

SURFACE MOUNT 10BASE-T INTERFACE MODULES

Designed for AMD, DEC, LSI, Motorola,
and National Transceivers



- Fully integrated for Adapter Cards, Hubs, and Motherboard applications
- Designed to meet IEEE 802.3i-1993 10Base-T specifications
- Low profile surface mount package
- 235°C peak convection and infrared reflow temperature rating

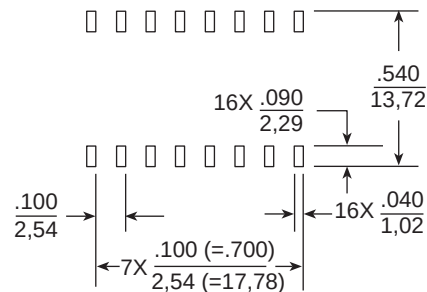
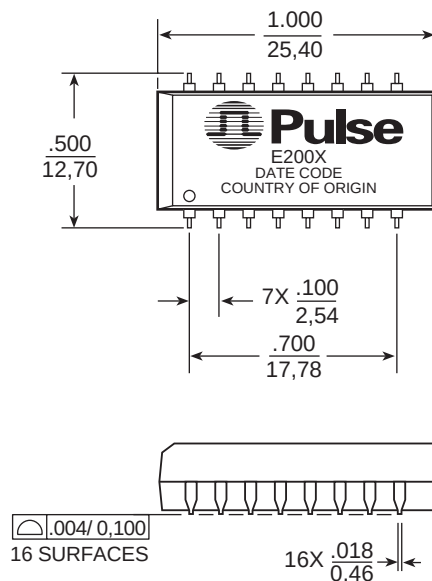
Electrical Specifications @ 25°C — Operating Temperature 0°C to 70°C

Part Number	Insertion Loss to 10 MHz (dB MAX)	Attenuation XMIT (dB MIN)			Return Loss 5 to 100 MHz (dB MIN)		Common Mode Rejection (Transmit) (dB MIN)				Crosstalk (dB MIN)	Hi-Pot (Vrms MIN)
		30 MHz	40 MHz	100 MHz	100 Ω	98 ±13 Ω	5 MHz	10 MHz	50 MHz	100 MHz		
E2001	-5.0	-30	-35	-40	-18	-15	-35	-30	-55	-50	-35	1500
E2003	-6.0	-30	-27	-27	-18	-15	-45	-35	-45	-30	-35	1500
E2004	-5.5	-30	-27	-27	-18	-15	-40	-35	-45	-45	-35	1500
E2005	-1.0	-30	-27	-27	-18	-15	-40	-30	-50	-45	-35	1500
E2007	-5.0	-30	-35	-40	-18	-15	-35	-30	-55	-50	-30	1500
E2009	-1.0	-30	-27	-27	-18	-15	-40	-35	-45	-45	-35	1500

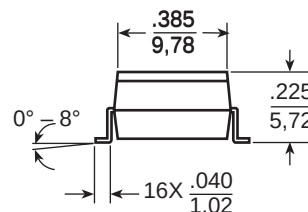
All TX turns ratios are 1:1, except the E2009 which has a turns ratio of $1:\sqrt{2}$.

Mechanical

E2001, E2003, E2004, E2005, E2007, E2009



SUGGESTED PAD LAYOUT



Weight 2.5 grams
Tape & Reel 350/reel
Tube 20/tube

Dimensions: $\frac{\text{Inches}}{\text{mm}}$ Unless otherwise specified, all tolerances are $\pm .010$ / ± 0.25

12220 WORLD TRADE DRIVE, SAN DIEGO, CALIFORNIA 92128 • TEL 619-674-8100 • FAX 619-674-8262 • <http://www.pulseeng.com>

PRELIMINARY E111.P (5/97)

