





### Features

- Four, six and eight channel of EMI filtering with integrated ESD protection
- ±15kV ESD protection on each channel (IEC 61000-4-2 Level 4, contact discharge)
- ±30kV ESD protection on each channel (HBM)
- Greater than 30dB attenuation (typical) at 1 GHz
- Chip Scale Package (CSP) with 0.40mm pitch and 0.25mm CSP solder ball pitch feature enable low parasitic inductance for optimum filter and ESD performance
- *OptiGuard™* Coating for improved reliability and assembly
- RoHS-compliant, lead-free finishing

### Applications

- LCD and Camera data line in mobile handset
- I/O port protection for mobile handset, notebook computer, PDA etc.
- EMI filtering for data port in cell phone, PDA or notebook computer.
- Wireless handset



CM1452

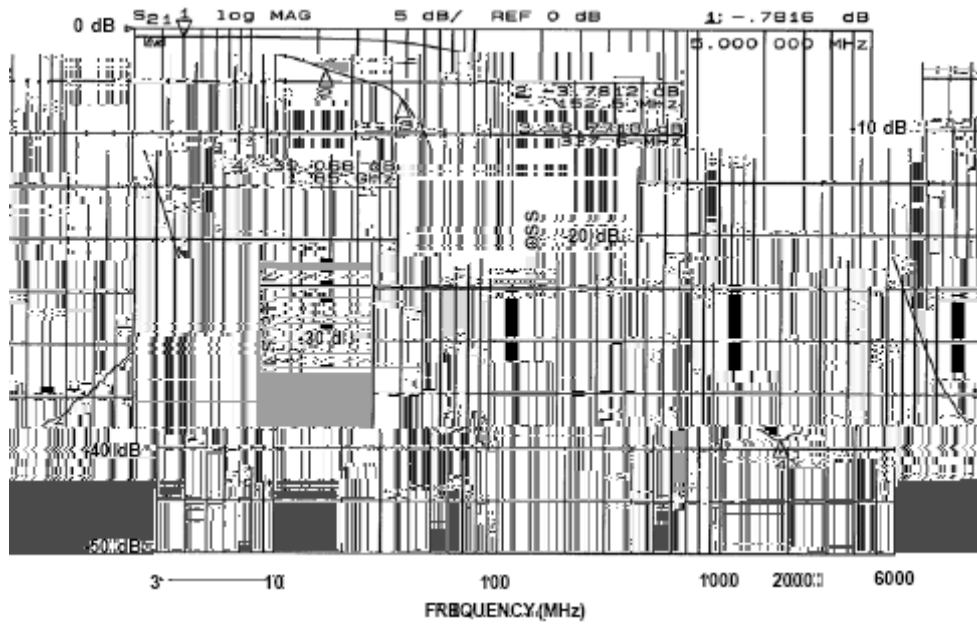


**ELECTRICAL OPERATING CHARACTERISTICS** (SEE NOTE 1)

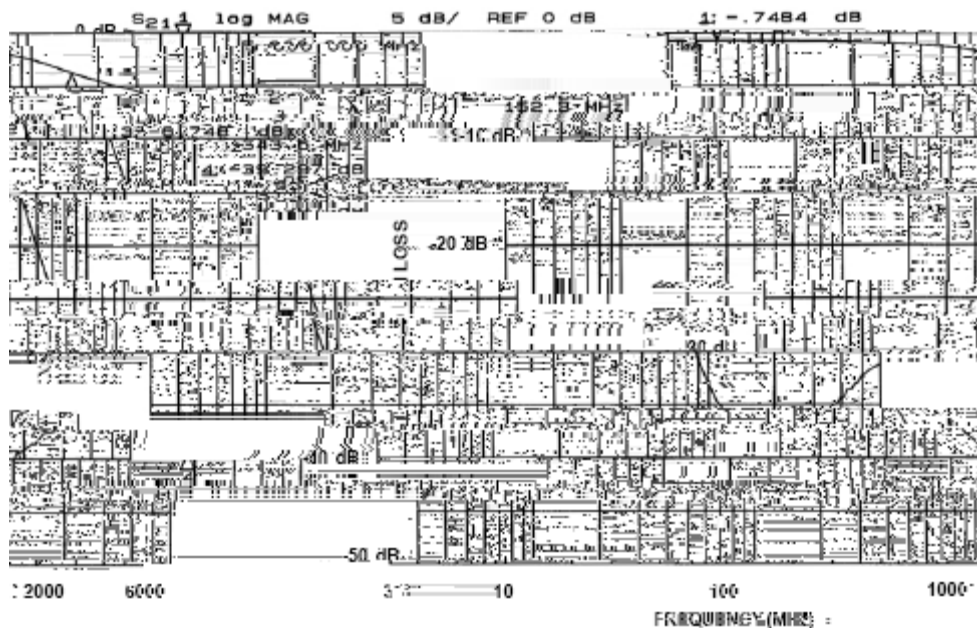
SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
$L_{CHAN}$	Channel Inductance			17		nH
$C_{TOT}$	Total Channel Capacitance at 2.5Vdc; 1MHz, 30mVac	2.5V dc; 1MHz, 30mV ac	24	30	36	pF
$C_1$	Capacitance C1 at 2.5V dc; 1MHz, 30mV ac	2.5V dc; 1MHz, 30mV ac		15		pF
