100BASE-VG MAGNETICS MODULES
Designed for 100 Mbps Quartet Transmission Over UTP-3 Cable
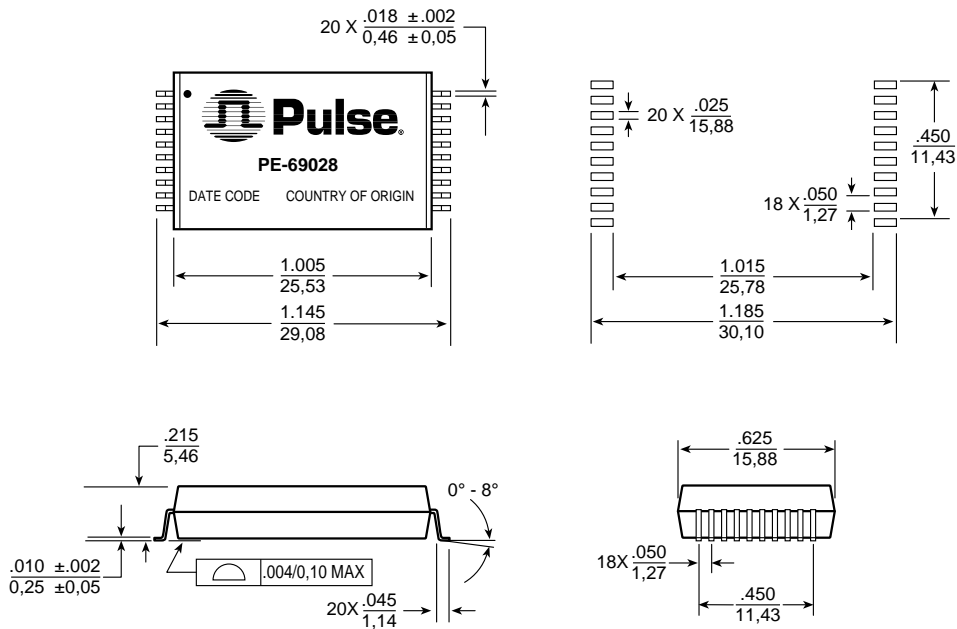

Pulse
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- Designed to meet IEEE 802.12 specifications
- Designed to withstand infrared and vapor phase soldering
- Pick and Place compatible
- Surface mount packages

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

Part Number	Insertion Loss (dB MIN)					Return Loss (dB MIN)	Common Mode Rejection (dB MIN)	Crosstalk (dB MIN)	Voltage Isolation (Vrms MIN)
	15 MHz (MAX)	20 MHz	30 MHz	40 MHz	50 MHz	.1-15 MHz	.1-30 MHz	0-15 MHz	
PE-69028	-3.6	-3.2	-16	-27	-37	-20	-30	30	1.6 kV
78Z9011SM	-3	-5	-20	-32	-42	-21	-30	30	2 kV

