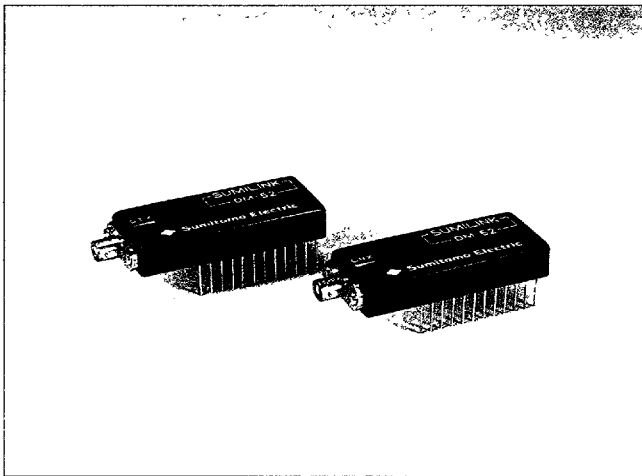


# High Speed Fiber Optic

T-41-91

## Transmitter/Receiver Module (DM-52)



### FEATURES

- High Speed: DC~20M b/s NRZ
- Low Profile: 9mm thick
- Mountable on Printed Circuit Board
- 24-pin DIP Packages
- 1300nm Wavelength
- Long-Distance Transmission: up to 10km
- Fast Peak Hold ATC Function
- Suitable for Ethernet Type Networks
- TTL Input/Output Interface
- Wide Optical Dynamic Range
- Applicable Connector: Mini-BNC

### DESCRIPTION

DM-52 is a high-speed fiber optic transmitter/receiver module designed for digital data transmission through optical fiber cables. This module can be mounted on printed circuit boards without a heat sink. DM-52 can transmit digital data signals of DC~20Mb/s. Input/Output signal levels are TTL. TTL input signals are converted to the optical ON/OFF signals with InGaAsP LED. Optical input signals are reconverted to electrical signals with InGaAs PIN-PD ATC (Automatic Threshold Control) function using fast peak hold technique is provided for DMR-52. DMR-52's quick response to burst signals makes it suitable for use in fiber optic data buses, such as the Ethernet

DM-52 can be used in the same manner as the conventional TTL-IC. DM-52 is a high output power transmitter module and designed to be used for 50/125 $\mu$ m\* fiber, 63/125 $\mu$ m\* fiber and 100/140 $\mu$ m\* fiber.

DM-52 has a maximum transmission distance of 10km

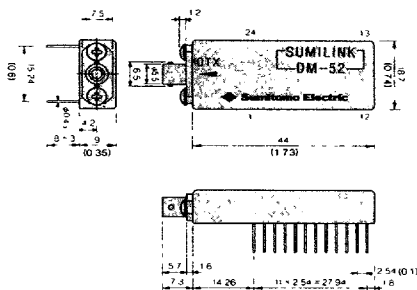
\*core dia /cladding dia

### PACKAGE DIMENSION

#### A. Transmitter

Pin	Function
12	Ground
13	Vbb
14	Transmitted Data (Negative)
15	Transmitted Data (Positive)
24	+5V

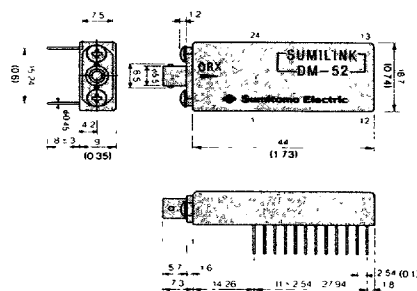
Vbb Reference Voltage  
Others NC



#### B. Receiver

Pin	Function
10	Received Data (Positive)
11	Received Data (Negative)
12	Ground
13	-5V
24	+5V

Others NC



unit mm  
(inch)

### ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Min.	Max.	Units	Notes
Storage Temperature	T <sub>s</sub>	-40	85	°C	
Operating Temperature	T <sub>A</sub>	-10	50	°C	
Lead Soldering	Temperature		260	°C	1
	Time		10	S	
Supply Voltage	+V <sub>cc</sub>	-0.5	+7.0	V	
	-V <sub>cc</sub>	-7.0	+0.5		
Data Input Voltage	V <sub>i</sub>	-0.5	5.5	V	



