

78Z060B/060BSMD and 78Z062B/062BSMD Transceiver Interface Modules

Key Features

- Module includes both transmit and receive channels
- Module supports both media, 150 Ohm STP and 100 Ohm UTP transmission
- Robust matching for excellent return loss
- Exceeds IEEE 802.5 1989 Token Ring specification for STP cable, and meets current proposal for UTP cable
- Meets IEEE 802.5q7/D4 4/16 Mbps zeros and ones template
- Both surface mount and through-hole packaging available
- Simple interface to TMS38054
- Designed and tested to withstand infrared soldering

SurfaceMount

- Proven in all surface mount soldering processes
- Available in tubes; tape and reel optional

Through-Hole

- Low-profile DIP package
- Auto insertable

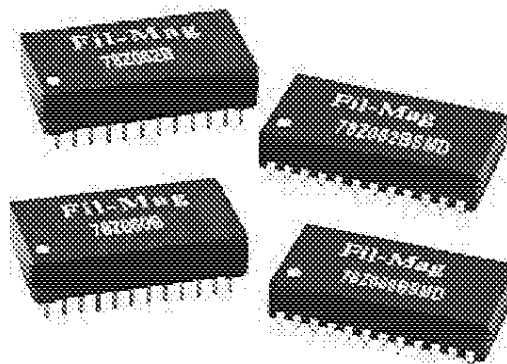
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Dual Speed Token Ring Interface for 150 Ohm STP & 100 Ohm UTP Media

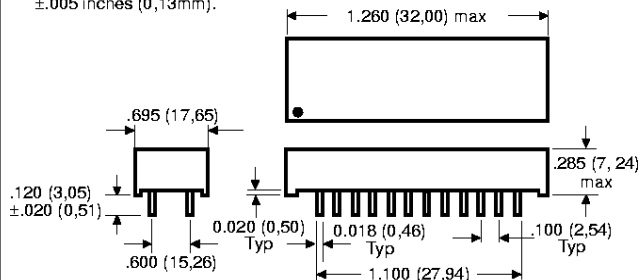


Electrical Specifications at 25°C

Part No.	Insertion Loss (dB)		Return Loss (dB) min		CMRR (dB) min		CMDM (dB) min		Differential Group Delay (ns) min/max	
	Spec	Freq	Spec	Freq	Spec	Freq	Spec	Freq	Spec	Freq
78Z060B	-3.0 max	12 kHz	-20.0	1-5 MHz	-65.0	100 kHz	-70.0	100 kHz	0.0/0.4	2-4 MHz
78Z060BSMD	-0.8 max	16 MHz	-15.0	10-16 MHz	-30.0	20 MHz	-55.0	10 MHz	-0.3/0.0	4-8 MHz
78Z062B	-1.7 max	24 MHz	-8.0	24 MHz	-20.0	200 MHz	-25.0	100 MHz	0.51/1.25	8-16 MHz
78Z062BSMD	-7.0 min	32 MHz							2.5/4.8	8-24 MHz

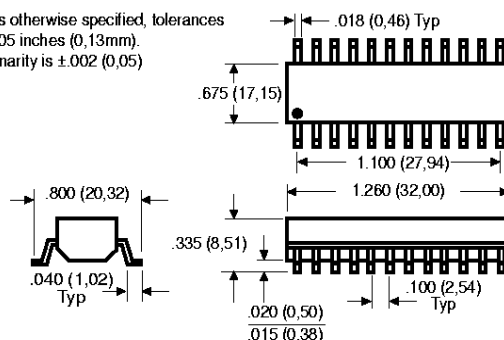
78Z060B/062B Mechanical Specifications

Unless otherwise specified, all tolerances are
±.005 inches (0,13mm).