Mechanical

PE-69028

$$20 \text{ X} \frac{.018 \pm .002}{0,46 \pm 0,05}$$

$$20 \text{ X} \frac{.025}{15,88}$$

$$18 \text{ X} \frac{.050}{1,27}$$

$$\frac{.450}{11,43}$$

$$\frac{1.005}{25,53}$$

$$\frac{1.145}{29,08}$$

$$\frac{1.015}{25,78}$$

$$\frac{1.185}{30,10}$$

$$\frac{.215}{5,46}$$

$$\frac{.010 \pm .002}{0,25 \pm 0,05}$$

$.004/0,10$ MAX

$$20 \text{X} \frac{.045}{1,14}$$

0° - 8°

$$\frac{.625}{15,88}$$

$$18 \text{X} \frac{.050}{1,27}$$

$$\frac{.450}{11,43}$$

Weight . . . . .2.8 grams
Tape & Reel 250/reel
Tube 30/tube

Dimensions: $\frac{\text{Inches}}{\text{mm}}$

Unless otherwise specified, all tolerances are $\pm \frac{.005}{0,13}$

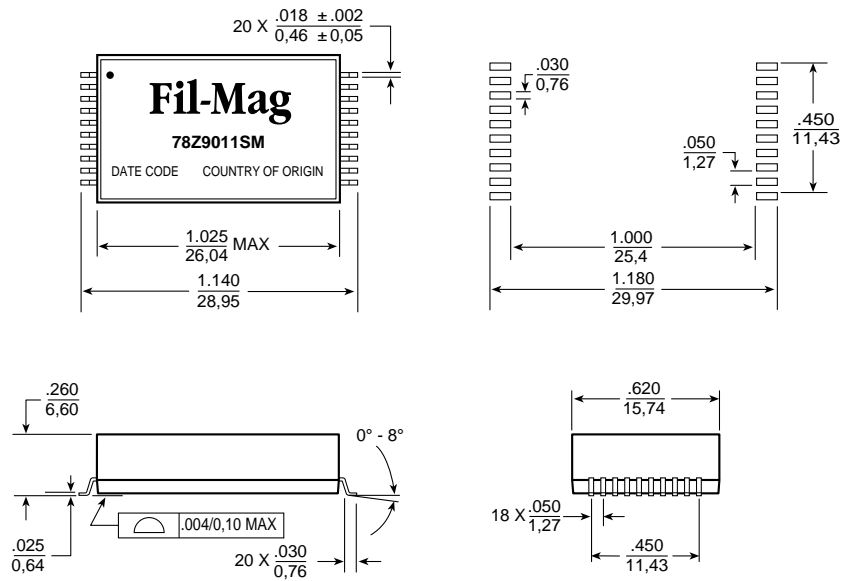# 100BASE-VG MAGNETICS MODULES
Designed for 100 Mbps Quartet Transmission Over UTP-3 Cable

Pulse
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Mechanical

78Z9011SM

Fil-Mag
78Z9011SM
DATE CODE   COUNTRY OF ORIGIN

20 X $\frac{.018 \pm .002}{0,46 \pm 0,05}$

$\frac{1.025}{26,04}$ MAX

$\frac{1.140}{28,95}$

$\frac{.030}{0,76}$

$\frac{.050}{1,27}$

$\frac{.450}{11,43}$

$\frac{1.000}{25,4}$

$\frac{1.180}{29,97}$

$\frac{.260}{6,60}$

0° - 8°

.004/0,10 MAX

$\frac{.025}{0,64}$

20 X $\frac{.030}{0,76}$

$\frac{.620}{15,74}$

18 X $\frac{.050}{1,27}$

$\frac{.450}{11,43}$

Weight . . . . .5.8 grams
Tape & Reel 250/reel
Tube 35/tube

Dimensions: $\frac{\text{Inches}}{\text{mm}}$

Unless otherwise specified, all tolerances are $\pm \frac{.005}{0,13}$

Schematic

PE-69028, 78Z9011SM

1
2
3*
4
5
6
7
8*
9
10

FILTER
FILTER
FILTER
FILTER

20
19
17
16
15
14
12
11
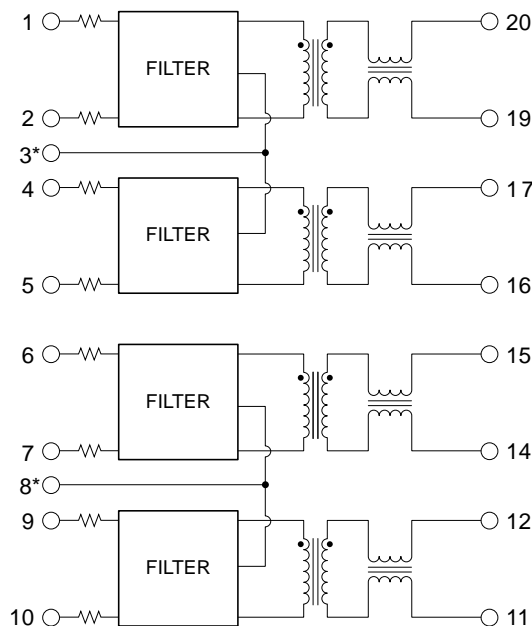
*Note: Attach pins 3 and 8 to ground for improved common mode performance.

H302.A (8/96)

100BASE-VG MAGNETICS MODULES
Designed for 100 Mbps Quartet Transmission Over UTP-3 Cable

Application

The PE-69028 and the 78Z9011SM filter/magnetics modules are designed specifically for implementation of 100BASE-VG data link over voice grade unshielded twisted pair cable (UTP-3). The modules provide excellent EMI filtering and are targeted for adapter card and HUB applications. In designing these parts, Pulse has worked closely with members of the IEEE 802.12 committee to develop an analog interface that provides isolation and filtering for a 100Base-VG media interface. The modules have duplex transmit or receive channels for quartet signaling.

Each pair communicates at 25 Mbps. The insertion loss graph on the next page shows that the cut-off frequency is close to a 10Base-T filter. This makes the modules ideal for the hybrid of 10Base-T/100Base-VG HUBs.

The transformers used in the modules provide high voltage isolation, wide band width, fast rise times and minimal baseline wander. Each channel includes a low pass filter which reduces overshoot and ringing on the transmitted waveform and decreases susceptibility to noise picked up by the cable. The filter and magnetic characteristics are also suitable for 10 Mbps transmission,

which allows the module to be shared for 10 Mb/100 Mb ports. The low pass filter corner frequency has been optimized to provide low insertion loss and uniform group delay in the pass band, while providing monotonic, high attenuation in the stop band. The parts provide over 15 dB of attenuation at 30 MHz to filter signal harmonics and reduce EMI.

EMI is also controlled with exceptional common mode filtering. When the module is receiving a signal, the filter removes impulse and random noise that may be introduced by the transmission medium.

