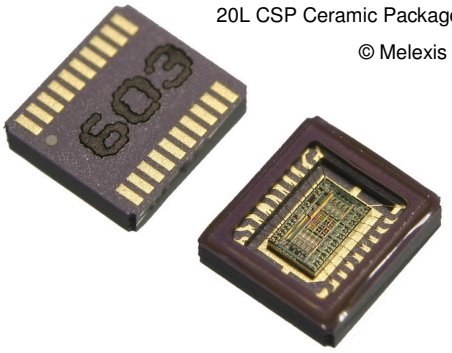
MLX75012

10-Channel High-Speed Universal PDIC

Features

- ❑ Triple wavelength 405nm, 650nm and 780nm
- ❑ 120MHz bandwidth high speed RF-Channels
- ❑ 8 selectable gain modes, sleep mode
- ❑ Tristate inputs for gain mode selection
- ❑ Two PD-pattern design
- ❑ Low noise design
- ❑ Integrated test mode for easy pick-up adjustment
- ❑ Small-size Ceramic glass-lid package 20-pin 4.5mm x 4.0mm x 1.25mm
- ❑ Integrated 49Bit OTP for parameter trimming
- ❑ High impedance outputs in sleep mode
- ❑ On chip supply blocking



20L CSP Ceramic Package

© Melexis

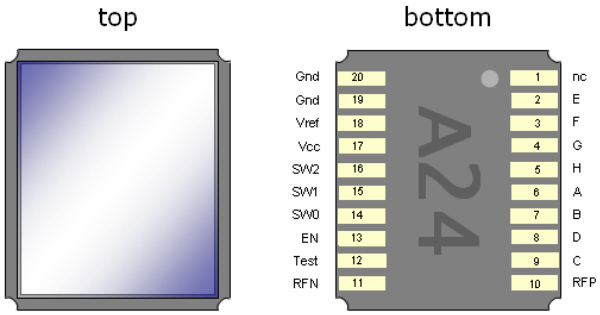
Ordering Information

Part No.	Temperature Code	Package Code	Option code
MLX75012	(-25°C to 85°C)	20L CSP Opto Ceramic	

Application Examples

- ❑ HD-DVD or Blu-Ray® applications read/write
- ❑ High-Speed DVD read/write
- ❑ CD read/write
- ❑ writable data storage optical devices

Pin Description



General Description

The MLX75012 is a triple wavelength photo detector IC (PDIC) with integrated amplifiers and control circuitry for use in optical pick-up heads. Its 20 photo detectors are optimized for the detection of 405nm, 650nm, and 780nm wavelength laser light used in HD-DVD, Blu-Ray®, DVD, and CD applications and are arranged in two 3-beam photo detector arrays in the chip centre. The ten signal channels consist of four main-detector channels (A, B, C, and D), four sub-detector channels (E, F, G, H), and two channels with balanced differential output (RFP, RFN). The device features a test mode for PDIC adjustment, a sleep mode, and 8 selectable gain modes, which are controllable by digital- and tri-state logic. The integrated 49Bit one-time programmable ROM allows parameter trimming of the MLX75012 for high product quality.
The MLX75012 is manufactured in a 0.6µm BiCMOS-technology.

Table of Contents

1 FUNCTIONAL BLOCK DIAGRAM 3

2 GLOSSARY OF TERMS 3

3 ABSOLUTE MAXIMUM RATINGS 4

4 PIN DEFINITIONS AND DESCRIPTIONS 4

5 GENERAL ELECTRICAL SPECIFICATIONS 5

5.1 NORMAL OPERATING CONDITIONS 5
5.2 DC CHARACTERISTICS HD/DVD 6
5.3 DC CHARACTERISTICS CD 7
5.4 AC CHARACTERISTICS HD/DVD 8
5.5 AC CHARACTERISTICS CD 9
5.6 SENSITIVITY AND BANDWIDTH 10

6 OUTSTANDING FEATURES 11

7 PERFORMANCE GRAPHS 12

7.1 BANDWIDTH MEASURED DATA 12
7.2 TRANSIENT BEHAVIOR 13
7.3 MAIN-DETECTOR SENSITIVITY MAPPING 13
7.4 NOISE MEASURED DATA 13

