

# EMI6316FCTBG

## EMI Filter with ESD Protection for MicroSD Card Applications

### 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.



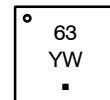
ON Semiconductor®

<http://onsemi.com>

### MARKING DIAGRAM



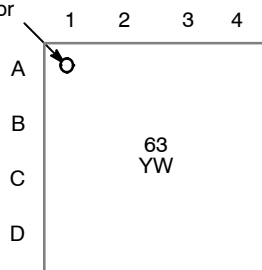
WLCSP15  
CASE 567FX



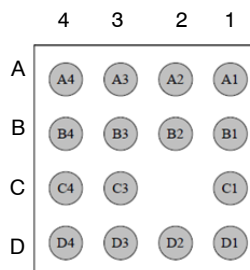
- 63 = Specific Device Code
- Y = Year
- W = Work Week
- = Pb-Free Package

### PACKAGE / PINOUT DIAGRAMS

A1 Corner Indicator



Top View  
(Bumps Down View)

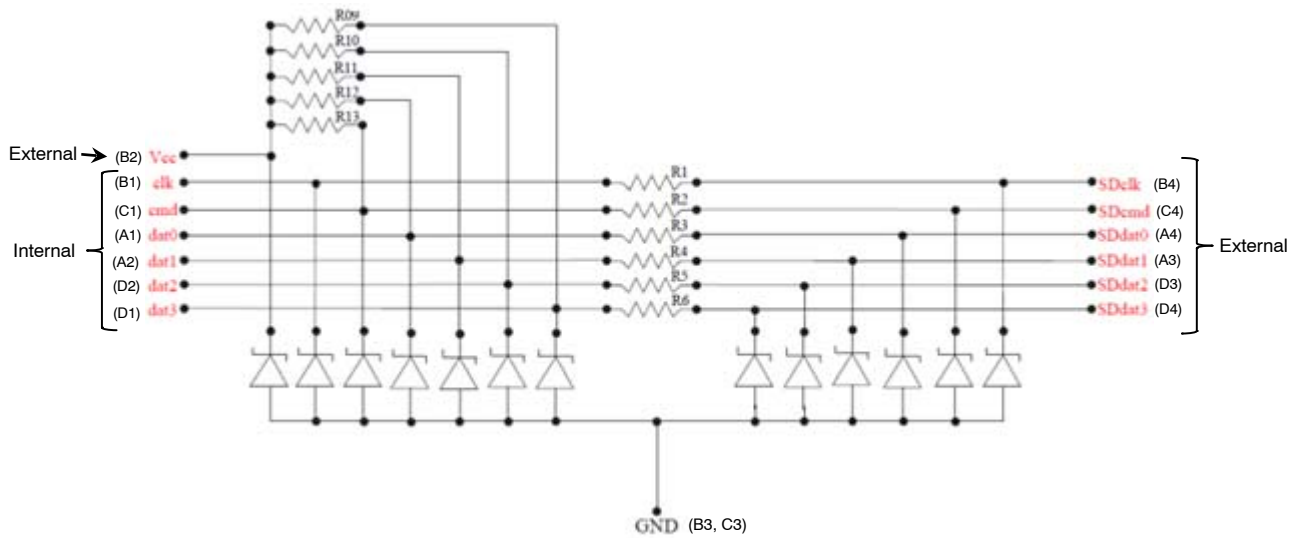


Bottom View  
(Bumps Up View)

### ORDERING INFORMATION

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

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**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 <sub>CC</sub> 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

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## 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 <sub>1</sub> R <sub>2</sub> R <sub>3</sub> R <sub>4</sub> R <sub>5</sub> R <sub>6</sub>	Resistance		34	40	46	Ω
R <sub>9</sub> R <sub>10</sub> R <sub>11</sub> R <sub>12</sub>	Resistance		42.5	50	57.5	kΩ
R <sub>13</sub>	Resistance		12.75	15	17.25	kΩ
I <sub>LEAK</sub>	Leakage Current per Channel	V <sub>IN</sub> = 3.0 V		10	100	nA
C	Line Capacitance	At 1 MHz, V <sub>IN</sub> = 0 V	9	11.5	14	pF
		At 1 MHz, V <sub>IN</sub> = 1.8 V (Note 2)		8		pF
		At 1 MHz, V <sub>IN</sub> = 2.5 V		7		pF
V <sub>B</sub>	Breakdown Voltage (Positive)	I <sub>R</sub> = 1 mA	6	7	9	V
V <sub>ESD</sub>	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)				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)	±8 ±15			
			±2 ±2			

1. All parameters specified at T<sub>A</sub> = 25°C unless otherwise noted.
2. microSD version 3.0 SDR104 compliant.
3. Standard IEC 61000-4-2 with C<sub>Discharge</sub> = 150 pF, R<sub>Discharge</sub> = 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.

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## RF CHARACTERISTICS

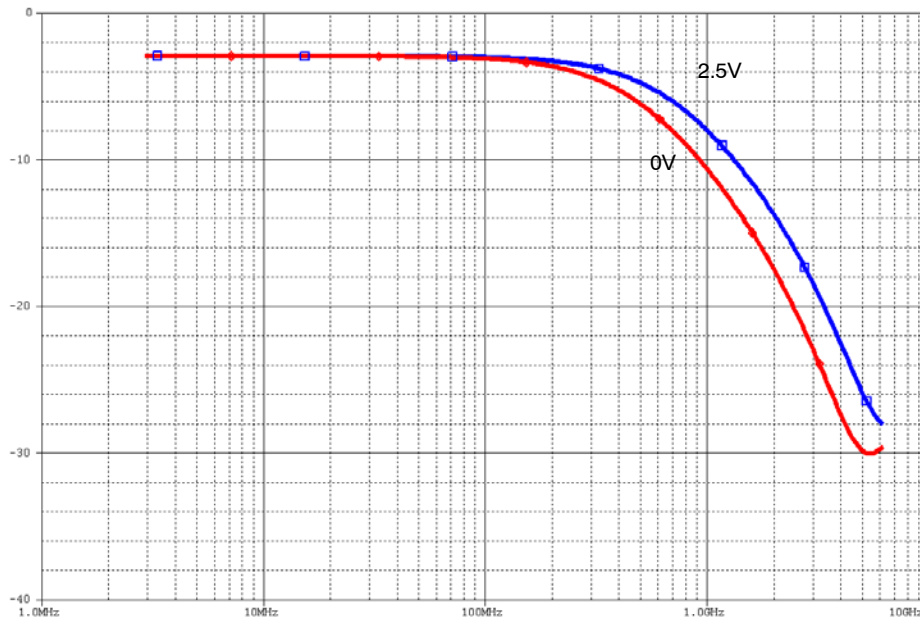


Figure 2. S21 Attenuation Simulation



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