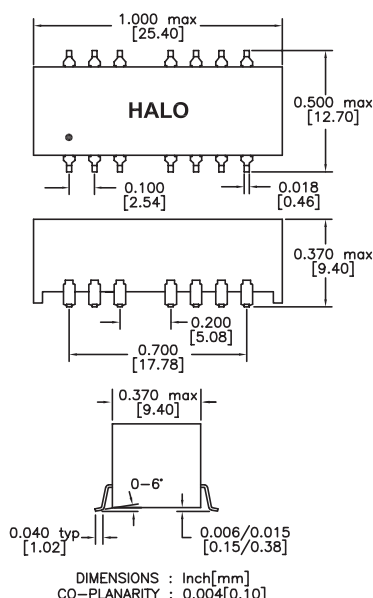


WALSH
ELECTRONICS, INC. **SMD 10/100 Isolation Modules**

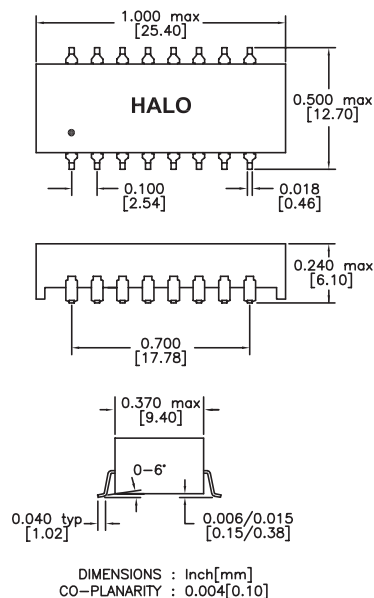
HALO Electronics has developed this standard series of 10/100 Isolation Modules to specifically address the isolation, insertion loss and return loss requirements of IEEE 802.3u. Available in industry standard and low profile packages. Isolation Modules are available for most LAN IC manufacturer's products. To select the correct Isolation Module please refer to the HALO Electronics [10/100 Selector Guide](#).



ND Package



NL Package



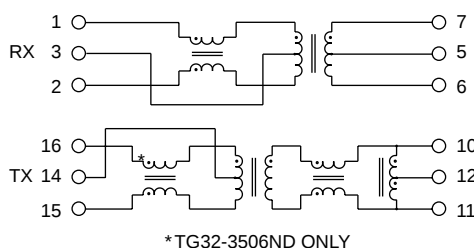
Patented Construction

US Patent Numbers: 5,656,985 6,297,721 B1 6,297,720 B1 6,320,489 B1 6,344,785 B1

Electrical Specifications @ 25°C

Isolation Voltage:	1,500 Vrms
OCL (100KHz, 0.1Vrms, 8mA):	350 μ H Min.
Leakage Inductance (1MHz):	0.4 μ H Max.
Cw/w:	15 pF Typ.
DCR:	TG22 0.9 Ω Max. TG32 1.0 Ω Max.
Rise Time:	2.5 nS Typ.
Insertion Loss (0.1-100MHz):	-1.1 dB Max.
Cross Talk (0.1-100 MHz):	-38 dB Min.
CMR (0.1-100MHz):	TG22 -40 dB Typ. TG32 -45 dB Typ.

Schematic



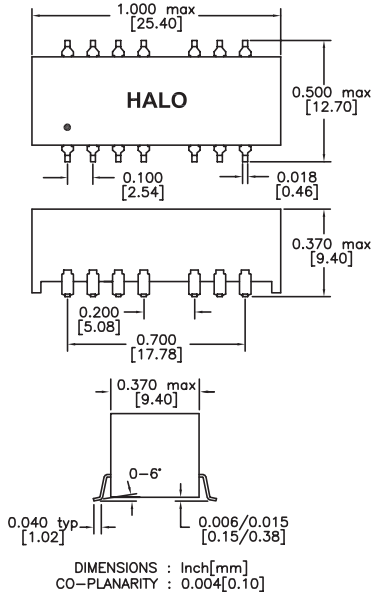
Part Number	Turns Ratio		Return Loss			Package
	TX	RX	0.1-40MHz	50MHz	60-80MHz	
TG22-3506ND	1CT:1CT	1CT:1CT	-15.5dB Min.	-13.6dB Min.	-12dB Min.	ND
TG32-3506ND	1CT:1CT	1CT:1CT	-15.5dB Min.	-13.6dB Min.	-12dB Min.	ND*
TG22-3506NL	1CT:1CT	1CT:1CT	-15.5dB Min.	-13.6dB Min.	-10dB Min.	NL

