



EMI Filters with ESD Protection for Data Line Applications

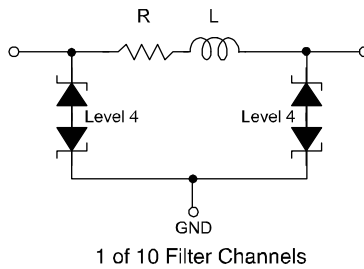
CM6400A

Product Description

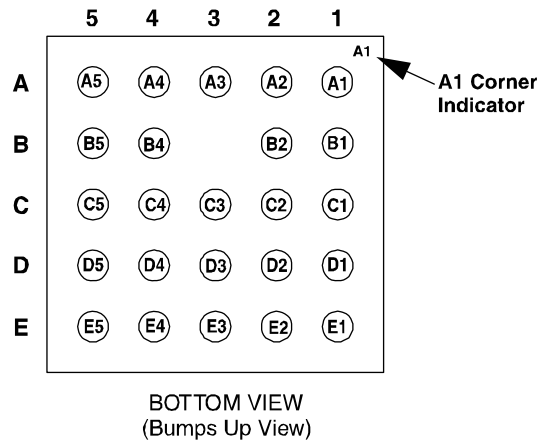
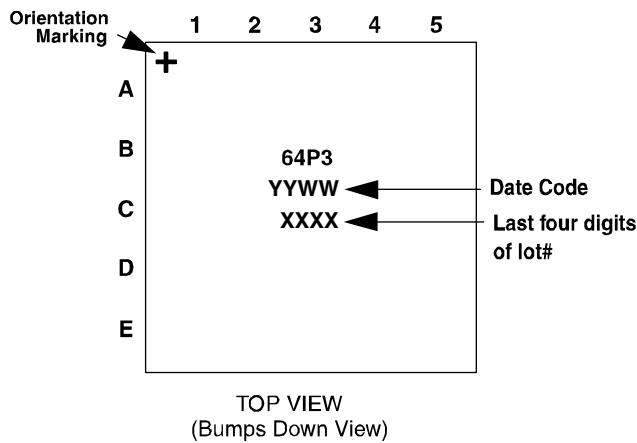
The CM6400A is a 24-bump EMI filter with ESD protection device for data line application in a 0.4mm pitch, 5x5 CSP form factor. It is fully compliant with IEC 61000-4-2 Level 4. The CM6400A is RoHS II compliant.

Electrical Schematic / Pin Description

Electrical Schematic



Package Pinout



Notes:

1) These drawings are not to scale.

Pin Information

PIN DESCRIPTIONS				
A5=Line 1	A4=Line 2	A3=GND	A2=Line 1	A1=Line 2
B5=Line 3	B4=Line 4		B2=Line 3	B1=Line 4
C5=Line 5	C4=Line 6	C3=GND	C2=Line 5	C1=Line 6
D5=Line 7	D4=Line 8	D3=GND	D2=Line 7	D1=Line 8
E5=Line 9	E4=Line 10	E3=GND	E2=Line 9	E1=Line 10

Ordering Information

PART NUMBERING INFORMATION				
Bumps	Package	Variation	Ordering Part Number ¹	Part Marking
24	CSP	CSP-SAC105	CM6400A	64P3

Note 1: Parts are shipped in Tape and Reel form unless otherwise specified.

Electrical Specifications and Conditions

PARAMETERS AND OPERATING CONDITIONS		
PARAMETER	RATING	UNITS
Storage Temperature Range	-55 to +150	°C
Operating Temperature Range	-40 to +85	°C
Power dissipation at 70°C per channel	60	mW

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ELECTRICAL OPERATING CHARACTERISTICS (SEE NOTE 1)

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
R	Resistance		100	125	150	Ω
L	Inductance	Note 2		35		nH
C	Capacitance per Channel	At 1 MHz, $V_{IN} = 0V$; Notes 2 and 3	19	24	29	pF
		At 1 MHz, $V_{IN} = 2.5V$		15		pF
Att(5)	Passband Attenuation at 5MHz			-7		dB
F_C	Cut-off Frequency	$Z_{SOURCE} = 50\Omega, Z_{LOAD} = 50\Omega$		250		MHz
V_{BR}	Breakdown Voltage	$I_R = \pm 1mA$	± 6	± 7.8	± 10	V
I_{LEAK}	Leakage Current per Channel	$V_{IN} = 3.0V$		10	100	nA
V_{ESD}	ESD Peak Discharge Voltage Protection at All Pins: a) Contact discharge per IEC 61000-4-2 standard b) Air discharge per IEC 61000-4-2 standard	Notes 2, 3, and 4	± 15			kV
			± 15			kV

Note 1: All parameters specified at $T_A = 25^\circ C$ unless otherwise noted.