8 STANDARD INFORMATION REGARDING MANUFACTURABILITY OF MELEXIS PRODUCTS 14

9 ESD PRECAUTIONS 14

10 PHOTO DIODE PATTERN 15

11 PACKAGE INFORMATION 16

12 DISCLAIMER 18

1 Functional Block Diagram

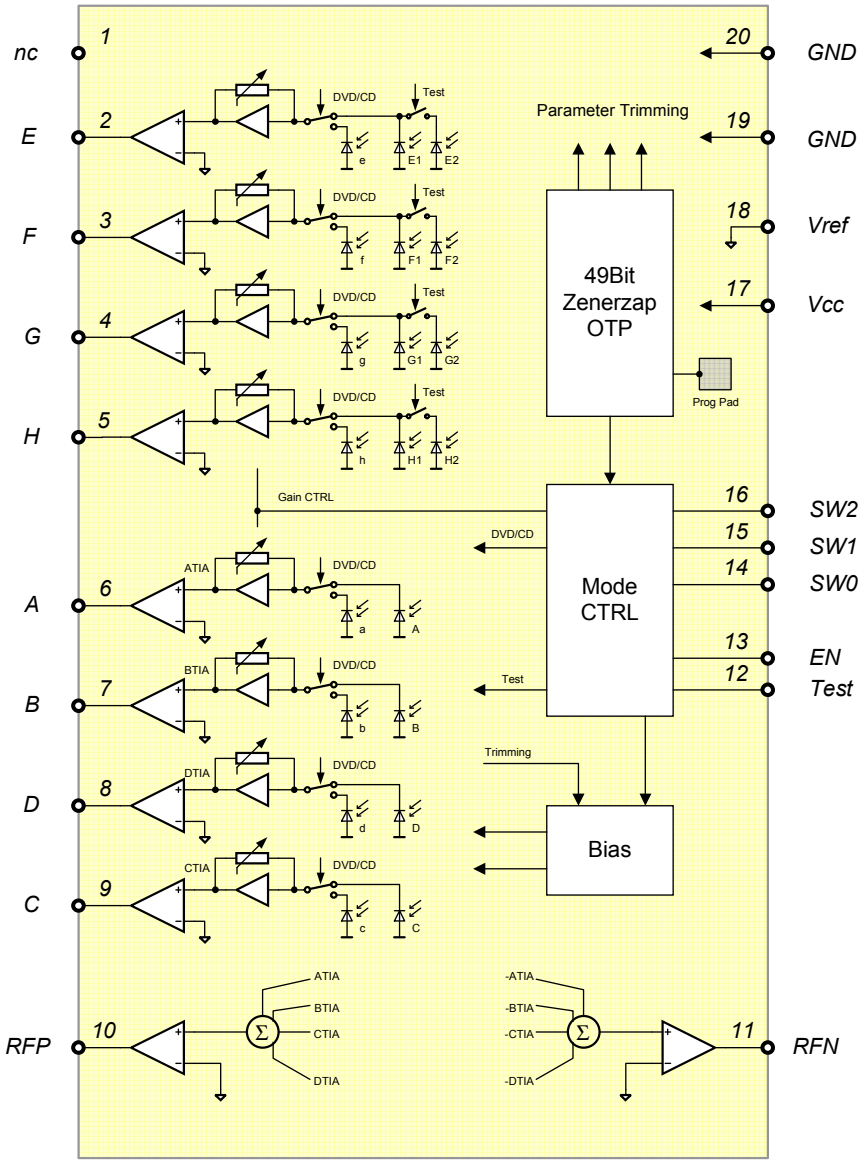


Fig. 1: Functional Block Diagram of MLX75012

2 Glossary of Terms

PDIC	Photo detector IC
OPU	Optical Pickup-Unit
PUH	Pick-up Head
OTP	One-time programmable

3 Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Units
Supply Voltage (overvoltage)	V_{CC}	-0.3	6	V
Supply Voltage (operating)	V_{CC}	4.5	5.5	V
Output Voltage	V_{out}	-0.3	V_{DD} + 0.3	V
Output Current	I_{out}	-5	5	mA
Input Voltage	V_{in}	-0.3	V_{DD} + 0.3	V
Operating Temperature Range	T_A	-25	85	°C
Storage Temperature Range	T_S	-40	100	°C
ESD Sensitivity (AEC Q100 002)			4	kV
Power Consumption	P_{tot}		250	mW

Table 1: Absolute maximum ratings

Exceeding the absolute maximum ratings may cause permanent damage. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

4 Pin Definitions and Descriptions

Pin №	Name	Type	Function
1	-	-	n.c.
2	E	Output	E1+E2 for HD/DVD-Mode / e for CD-Mode
3	F	Output	F1+F2 for HD/DVD-Mode / f for CD-Mode
4	G	Output	G1+G2 for HD/DVD-Mode / g for CD-Mode
5	H	Output	H1+H2 for HD/DVD-Mode / h for CD-Mode
6	A	Output	A for HD/DVD-Mode / a for CD-Mode
7	B	Output	B for HD/DVD-Mode / b for CD-Mode
8	D	Output	D for HD/DVD-Mode / d for CD-Mode
9	C	Output	C for HD/DVD-Mode / c for CD-Mode
10	RF+	Output	Pos(A+B+C+D)
11	RF-	Output	Neg(A+B+C+D)
12	TEST	Digital-IN	Adjustment Mode
13	EN	Digital-IN	Sleep Mode
14	SW0	Tristate-IN	Operating Mode Selection
15	SW1	Tristate-IN	Gain Mode Selection
16	SW2	Tristate-IN	Gain Mode Selection
17	Vcc	Supply	Power Supply Pin (4.5V to 5.5V)
18	Vref	Ref-IN	Voltage Reference (1.6V to Vcc-2.0V)
19	GND	Supply	Analog Ground
20	GND	Supply	Digital Ground

