SERIES: DM7041 | DESCRIPTION: SFP 1000BASE-T TRANSCEIVER

FEATURES

- Supports links up to 100 m using Cat5 cable
- IEEE 802.3z, IEEE 802.3u, IEEE 802.3ab compliant
- SFP MSA compliant
- Hot-pluggable SFP footprint
- RJ-45 connector
- 1000BASE-T, full duplex default operating mode
- 10/100/1000BASE-T operation on platforms supporting SGMII
- I2C 2-Wire Serial Interface for Serial ID and PHY Registers
- Auto MDI/MDIX crossover
- Low power consumption
  - (1.0 W max, 800 mW typ, 100 m @ 1.0 G)
- ROHS compliant
- Robust die cast housing
- Bail latch style ejector mechanism
- Unshielded and shielded cable support
- Commercial operating temperature range (-5 to 85°C)
- FCC Class A compliant

MODEL	Speed [Mbps]	Host Interface	Power Consumption max [W]	Reach max [m]	Cable Type	Features
DM7041-R	10 ~ 1000	SGMII	1.0	100	Cat5/5e	EEPROM locked, LOS grounded
DM7041-R-L	10 ~ 1000	SGMII	1.0	100	Cat5/5e	EEPROM locked, LOS operational
DM7041-RW	10 ~ 1000	SGMII	1.0	100	Cat5/5e	EEPROM writable, LOS grounded
DM7041-RW-L	10 ~ 1000	SGMII	1.0	100	Cat5/5e	EEPROM writable, LOS Operational

PART NUMBER KEY

DM7041 - XX - X

Type / Product Series
DM7041 = Product Series

EEPROM
R = EEPROM locked
RW = EEPROM writable

Loss of Signal
(blank) = LOS grounded
L = LOS operational

ELECTRICAL - HOST INTERFACE

Parameter	Conditions	Min	Typ	Max	Units
Supply voltage	Vcc	3.135	3.3	3.465	VDC
Low speed input voltage		-0.5		Vcc+0.3	V
2-wire interface input voltage		-0.3		Vcc+0.5	V
Power consumption	100 m @ 25°C ambient, 1.0 Gbps		0.8	1.0	W
Host interface	SGMII / data transfer over 1.25 GHz PECL differential interface				
Data rate	Full duplex, over SGMII interface	10		1000	Mbps

ELECTRICAL - MEDIUM-DEPENDENT INTERFACE (MDI)

Parameter	Conditions	Min	Typ	Max	Units
Ethernet standard	IEEE 802.3z, IEEE 802.3u, IEEE 802.3ab				
Reach				100	m
Cable / medium	Cat5/5e				
Configuartion	Auto MDI/MDIX crossover				
Auto-negotiation	Transparent MAC-to-link partner				

MANAGEMENT INTERFACE

Parameter	Conditions	Min	Typ	Max	Units
Serial interface	I^2C 2-wire serial interface for Serial ID and PHY register access				
EEPROM	Serial ID EEPROM at address 0xA0 (SFF-8472 base/extended ID fields)				
Status signals	Rx_LOS (link status), Tx_Fault, Mod_ABS, Rate Select (RS0/RS1)				

SFP PIN ASSIGNMENT

Pin	Symbol	Function	Pin	Symbol	Function
1	VeeT	Transmitter ground	11	VeeR	Receiver ground
2	Tx_Fault	Transmitter fault, internally tied to GND, not operational	12	RD-	Receiver inverted data output
3	Tx_Disable	Transmitter disable (used as a reset)	13	RD+	Receiver non-inverted data output
4	SDA	2-wire serial interface data line	14	VeeR	Receiver ground
5	SCL	2-wire serial interface clock	15	VccR	Receiver 3.3V supply
6	Mod_ABS	Module absent, connected to VeeT or VeeR in the module	16	VccT	Transmitter 3.3V supply
7	RS0	Rate select 0, not used, internally pulled to GND with 33 kΩ	17	VeeT	Transmitter ground
8	Rx_LOS	Receiver loss of signal indication	18	TD+	Transmitter inverted data output
9	RS1	Rate select 1, tied internally to GND	19	TD-	Transmitter inverted data input
10	VeeR	Receiver Ground	20	VeeT	Module transmitter ground

Notes:
1. The module signal grounds should be isolated from the module case.
2. LOS operation is an option, can be operational or GND.