Note: Please contact the factory for detailed data sheets.

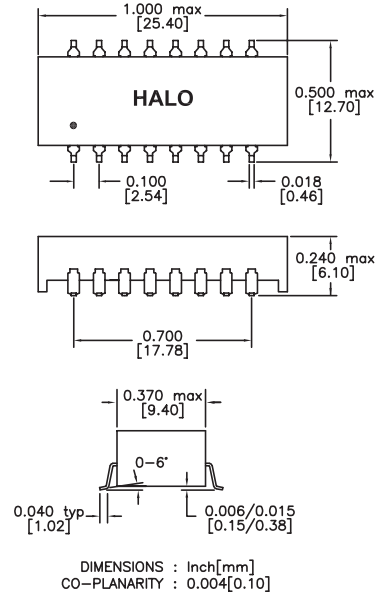
HALO Electronics has developed this standard series of 10/100 Isolation Modules to specifically address the isolation, insertion loss and return loss requirements of IEEE 802.3u. Also compatible with ATM155 applications. Available in industry standard and low profile packages. Isolation Modules are available for most LAN IC manufacturer's products. To select the correct Isolation Module please refer to the HALO Electronics [10/100 Selector Guide](#).



ND Package



NL Package



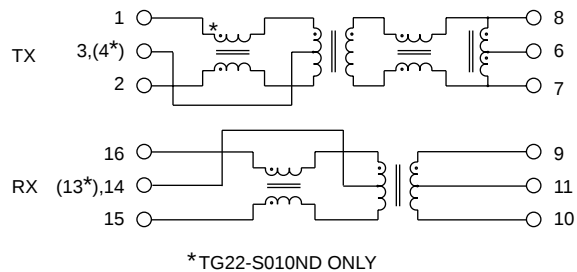
Patented Construction

US Patent Numbers: 5,656,985 6,297,721 B1 6,297,720 B1 6,320,489 B1 6,344,785 B1

Electrical Specifications @ 25°C

Isolation Voltage:	1,500 Vrms
OCL (100KHz, 0.1Vrms, 8mA):	350 μ H Min.
Leakage Inductance (1MHz):	0.4 μ H Max.
Cw/w:	15 pF Typ.
DCR:	0.9 Ω Max.
Rise Time:	2.5 nS Typ.
Insertion Loss (0.1-100MHz):	-1.1 dB Max.
Cross Talk (0.1-100 MHz):	-38 dB Min.
CMR (0.1-100MHz):	S010 -45 dB Typ.
	S012 -40 dB Typ.

Schematic



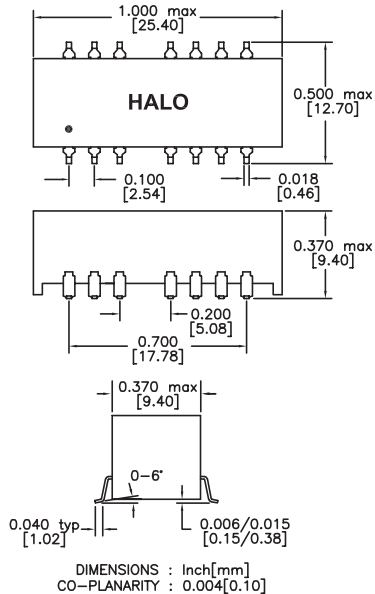
Part Number	Turns Ratio		Return Loss			Package
	TX	RX	0.5-40MHz	50MHz	60-80MHz	
TG22-S010ND	1CT:1CT	1CT:1CT	-15.5dB Min.	-13.6dB Min.	-12dB Min.	ND*
TG22-S012ND	1CT:1CT	1CT:1CT	-15.5dB Min.	-13.6dB Min.	-12dB Min.	ND
TG22-S012NL	1CT:1CT	1CT:1CT	-15.5dB Min.	-13.6dB Min.	-10dB Min.	NL

Note: Please contact the factory for detailed data sheets.