Note 2: These parameters guaranteed by design.

Note 3: These parameters guaranteed by characterization.

Note 4: Standard IEC 61000-4-2 ($C_{Discharge} = 150pF, R_{Discharge} = 330\Omega$).

RF Characteristics

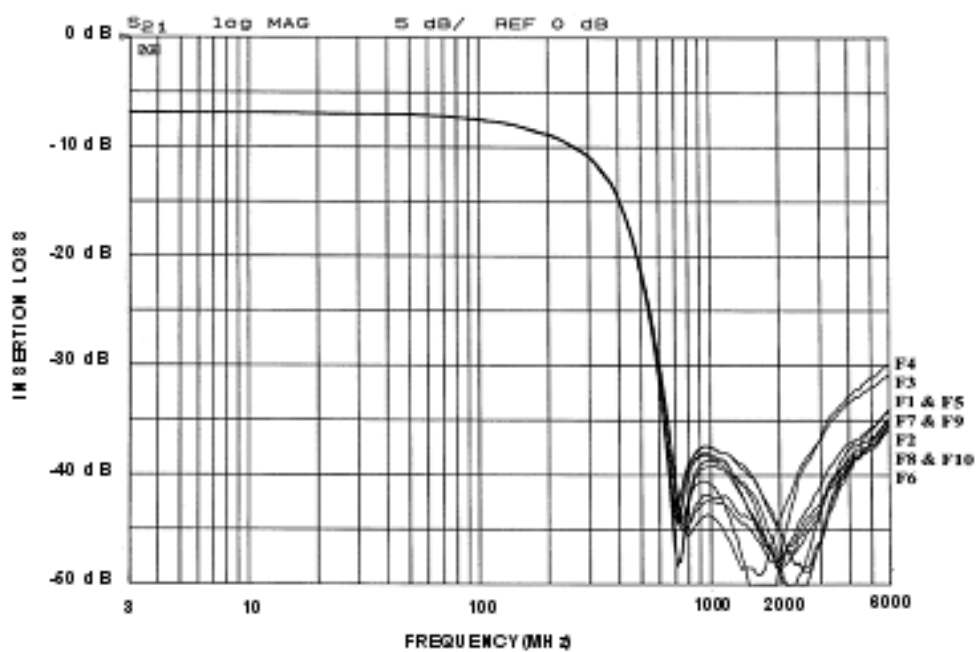


Figure 1. Typical Insertion Loss (Bias=0V, $T_A = 25^\circ\text{C}$, 50 Ohm Environment)

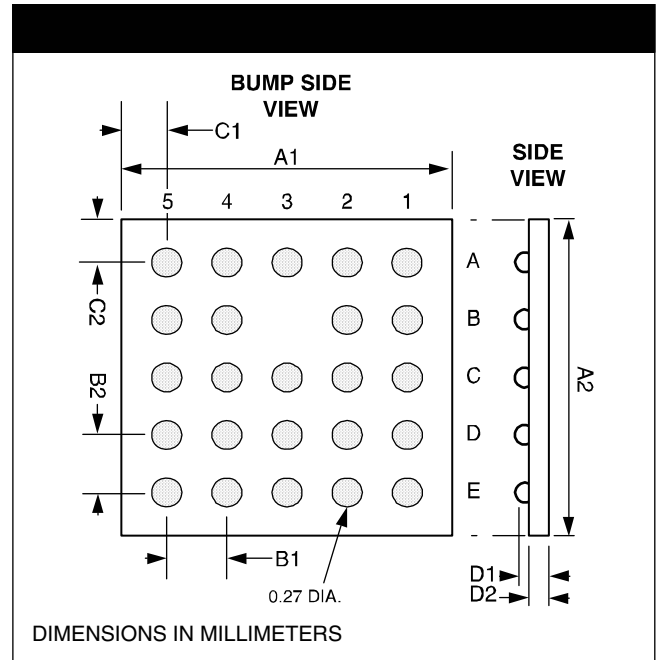
CM6400A

Mechanical Specification

CSP-24 Mechanical Specifications

The CM6400A is supplied in a 24 bump, 5x5 Chip Scale Package (CSP).

