PROTEK DEVICES®
.....Engineered solutions for the transient environment

EMC3.3F-LC thru EMC15F-LC

TVS/ LOW PASS L/C FILTER ARRAY

APPLICATIONS

- **High Speed Interface Networks**
- **Graphics & Video Cards**
- **Global Positioning Systems**
- **Wireless Communications/ LANS**
- **EMI/RFI Low Pass Filtering**
- **Notebook & Desktop Computers**

FEATURES

- **EMI/RFI Protection**
- **L/C Bessel Filter**
- **Very Low Insertion Loss: < 0.5dB up to 200 MHz**
- **Excellent Matching Over the Operating Frequency**
- **Meets IEC 1000-4 Industry Requirements**
- **300 Watts Peak Pulse Power Dissipation (8/20 μs)**
- **Protects 3.3 - 15 Volt I/O Ports**
- **Four (4), Two Port Networks**
- **50 Ohm Network Terminations**
- **ESD Protection > 40 kilovolts**

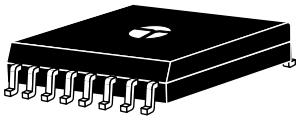
DESCRIPTION

The EMCxxF-LC consists of four, two port diode clamp and EMI/RFI filter networks. It is designed to provide complete Electromagnetic Compatibility (EMC) protection according to IEC 1000-4 requirements and European standard EN50082, EN61000-4 and EN300 386-2.

The transient voltage suppressor (TVS) and L/C filter components are configured in a Pi filter arrangement. This device includes four (4) isolated network circuits in a standard SO-16L, surface mount package. The EMCxxF-LC is a low capacitance device designed as one leg of a pi filter and offers protection for sensitive IC components. With the combination of active and passive components, this device reduces the reflections and ringing associated with high speed data line circuits.

MAXIMUM RATINGS	
P_{PP} @ 25°C (See Figure 1)	300 Watts, 8/20 μs Waveshape
Repetition Rate (Duty Cycle)	0.01%
Operating & Storage Temperature	-55° to +150°C
Operating Current I_{mA} (DC)	100mA
$t_{Clamping}$ (0 Volts to $V_{(BR)}$ Min.)	Bidirectional: < 10 x 10^{-9} seconds
MECHANICAL CHARACTERISTICS	
Package	Molded SO-16L Wide Body Surface Mount Package
Packaging	Tube or 16mm Tape per EIA 481
Approximate Weight	0.5 grams
Device Markings	Logo & Part Number
Miscellaneous	Pin No. 1 Indicated by Dot on Top of Package

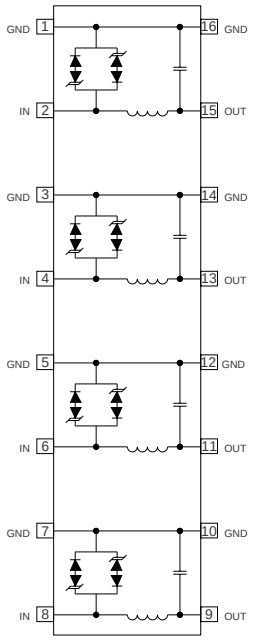
IEC 1000-4 COMPATIBLE



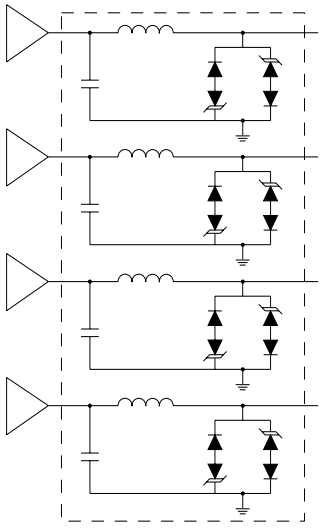
SO-16L PACKAGE

CIRCUIT DIAGRAM

EMC3.3F-LC
EMC5.0F-LC
EMC8.0F-LC
EMC12F-LC
EMC15F-LC



TYPICAL APPLICATION
VIDEO BUFFER DRIVER: 50Ω CABLES



ELECTRICAL CHARACTERISTICS @ 25°C Ambient Temperature

PROTEK PART NUMBER	MAXIMUM OPERATING VOLTAGE $V_{(OP)}$ VOLTS	MINIMUM BREAKDOWN VOLTAGE (See Note 1) @ 1 mA $V_{(BR)}$ VOLTS	MAXIMUM LEAKAGE CURRENT (See Note 1) @ V_{WM} I_D µA	MAXIMUM CLAMPING VOLTAGE (See Fig. 5) @ I_P = 5 A V_C VOLTS	TYPICAL OUTPUT CAPACITANCE (See Note 2) @ 0V, 1 MHz C pF	CUT-OFF FREQUENCY @ -3dB f_C MHz
EMC3.3F-LC	3.3	4.0	100	9.0	10	500
EMC5.0F-LC	5.0	6.0	50.0	11.0	10	500
EMC8.0F-LC	8.0	8.5	5.0	16.6	10	500
EMC12F-LC	12	13.3	5.0	24.0	10	500
EMC15F-LC	15	16.7	5.0	30.0	10	500

Note 1: Apply positive (negative) potential between input pins to ground pins, output open.
Note 2: Measure capacitance between output pins to ground pins.

