reads undefined
FA	1	USRPWSET	User passwort setting; read/write using and pw; returns zero otherwise
FB	1	USRPW	Entry field for user password
FC-FD	2	POH	Power-On hour meter result; read only
FE	1	Data Ready Flags	Data ready bits for each measured parameter; read only
FF	1	User Control	End-user control and status bits

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12 I²C Address (continued)_____

Serial Address = A4 (HEX)			
Address (HEX)	**Field Size (Byte)**	**Name**	**Description**
00-3F	64	APCLUTn	APC look up table
40-7F	64	MODLUTn	VMOD look up table
80-BF	64	IFLTUT	Bias current fault threshold look up table
C0-FF	64	EOLLUTn	Bias current high alarm look up table

Serial Address = A6 (HEX)			
Address (HEX)	**Field Size (Byte)**	**Name**	**Description**
00	1	OEMCFG0	Control and status bits
01	1	OEMCFG1	Control and status bits
02	1	OEMCFG2	Control and status bits
03	1	APCSET0	APC setpoint 0
04	1	APCSET1	APC setpoint 1
05	1	APCSET2	APC setpoint 2
06	1	MODSET	DAC setpoint
07	1	IBFLT	Bias current fault comparator threshold
08	1	TXPFLT	TX power fault threshold
09	1	LOSFLT	RX loss fault comparator threshold
0A	1	FLTTMR	Fault comparator masking interval timer setting
0B	1	FLTMSK	Fault source mask bits
0C-0F	2	OEMPWSET	OEM area access password
10	1	OEMCAL0	OEM calibration register 0
11	1	OEMCAL1	OEM calibration register 1
12	1	LUTINDX	Look up table index read back
13	1	Reserved	Reserved for future use
14	1	APCDAC	Reads back current APC DAC setting
15	1	MODDAC	Reads backcurrent MOD setting
16	1	OEMREAD	Reads back OEM calibration data
17	1	LOSFLTn	LOS de-assert threshold
18	1	RXPOT	RX-Pot tab selection
19	1	OEMCFG4	Start selection bits

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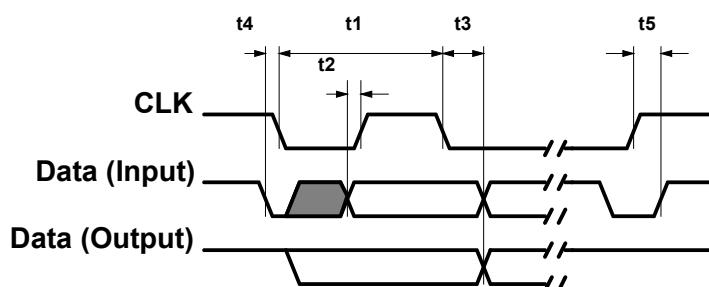
12 I²C Address (continued)_____

Serial Address = A6 (HEX)			
Address (HEX)	**Field Size (Byte)**	**Name**	**Description**
1A-1F	6	Reserved	Reserved for future use
20-27	8	POHDATA	Power-On hour meter scratchpad
28-47	32	RXLUT	RX power calibration look up table
48-49	2	Reserved	Reserved for future use
4A-57	18	CAL	Internal calibration slope and offset data
59-7D	37	Reserved	Reserved for future use
7E-FD	128	SCRATCH	Scratchpad area
FE	1	MFG_ID	42
FF	1	DEV_ID	Device and die revison

13 I²C Interface_____

I² Interface			
Parameter	**Symbol**	**Value**	**Unit**
Low output voltage	V_{CL}	0.8	V (max.)
High input voltage	V_{IH}	2.1	V (min.)
Clock period	t1	2.5	µs (min.)
Data IN setup time	t2	100	ns (min.)
Data OUT stable	t3	300	ns (min.)
Data low to Clk low	t4	100	ns (min.)
Data high to Clk high	t5	100	ns (min.)

14 I²C Timing _____

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