Table 2: Pin definitions and descriptions

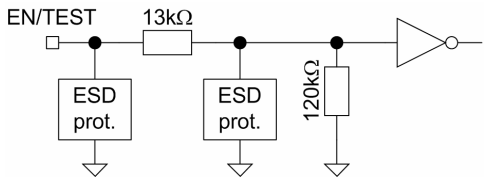
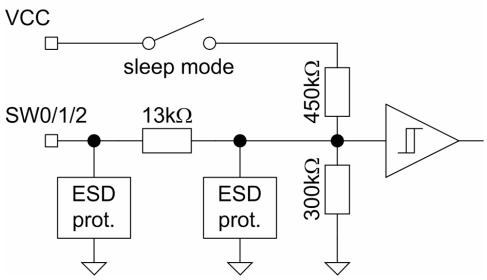
Pin №	Name	Type	Functional Schematic
12	TEST	Digital-IN	
13	EN	Digital-IN	
14	SW0	Tristate-IN	
15	SW1	Tristate-IN	
16	SW2	Tristate-IN	

Table 3: Functional schematics of digital inputs

5 General Electrical Specifications

5.1 Normal Operating Conditions

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Supply voltage range	V_{CC}		4.5		5.5	V
Operation temperature	ϑ_{amb}		-25		85	°C
Input light Power main-channels[1]	I_{Lpdata}				1000	uW
Input light Power sub-channels[2]	$I_{Lptrack}$				1000	uW
Tristate High select pin Voltage	$V_{selectH}$		3.1		V_{CC}	V
Tristate Middle select pin Voltage	$V_{selectM}$		1.3		2.6	V
Tristate Low select pin Voltage	$V_{selectL}$		0		0.8	V
Digital pin High Voltage	V_{High}		Vcc-1.5		V_{CC}	V
Digital pin Low Voltage	V_{Low}		0		1.5	V
Channel Output Resistive Load	R_L			10		kΩ
Channel Output Capacitive Load	C_L		10	20	50	pF
VREF voltage range	V_{REF}		1.6	2.0	V_{CC} –2	V

Table 4: Normal operating conditions

[1] Maximum input light power per channel
[2] Maximum input light power per channel

5.2 DC Characteristics HD/DVD

All parameter values at ϑ_{amb} = 25 °C, V_{CC}=5V, V_{REF}=2.0V, R_L=10kΩ, C_L=20pF, λ=405nm (HD) or λ=650nm (DVD), unless otherwise specified;

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Current consumption	I_{cc}	shade		38	44	mA
Sleep Mode Current Consumption	$I_{cc\ sleep}$	for EN=Low			35	uA
		for SWx=Low/Low/Low			110	uA
Output Offset Voltage (A...D) HD/DVD	$V_{off\ A,B,C,D}$	Shade, BaseVoltage=V_{REF}	-25	0	+25	mV
Output Offset Voltage (E...H) HD/DVD	$V_{off\ E,F,G,H}$	Shade, BaseVoltage=V_{REF}	-25	0	+25	mV
Output Offset Voltage (RF+, RF-)	$V_{off\ RF+,RF-}$	Shade, BaseVoltage=V_{REF}	-40	0	+40	mV
Output Offset Voltage, calculated values, HD/DVD	ΔV_{off}	A-B, Shade	-35	0	+35	mV
		C-D, Shade	-35	0	+35	mV
		(A+B)-(C+D), Shade	-35	0	+35	mV
		(A+C)-(B+D), Shade	-35	0	+35	mV
		A+B+C+D, Shade	-60	0	+60	mV
		(E1+E2)-(H1+H2), Shade	-35	0	+35	mV
		(G1+G2)-(F1+F2), Shade	-35	0	+35	mV
		(E1+E2+F1+F2)-(G1+G2+H1+H2), Shade	-40	0	+40	mV
Offsetdrift	$\Delta V_{off} / \Delta\vartheta$	A,B,C,D,E,F,G,H			100	uV / K
Gain Variation (A,B,C,D)	$V_{out\ A,B,C,D}$		-15	0	+15	%
Gain Variation (E,F,G,H)	$V_{out\ E,F,G,H}$		-15	0	+15	%
Gain Variation (RF+,RF-)	$V_{out\ RF+,RF-}$		-15	0	+15	%
Max. Output Voltage	V_{outmax}	(A...D, E…H, RF+),	4			V
Min. Output Voltage	V_{outmin}	(RF-), P_o =500µW			1.0	V
Gaindrift	ΔGain				0.1	% / K
Linearity	ΔGain / ΔI_{light}	all gain modes, all channels (0- 90% output swing)			8	%

Table 5: DC characteristics HD/DVD mode

5.3 DC Characteristics CD

All parameter values at ϑ_{amb} = 25 °C, V_{CC}=5V, V_{REF}=2.0V, R_L=10kΩ, C_L=20pF, λ=780nm (CD), unless otherwise specified;

