

## LCD - EMI FILTER/TVS ARRAY

## APPLICATIONS

- ✓ LCD Displays
- ✓ Cellular Phones
- ✓ Notebooks
- ✓ Personal Digital Assistant (PDA)
- ✓ Ground Positioning System (GPS)
- ✓ SMART Cards

## IEC COMPATIBILITY (EN61000-4)

- ✓ 61000-4-2 (ESD): Air - 15kV, Contact - 8kV
- ✓ 61000-4-4 (EFT): 40A - 5/50ns

## FEATURES

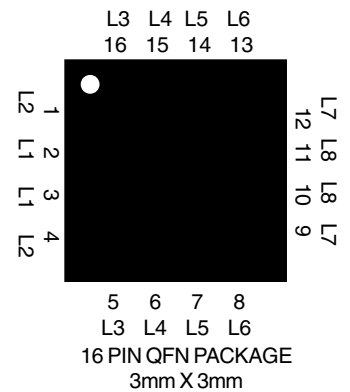
- ✓ ESD Protection > 25 kilovolts
- ✓ Bidirectional EMI Filtering/TVS Low Pass Filters
- ✓ Low Insertion Loss: -3db Roll-Off @ 140MHz
- ✓ Protects Up to Eight(8) Data Lines
- ✓ RoHS Compliant

## MECHANICAL CHARACTERISTICS

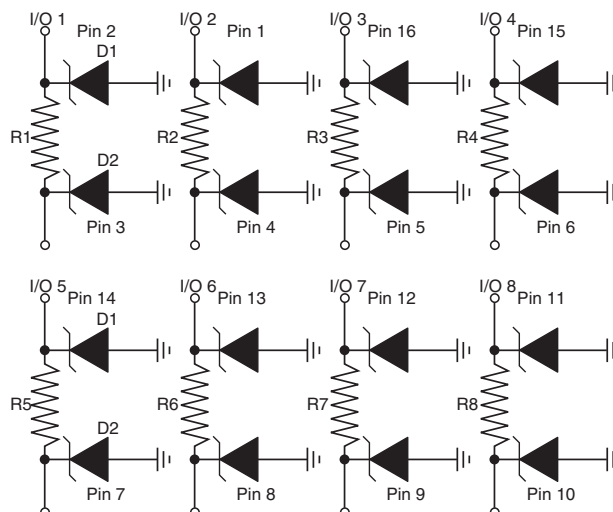
- ✓ QFN-16 Package
- ✓ Weight 0.73 milligrams (Approximate)
- ✓ Available in Lead-Free Pure-Tin Plating(Annealed)
- ✓ Solder Reflow Temperature:  
Pure-Tin - Sn, 100: 260-270°C
- ✓ Consult Factory for Leaded Device Availability
- ✓ Flammability Rating UL 94V-0
- ✓ 8mm Tape and Reel Per EIA Standard 481
- ✓ Marking: Logo, Part Number and Pin One Defined By Dot on Package



QFN-16



## PIN CONFIGURATION



Note: Center Tab as the Ground.

# EM8Q-200

## DEVICE CHARACTERISTICS

### MAXIMUM RATINGS @ 25°C Unless Otherwise Specified

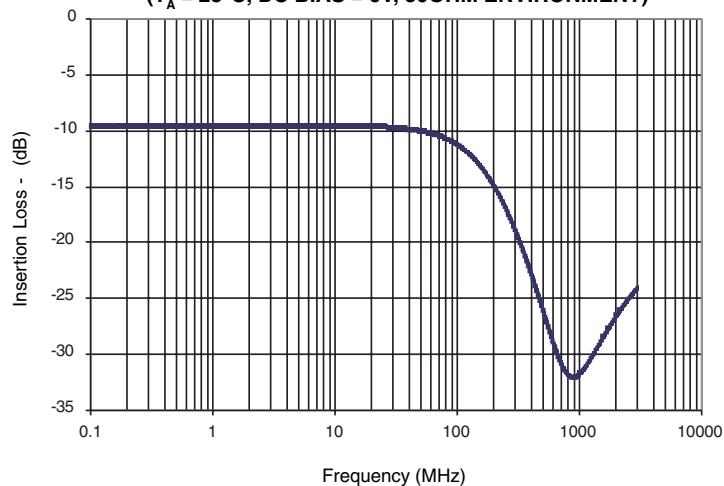
PARAMETER	SYMBOL	VALUE	UNITS
Operating Temperature	$T_A$	-40 to 85	°C
Storage Temperature	$T_{STG}$	-55 to 150	°C
DC Power Per Resistor	P	100	mW
Typical Resistance @ ± 15%	R	200	OHMS
Soldering Temperature for 10 seconds	$T_L$	265	°C

### ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified

PART NUMBER	RATED STAND-OFF VOLTAGE $V_{WM}$ VOLTS	MINIMUM BREAKDOWN VOLTAGE @ 1mA $V_{BR}$ VOLTS	MAXIMUM LEAKAGE CURRENT @ 3V $I_b$ $\mu A$	TYPICAL FORWARD VOLTAGE @ 10mA $V_F$ VOLTS	MINIMUM ATTENUATION @ 800-3000 MHz dB	CUT-OFF FREQUENCY (50 Ohms I/O) ZERO BIAS f <sub>c</sub> MHz	TYPICAL CAPACITANCE PER LINE @ 2.5V, 1 MHz C pF
EM8Q-200	5.0	6.0	0.1	0.8	25	140	20