SAFETY AND COMPLIANCE

Parameter	Compliant			
Safety approvals	Certified to IEC 60950			
Isolation	At 50 to 50 Hz applied for 60 sec Applied for 60 sec	1500 2250		Vrms VDC
Flammability	SFP module min. V-0 UL flame rated			
RoHS	Compliance with RoHS and Halogen Free			

ENVIROMENTAL

Parameter	Conditions	Min	Typ	Max	Units
Operating temperature	Tc, commercial / industrial grade	-5		85	°C
Storage temperature	Ts	-40		85	°C
Humidity	RH, Relative, Non-condensing	5		95	%

MECHANICAL

Parameter	Conditions	Min	Typ	Max	Units
Form factor	SFP (Small Form-factor Pluggable), MSA compliant				
Housing	Robust die cast				
Connector	RJ-45				
Ejector mechanism	Bail latch				
Dimensions	2.71 x 0.538 x 0.550		2.71 x 0.538 x 0.550		inch
Weight			X		g

MECHANICAL DRAWING

Units (in)

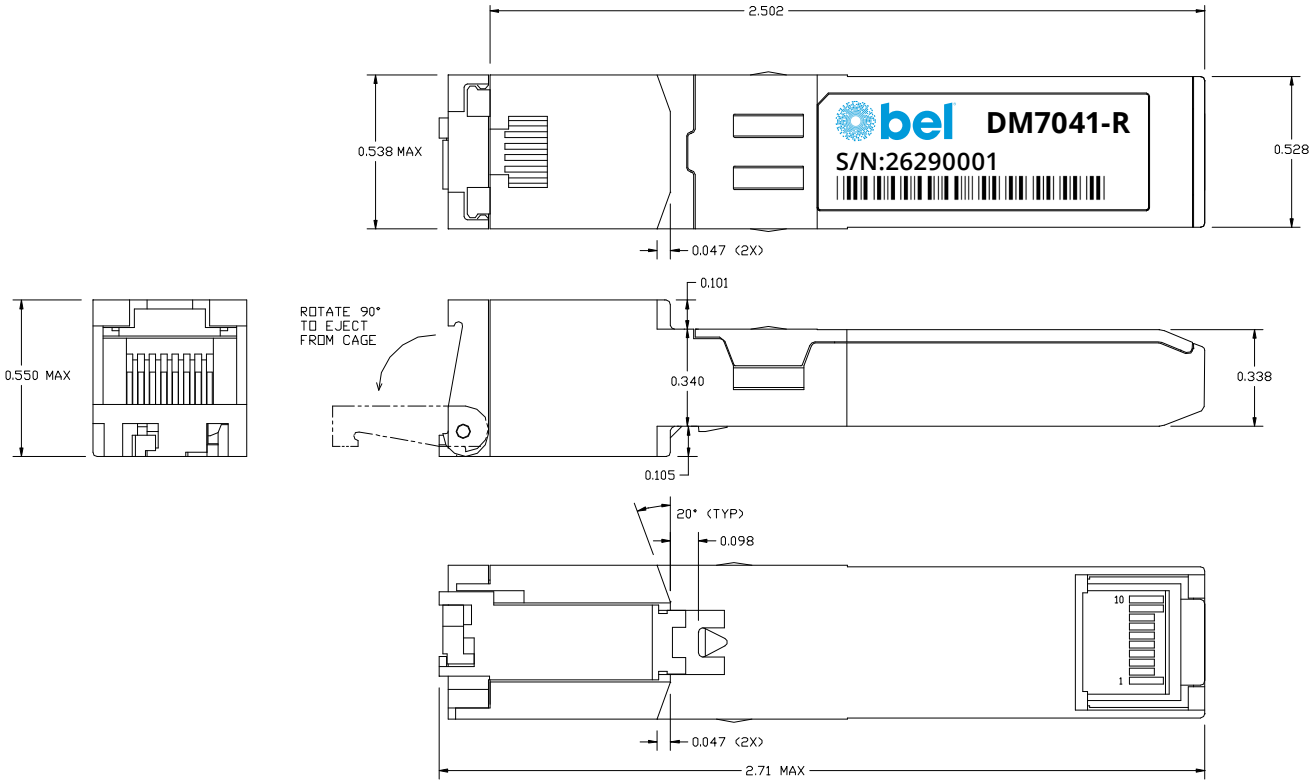

Figure 1. Mechanical drawing

FUNCTIONAL BLOCK DIAGRAM

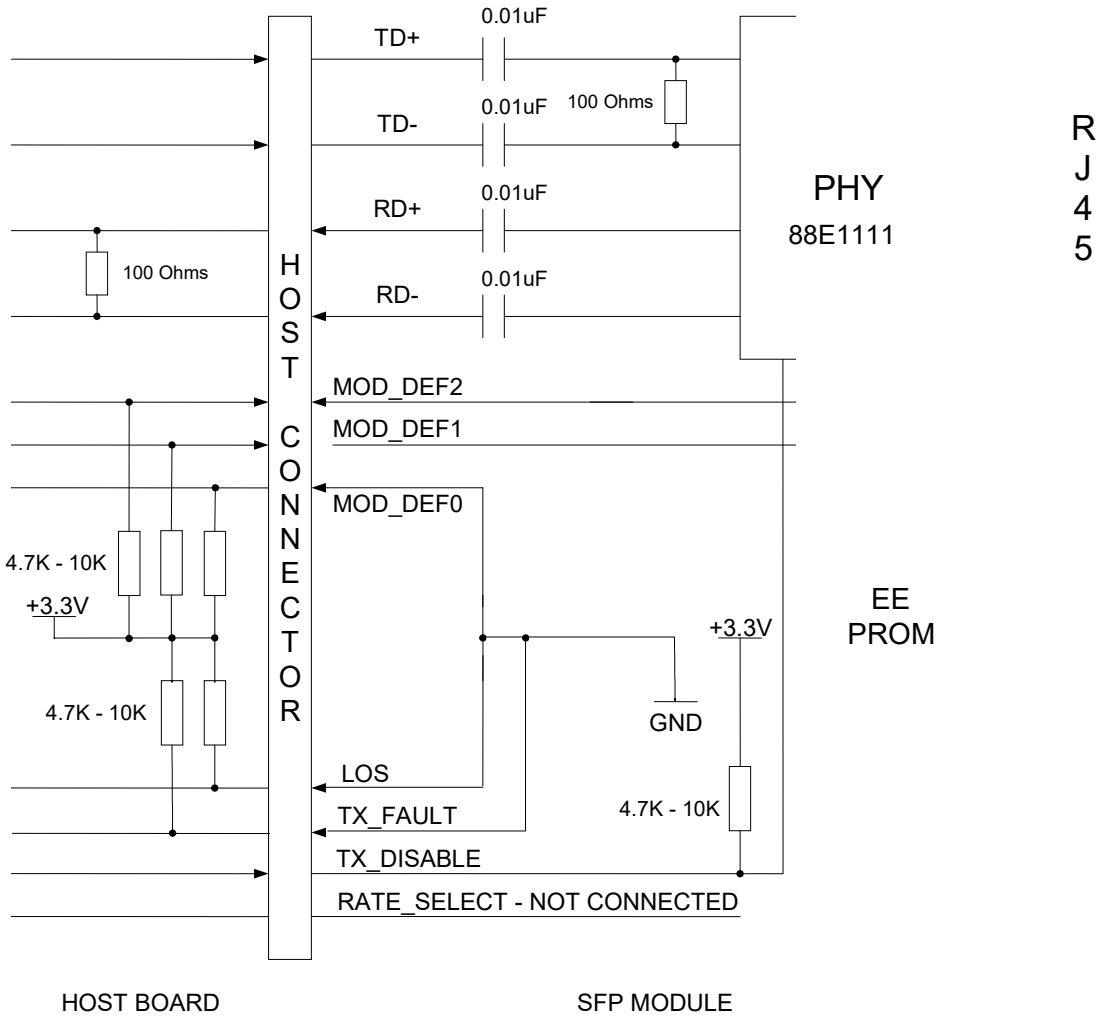

Figure 2. Block diagram

LATCH REQUIREMENTS

Parameter	Conditions	Min	Typ	Max	Units
SFP transceiver insertion	Without cage kick-out spring force; nominal cage			18	N
SFP transceiver extraction	Without cage kick-out spring force; nominal cage			12.5	N
SFP transceiver retention	No functional damage below 90 N	90		170	N
Insertion/removal cycles	No functional damage to module, cage, or connector	50			cycles

Note:
3. Bail-type ejector latch releases the module regardless of row position when adjacent SFP ports are populated; passes RJ-45 connector "wiggle" stress test.