FIGURE 1
PEAK PULSE VS PULSE TIME

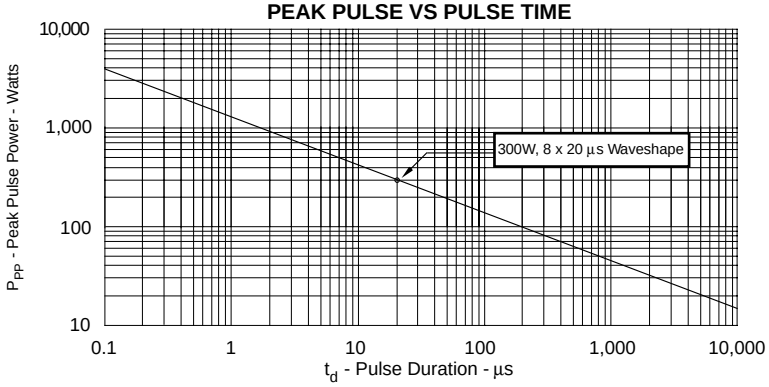


FIGURE 2
TYPICAL S11 RETURN LOSS CURVE

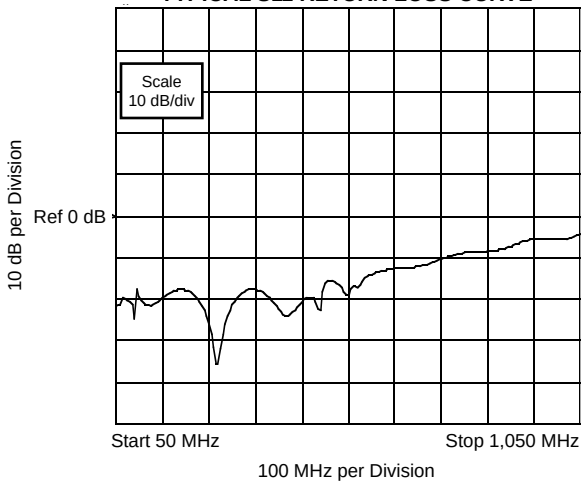


FIGURE 3
TYPICAL S12 INSERTION LOSS CURVE

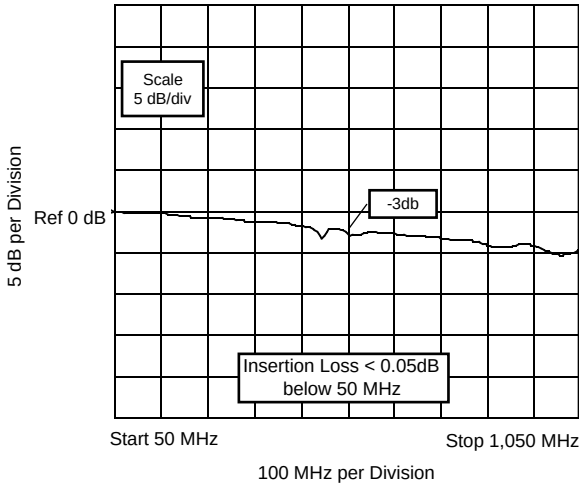


FIGURE 4
POWER DERATING CURVE

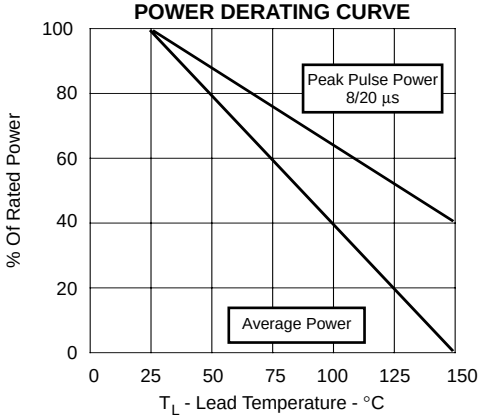
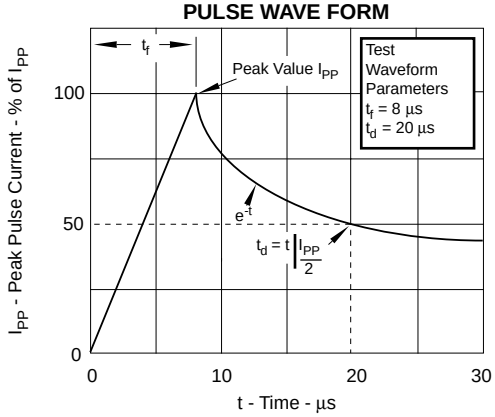