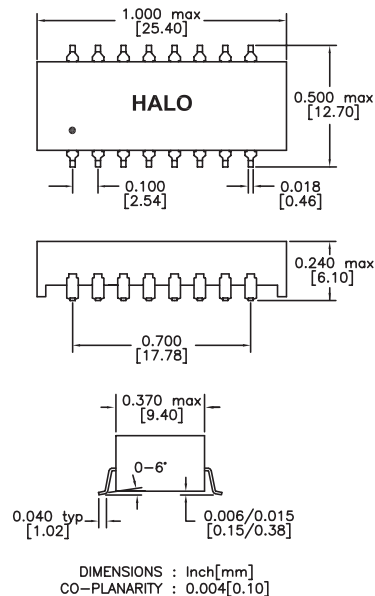
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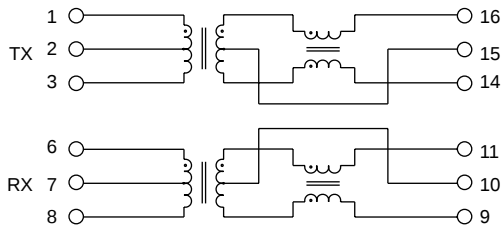
ND Package



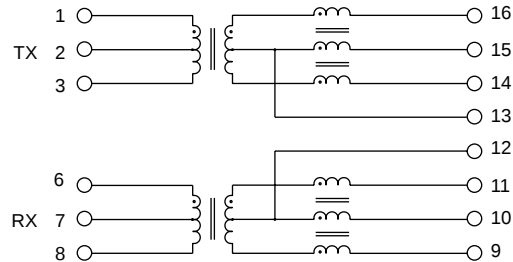
NL Package



Schematic A



Schematic B



Patented Construction

US Patent Numbers: 5,656,985 6,297,721 B1 6,297,720 B1 6,320,489 B1 6,344,785 B1

Electrical Specifications @ 25°C

Isolation Voltage: 1,500 Vrms
OCL (100KHz, 0.1Vrms, 8mA): 350 μ H Min.
Cw/w: 20 pF Typ.

DCR: 0.9 Ω Max.
Rise Time: 2.5 nS Typ.
Cross Talk (0.1-100 MHz): -38 dB Min.

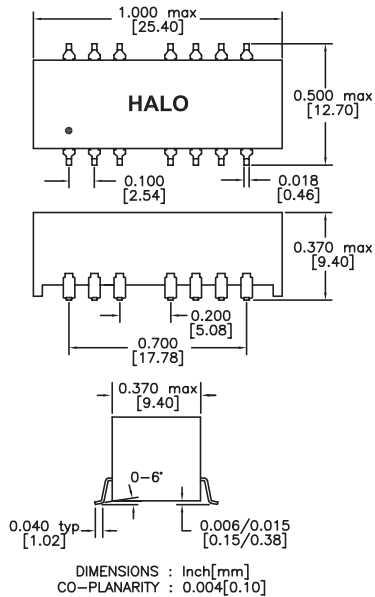
Part Number	Turns Ratio		L_L (μ H Max.)	(CMR Typ.) (0.1-100MHz)	Schematic	Package
	TX	RX				
TG22-S131ND	$\sqrt{2}$ CT:1CT	1CT:1CT	0.40	-40dB	A	ND
TG22-S131NL	$\sqrt{2}$ CT:1CT	1CT:1CT	0.40	-40dB	A	NL
TG22-S133NL	$\sqrt{2}$ CT:1CT	1CT:1CT	0.40	-35dB	B	NL
TG22-S136NL	1.25CT:1CT	1CT:1CT	0.35	-35dB	B	NL
TG22-S139ND	1.25CT:1CT	1CT:1CT	0.35	-40dB	A	ND
TG22-S139NL	1.25CT:1CT	1CT:1CT	0.35	-40dB	A	NL

Note: Please contact the factory for detailed data sheets.

