

# 8-Channel EMI Filter with Integrated ESD Protection

## EM2378K

### Description

The EM2378K is a four-channel (C-R-C) Pi-style EMI filter array with integrated ESD protection. Its typical component values of  $R=100\Omega$  and  $C=8.5\text{pF}$  deliver a cutoff frequency. This performance makes the part ideal for parallel interfaces with data rates up to 70 Mbps in applications where wireless interference must be minimized. The specified attenuation range is very effective in minimizing interference from 2G/3G, GPS, Bluetooth® and WLAN signals. The EM2378K is available in the low-profile 16-lead 3.30mm x 1.35mm LWSO-16 surface mount package.

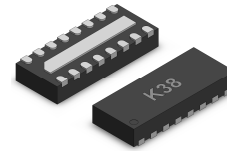
### Feature

- u Filter performance: 30dB minimum attenuation 1.8GHz to 2.5GHz
- u Bidirectional EMI/RFI filter with integrated TVS for ESD protection
- u TVS working voltage: 5V
- u Resistor:  $100\Omega \pm 20\%$
- u Typical Capacitance: 20pF (VR = 0V)
- u Protection and filtering for four lines
- u Solid-state technology
- u RoHS Compliant
- u IEC61000-4-2 (ESD)  $\pm 15\text{kV}$  (air),  $\pm 8\text{kV}$  (contact)
- u IEC61000-4-4 (EFT) 40A (5/50ns)

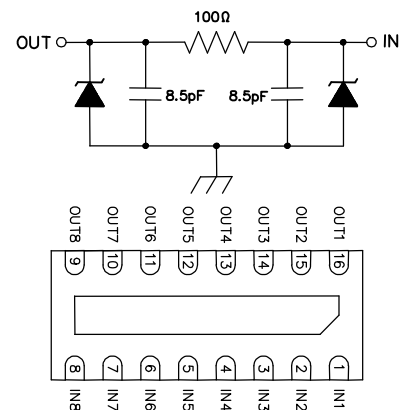
### Applications

- u EMI Filtering for LCD and Camera Data Lines
- u EMI Filtering and Protection for I/O Ports and Keypads

### LWSO-16



### Functional Diagram



### Mechanical Characteristics

- u Nominal Dimensions: 3.30x 1.35 x 0.50 mm
- u Molding Compound Flammability Rating : UL 94V-0
- u Quantity Per Reel : 3,000pcs
- u Reel Size : 7 inch
- u Lead Finish : Lead Free

### Mechanical Characteristics (@ 25°C Unless Otherwise Specified)

Symbol	Parameter	Value	Units
$T_L$	Lead Soldering Temperature	260 (10sec)	°C
$T_J$	Junction Temperature	125	°C
$T_{STG}$	Storage Temperature Range	-55 to +150	°C
$T_{OP}$	Operating Temperature Range	-55 to +85	°C
	IEC61000-4-2 (ESD)		
	Air Discharge	$\pm 15$	KV
	Contact Discharge	$\pm 8$	
	IEC61000-4-4 (EFT)	40	A

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Electrical Characteristics (@ 25°C Unless Otherwise Specified)

Part Number	Device Marking	V <sub>RWM</sub> (V) (Max.)	V <sub>B</sub> (V) (Min.)	I <sub>R</sub> (μA) (Max.)	R (Ω) (Typ.)	F <sub>C</sub> (MHz) (Typ.)	Attenuation (dB) (Min.)	C <sub>T</sub> @0V (pF) (Typ.)	C <sub>T</sub> @2.5V (pF) (Typ.)
EM2378K	K38	5	6.0	0.5	100	200	25	20	11

### Characteristic Curves

Fig1. ESD Pulse Waveform (according to IEC 61000-4-2)