Package Dimensions						
Package	Custom CSP					
Bumps	24					
Dim	Millimeters			Inches		
	Min	Nom	Max	Min	Nom	Max
A1	1.915	1.960	2.005	0.0754	0.0772	0.0789
A2	1.915	1.960	2.005	0.0754	0.0772	0.0789
B1	0.395	0.400	0.405	0.0156	0.0157	0.0159
B2	0.395	0.400	0.405	0.0156	0.0157	0.0159
C1	0.130	0.180	0.230	0.0051	0.0071	0.0091
C2	0.130	0.180	0.230	0.0051	0.0071	0.0091
D1	0.570	0.600	0.630	0.0224	0.0236	0.0248
D2	0.394	0.406	0.419	0.0155	0.0160	0.0165
Controlling dimension: millimeters						



**Package Dimensions for
CM6400A Chip Scale Package**

Vertical Structure Specification*

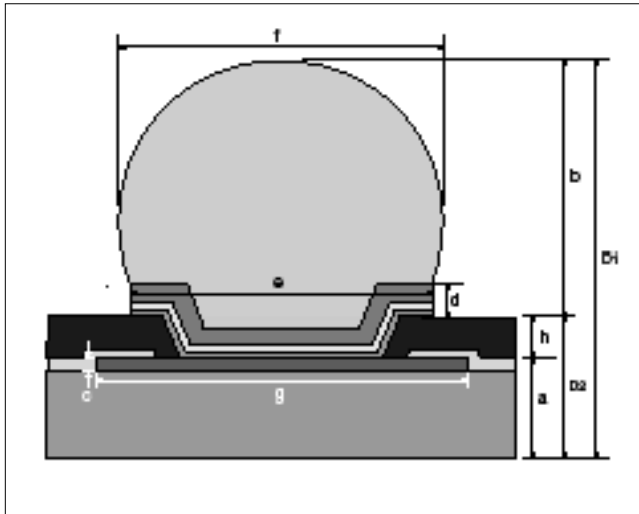


Figure 2. Sectional View

*Daisy Chain CM6000

Vertical Structure Dimensions (nominal)

REF.	Parameter	Material	Dimension
a	Die Thickness	Silicon	396 μ m
h	Repassivation	Polyimide	10 μ m
d	UBM-(Ti/Cu)	Plated Cu	7 μ m
		Sputtered Cu	0.4 μ m
		Sputtered Ti	0.1 μ m
e	UBM Wetting Area Diameter		240 μ m
b	Bump Standoff		194 μ m
f	Solder Bump Diameter after Bump Reflow		270 μ m
c	Metal Pad Height	AlSiCu	1.5 μ m
g	Metal Pad Diameter		284 μ m
D2			0.406mm
D1	Finished Thickness		0.600mm

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Mechanical Specification (cont'd)

CSP Tape and Reel Specifications

PART NUMBER	CHIP SIZE (mm)	POCKET SIZE (mm) $B_0 \times A_0 \times K_0$	TAPE WIDTH W	REEL DIA.	QTY PER REEL	P_0	P_1
CM6400A	1.96 X 1.96 X 0.60	2.20 x 2.20 x 0.68	8mm	178mm (7")	5000	4mm	4mm

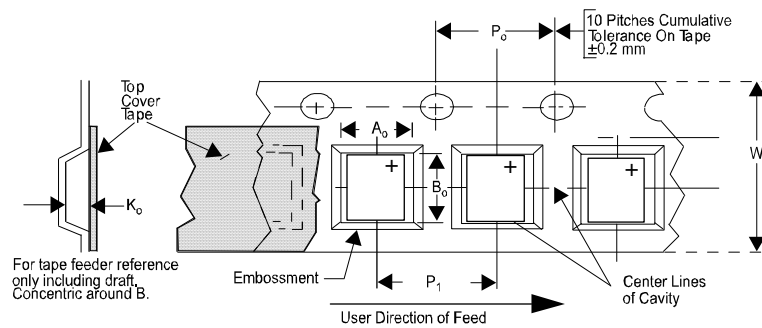



Figure 3. Tape and Reel Mechanical Data

**REVISION RECORD FOR NOKIA PRODUCT DATASHEET
CM6400A**

ISSUE	DATE	DETAILS OF CHANGE	ORIGINATOR
X-1	5/21/09	<ul style="list-style-type: none"> Preliminary release of datasheet 	Tim Micun
X-2	8/03/09	<ul style="list-style-type: none"> Product name change from CM6400-P3 to CM6400A Changed Vertical Structure drawing to match CM6000/CM6100 on page 4. 	Tim Micun
X-3	9/15/09	<ul style="list-style-type: none"> Replaced RF characteristics graph (Figure 1 "Typical Insertion Loss") on page 3. 	Tim Micun
A	10/2/09	<ul style="list-style-type: none"> Datasheet is now at "production" status (Issue A). No other changes made. 	Tim Micun

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