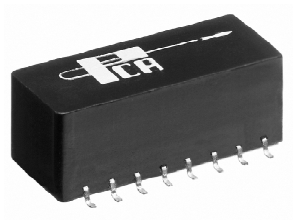
10Base-T Interface Module with Enhanced CMA and Resistor Network

EPA2116G



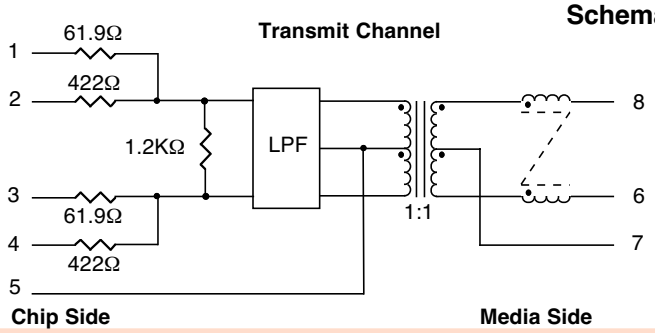
- Optimized for AMD/PHY controllers
- Robust construction allows for IR/VP processes
- Complies with or exceeds IEEE 802.3, 10Base-T Requirements

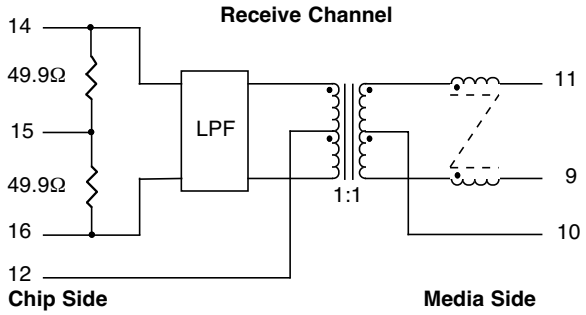
Electrical Parameters @ 25° C

Cut-off Frequency (MHz)		Insertion Loss (dB Max.)		Return Loss (dB Min.)		Attenuation (dB Min.) (1)								Common Mode Rejection (dB Min.)		Crosstalk (dB Min.) [Between Channels]
± 1.0 MHz		1-10 MHz		5-10 MHz		@ 20 MHz		@ 25 MHz		@ 30 MHz		@ 40 MHz		@ 1-100 MHz		@ 1-10 MHz
Xmit	Rcv	Xmit	Rcv	Xmit	Rcv	Xmit	Rcv	Xmit	Rcv	Xmit	Rcv	Xmit	Rcv	Xmit	Rcv	
17	17	-1.5	-1	-15	-15	-7	-5	-18	-11	-30	-16	-33	-26	-30	-30	-35

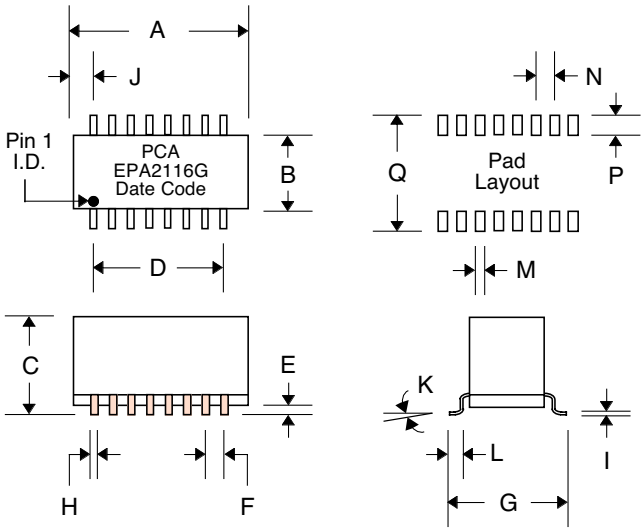
- **Isolation** : meets or exceeds 802.3 IEEE Requirements • **Characteristic Filter Impedance** : 100 Ω •
- **Note:** 1) Referenced to the filter output @ 5 MHz for filter only, excluding resistor network. •

