EMI6316FCTBG

EMI Filter with ESD Protection for MicroSD Card Applications

ON Semiconductor®

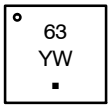
http://onsemi.com

Product Description

The EMI6316 is a 4 x 4, 15−bump EMI filter with ESD protection device for MicroSD card applications in a 0.4 mm pitch CSP form factor. It is fully compliant with IEC 61000−4−2. The EMI6316 is also RoHS II compliant.

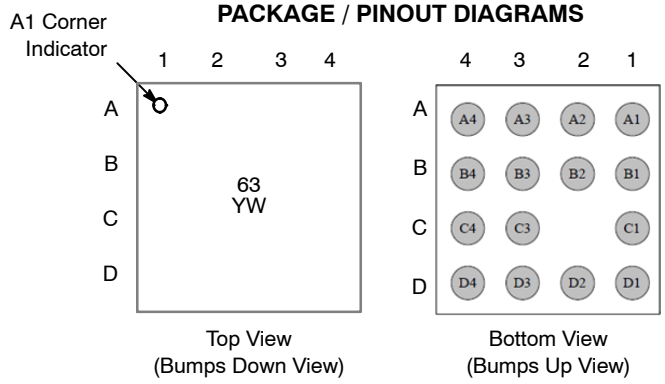
MARKING DIAGRAM

WLCSP15
CASE 567FX



63 = Specific Device Code
Y = Year
W = Work Week
▪ = Pb−Free Package

PACKAGE / PINOUT DIAGRAMS



ORDERING INFORMATION

See detailed ordering, marking and shipping information in the package dimensions section on page 3 of this data sheet.

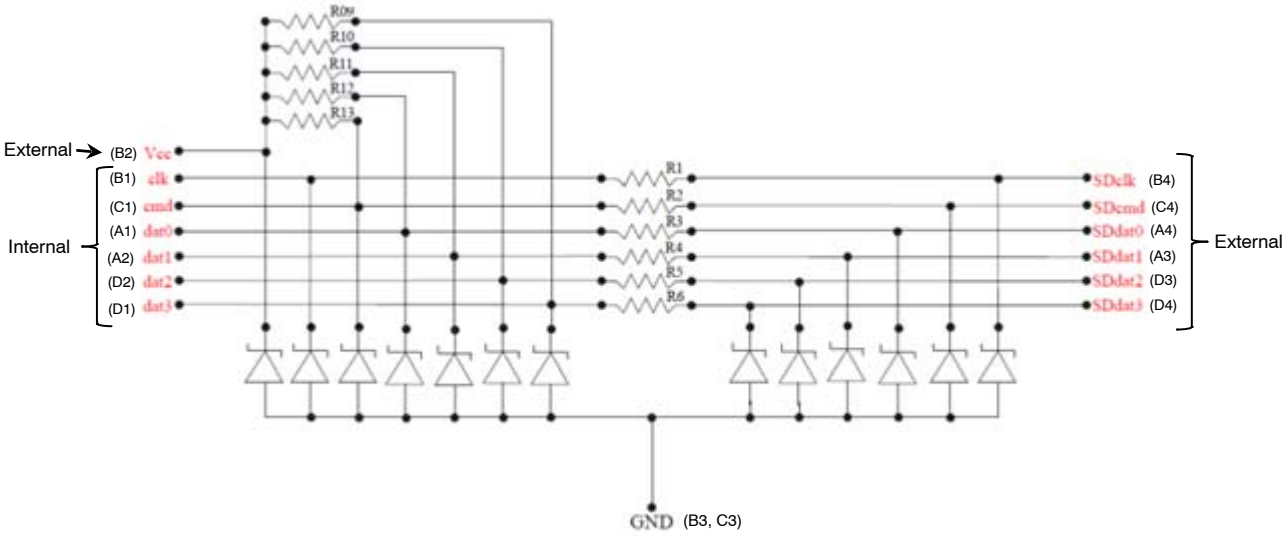


Figure 1. Electrical Schematic

Table 1. PIN DESCRIPTIONS

Pin	Description	Pin	Description	Pin	Description	Pin	Description
A1	dat0 Internal	B1	clk Internal	C1	cmd Internal	D1	data3 Internal
A2	dat1 Internal	B2	V_{CC} External			D2	data2 Internal
A3	SDdat1 External	B3	GND	C3	GND	D3	SDdata2 External
A4	SDdat0 External	B4	SDclk External	C4	SDcmd External	D4	SDdata3 External

ELECTRICAL SPECIFICATIONS AND CONDITIONS

Table 2. PARAMETERS AND OPERATING CONDITIONS

Parameter	Rating	Unit
Storage Temperature Range	−55 to +150	°C
Operating Temperature Range	−40 to +85	°C

Table 3. ELECTRICAL OPERATING CHARACTERISTICS (Note 1)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
R_1 R_2 R_3 R_4 R_5 R_6	Resistance		34	40	46	Ω
R_9 R_{10} R_{11} R_{12}	Resistance		42.5	50	57.5	kΩ
R_{13}	Resistance		12.75	15	17.25	kΩ
I_{LEAK}	Leakage Current per Channel	V_{IN} = 3.0 V		10	100	nA
C	Line Capacitance	At 1 MHz, V_{IN} = 0 V	9	11.5	14	pF
		At 1 MHz, V_{IN} = 1.8 V (Note 2)		8		pF
		At 1 MHz, V_{IN} = 2.5 V		7		pF
V_B	Breakdown Voltage (Positive)	I_R = 1 mA	6	7	9	V
V_{ESD}	ESD Protection Peak Discharge Voltage at A3, A4, B2, B4, C4, D3 and D4 pins a) Contact Discharge per IEC 61000−4−2 standard b) Air Discharge per IEC 61000−4−2 standard	(Note 3)	 ±8 ±15			kV
	ESD Protection Peak Discharge Voltage at A1, A2, B1, C1, D1 and D2 pins a) Contact Discharge per IEC 61000−4−2 standard b) Air Discharge per IEC 61000−4−2 standard	(Note 3)	 ±2 ±2			

1. All parameters specified at T_A = 25°C unless otherwise noted.
2. MicroSD version 3.0 SDR104 compliant.
3. Standard IEC 61000−4−2 with $C_{Discharge}$ = 150 pF, $R_{Discharge}$ = 330 Ω.