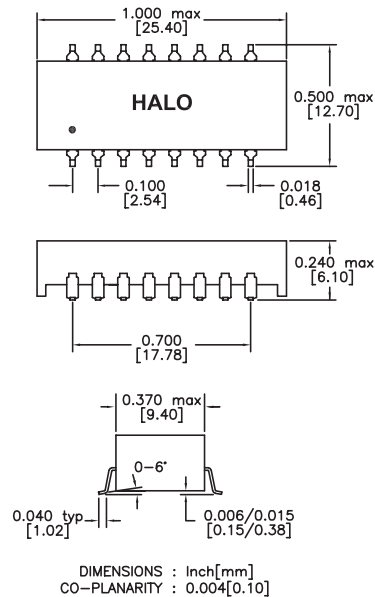
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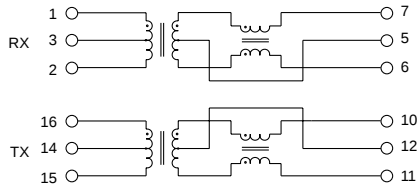
ND Package



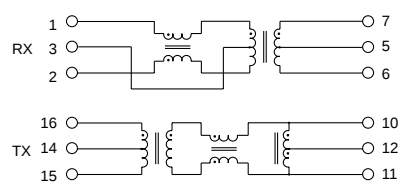
NL Package



Schematic A



Schematic B



Patented Construction

US Patent Numbers: 5,656,985 6,297,721 B1 6,297,720 B1 6,320,489 B1 6,344,785 B1

Electrical Specifications @ 25°C

Isolation Voltage:	1,500 Vrms	DCR:	0.9 Ω Max.
OCL (100KHz, 0.1Vrms, 8mA):	350 μH Min.	Rise Time:	2.5 nS Typ.
Cw/w:	20 pF Typ.	Cross Talk (0.1-100 MHz):	-38 dB Min.
		CMR (0.1-100MHZZ):	-40 dB Typ.

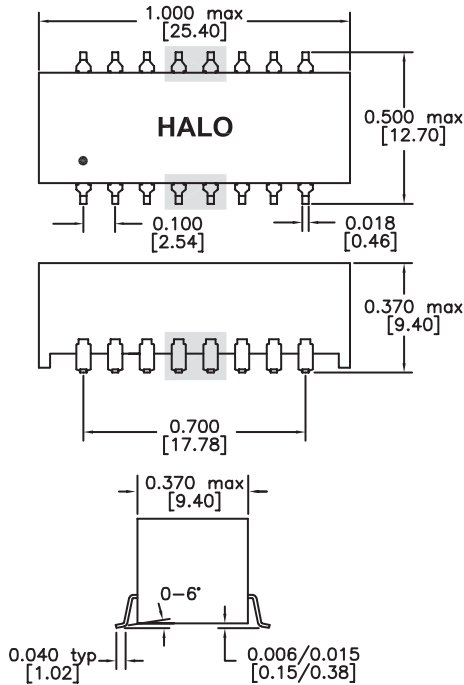
Part Number	Turns Ratio TX	Turns Ratio RX	L _L (μH Max.)	Schematic	Package
TG22-S132ND	√2CT:1CT	1CT:1CT	0.40	A	ND
TG22-S132NL	√2CT:1CT	1CT:1CT	0.40	A	NL
TG22-S134ND	1.25CT:1CT	1CT:1CT	0.35	A	ND
TG22-S134NL	1.25CT:1CT	1CT:1CT	0.35	A	NL
TG22-S137ND	1.25CT:1CT	1CT:1CT	0.35	B	ND
TG22-S137NL	1.25CT:1CT	1CT:1CT	0.35	B	NL
TG22-S141ND	1CT:√2CT	1CT:1CT	0.40	A	ND
TG22-S143ND	1CT:√2CT	1CT:1CT	0.40	B	ND

Note: Please contact the factory for detailed data sheets.