78Z060BSMD/062BSMD Mechanical Specifications

Unless otherwise specified, tolerances
are .005 inches (0,13mm).
Coplanarity is ±.002 (0,05)

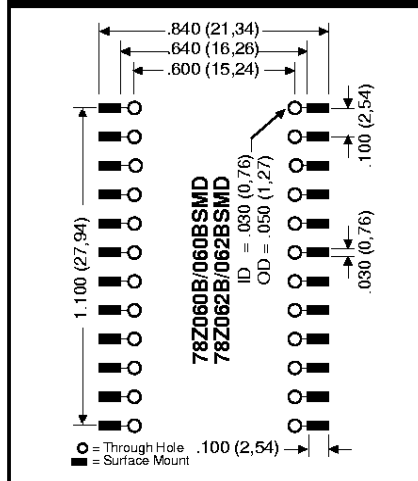


78Z060B/060BSMD and 78Z062B/062BSMD Transceiver Interface Modules



Dual Speed Token Ring Interface for 150 Ohm STP & 100 Ohm UTP Media

Pad Layout



Pin Descriptions

Pin #	Symbol	Function Description
1	Vcc	+5 VDC ($\pm 10\%$). Required for biasing the over voltage protection circuit.
2	RCVINA	Filtered differential Manchester receive data to the I.C. Connect pin 38 of the TMS38054.
3	GND	Ground. Required for biasing the overvoltage protection circuit.
4	RCVINB	Filtered differential Manchester receive data to the I.C. Connect to pin 37 of the TMS38054.
5	PHRETA	Return path for phantom drive on the "A" receive channel. Can be used for fault determination and to allow sensing the presence of phantom drive. Pin to be left unconnected on 78Z060B/78Z060BSMD.
6	PHRETB	Return path for phantom drive on the "B" receive channel. Can be used for fault determination and to allow sensing of the presence of phantom drive. Pin to be left unconnected on 78Z060B/78Z060BSMD.
9	GND	Ground. Required for biasing the overvoltage protection circuit.
10	DROUTB	Differential Manchester transmit data from the I.C. Connect to pin 31 of the TMS38054.
11	Vcc	+5 VDC ($\pm 10\%$). For constant coil bias of the differentially driven center-tapped isolation transformer.
12	DROUTA	Differential Manchester transmit data from the I.C. Connect to pin 32 of the TMS38054.
13	PHOUTA	Phantom drive input port, provided for the convenience of transmitting an activated ring insertion command to the concentrator from the front end I.C. Connect to pin 29 of the TMS38054.
14	PHOUTB	Phantom drive input port, provided for the convenience of transmitting an activated ring insertion command to the concentrator from the front end I.C. Connect to pin 27 of the TMS38054.
15	XMIT/09	Filtered, shaping differential Manchester transmit data, including phantom drive, to STP ring. Connect directly to the DB-9 pin 9, or the MIC's orange wire.
16	XMIT/B5	Filtered, shaping differential Manchester transmit data, including phantom drive, to STP ring. Connect directly to the DB-9 pin 5, or the MIC's black wire.
17	XMIT/6	Filtered, shaping differential Manchester transmit data, including phantom drive, to UTP ring. Connect directly to the RJ-45 pin 6.
18	XMIT/3	Filtered, shaping differential Manchester transmit data, including phantom drive, to UTP ring. Connect directly to the RJ-45 pin 3.
19	GND	Ground. Required for biasing.
20	RCV/5	Raw differential Manchester receive data, including phantom drive, from UTP ring. Connect directly to the RJ-45 pin 5.
21	RCV/4	Raw differential Manchester receive data, including phantom drive, from UTP ring. Connect directly to the RJ-45 pin 4.
22	RCV/R1	Raw differential Manchester receive data, including phantom drive, from STP ring. Connect directly to DB-9 pin 1 or the MIC's red wire.
23	RCV/G6	Raw differential Manchester receive data, including phantom drive, from STP ring. Connect directly to DB-9 pin 6 or the MIC's green wire.
24	GND	Ground. Allows return path for phantom drive on the receive channel. Pin to be left unconnected on 78Z062B/78Z062BSMD.