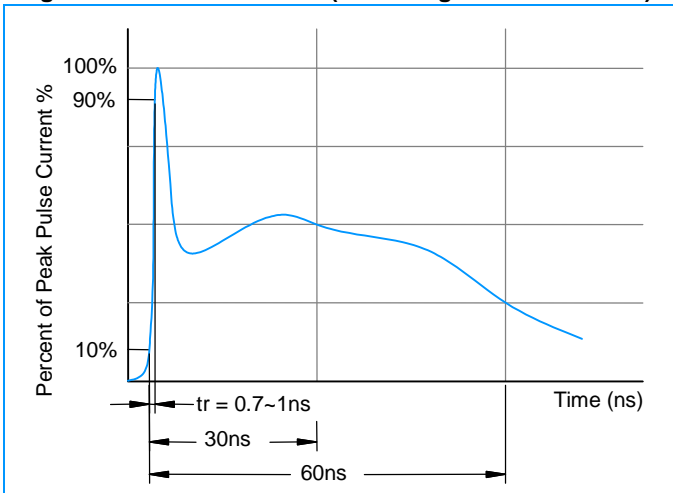


Fig2. Power Derating Curve

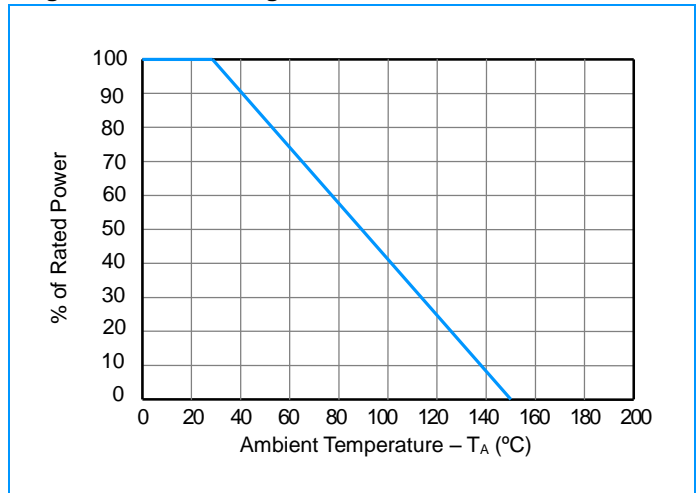


Fig3. Analog Crosstalk (Each Line)

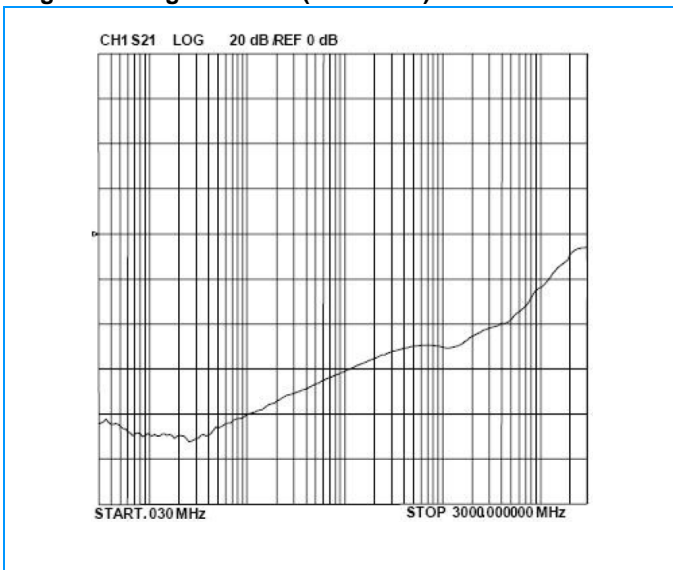
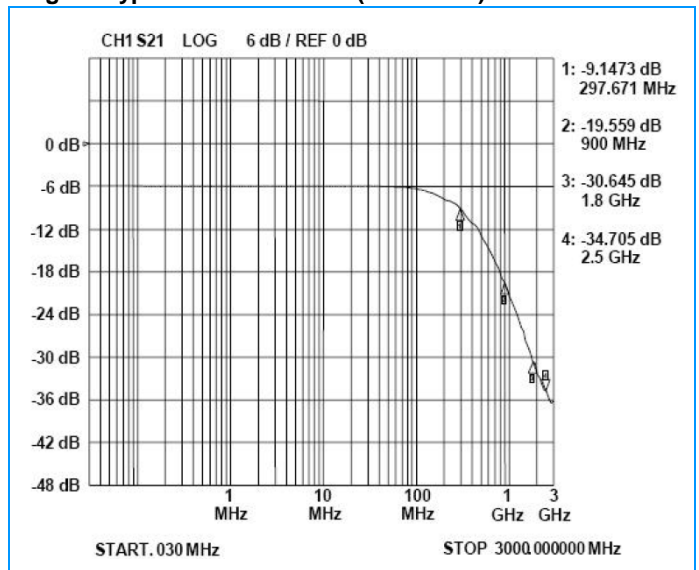