FIGURE 5
PULSE WAVE FORM

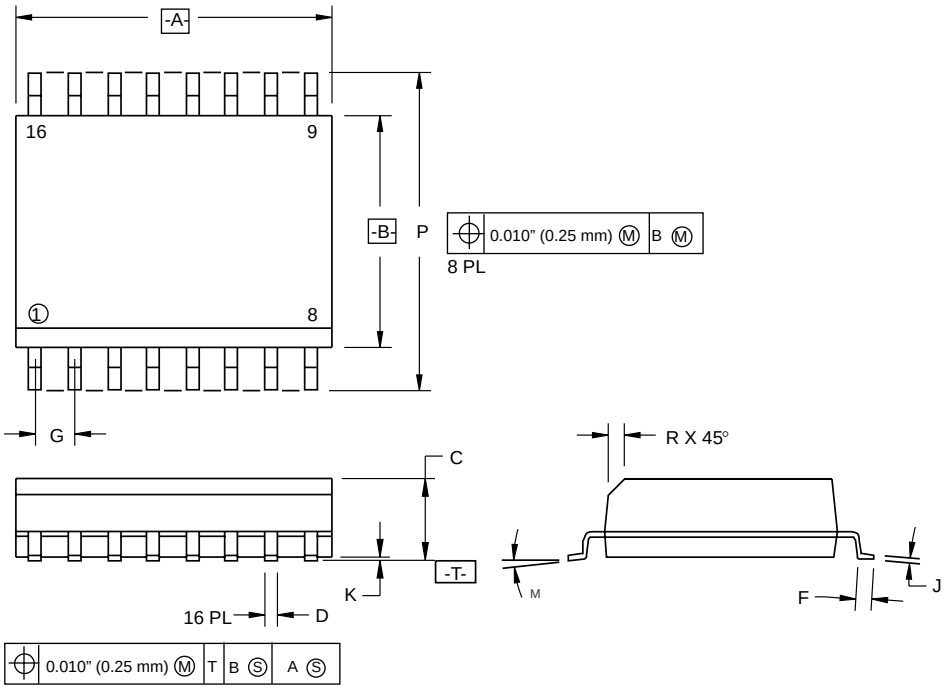


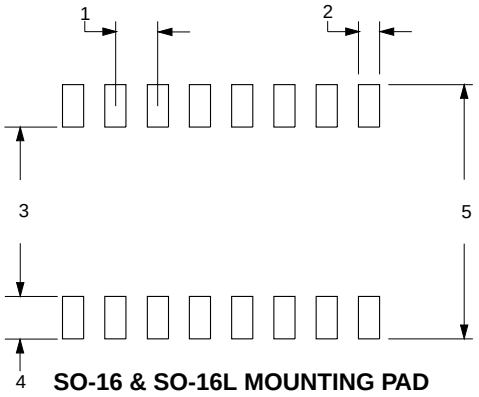
SO-16L (Wide Body) PACKAGE DIMENSIONS

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	10.15	10.45	0.400	0.411
B	7.40	7.60	0.292	0.299
C	2.35	2.65	0.093	0.104
D	0.35	0.49	0.014	0.019
F	0.50	0.90	0.020	0.035
G	1.27 BSC	1.27 BSC	0.05 BSC	0.05 BSC
J	0.25	0.32	0.010	0.012
K	0.10	0.25	0.004	0.009
M	0°	7°	0°	7°
P	10.05	10.55	0.395	0.415
R	0.25	0.75	0.010	0.029

NOTES:
1. - T - = Seating Plane
2. Dimension “A” is Datum
3. Dimension “A” and “B” do not include mold protusion.
4. Dimensioning and tolerances per ANSI Y14.5M, 1982.

SO-16 & SO-16L PACKAGE OUTLINE





SO-16 & SO-16L MOUNTING PAD

DIM	MOUNTING PAD	
	SO-16	SO-16L
1	0.050” TYP	0.050 TYP
2	0.030” ± 0.005”	0.030” 0.005”
3	0.160” ± 0.005”	0.325” ± 0.005”
4	0.045” 0.005”	0.045” ± 0.005”
5	0.245” MIN	0.420” MIN