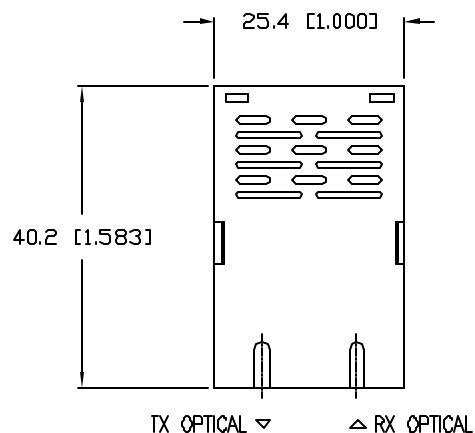


UNCONTROLLED DOCUMENT

PART NUMBER
LLD-IT1515550SSCREV.
A

REV.	E.C.N. NUMBER AND REVISION COMMENTS	DATE
A	E.C.N. #11148.	01.24.07

WARNING
INVISIBLE LASER RADIATION,
AVOID DIRECT EXPOSURE TO BEAM.

**LASER SAFETY**

This single mode transceiver is a Class 1 laser product. It complies with IEC 825 and FDA 21 CFR 1040.10 and 1040.11. The transceiver must be operated within the specified temperature and voltage limits. The optical ports of the module shall be terminated with an optical connector or with a dust plug.

CAUTION: STATIC SENSITIVE DEVICE
FOLLOW PROPER E.S.D. HANDLING PROCEDURES
WHEN WORKING WITH THIS PART.

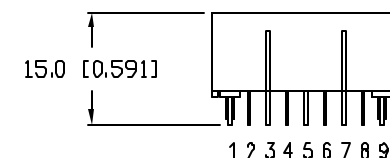
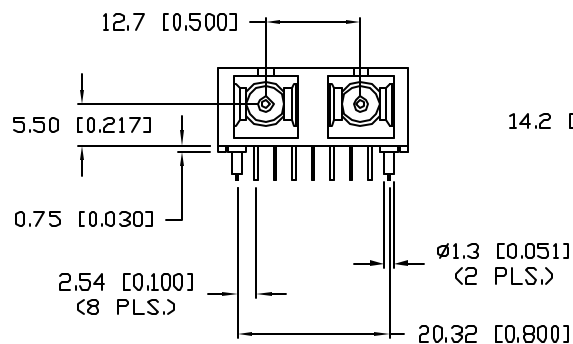
ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

PARAMETER	SYMBOL	MIN.	MAX.	UNITS
POWER SUPPLY VOLTAGE	Vcc	0	6	V
INPUT VOLTAGE	-	GND	Vcc	V
OUTPUT CURRENT	Iout	0	30	mA
SOLDERING TEMPERATURE*	-		240	°C
OPERATING TEMPERATURE	Topr	0	70	°C
STORAGE TEMPERATURE	Tstg	-40	85	°C

* 10 SEC. ON LEADS ONLY

RECOMMENDED OPERATING CONDITIONS

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNITS
POWER SUPPLY VOLTAGE	Vcc	4.75	5	5.25	V
OPERATING TEMPERATURE	Topr	0		70	°C
DATA RATE			155		Mbit/s



*UNLESS OTHERWISE SPECIFIED TOLERANCES PER DECIMAL PRECISION ARE: X=±1 (±0.039), XX=±0.5 (±0.020), XXX=±0.25 (±0.010), XXXX=±0.127 (±0.005). LEAD SIZE=±0.05 (±0.002), LEAD LENGTH=±0.75 (±0.030). MIN=+DECIMAL PRECISION -0.00 MAX.=+0.00 -DECIMAL PRECISION

REV.
APART NUMBER
LLD-1515550SSC

1550nm-155Mbps SINGLE MODE TRANSCEIVER.

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RELIABILITY NOTE

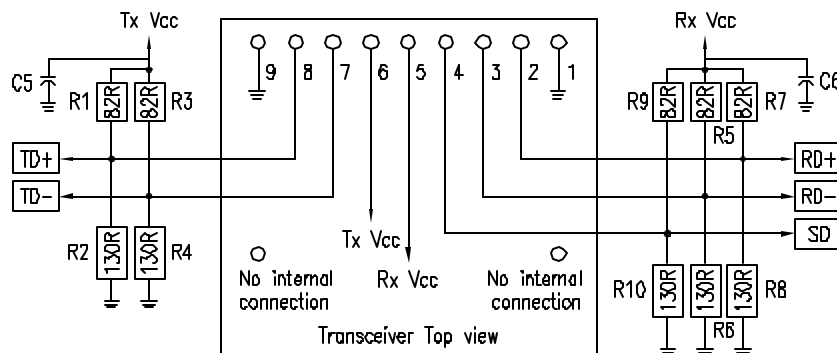
OUR MANY YEARS OF EXPERIENCE DATA ACCUMULATION INDICATE THAT SOLDER HEAT IS A MAJOR CAUSE OF EARLY AND FUTURE FAILURE. PLEASE PAY ATTENTION TO YOUR SOLDERING PROCESS.



