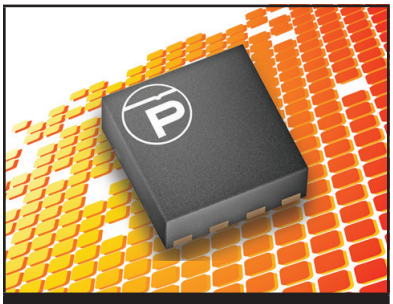
EMI FILTER/TVS ARRAY



DFN-8 PACKAGE

DESCRIPTION

The EM4D-100L is a 2mm square DFN-8, 4 line low pass filter array with integrated TVS diodes. The EM4D-100L is designed to suppress unwanted EMI/RFI signals and provide ESD protection for high-speed data interfaces such as LCD displays and camera imagers for SMART phones.

With a desired cutoff frequency of 150MHz, the EM4D-100L provides good EMI/RFI attenuation better than 35dB in the 800MHz - 3GHz bandwidth. This blocks RF noises from GSM, DCS or Bluetooth which can affect the baseband chipset and other blocks. Coupled with the integrated TVS diodes, this device is able to meet IEC 61000-4-2 (ESD) and 61000-4-4 (EFT) immunity requirements.

FEATURES

- Compatible with IEC 61000-4-2 (ESD): Air - 15kV, Contact - 8kV
- Compatible with IEC 61000-4-4 (EFT): 40A - 5/50ns
- ESD Protection > 25 kilovolts
- EMI Filtering/TVS Low Pass Filters
- >25dB Attenuation from 800MHz to 3GHz
- Protects up to 4 Data Lines
- RoHS Compliant
- REACH Compliant

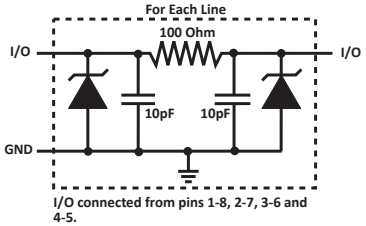
APPLICATIONS

- SMART Phones
- LCD Display Panel
- Portable Electronics
- SMART Cards

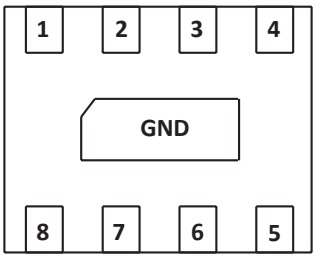
MECHANICAL CHARACTERISTICS

- Molded JEDEC DFN-8 Package
- Approximate Weight: 2 milligrams
- Lead-Free Pure-Tin Plating (Annealed)
- Solder Reflow Temperature:
  Pure-Tin - Sn, 100: 260-270°C
- 8mm Tape and Reel Per EIA Standard 481
- Flammability Rating UL 94V-0

CIRCUIT DIAGRAM & PIN CONFIGURATION



I/O connected from pins 1-8, 2-7, 3-6 and 4-5.



BOTTOM VIEW

TYPICAL DEVICE CHARACTERISTICS

MAXIMUM RATINGS @ 25°C Unless Otherwise Specified			
PARAMETER	**SYMBOL**	**VALUE**	**UNITS**
Operating Temperature	T_A	-40 to 85	°C
Storage Temperature	T_{STG}	-55 to 150	°C
DC Power per Resistor	P	400	mW
Typical Resistance ±20%	R	100	OHMs
Soldering Temperature for 10 seconds	T_L	265	°C

ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified

PART NUMBER	DEVICE MARKING	RATED STAND-OFF VOLTAGE V_{WM} VOLTS	MINIMUM BREAKDOWN VOLTAGE @ 1mA $V_{(BR)}$ VOLTS	MAXIMUM REVERSE LEAKAGE CURRENT @ 3V I_D µA	TYPICAL FORWARD VOLTAGE @ 10mA V_F VOLTS	MINIMUM ATTENUATION @ 800-3000 MHz dB	CUT-OFF FREQUENCY (50 OHMS I/O) ZERO BIAS fC MHz	TYPICAL CAPACITANCE (Note 1) @2.5V, 1MHz C pF
EM4D-100L	M4D10L	5.0	6.0	0.1	0.8	25	150	20

NOTES
1. 30pF @ 0V, 1MHz, ± 20% tolerance.