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Current consumption	I_{cc}	shade		38	44	mA
Sleep Mode Current Consumption	$I_{cc\ sleep}$	for EN=Low			35	uA
		for SWx=Low/Low/Low			110	uA
Output Offset Voltage (A...D) CD mode	$V_{off\ A,B,C,D}$	Shade, BaseVoltage=V_{REF}	-50	0	+50	mV
Output Offset Voltage (E...H) CD mode	$V_{off\ E,F,G,H}$	Shade, BaseVoltage=V_{REF}	-50	0	+50	mV
Output Offset Voltage (RF+, RF-) CD	$V_{off\ RF+,RF-}$	Shade, BaseVoltage=V_{REF}	-60	0	+60	mV
Output Offset Voltage, calculated values, CD mode	ΔV_{off}	A-B, Shade	-50	0	+50	mV
		C-D, Shade	-50	0	+50	mV
		(A+B)-(C+D), Shade	-60	0	+60	mV
		(A+C)-(B+D), Shade	-60	0	+60	mV
		A+B+C+D, Shade	-100	0	+100	mV
		(E1+E2)-(H1+H2), Shade	-60	0	+60	mV
		(G1+G2)-(F1+F2), Shade	-60	0	+60	mV
		(E1+E2+F1+F2)-(G1+G2+H1+H2), Shade	-80	0	+80	mV
Offsetdrift	$\Delta V_{off} / \Delta\vartheta$	A,B,C,D,E,F,G,H			100	uV / K
Gain Variation (A,B,C,D)	$V_{out\ A,B,C,D}$		-15	0	+15	%
Gain Variation (E,F,G,H)	$V_{out\ E,F,G,H}$		-15	0	+15	%
Gain Variation (RF+,RF-)	$V_{out\ RF+,RF-}$		-15	0	+15	%
Max. Output Voltage	V_{outmax}	(A...D, E…H, RF+),	4			V
Min. Output Voltage	V_{outmin}	(RF-), P_o =500µW			1.0	V
Gaindrift	ΔGain				0.1	% / K
Linearity	ΔGain / ΔI_{light}	all gain modes, all channels (0- 90% output swing)			8	%

Table 6: DC characteristics CD mode

5.4 AC Characteristics HD/DVD

All parameter values at ϑ_{amb} = 25 °C, V_{CC}=5V, V_{REF}=2.0V, R_L=10kΩ, C_L=20pF, λ=405nm (HD) or λ=650nm (DVD), unless otherwise specified;

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Group Delay (A~D, RF+/-)	ΔGd	100kHz~bandwidth limit			2	ns
RF Settling Time (write)	$T_{RFset\ write}$	Output-step1.5V			10	
RF Settling Time (read)	$T_{RFset\ read}$	Output-step1.5V			20	
A,B,C,D,E,F,G,H Settling Time (write)	$T_{set\ write}$	Output-step1.5V			15	
A,B,C,D,E,F,G,H Settling Time (read)	$T_{set\ read}$	Output-step1.5V			25	
Slew Rate (RF)	$SR_{RF+,RF-}$	Output-step 1V, Gain Mode (1…32) Gain Mode 64 Gain Mode 128	200 175 150			V/us
Slew Rate (A~D)	$SR_{A,B,C,D}$	Output-step 1V, Gain Mode (1…32) Gain Mode 64 Gain Mode 128	150 110 75			V/us
Slew Rate (E~H)	$SR_{E,F,G,H}$	Output-step 1V, Gain Mode (1…32) Gain Mode 64 Gain Mode 128	150 110 75			V/us
Noise Level (A~D)	$Vn_{A,B,C,D}$	RBW=30kHz, 1...65MHz Highest Gain			-78	dBm
Noise Level (E~H)	$Vn_{E,F,G,H}$	RBW=30kHz, 1...65MHz Highest Gain			-73	dBm
Noise Level (RF+/-)	Vn_{RF}	RBW=30kHz, 1...130MHz Highest Gain			-78	dBm
Peaking (A~D)	S_{peak}				1	dB
Power Supply Rejection Ratio	PSRR	<10kHz			-45	dB
Gain Switch Response Time	t_{switch}			10	50	us
Sleep-Mode Wake-up Time	$t_{wake-up}$				50	us

Table 7: AC characteristics HD/DVD

5.5 AC Characteristics CD

All parameter values at ϑ_{amb} = 25 °C, V_{CC}=5V, V_{REF}=2.0V, R_L=10kΩ, C_L=20pF, λ=780nm (CD), unless otherwise specified;

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Group Delay (A~D, RF+/-)	ΔGd	100kHz~bandwidth limit			3	ns
RF Settling Time (write)	$T_{RFset\ write}$	Output-step1.5V			20	
RF Settling Time (read)	$T_{RFset\ read}$	Output-step1.5V			40	
A,B,C,D,E,F,G,H Settling Time (write)	$T_{set\ write}$	Output-step1.5V			25	
A,B,C,D,E,F,G,H Settling Time (read)	$T_{set\ read}$	Output-step1.5V			45	
Slew Rate (RF)	$SR_{RF+,RF-}$	Output-step 1V, Gain Mode (1…32) Gain Mode 64 Gain Mode 128	150 110 75			V/us
Slew Rate (A~D)	$SR_{A,B,C,D}$	Output-step 1V, Gain Mode (1…32) Gain Mode 64 Gain Mode 128	150 110 75			V/us
Slew Rate (E~H)	$SR_{E,F,G,H}$	Output-step 1V, Gain Mode (1…32) Gain Mode 64 Gain Mode 128	100 75 50			V/us
Noise Level (A~D)	$Vn_{A,B,C,D}$	RBW=30kHz, 1...65MHz Highest Gain			-78	dBm
Noise Level (E~H)	$Vn_{E,F,G,H}$	RBW=30kHz, 1...65MHz Highest Gain			-73	dBm
Noise Level (RF+/-)	Vn_{RF}	RBW=30kHz, 1...130MHz Highest Gain			-78	dBm
Peaking (A~D)	S_{peak}				1	dB
Power Supply Rejection Ratio	PSRR	<10kHz			-45	dB
Gain Switch Response Time	t_{switch}			10	50	us
Sleep-Mode Wake-up Time	$t_{wake-up}$				50	us