SERIAL IDENTIFICATION (EEPROM, ADDRESS 0xA0)

Data Address	Field Size	Field Name	Field Description	Field Value	Value Description
BASE ID FIELDS					
0	1	Identifier	Type of transceiver	03	SFP TRANSCEIVER
1	1	Ext. Identifier	Extended identifier of type of serial transceiver	04	WITH SERIAL ID
2	1	Connector	Code for connector type	22	RJ-45 conn
3-10	8	Transceiver	Code for electronic or optical compatibility	00,00,00,08, 00,00,00,00	1000BASE-T Ethernet Compliant
11	1	Encoding	Code for serial encoding algorithm	01	8B/10B
12	1	BR, Nominal	Nominal signaling rate, units of 100Mbits/sec	0d	1250 bps GbE rate
13	1	Rate Identifier	Type of rate select functionality	00	UNSPECIFIED
14	1	Length (SMF, km)	Link length supported for single mode fiber, units of km	00	NA
15	1	Length (SMF)	Link length supported for single mode fiber, units of 100 m	00	NA
16	1	Length (50 µm)	Link length supported for 50µm OM2 fiber, units of 10 m	00	NA
17	1	Length (62.5 µm)	Link length supported for 62.5µm OM1 fiber, units of 10 m	00	NA
18	1	Length (cable)	Link length supported for copper or direct attach cable, units of m	64	100m @ 1G
19	1	Length (OM3)	Link length supported for 50µm OM3 fiber, units of 10m	00	RESERVED
20-35	16	Vendor name	SFP vendor name (ASCII)	42,65,6C,20,50,6F, 77,65,72,20,49,6E, 63,2E,20,20	Bel Power Inc. (ASCII)
36	1	Transceiver	Code for electronic or optical compatibility	00	Unspecified
37-39	3	Vendor OUI	SFP transceiver vendor IEEE company ID	50,22,C9	Bel Power OUI
40-55	16	Vendor PN	Part number provided by SFP transceiver vendor (ASCII)	44,4d,37,30,34,31, 2D,xx,xx,20,20,20, 20,20,20,20	DM7041-xx (ASCII)
56-59	4	Vendor rev	Revision level for part number provided by vendor (ASCII)	41,20,20,20	56: Part Rev “A“ 57: Reserved 58: Reserved 59: Reserved
60-61	2	Wavelength	Laser wavelength (Passive/Active Cable Specification Compliance)	41,0c	PHY REG 2 [7:0], PHY REG 3 [15:8]
62	1	Unallocated		C1	PHY REG 3 [7:0]
63	1	CC_BASE	Check code for BASE ID Fields (addresses 0 to 62)	VARIES	
EXTENDED ID FIELDS					
64-65	2	Options	Indicates which optional SFP signals are implemented	00,00	
66	1	BR, max	Upper bit rate margin, units of %	00	
67	1	BR, min	Lower bit rate margin, units of %	00	
68-83	16	Vendor SN	Serial number provided by vendor (ASCII)	VARIES	(ASCII)
84-91	8	Date code	Vendor’s manufacturing date code	VARIES	YY-MM-DD-LOT#
92	1	Diagnostic Monitoring Type	Indicates which type of diagnostic monitoring is implemented (if any)	00	None included
93	1	Enhanced Options	Indicates which optional enhanced features are implemented (if any)	00	None included
94	1	SFF-8472 Compliance	Indicates which revision of SFF-8472 the transceiver complies with	00	None included
95	1	CC_EXT	Check code for the Extended ID Fields (addr. 64 to 94)	VARIES	Checksum
96-127	32	Vendor Specific	Vendor Specific EEPROM	All FF’s	
128-255	128	Reserved	Reserved	All FF’s	

REGULATORY & QUALIFICATION TESTING

Test	Method / Condition
Radiated Emission (RE)	Meets Class A requirements (≥6 dB margin)
Electrostatic Discharge (ESD)	IEC 61000-4-2 (Direct: 15 kV air / 8 kV contact; Indirect: 8 kV contact)
RF Immunity	IEC 61000-4-3 (80 – 1000 MHz) and GR-1089
Fast Transients	IEC 61000-4-4 (1 kV for signal port)
Surge on Signal Ports	IEC 61000-4-5 (2 kV common mode, 1 kV differential mode)
Conducted Immunity	IEC 61000-4-6 (10 V)
Relative Humidity (non-operational)	MIL-STD-810 Method 507.3, Procedure III, for five 24 hour cycles. The maximum relative humidity is 95%.
Mechanical Shock	Half-sine wave, 80G peak, 2 ms pulse width, in all directions at velocity change limit 2.39 m/s.
Vibration	MIL-STD-810, Method 514.4. Random vibration, 0.41 Grms over 3–500 Hz, 3 perpendicular axis, 2 hrs per axis.
Altitude	MIL-STD-810, Method 500.3

ORDERING INFORMATION & PACKAGING

Packaging Option	Packaging Specification	QTY	Packaging Code	Notes
Tray	Anti-static tray	-	-	-

REVISION HISTORY

Rev.	Description	Date
1	Initial release	07/30/2026
A		

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