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RECOMMENDED CIRCUIT SCHEMATIC



NOTES:

R1=R3=R5=R7=R9=82Ω
R2=R4=R6=R8=R10=130Ω
C1=C2=C3=C5=C6=0.1μF
C4=10μF
L1=L2=1μH

The split-load terminations for ECL signals need to be located at the input of devices receiving those ECL signals. The power supply filtering is required for good EMI performance. Use short traces from the inductor L1/L2 to the module Rx Vcc and Tx Vcc. A ground plate under the module is required for good EMI and sensitivity performance.

CONNECTION DIAGRAM

Receiver Signal Ground	1. (Rx GND)	○
Receiver Data Out	2. (RD+)	N/C
Receiver Data Out Bar	3. (RD-)	
Signal Detect	4. (SD)	
Receiver Power Supply	5. (Rx Vcc)	TOP VIEW
Transmitter Power Supply	6. (Tx Vcc)	
Transmitter Data Out Bar	7. (TD-)	
Transmitter Data In	8. (TD+)	N/C
Transmitter Signal Ground	9. (Tx GND)	○

PIN	SYMBOL	NOTES:
1	Rx GND	Directly connect this pin to the receiver ground plate.
2	RD+	See recommended circuit schematic.
3	RD-	See recommended circuit schematic.
4	SD	Active high on this indicates a received optical signal.
5	Rx Vcc	+5v dc power for the receiver section.
6	Tx Vcc	+5v dc power for the transmitter section.
7	TD-	See recommended circuit schematic.
8	TD+	See recommended circuit schematic.
9	Tx GND	Directly connect this pin to the transmitter ground plate.

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PAGE: 1 OF 1

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TRANSMITTER SPECIFICATIONS ($0^{\circ}\text{C} < T_{opr} < 70^{\circ}\text{C}$, $4.75\text{V} < V_{cc} < 5.25\text{V}$)

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	NOTES:
OPTICAL TRANSMIT POWER	P_o	-15	---	-7	dBm	(1)
OUTPUT CENTER WAVELENGTH	λ	1510	1550	1590	nm	
OUTPUT SPECTRUM WIDTH	$\Delta\lambda$	---	---	7.7	nm	RMS
EXTINCTION RATIO	E_R	8.2	---	---	dB	
OUTPUT PULSE MASK	Compliant with FDDI SMF-PMDI					
OUTPUT EYE	Compliant with Bellcore TR-NWT-000253 and ITU recommendation G.957					
OPTICAL RISE TIME	t_r			2	ns	(2)
OPTICAL FALL TIME	t_f			2	ns	(2)
RELATIVE INTENSITY NOISE	RIN			-120	dB/Hz	
TOTAL JITTER	TJ			1.2	ns	(3)
POWER SUPPLY CURRENT	I_{cc}			140	mA	(4)
DATA INPUT CURRENT-LOW	I_{IL}	-350			μA	
DATA INPUT CURRENT-HIGH	I_{IH}			350	μA	
DIFFERENTIAL INPUT VOLTAGE	$V_{IH}-V_{IL}$	300			mV	
DATA INPUT VOLTAGE-LOW	$V_{IL}-V_{CC}$	-2.0		-1.58	V	(5)
DATA INPUT VOLTAGE-HIGH	$V_{IH}-V_{CC}$	-1.1		-0.74	V	

(1) Output power is coupled into a 9/125 μm single mode fiber.
 (2) 10%-90% Values
 (3) Measured with $2^{23}-1$ PRBS with 72 ones and 72 zeros
 (4) Maximum current is specified at V_{cc} = Maximum @ maximum temperature.
 (5) These inputs are compatible with 10K, 10KH, and 100KECL and PECL inputs.

RECEIVER SPECIFICATIONS ($0^{\circ}\text{C} < T_{opr} < 70^{\circ}\text{C}$, $4.75\text{V} < V_{cc} < 5.25\text{V}$)

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	NOTES:
SENSITIVITY	---	---		-34	dBm	(1)
MAXIMUM INPUT POWER	P_{in}	-5		---	dBm	
SIGNAL DETECT-ASSERTED	P_a	---		-34	dBm	(2)
SIGNAL DETECT-DEASSERTED	P_d	-47		---	dBm	(3)
SIGNAL DETECT-HYSTERESIS		1.0		4.0	dB	
WAVELENGTH OF OPERATION		1100		1600	nm	
POWER SUPPLY CURRENT	I_{cc}			100	mA	(4)
DATA OUTPUT VOLTAGE-LOW	$V_{OL}-V_{CC}$	-2		-1.58	V	(5)
DATA OUTPUT VOLTAGE-HIGH	$V_{OH}-V_{CC}$	-1.1		-0.74	V	
SIGNAL DETECT	LOW	$V_{SDH}-V_{CC}$	-2	-1.58	V	
OUTPUT VOLTAGE	HIGH	$V_{SDL}-V_{CC}$	-1.1	-0.74	V	

(1) Measured with $2^{23}-1$ PRBS with 72 ones and 72 zeros. (ITU-T recommendation G.958)
 (2) Measured on transition: low to high.
 (3) Measured on transition: high to low.
 (4) The current excludes the output load current.
 (5) These inputs are compatible with 10K, 10KH, and 100KECL and PECL inputs.

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