Table 8: AC characteristics CD

5.6 Sensitivity and Bandwidth

HD-DVD / Blu-Ray® / DVD Mode (SW0 = H) Detector-Pattern 1														
Gain Mode			A, B, C, D				E, F, G, H				RFP / RFN			
No	SW1	SW2	Sens. [mV/uW]		BW [MHz]		Sens. [mV/uW]		BW [MHz]		Sens. [mV/uW]		BW [MHz]	
			405nm	650nm	min.	typ.	405nm	650nm	min.	Typ.	405nm	650nm	min.	typ.
1	L	M	0.23	0.45	80	100	0.56	1.125	60	80	0.15	0.3	110	120
2	L	M	0.45	0.9	80	100	1.125	2.25	60	80	0.3	0.6	110	120
4	M	L	0.9	1.8	80	100	2.25	4.5	60	80	0.6	1.2	110	120
8	M	M	1.8	3.6	80	100	4.5	9	60	80	1.2	2.4	110	120
16	M	H	3.6	7.2	80	100	9	18	60	80	2.4	4.8	110	120
32	H	L	7.2	14.4	80	100	18	36	45	60	4.8	9.6	90	110
64	H	M	14.4	28.8	65	80	36	72	30	50	9.6	19.2	70	90
128	H	H	28.8	57.6	45	55	72	144	20	35	19.2	38.4	45	55

Table 9: Sensitivity and bandwidth characteristics HD/DVD (405nm and 650nm),
Operating Point: 200mV(DC), 70mV(AC) Output Voltage

CD Mode (SW0 = M or L) Detector-Pattern 2												
Gain Mode			A, B, C, D			E, F, G, H			RFP / RFN			
No	SW1	SW2	Sens. [mV/uW]	BW [MHz]		Sens. [mV/uW]	BW [MHz]		Sens. [mV/uW]	BW [MHz]	
			780nm	min.	typ.	780nm	min.	typ.	780nm	min.	typ.
1	L	M	0.9	80	90	2.25	60	80	0.6	80	100
2	L	M	1.8	80	90	4.5	60	80	1.2	80	100
4	M	L	3.6	80	90	9	60	80	2.4	80	100
8	M	M	7.2	80	90	18	60	80	4.8	80	100
16	M	H	14.4	60	90	36	40	60	9.6	80	100
32	H	L	28.8	40	90	72	30	40	19.2	60	100
64	H	M	57.6	30	55	144	25	30	38.4	40	60
128	H	H	115.2	20	30	288	15	20	76.8	30	40

Table 10: Sensitivity and bandwidth characteristics CD (780nm)
Operating Point: 200mV(DC), 70mV(AC) Output Voltage

6 Outstanding Features

The MLX75012 opens the door to the new world of violet laser based storage-technology. By combining the traditional red and infrared applications in a high-speed-, low-power design a real universal device was created that can be used in any thinkable application ranging from HD-DVD recorders over gaming-equipment to the use in ultra-slim drives in new generation laptops. To allow small-size and cost-effective solutions in optical pick-up design, the MLX75012 offers two complete three-beam Detector patterns that can be used by dual-wavelength lasers. At the same time, the robust 20-pin CSP Ceramic Glass-Lid package offers small-size outer dimensions.

The system concept of the MLX75012 universal PDIC is based on newly developed blue enhanced detectors that ensure a high spectral sensitivity even before the first amplifier is involved. A 49-Bit one time programmable ROM guarantees high parameter stability by trimming at the device manufacturing process.

To support the adjustment process of pick-up systems in manufacturing, the MLX75012 offers a special test-mode in which one of the tracking detector-array can be switched off.