HALO Electronics has developed this standard series of 10/100 Isolation Modules to specifically address the isolation, insertion loss and return loss requirements of IEEE 802.3u. Available in industry standard and low profile packages. Isolation Modules are available for most LAN IC manufacturer's products. To select the correct Isolation Module please refer to the HALO Electronics [10/100 Selector Guide](#).

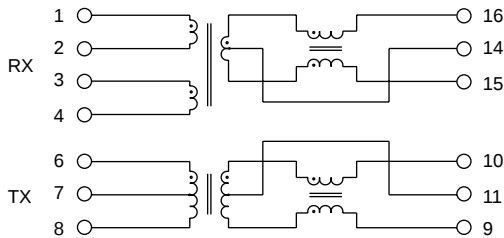


ND Package

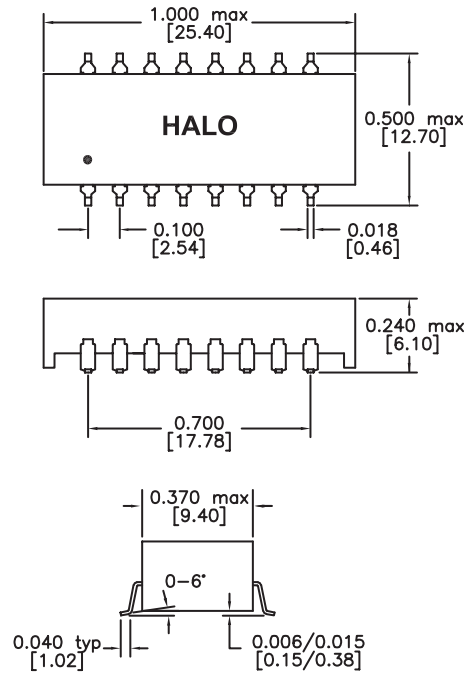


DIMENSIONS : Inch[mm]
CO-PLANARITY : 0.004[0.10]

Schematic A

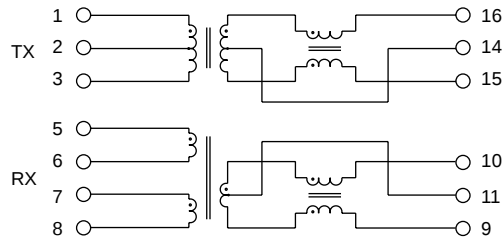


NL Package



DIMENSIONS : Inch[mm]
CO-PLANARITY : 0.004[0.10]

Schematic B



Patented Construction

US Patent Numbers: 5,656,985 6,297,721 B1 6,297,720 B1 6,320,489 B1 6,344,785 B1

Electrical Specifications @ 25°C

Isolation Voltage: 1,500 Vrms
OCL (100KHz, 0.1Vrms, 8mA): 350 μ H Min.
Cw/w: 20 pF Typ.

DCR:
Rise Time:
Cross Talk (0.1-100 MHz):
CMR (0.1-100MHz):

0.9 Ω Max.
2.5 nS Typ.
-38 dB Min.
-40 dB Typ.

Part Number	Turns Ratio		Schematic	Package	Package Description
	TX	RX			
TG110-S045ND	2CT:1CT	1 : 1 :1CT	A	ND	Pins 5 & 12 omitted
TG110-S045NL	2CT:1CT	1 : 1 :1CT	A	NL	—
TG110-S048ND	2CT:1CT	1 : 1 :1CT	B	ND	Pins 4 & 13 omitted
TG110-S048NL	2CT:1CT	1 : 1 :1CT	B	NL	—

Note: Please contact the factory for detailed data sheets.