Note:

All other pins are not to be connected as they are manufacturing internal test points.

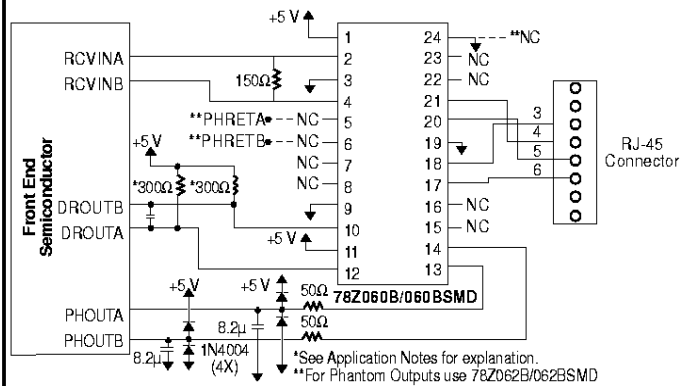
Operating/Storage Conditions

	Parameter	Test Condition	Min	Max	Units
T_A	Operating Temperature Range	Free Air	0	+70	$^{\circ}\text{C}$
T_S	Storage Temperature Range	Free Air	-55	+125	$^{\circ}\text{C}$

Note:

78Z060/060SMD for STP/UTP Transceiver Interface Module for adapter cards.
78Z0602/062SMD for STP/UTP Transceiver Interface Module with phantom circuits for hubs.

Suggested UTP Application Circuit for a Typical Node or with Phantom Outputs

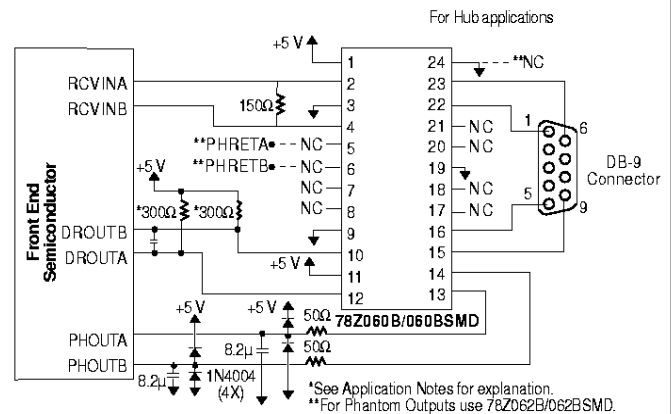


Application Notes:

Fil-Mag®'s Transceiver Interface Module is designed for use with IEEE-802.5 transceiver chips, i.e., TMS38054. The reference application circuits should serve as a starting point to design. To reduce induced noise, special attention should be given to the layout of the Token Ring interface circuitry, especially to the selection of components and their placement.

Transmit. The transmit channel provides a 300 Ω impedance to each side of the transceivers IC's output driver. This load represents the impedance reflected through the 2:1 isolation transformer. Signal switching is referenced to Vcc (+5 volts), with surge suppression limits at 0 and 10 volts. The 2:1 isolation transformer interfaces the IC drivers to a 150 Ω EMI filter. The cut-off frequency and phase characteristics of this filter are precisely controlled to maximize the attenuation of signal harmonics above 30 MHz, while minimizing signal delay distortion.

Suggested STP Application Circuit for a Typical Node or with Phantom Outputs

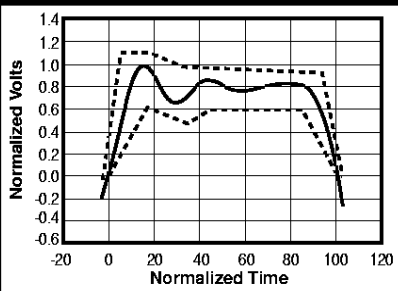


Receive. The receive channel consists of a surge suppression network, isolation transformer, low pass filter, and common mode choke. The cut-off frequency of the filter has been carefully placed to minimize attenuation and phase distortion on incoming signals. Together with the common mode choke, the filter network prevents impulse noise, picked up from the media, from entering the IC receiver input. External terminations allow for module flexibility in achieving high return loss.