The modules replace 48 discrete components. The small form factor benefits the users by allowing shorter signal interconnect lines and assuring good high frequency performance. Transfer molded packaging provides protection against extreme environments.

Pins 3 and 8 should have a 0.1 µF capacitor tied to ground to help reduce unwanted EMI and improve the common mode performance.
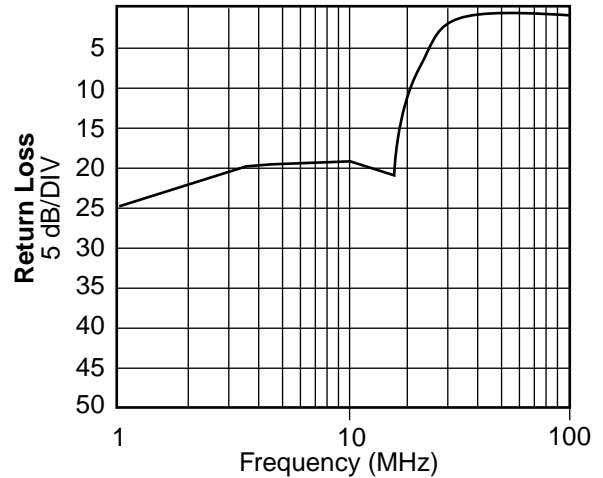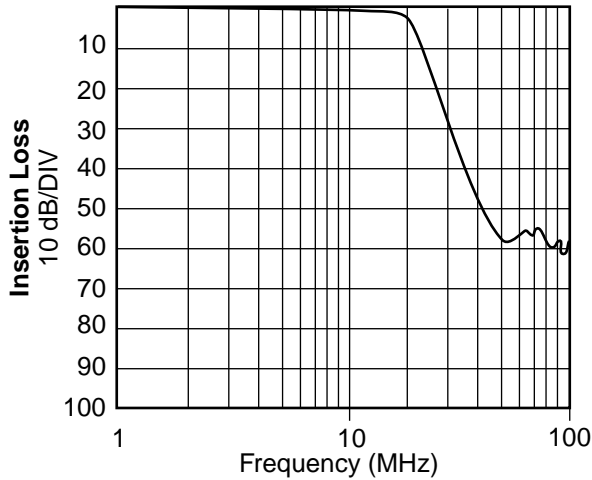
Typical Electrical Performance

PE-69028
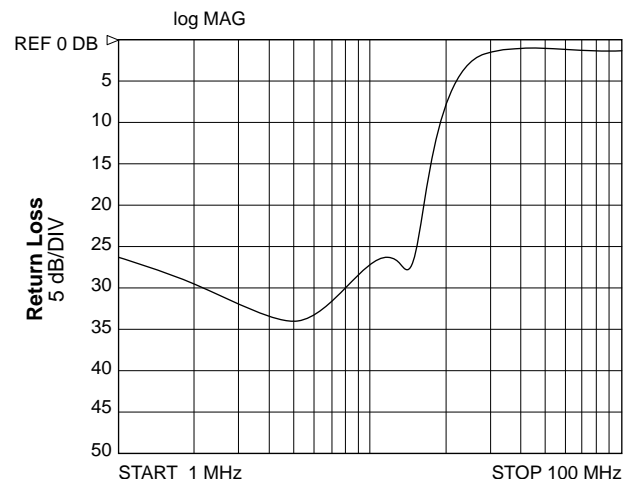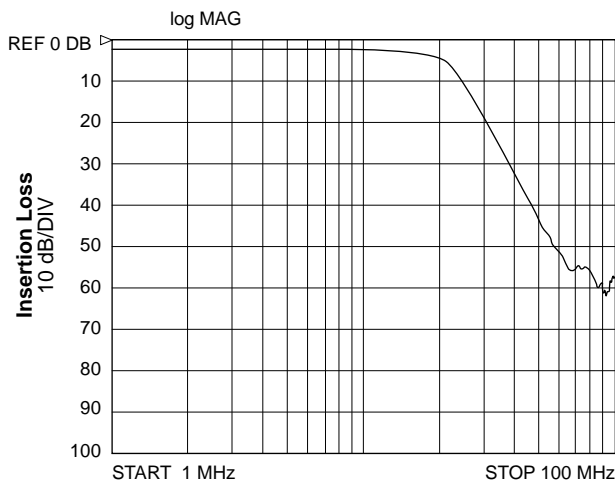
100BASE-VG MAGNETICS MODULES
Designed for 100 Mbps Quartet Transmission Over UTP-3 Cable

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Typical Electrical Performance

78Z9011SM

Insertion Loss 10 dB/DIV vs Frequency (MHz)

Return Loss 5 dB/DIV vs Frequency (MHz)

For More Information :

Performance warranty of products offered on this data sheet is limited to the parameters specified. Data is subject to change without notice.

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