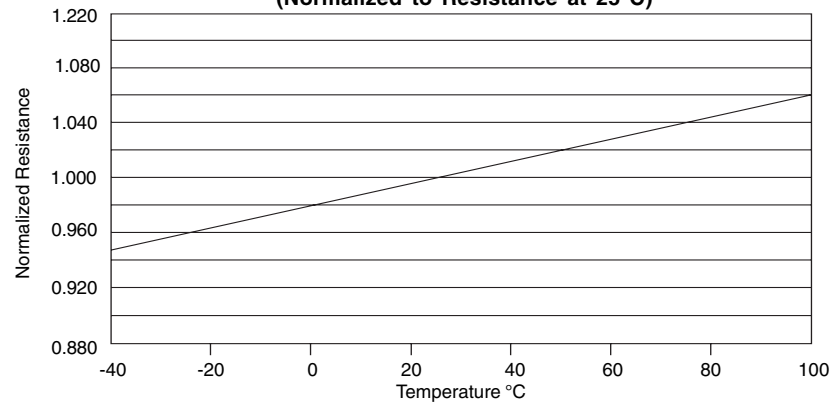
Note 1: ±20% tolerance.

**FIGURE 1**  
TYPICAL INSERTION LOSS  
( $T_A = 25^\circ C$ , DC BIAS = 0V, 50OHM ENVIRONMENT)

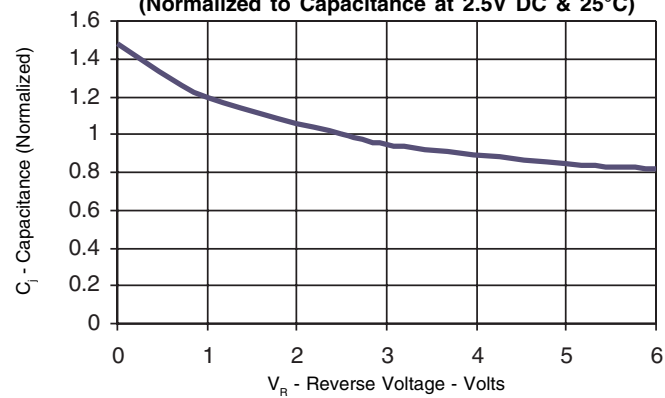


## GRAPHS

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



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



# EM8Q-200

## QFN-16 PACKAGE OUTLINE & DIMENSIONS

### PACKAGE OUTLINE

**TOP VIEW**                      **SIDE VIEW**

### PACKAGE DIMENSIONS

DIM	MILLIMETERS	INCHES
A	3.000 SQ	0.1181 SQ
B	1.70 SQ ± 0.050	0.067 SQ ± 0.002
C	1.500	0.059
D	0.500 BSC	0.0196 BSC
E	0.230 ± 0.05	0.009 ± 0.002
F	0.400 ± 0.05	0.0157 ± 0.002
G	0.750 ± 0.05	0.0295 ± 0.002
H	0.000 - 0.05	0.000 - 0.002
I	0.203 ± 0.025	0.0079 ± 0.001

**NOTES:**  
 1. Controlling dimensions in inches.  
 2. Decimal tolerances for mounting pad and outline: .xxx ± 0.05mm (± 0.002").

**TAPE & REEL ORDERING NOMENCLATURE**

- Surface mount product is taped and reeled in accordance with EIA 481.
- Suffix-T73 = 7 Inch Reels - 3,000 pieces per 12mm tape, i.e., EM8Q-200-T73.
- Suffix-T13 = 13 Inch Reels - 10,000 pieces per 12mm tape, i.e., EM8Q-200-T13.
- Suffix-LF = Pure Tin Plating, i.e., EM8Q-200-LF-T73.

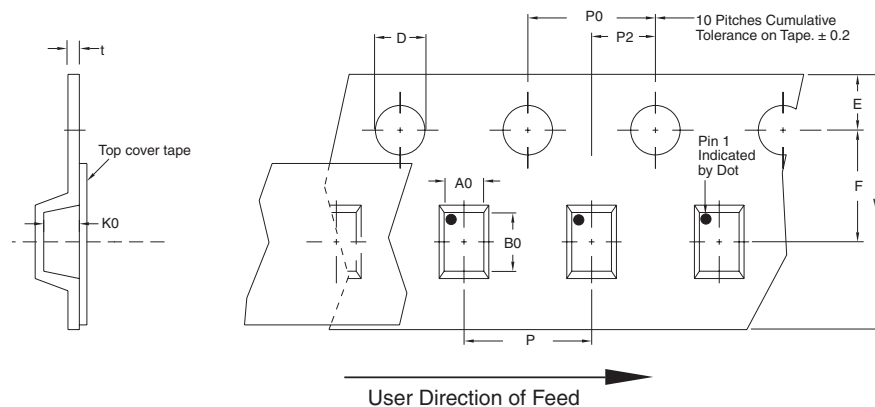
### MOUNTING PAD

TYPICAL		
DIM	Millimeters	Inches
1	4.000	0.1574
2	0.700	0.0275
3	1.000	0.0393
4	0.500	0.0196
5	0.300	0.0118

**Outline & Dimensions: Rev 0 - 10/06, 06054**

Tape & Reel Specifications (Dimensions in millimeters)

Reel Dia.	Tape Width	A0	B0	K0	D	E	F	W	P0	P2	P	tmax
178mm (7")/330mm(13")	12mm	3.30± 0.10	3.30± 0.10	1.00 ± 0.10	1.50 ± 0.10	1.75 ± 0.10	5.50 ± 0.10	12.00 ± 0.30	4.00 ± 0.10	2.00 ± 0.05	8.00 ± 0.10	0.25



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