7 Performance Graphs

7.1 Bandwidth measured data

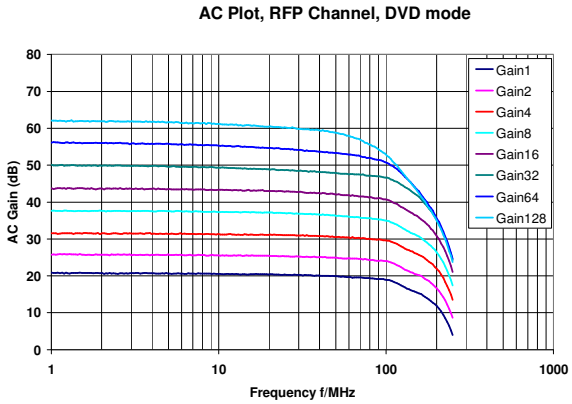


Fig. 2: RFP Channel AC Response, HD/DVD mode, λ=405nm

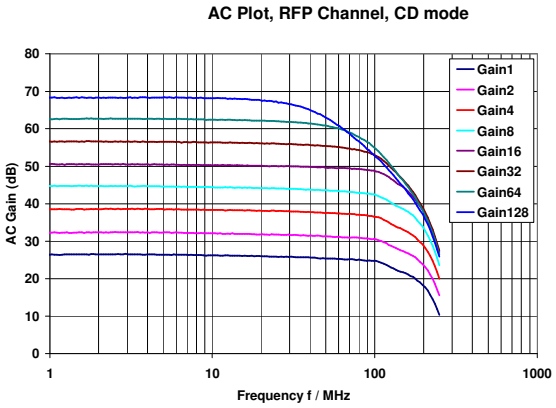


Fig. 3: RFP Channel AC Response, CD mode, λ=780nm

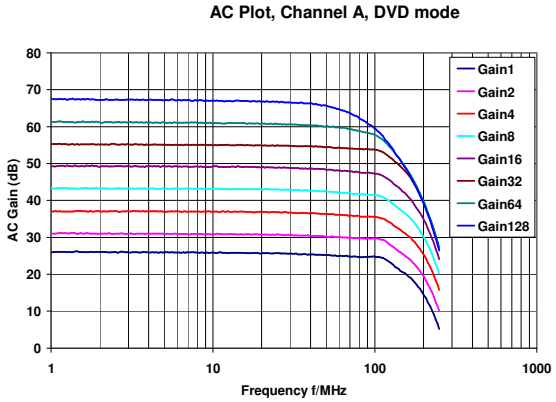


Fig. 4: AC Response, Channel A, HD/DVD mode, λ=405nm

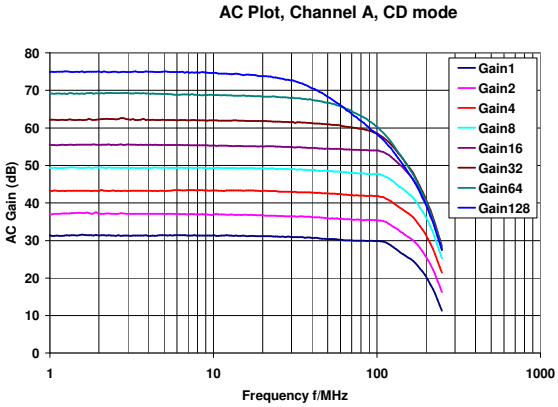


Fig. 5: AC Response, Channel A, CD mode, λ=780nm

7.2 Transient behavior

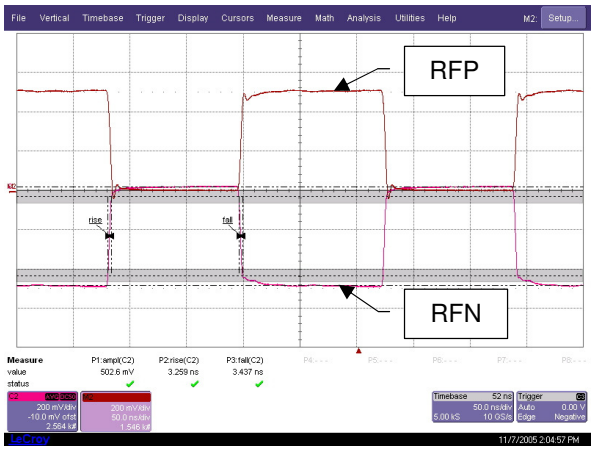


Fig. 6: RF Channels Transient Output Signal, Gain Mode=128, HD-DVD/Blu-Ray®/DVD Mode

7.3 Main-detector sensitivity mapping

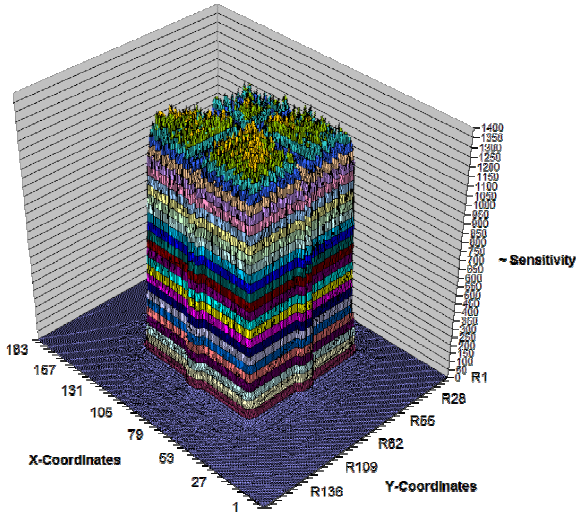


Fig. 7: Laser Scan of Central Main Detector, Pattern1 with 635nm Laser. HD-DVD/Blu-Ray®/ DVD Mode

