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EMI7403

EMI Filter with ESD Protection for MicroSD Card Applications

ON Semiconductor®

http://onsemi.com

Product Description

The EMI7403 is a combination EMI filter with integrated TVS diodes for use on Multimedia Card interfaces. This state−of−the−art device utilizes solid−state, silicon− avalanche technology for superior clamping performance and DC electrical characteristics. The EMI7403 has been optimized for protection of MicroSD interfaces in smart phones and other portable electronics.

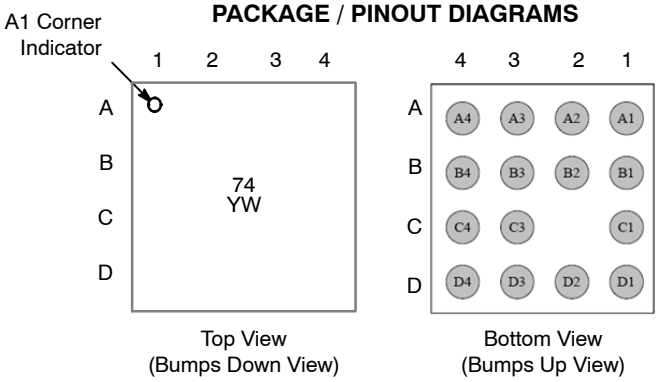
Features

- Provides ESD Protection to IEC61000−4−2:
  ±15 kV Contact Discharge
- Protection and Termination for 6 Lines + V_{CC}
- These Devices are Pb−Free, Halogen Free/BFR Free and are RoHS Compliant

Applications

- MicroSD Interfaces
- MMC Interfaces
- Feature Phones, Smart Phones

PACKAGE / PINOUT DIAGRAMS



MARKING DIAGRAM

WLCSP15
CASE 567FX

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

ORDERING INFORMATION

Device	Package	Shipping†
EMI7403FCTBG	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 Specifications Brochure, BRD8011/D.

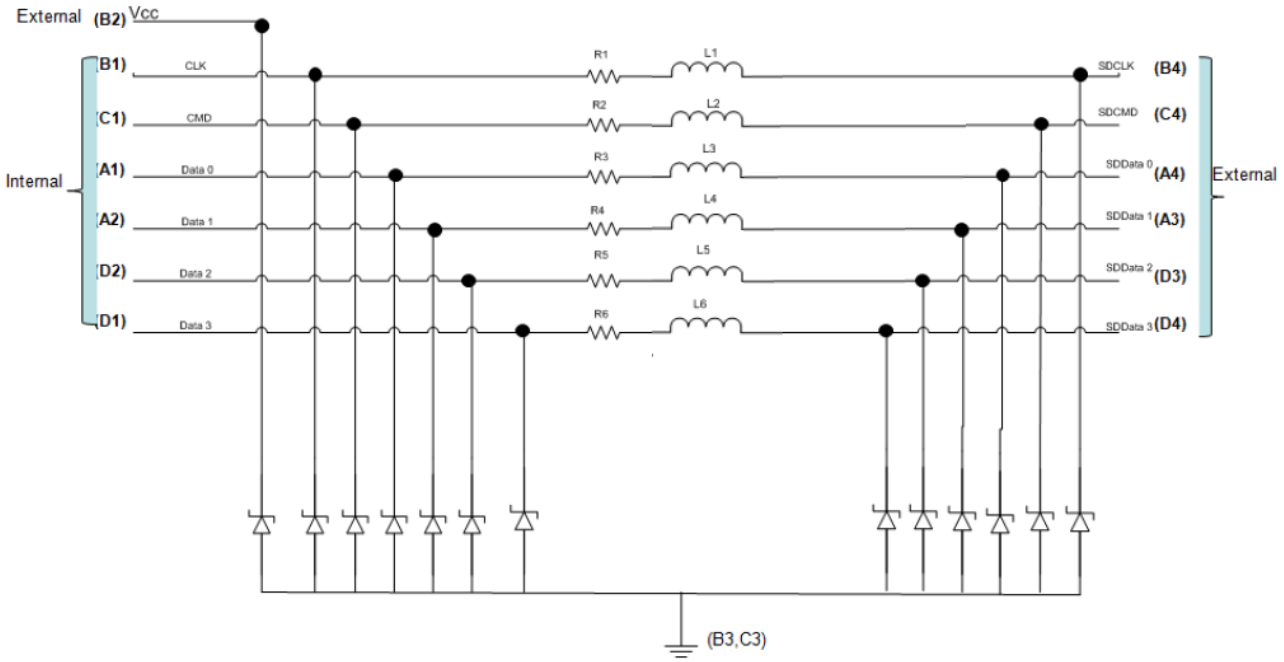


Figure 1. Electrical Schematic

Table 1. PIN DESCRIPTIONS

Pin	Description	Pin	Description	Pin	Description	Pin	Description
A1	data0 Internal	B1	clk Internal	C1	cmd Internal	D1	data3 Internal
A2	data1 Internal	B2	V_{CC} External			D2	data2 Internal
A3	SDdata1 External	B3	GND	C3	GND	D3	SDdata2 External
A4	SDdata0 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

Functional operation above the stresses listed in the Recommended Operating Ranges is not implied. Extended exposure to stresses beyond the Recommended Operating Ranges limits may affect device reliability.