$f_c$	Cutoff Frequency, ZSOURCE = 50Ω, ZLOAD = 50Ω			148		MHz
$f_r$	Roll-off Frequency at -6dB Attenuation, ZSOURCE = 50Ω, ZLOAD = 50Ω			330		MHz
$V_{ST}$	Stand-off Voltage, I = 10mA		5.5			V
$I_{LEAK}$	Diode Leakage at 3.3V reverse bias voltage			0.1	1.0	μA
$V_{SIG}$	Signal Clamp Voltage:					
	Positive Clamp	$I_{LOAD} = 10mA$	5.6	6.8	9.0	V
	Negative Clamp	$I_{LOAD} = -10mA$	-1.5	-0.8	-0.4	V

P. 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100.

T. 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100.



F.1. 1. L. 1. F. (F.1. 1: CM1452-04, -06, -08)



F.1. 2. L. 2. F. (F.1. 2: CM1452-04, -06, -08)

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P. 1. 2. 1. 2 (C 1. 2)

T. 1. 2 F. 1. 2 B. 1. 2 ( 1. 2 1. 1. 2 1. 1. 2 1. 1. 2 , 50Ω 1. 1. 2 )

S21 100 MAG 5 dB/ REF 0 dB 1: -7960 dB

F. 1. 3. 1. 2 L . F. 1. 2 (F. 1. 3: CM1452-04, -06, -08)

S21 100 MAG 5 dB/ REF 0 dB 1: -7780 dB

F. 1. 4. 1. 2 L . F. 1. 2 (F. 1. 4: CM1452-04, -06, -08)





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Figure 7. Load Regulation (C<sub>L</sub>)

Test Conditions: B<sub>1</sub> (V<sub>IN</sub> = 2.4V, I<sub>OUT</sub> = 100mA, R<sub>LOAD</sub> = 50Ω, f<sub>SW</sub> = 1MHz)