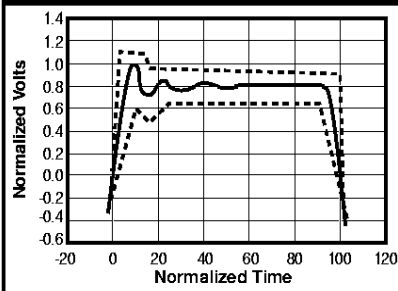
Important. Do not connect to both the UTP and STP simultaneously. The module has been optimized to support only one media connection at a time.

***Other Applications.** The 300 Ω termination resistors across pins 10 and 12 of the transmit channel are recommended for the TMS38054 Transceiver Chip. The typical capacitive load between these pins is 8 pF to 9 pF, which includes the chip and PC board. Additional capacitance may be required for other transceiver applications.

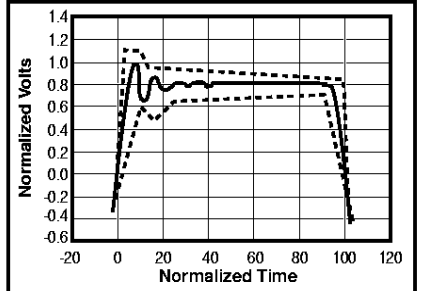
4 Mbps Binary Zeros



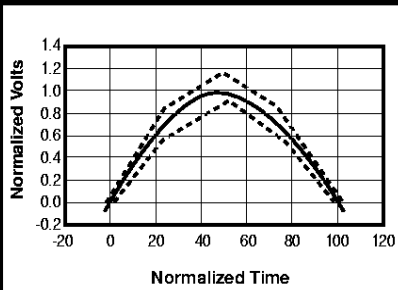
4 Mbps Binary Ones



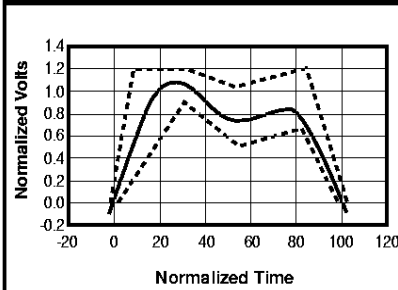
4 Mbps Start Delimeter



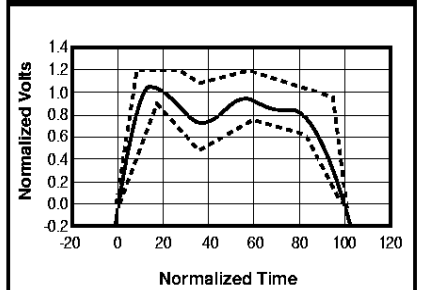
16 Mbps Binary Zeros



16 Mbps Binary Ones



16 Mbps Start Delimeter



Actual Voltage Template Tests Performed on the 78Z060B Series per IEEE 802.5q7/4 for STP and UTP Media.

The STP delivers a transmit signal with amplitude between 2.2 and 4.3 Vpp delivered from the differential manchester encoded data input.

For UTP, the transmit signal amplitude is between 2.0 and 3.9 Vpp.