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
V_{RWM}	Reverse Working Voltage	(Note 3)		3.3		V
V_{BR}	Breakdown Voltage	I_T = 1 mA; (Note 4)	6.0		9.0	V
I_{LEAK}	Channel Leakage Current	V_{IN} = 3.3 V		0.1	0.5	μA
R_{CH}	Channel Resistance (R1 to R6)			40		Ω
f_{3dB}	Cut-off Frequency	50 Ω Source and Load Termination		300		MHz
F_{atten}	Stop Band Attenuation	@ 700 MHz @ 900 MHz		20 35		dB
V_{ESD}	In-system ESD Withstand Voltage a) Contact discharge per IEC 61000-4-2 standard, Level 4 **(External Pins)** b) Contact discharge per IEC 61000-4-2 standard, Level 1 **(Internal Pins)**	(Notes 1 and 2)	 ±15 ±2			kV

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

1. Standard IEC61000−4−2 with $C_{Discharge}$ = 150 pF, $R_{Discharge}$ = 330, GND grounded.
2. These measurements performed with no external capacitor.
3. TVS devices are normally selected according to the working peak reverse voltage (V_{RWM}), which should be equal to or greater than the DC or continuous peak operating voltage level.
4. V_{BR} is measured at pulse test current I_T.

RF CHARACTERISTICS

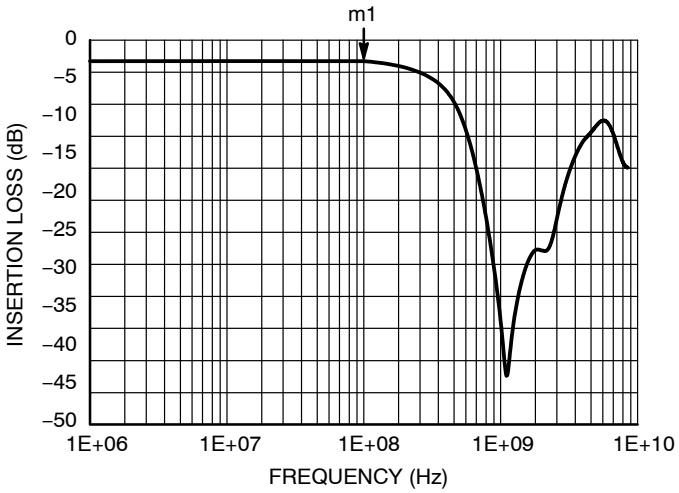


Figure 2. S21 Attenuation Simulation

Interface	Data Rate (Mbyte/s)	Fundamental Frequency (MHz)	EMI7403 Insertion Loss (dB)
DDR50/SDR50	50	100 (m1)	m1 = 3.27

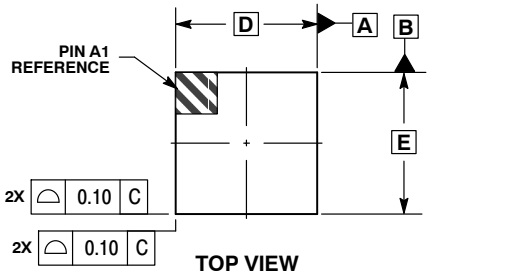
MECHANICAL CASE OUTLINE
PACKAGE DIMENSIONS

ON Semiconductor®

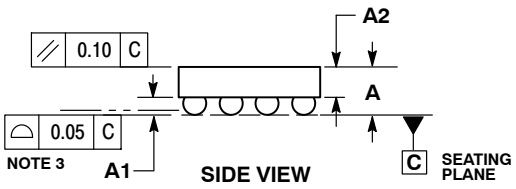
WLCSP15, 1.56x1.56
CASE 567FX
ISSUE O

SCALE 4:1

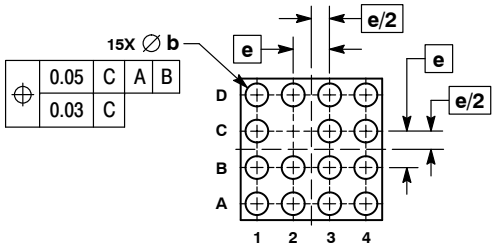
DATE 07 JUN 2012



TOP VIEW



SIDE VIEW

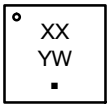


BOTTOM VIEW

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	

GENERIC MARKING DIAGRAM*



XX = Specific Device Code
Y = Year
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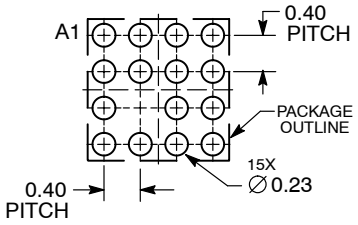
*This information is generic. Please refer to device data sheet for actual part marking. Pb−Free indicator, “G” or microdot “ ▪”, may or may not be present.

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.

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DESCRIPTION:	WLCSP15, 1.56X1.56	PAGE 1 OF 1

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:
Email Requests to: orderlit@onsemi.com

ON Semiconductor Website: www.onsemi.com

TECHNICAL SUPPORT
North American Technical Support:
Voice Mail: 1 800−282−9855 Toll Free USA/Canada
Phone: 011 421 33 790 2910

Europe, Middle East and Africa Technical Support:
Phone: 00421 33 790 2910
For additional information, please contact your local Sales Representative

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