TYPICAL DEVICE CHARACTERISTICS

FIGURE 1
TYPICAL FILTER PERFORMANCE
(T_A = 25°C, DC Bias = 0V, 50 Ohm Environment)

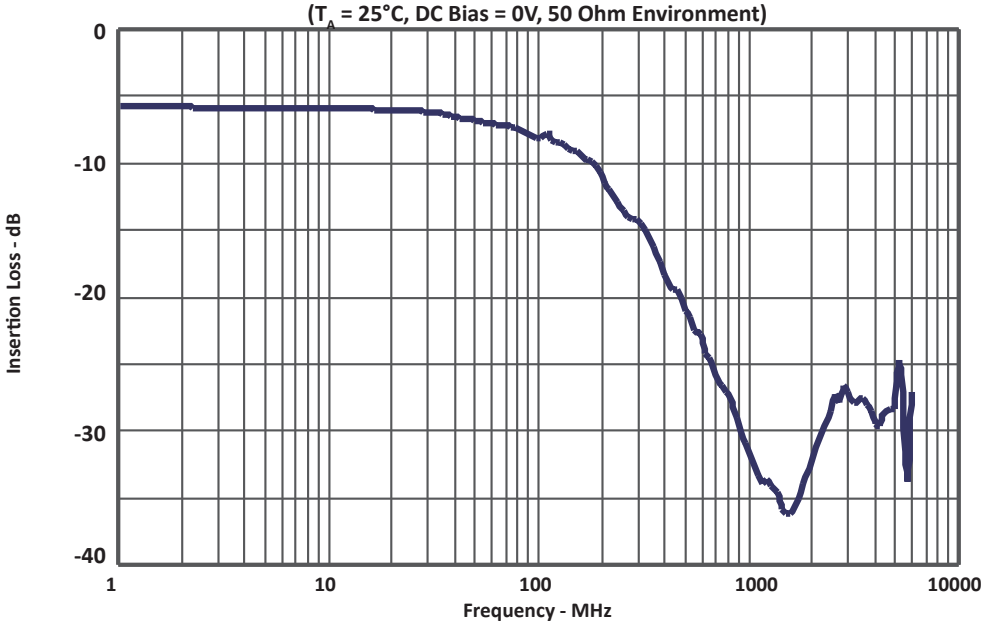
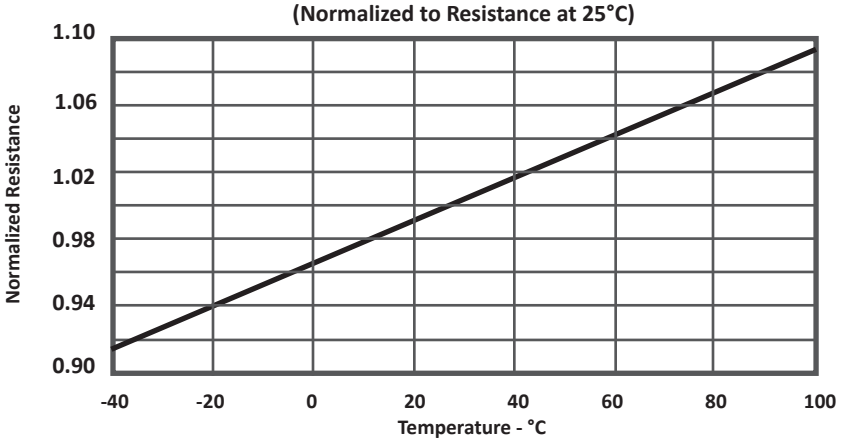


FIGURE 2
RESISTANCE VS TEMPERATURE
(Normalized to Resistance at 25°C)



TYPICAL DEVICE CHARACTERISTICS

FIGURE 3
CAPACITANCE VS REVERSE VOLTAGE
(Normalized to Capacitance at 2.5V DC @ 25°C)