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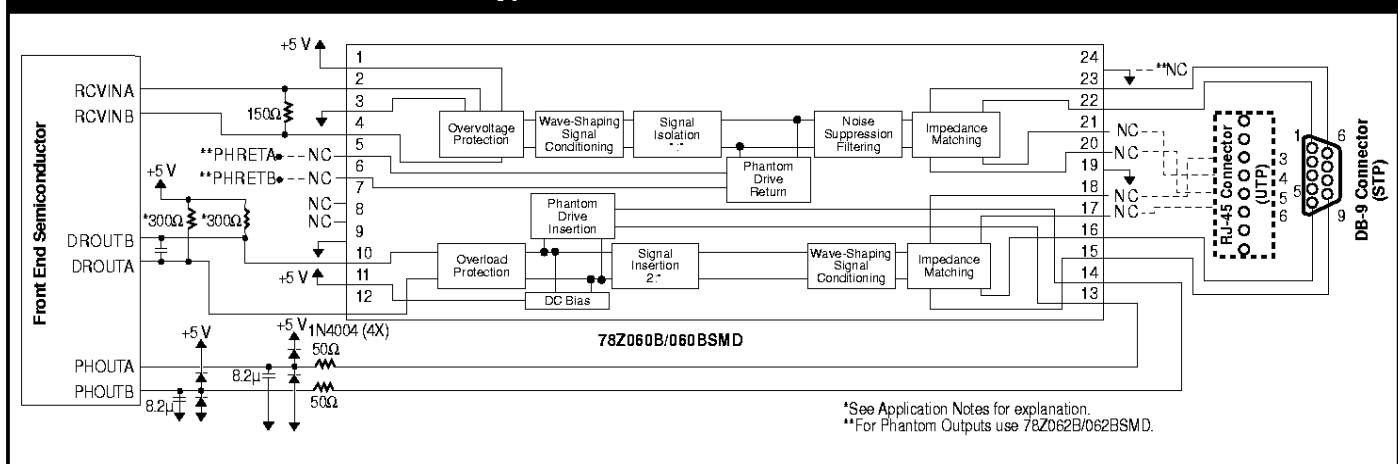
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78Z060B/060BSMD and 78Z062B/062BSMD Transceiver Interface Modules



Dual Speed Token Ring Interface for 150 Ohm STP & 100 Ohm UTP Media

Typical Circuit with STP/UTP Node



Description:

Fil-Mag's® Transceiver Interface Modules are designed specifically for use in Token Ring networks that adhere to the IEEE 802.5, 1989 and current proposal standards. These Models provide physical layer interface between front end semiconductors, i.e. TMS38054, and a DB-9 or a RJ-45 connector. These modules include transmit and receive channels and provide critical front end functions: signal conditioning and equipment isolation, EMI noise filtering and suppression, impedance matching, and overvoltage protection. The modules support transmission of both 4 Mbps and 16 Mbps data rates over either 100Ω unshielded twisted pair (UTP) or 150Ω shielded twisted pair (STP) media.

For maximum station performance, considerable care must be taken to control signal jitter and reflections. Some of this may be controlled by the

front end I.C., yet most of the transmission quality is determined by Fil-Mag's® device. With a few additional discretes for the phantom path, the physical linkage between the ring interface front end semiconductor and the media is complete.

Our Dual Token Ring Transceiver Modules are available in either a 24-pin low profile surface mount or through-hole package. The configuration and package options allow optimum flexibility on a PC board layout, while providing high frequency performance with minimal signal crosstalk. The modules are suited for installation into Token Ring boards, adapter cards, repeaters, concentrators, bridges, or MAU transceiver board applications.

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The components on this data sheet are Fil-Mag Legacy Parts.

In the construction of the components described, the full intent of the specification will be met. Pulse, however, reserves the right to make, from time to time, such departures from the detail specifications as may be required to permit improvements in the design of its products.

The information included herein is believed to be accurate and reliable. However, Pulse assumes no responsibility for its use, nor for any infringements of patents or other rights of third parties which may result from its use.



Corporate
12220 World Trade Drive
San Diego, CA 92128
Tel: 619 674 8100
FAX: 619 674 8262
<http://www.pulseeng.com>
Quick-Facts 619 674 9672

Europe
Millpool House
Mill Lane, Godalming
Surrey GU7 1EYU
U.K.
Tel: 441 483 428 8777
FAX: 441 483 416 011

Asia
P.O. Box 26-11 KEPZ
6 Central Sixth Road
KEPZ, Kaohsiung
Taiwan, R.O.C.
Tel: 886 821 3141
FAX: 886 7 841 9707

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