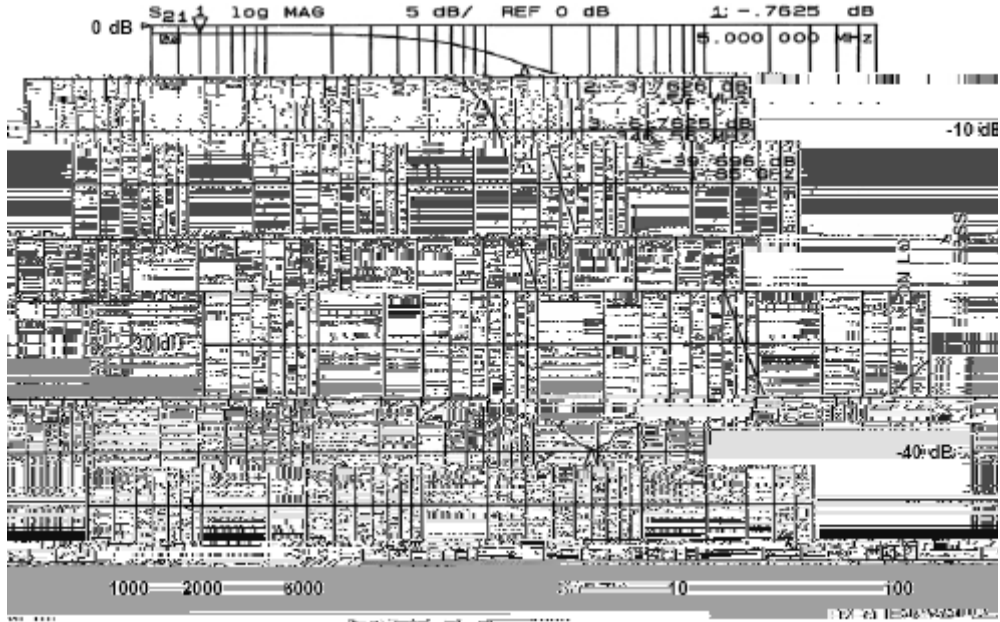
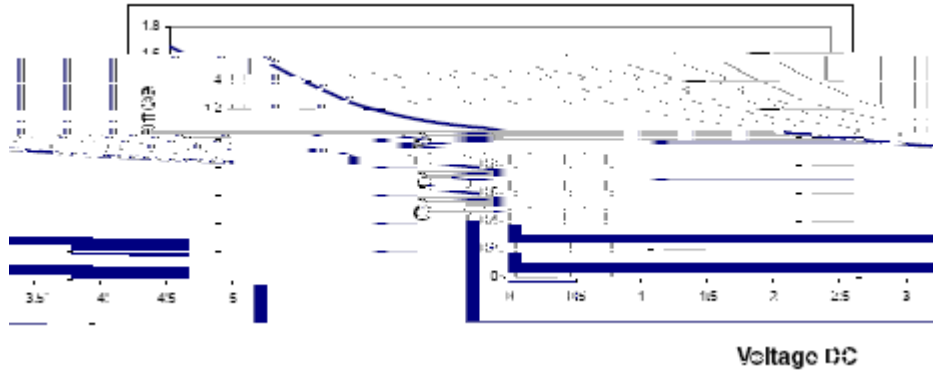


Figure 7. Load Regulation (F<sub>1</sub>: CM1452-08)



Figure 8. Load Regulation (F<sub>1</sub>: CM1452-08)

**P** ~~12.1.1~~ ~~12.1.1~~ (C ~~1.1~~ )



F.1 ~~12.1.1~~ CM1452 T. ~~12.1.1~~ D.1 ~~12.1.1~~ C2 ~~12.1.1~~ ~~12.1.1~~ V ~~12.1.1~~  
 (N ~~12.1.1~~ 2.5V ~~12.1.1~~)

**A** ~~12.1.1~~ ~~12.1.1~~

Refer to Application Note AP-217, "The Chip Scale Package", for a detailed description of Chip Scale Package offered by California Micro Devices. See <http://www.onsemi.com/pdf/ap-217.pdf> for download.

# CM1452

## M. 2.12 S. 1.12.1

CM1452-04CP de ice a e packaged in c om Chip Scale Package (CSP).

PACKAGE DIMENSIONS						
P <sub>2</sub>	C om CSP					
B	10					
D	M			L		
	M <sub>1</sub>	N	M <sub>2</sub>	M <sub>1</sub>	N	M <sub>2</sub>
A1	1.627	1.672	1.717	0.0641	0.0658	0.0676
A2	1.068	1.113	1.158	0.0420	0.0438	0.0456
B1	0.395	0.400	0.405	0.0156	0.0157	0.0159
B2	0.195	0.200	0.205	0.0077	0.0079	0.0081
B3	0.342	0.347	0.352	0.0135	0.0137	0.0139
B4	0.342	0.347	0.352	0.0135	0.0137	0.0139
C1	0.186	0.236	0.286	0.0073	0.0093	0.0113
C2	0.160	0.210	0.260	0.0063	0.0082	0.0102
D1	0.545	0.615	0.685	0.0215	0.0242	0.0270
D2	0.378	0.419	0.460	0.0149	0.0165	0.0181
#	3500 piece					



# CM1452

## Micro-SMD

CM1452-06CP device is packaged in common Chip Scale Package (CSP).

PACKAGE DIMENSIONS		
Pitch	Common CSP	
Bump	15	
Die	Mounting Pad	Lead
	Mounting Pad	



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## Micro LED SMD

CM1452-08CP device is packaged in common Chip Scale Package (CSP).

PACKAGE DIMENSIONS			
Pitch	Common CSP		
Bump	20		
Die	Mounting		Lead
	Mount	Nominal	