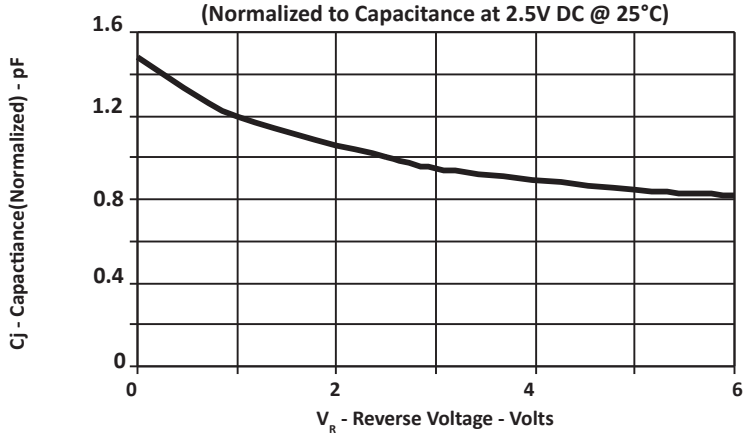
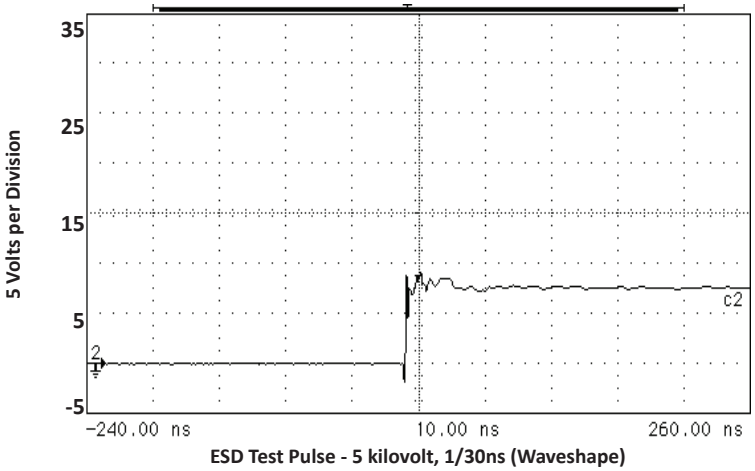


FIGURE 4
OVERSHOOT & CLAMPING VOLTAGE (Through the Filter)

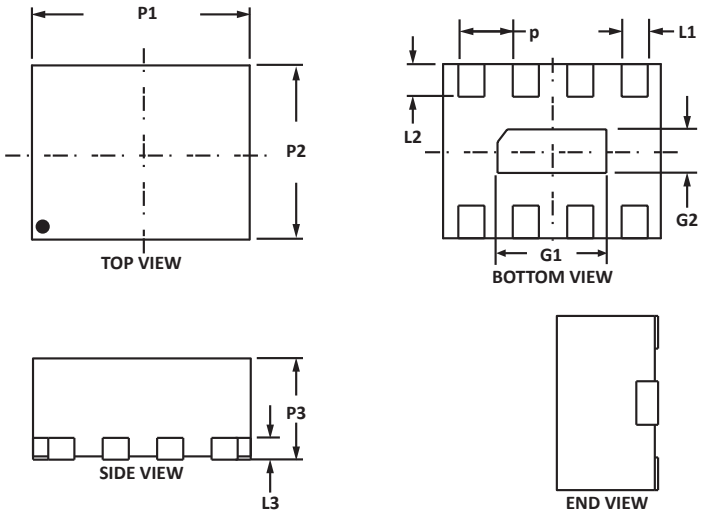


ESD Test Pulse - 5 kilovolt, 1/30ns (Waveshape)

DFN-8 PACKAGE INFORMATION

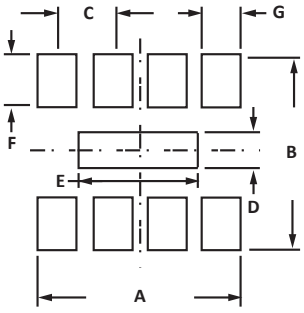
OUTLINE DIMENSIONS				
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
P1	1.95	2.05	0.077	0.081
P2	1.95	2.05	0.077	0.081
P3	0.75	0.85	0.029	0.033
L1	0.23	0.30	0.009	0.012
L2	0.33	0.40	0.013	0.016
L3	0.18	0.23	0.007	0.009
p	0.50 BSC		0.020 BSC	
G1	1.15	1.25	0.045	0.049
G2	0.55	0.65	0.022	0.026

NOTES
1. Controlling dimension: millimeters.
2. Dimensioning and tolerances per ANSI Y14.M, 1985.
3. Coplanarity applies to the exposed pad as well as the terminals.