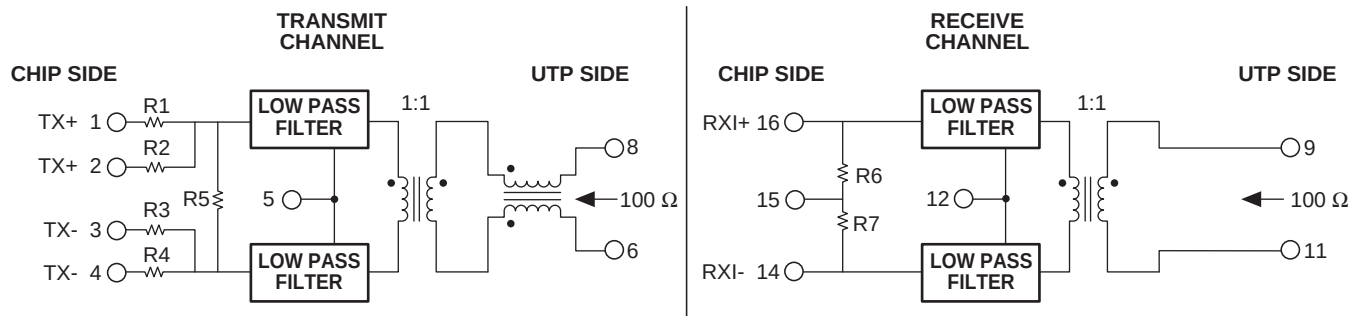
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Schematic

E2001, E2003, E2004, E2007

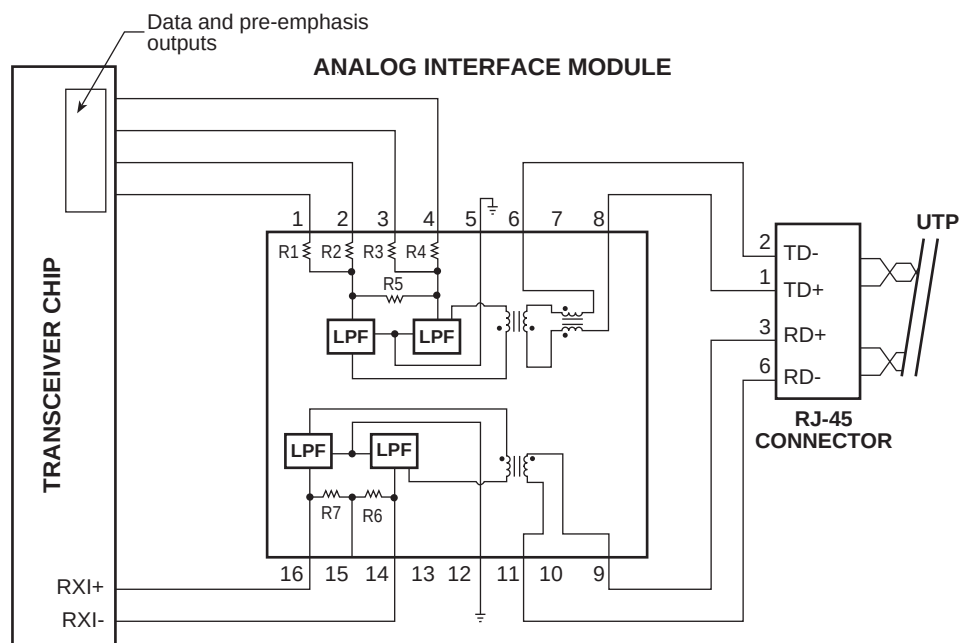


Resistor Values

Part Number	IC Manufacturer	R1 Ω	R2 Ω	R3 Ω	R4 Ω	R5 Ω	R6 Ω	R7 Ω
E2001	National	348	53.6	53.6	348	806 K	49.9	49.9
E2003	AMD	61.9	422	61.9	422	1.2 K	49.9	49.9
E2004	LSI	390	63.4	390	63.4	—	49.9	49.9
E2007	Motorola	39	—	39	—	—	49.9	49.9

Typical Application Circuit

E2001, E2003, E2004, E2007



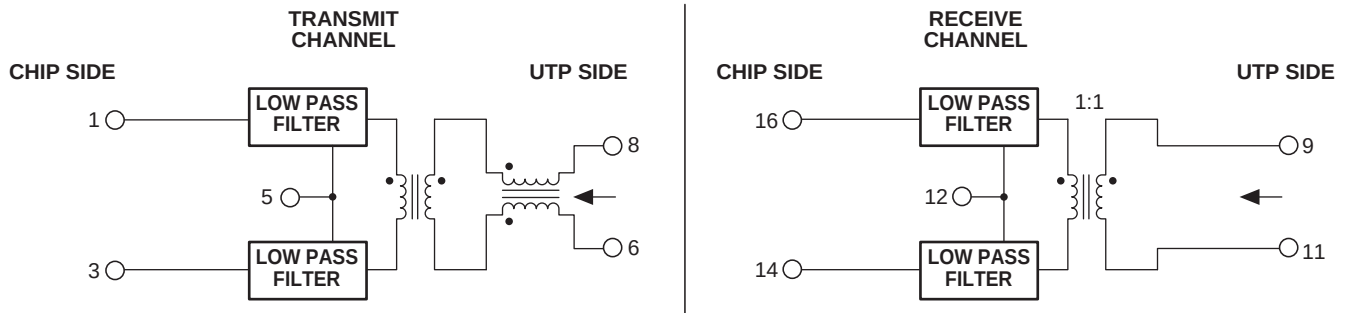
SURFACE MOUNT 10BASE-T INTERFACE MODULES