Table 4. CSP TAPE AND REEL SPECIFICATIONS†

Part Number	Chip Size (mm)	Package	Shipping†
EMI6316FCTBG	1.56 x 1.56 x 0.50	WLCSP15 (Pb−Free)	5000 / Tape & Reel

† For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification Brochure, BRD8011/D.

RF CHARACTERISTICS

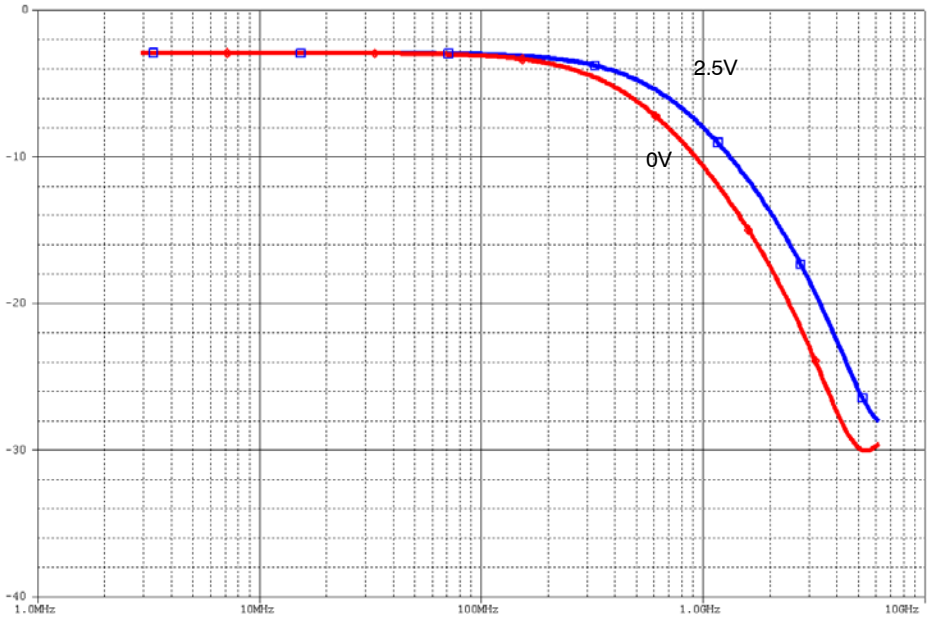
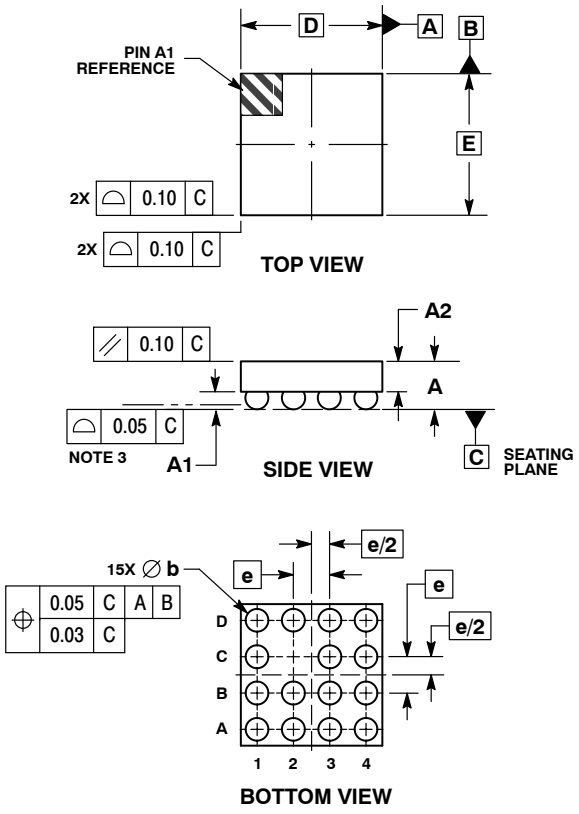


Figure 2. S21 Attenuation Simulation

EMI6316FCTBG

PACKAGE DIMENSIONS

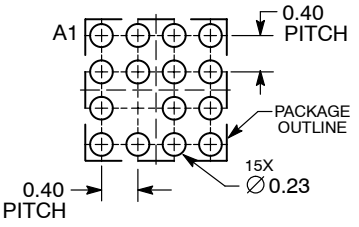
WLCSP15, 1.56x1.56
CASE 567FX
ISSUE O



NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. COPLANARITY APPLIES TO SPHERICAL CROWNS OF SOLDER BALLS.

	MILLIMETERS	
DIM	MIN	MAX
A	0.47	0.53
A1	0.185	0.205
A2	0.305 REF	
b	0.24	0.29
D	1.56 BSC	
E	1.56 BSC	
e	0.40 BSC	

RECOMMENDED SOLDERING FOOTPRINT*



DIMENSIONS: MILLIMETERS

*For additional information on our Pb−Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:
Literature Distribution Center for ON Semiconductor
P.O. Box 5163, Denver, Colorado 80217 USA
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