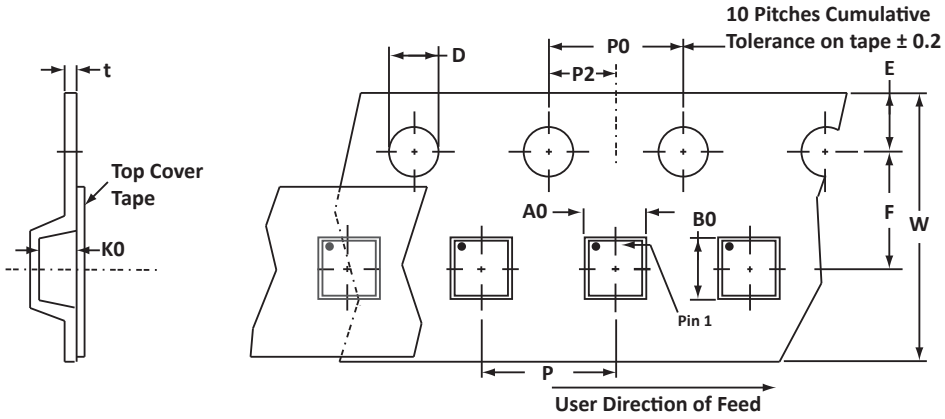


PAD LAYOUT DIMENSIONS				
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	2.10	2.20	0.083	0.087
B	2.10	2.20	0.083	0.087
C	0.50 BSC		0.020 BSC	
D	0.55	0.65	0.022	0.026
E	1.15	1.25	0.045	0.049
F	0.45	0.50	0.018	0.020
G	0.25	0.35	0.010	0.014

NOTES
1. Controlling dimension: millimeters.



TAPE AND REEL



SPECIFICATIONS												
REEL DIA.	TAPE WIDTH	A0	B0	K0	D	E	F	W	P0	P2	P	tmax
178mm (7")	8mm	2.30 ± 0.10	2.30 ± 0.10	0.95 ± 0.10	1.50 ± 0.10	1.75 ± 0.10	3.50 ± 0.05	8.00 ± 0.30	4.00 ± 0.10	2.00 ± 0.05	4.00 ± 0.10	0.25

NOTES
1. Dimensions are in millimeters.
2. Surface mount product is taped and reeled in accordance with EIA-481.
3. Suffix - T73 = 7" Reel - 3,000 pieces per 8mm tape.
4. Marking on Part - marking code (see page 2) and polarity dot.

Package outline, pad layout and tape specifications per document number 06057.R3 3/11.

ORDERING INFORMATION					
BASE PART NUMBER	LEADFREE SUFFIX	TAPE SUFFIX	QTY/REEL	REEL SIZE	TUBE QTY
EM4D-100L	-LF	-T73	3,000	7"	n/a

This device is only available in a Lead-Free configuration.

COMPANY INFORMATION

COMPANY PROFILE

In business more than 25 years, ProTek Devices™ is a privately held semiconductor company. The company offers a product line of overvoltage protection and overcurrent protection components. These include transient voltage suppressor array (TVS arrays) avalanche breakdown diode, steering diode TVS array and electronics SMD chip fuses. These components deliver circuit protection in electronic systems from numerous overvoltage and overcurrent events. They include lightning; electrostatic discharge (ESD); nuclear electromagnetic pulses (NEMP); inductive switching; and electromagnetic interference (EMI) / radio frequency interference (RFI). ProTek Devices also offers LED wafer die for ESD protection and related high frequency products. ProTek Devices is ISO 9001:2015 certified.

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