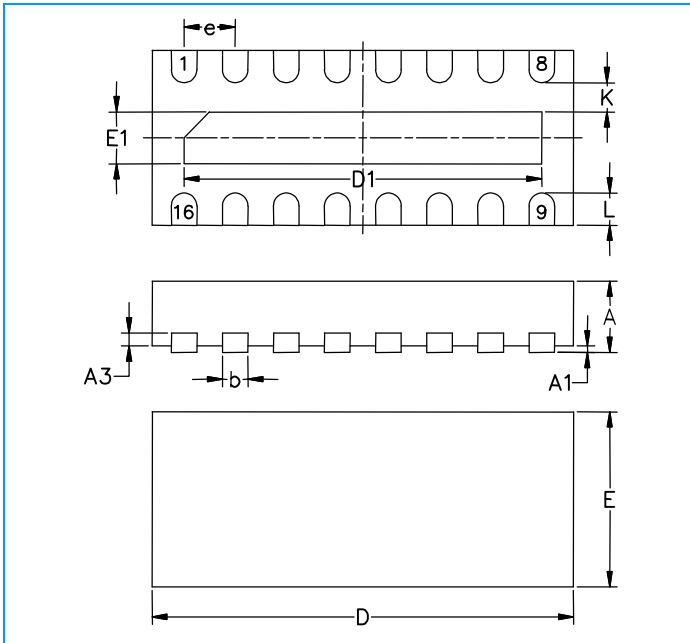
Fig4. Typical Insertion Loss(Each Line)



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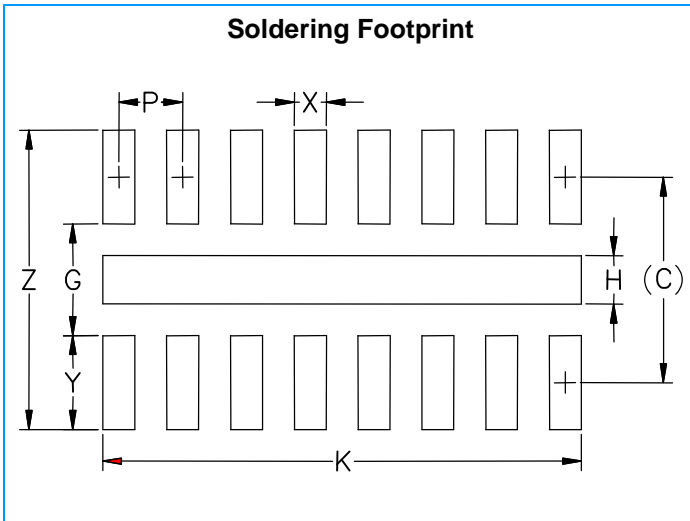
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## LWSON-16 Package Outline & Dimensions



Symbol	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	0.450/0.550	0.550/0.650	0.018/0.022	0.022/0.026
A1	0.000	0.050	0.000	0.002
A3	0.150REF		0.006REF	
D	3.224	3.376	0.127	0.133
E	1.250	1.450	0.049	0.057
D1	2.700	2.900	0.106	0.114
E1	0.300	0.500	0.012	0.020
K	0.200 MIN		0.008 MIN	
b	0.150	0.250	0.006	0.010
e	0.400 TYP.		0.016 TYP.	
L	0.150	0.350	0.006	0.014

### Soldering Footprint



Symbol	Millimeters	Inches
C	(1.27)	(0.050)
G	0.69	0.027
H	0.30	0.012
K	3.00	0.118
P	0.40	0.016
X	0.20	0.008
Y	0.58	0.023
Z	1.85	0.073