Schematic





Package



Dimensions

Dim.	(Inches) Min.	Max.	Nom.	(Millimeters) Min.	Max.	Nom.
A	.880	.900		22.35	22.86	
B	.360	.380		9.14	9.65	
C	.430	.450		10.92	11.43	
D	.700	Typ.		17.78	Typ.	
E	.010	.015		.254	.381	
F	.100	Typ.		2.54	Typ.	
G	.490	.510		12.45	12.95	
H	.017	.022		.432	.559	
I	.008	.012		.203	.305	
J	.095	Typ.		2.41	Typ.	
K	0°	5°		0°	5°	
L	.025	.045		.635	1.14	
M			.040			1.02
N			.100			2.54
P			.100			2.54
Q			.540			13.72

PCA ELECTRONICS, INC.
16799 SCHOENBORN ST.
NORTH HILLS, CA 91343

CSA2116Ga Rev. A 2/18/98

TEL: (818) 892-0761
FAX: (818) 894-5791
http://www.pca.com

10Base-T Module with Enhanced Common Mode Attenuation

EPA2116G

The circuit below is a guideline for interconnecting PCA's EPA2116G with AMD 79C96X and -970, PCnet chip family as reference controllers. Further details of system design, such as chip pin-out, etc. can be obtained from the specific chip manufacturer.

Typical insertion loss of the isolation transformer/filter is 0.7dB. This parameter covers the entire spectrum of the encoded signals in 10 Base-T protocols. However, the predistortion resistor network introduces some loss which has to be taken into account in determining how well your design meets the Standard Template requirements.

Users are encouraged to verify if this network best suits their application needs with the chip manufacturer before choosing a specific set of values. Additionally, user should make sure that these resistor values provide 802.3 Return Loss specification complaince at either extremes of the cable impedance, namely; 85Ω to 115Ω. Implement only those parts in the design that will meet this requirement.

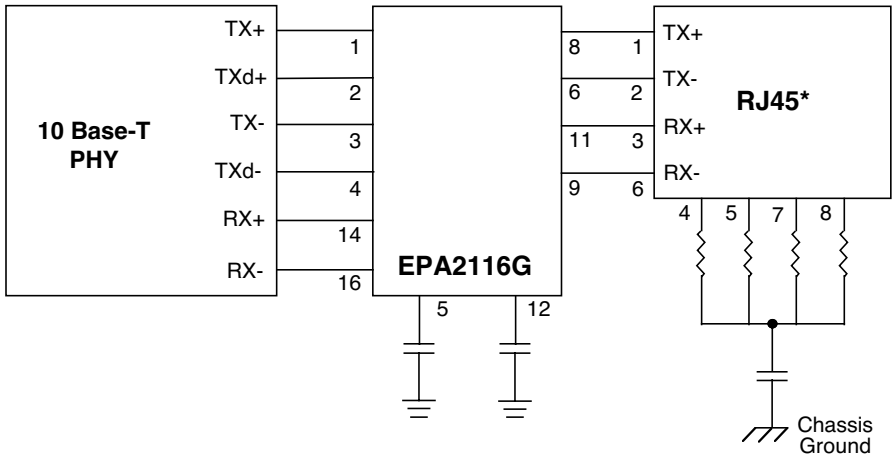
A quick calculation of the effective Thevenin's termination impedance for the filter follows:
R(termination)= 2(61.9//422)//1.2K≈100Ω.
Thus, when measuring the return loss of these parts on the bench, it is not necessary to provide a shunting resistor across the four outputs.

The phantom resistors shown around the RJ45 connector have been known to suppress unwanted radiation that unused wires pick up from the immediate environment. Their placement and use are to be considered carefully before a design is finalized.

It is recommended that there be a neat separation of ground planes in the layout. It is generally accepted practice to limit the plane off at least 0.08 inches away from the chip side pins of EPA2116G. There need not be any ground plane beyond this point.

For best results, PCB designer should design the outgoing traces preferably to be 50Ω, balanced and well coupled to achieve minimum radiation from these traces.

Typical Application Circuit for UTP



Notes : * Pin-outs shown are for NIC configurations.
For Hubs and Repeaters swap pins 1-2 with pins 3-6.

PCA ELECTRONICS, INC.
16799 SCHOENBORN ST.
NORTH HILLS, CA 91343

TEL: (818) 892-0761
FAX: (818) 894-5791
http://www.pca.com