7.4 Noise measured data

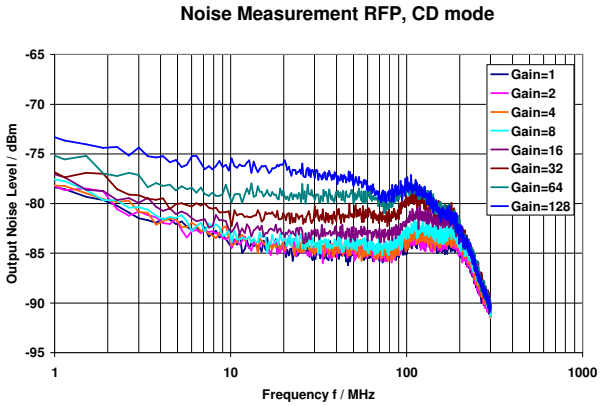


Fig. 8: RFP Channel Output Noise at 30kHz Bandwidth, CD mode

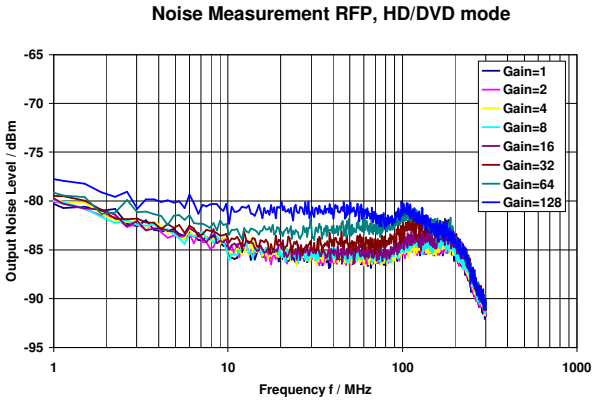


Fig. 9: RFP Channel Output Noise at 30kHz Bandwidth, HD-DVD/Blu-Ray®/DVD Mode

8 Standard information regarding manufacturability of Melexis products

Our products are classified and qualified regarding soldering technology, solderability and moisture sensitivity level according to following test methods:

Reflow Soldering SMD's (Surface Mount Devices)

- IPC/JEDEC J-STD-020
  Moisture/Reflow Sensitivity Classification for Nonhermetic Solid State Surface Mount Devices
  (classification reflow profiles according to table 5-2)
- EIA/JEDEC JESD22-A113
  Preconditioning of Nonhermetic Surface Mount Devices Prior to Reliability Testing
  (reflow profiles according to table 2)

Wave Soldering SMD's (Surface Mount Devices) and THD's (Through Hole Devices)

- EN60749-20
  Resistance of plastic- encapsulated SMD's to combined effect of moisture and soldering heat
- EIA/JEDEC JESD22-B106 and EN60749-15
  Resistance to soldering temperature for through-hole mounted devices

Iron Soldering THD's (Through Hole Devices)

- EN60749-15
  Resistance to soldering temperature for through-hole mounted devices

Solderability SMD's (Surface Mount Devices) and THD's (Through Hole Devices)

- EIA/JEDEC JESD22-B102 and EN60749-21
  Solderability

For all soldering technologies deviating from above mentioned standard conditions (regarding peak temperature, temperature gradient, temperature profile etc) additional classification and qualification tests have to be agreed upon with Melexis.

The application of Wave Soldering for SMD's is allowed only after consulting Melexis regarding assurance of adhesive strength between device and board.

Melexis is contributing to global environmental conservation by promoting **lead free** solutions. For more information on qualifications of **RoHS** compliant products (RoHS = European directive on the Restriction Of the use of certain Hazardous Substances) please visit the quality page on our website:
http://www.melexis.com/quality.asp

9 ESD Precautions

Electronic semiconductor products are sensitive to Electro Static Discharge (ESD).
Always observe Electro Static Discharge control procedures whenever handling semiconductor products.