SUMITOMO ELECTRIC

**RECOMMENDED OPERATING CONDITIONS**
**Transmitter (DMT-52)**

Parameter	Symbol	Min.	Max.	Units	Notes
Ambient Temperature	T <sub>A</sub>	-10	50	°C	
Supply Voltage	V <sub>CC</sub>	4.75	5.25	V	2
High Level Input Voltage	V <sub>IH</sub>	2.0	V <sub>CC</sub>	V	
Low Level Input Voltage	V <sub>IL</sub>	0	0.8	V	
Data Input Voltage	I <sub>IH</sub>	50		nsec	
Pulse Duration	I <sub>LL</sub>				

**Receiver (DMR-52)**

Parameter	Symbol	Min.	Max.	Units	Notes
Ambient Temperature	T <sub>A</sub>	-10	50	°C	
Supply Voltage	+V <sub>CC</sub> -V <sub>CC</sub>	4.75 -5.25	5.25 -4.75	V	
Supply Ripple (Peak to Peak)	ΔV <sub>CC</sub>		250	mV	2
High Level Output Current	I <sub>OH</sub>		-1	mA	
Low Level Output Current	I <sub>OL</sub>		10	mA	
Peak Optical Input	P <sub>in</sub>	50/125μm Fiber	-32	dBm	
63/125μm Fiber		-32			
100/140μm Fiber		-31			
Optical Input Pulse Duration	High Level Low Level	I <sub>IH</sub> I <sub>LL</sub>	50	nsec	

**DYNAMIC CHARACTERISTICS (T<sub>A</sub> = 25°C)**

Parameter	Symbol	Min.	Typ.	Max.	Units	Conditions	Notes
Propagation Delay	t <sub>PHL</sub>		70	120	ns		
			t <sub>PLH</sub>	70			
Bit Error Rate at 20M b/s	BER			10 <sup>-9</sup>		P <sub>in</sub> = -32dBm	3
Duty Cycle	DC	0		100	%		
Allowable Optical Loss	AL		12		dB	with 50/125μm Fiber	
			16			with 63/125μm Fiber	
			16			with 100/140μm Fiber	

**ORDERING INFORMATION**

	Ordering No.
Transmitter module	DMT-52
Receiver module	DMR-52
Connector cable assembly (50/125μm Fiber)	JLW-0510SA
Connector cable assembly (63/125μm Fiber)	JLW-0610SA
Connector cable assembly (100/140μm Fiber)	JLW-1010SA

■ This specification is subject to change without a prior announcement


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**ELECTRICAL/OPTICAL CHARACTERISTICS (T<sub>A</sub> = 25°C)**
**Transmitter (DMT-52)**

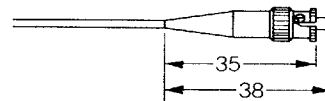
Parameter	Symbol	Min.	Typ.	Max.	Units	Conditions	Notes
High Level Input Current	I <sub>IH</sub>			0.1	mA	V <sub>CC</sub> = 5.25V V <sub>I</sub> = 2.4V	
Low Level Input Current	I <sub>IL</sub>			-0.4	mA	V <sub>CC</sub> = 5.25V V <sub>I</sub> = 0.4V	
Supply Current	I <sub>CC</sub>		100	150	mA	Data Input High or Low V <sub>CC</sub> = 5.25V	
Peak Optical Output	P <sub>O</sub>	-20			dBm	V <sub>CC</sub> = 5V with 50/125μm Fiber	4.5
		-16				V <sub>CC</sub> = 5V with 63/125μm Fiber	
		-15				V <sub>CC</sub> = 5V with 100/140μm Fiber	
Peak Emission Wavelength	λ <sub>PE</sub>	1290		1330	nm		

**Receiver (DMR-52)**

Parameter	Symbol	Min.	Typ.	Max.	Units	Conditions	Notes
Output Voltage	V <sub>OH</sub> V <sub>OL</sub>	High State	2.4	3.3	V	I <sub>OH</sub> = -1mA V <sub>CC</sub> = ±4.75V	
		Low State	0.25	0.5			
Supply Current	I <sub>CC</sub> -I <sub>CC</sub>		60	100	mA	V <sub>CC</sub> = ±5.25V	
			60	100			
Peak Responsivity Wavelength	λ <sub>PR</sub>		1600		nm		

**Notes**

- 1 Measured at a point 2mm from where the lead enters the package
- 2 A supply decoupling network of 100μH with 68μF is recommended
- 3 Measured with NRZ data, (2<sup>20</sup> - 1) PRBS 63/125μm fiber
- 4 The fiber is 10m length with Mini-BNC connectors at both ends.
- 5 Transmitted Data (Positive) = 'L', Transmitted Data (Negative) = 'H'

**Applicable Connector**


Unit mm

- SEI P/N CAM-125S/L-140
- Mini BNC Type
- Low cost and low loss
- Easy field assembly