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Schematic

E2005, E2009

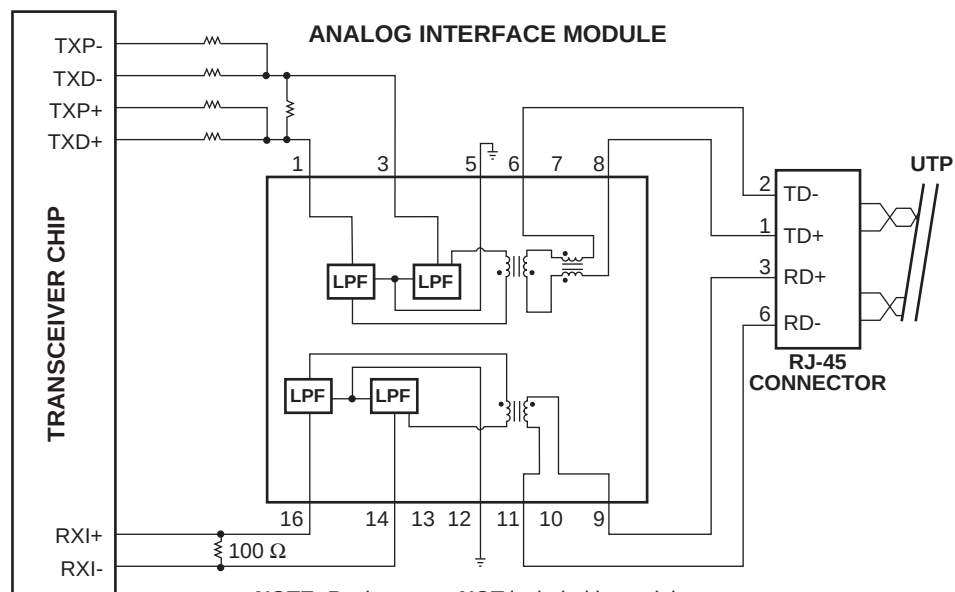


Turns Ratio for TX is 1:1 for E2005 and $1:\sqrt{2}$ for E2009.

NOTE: The E2005 is designed for use with most transceivers requiring a turns ratio of 1:1 on transmit. The E2009 is designed for use with **DEC** and most other transceivers requiring a turns ratio of $1:\sqrt{2}$ on transmit.

Typical Application Circuit

E2005, E2009



NOTE: Resistors are **NOT** included in module.

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Application Notes

Each module in this publication contains low pass filters, isolation transformers, and common mode chokes. These components provide impedance matching, equipment isolation, and EMI suppression to comply with IEEE 802.3 requirements. The E2001, E2003, E2004, and E2007 also provide the necessary data and pre-emphasis resistors recommended by most transceiver manufacturers. User compliance with FCC/CSPR Class B requirements can be achieved by applying rigorous design guidelines to suppress noise mechanisms. Attention to high frequency signal paths, proper PCB grounding techniques, and component placement are critical. Pins 5 and 12 provide noise return paths without the addition of external bypass capacitors. Recommended module orientation with respect to the RJ-45 connector is illustrated in each application circuit. Output pins 6 through 11 should be routed with short, matched traces to the connector for optimum EMI performance.

Surface mount devices manufactured by Pulse are designed to meet all published specifications after exposure to surface mount soldering temperatures. The products on this data sheet are transfer molded in I.C. style packaging, making them robust enough to withstand convection and infra-red reflow solder temperatures up to 235°C. In addition, compliant leads provide excellent solder-joint reliability with a coplanarity of $\pm 0.002"$ (0,05 mm).

Modules are shipped in tubes, unless Tape & Reel is specified. Please add the suffix "T" (i.e. E2003T) for Tape & Reel orders in increments of 350 pieces.

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PRELIMINARY E111.P (5/97)