10 Photo Diode Pattern

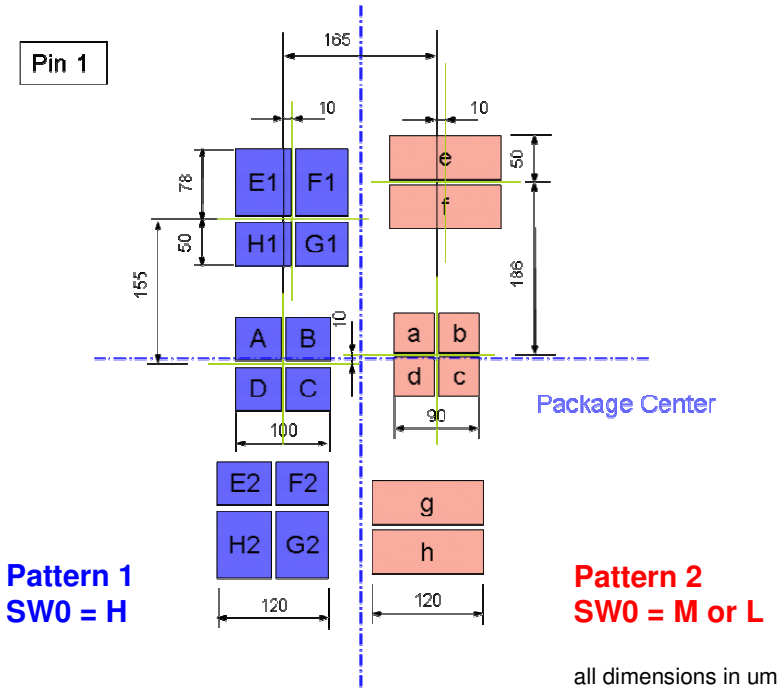


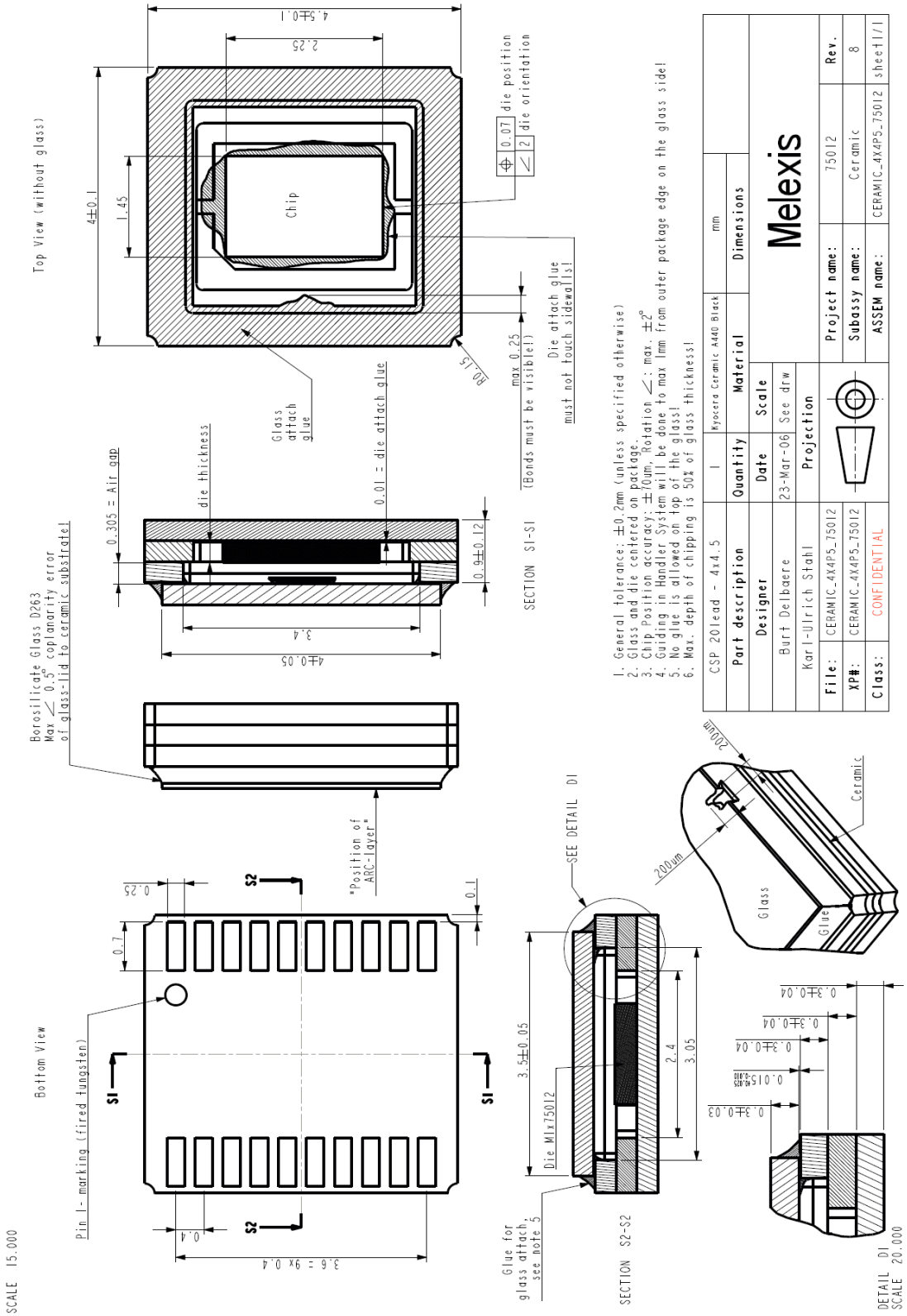
Fig. 10: The two Detector Patterns of MLX75012. Gap between detectors is 5um. The Patterns are switched by changing from CD- to DVD-Mode at pin 16 (SW0).

11 Package Information

Parameter	Unit	Typical Dimensions[3] for 20L CSP SMD Ceramic Package with Glass-Lid
Glass Type	Refractive Index	1.5300 @ 486nm 1.5204 @ 656nm
Glass x/y Dimesion	[µm/µm]	3500 / 4000
Glass Thickness	[µm]	300
Glass Type		Borosilicate Glass D263
Air gap above Detector	[µm]	300
No. of Pins		20
Package Height	[mm]	1.25 (incl. Glass)
Package Width	[mm]	4
Package Length	[mm]	4.5
Pin Pitch	[mm]	0.4
Pin Length	[mm]	0.7
Exposed Pad		no
Marking		yes, on bottom: 3digit Lot/Time Code
MSL		MSL-3
Pin 1 Marking		yes, Bottom (dot of fired tungsten) and Top (die-paddle)
Chip Position Tolerance x/y	[µm]	centered ±70
max Chip Rotation θ	[deg]	±2
Chip ARC		Yes

Table 11: Package Measures

[3] For Tolerances please see the package drawing on page 17


Top View (without glass)
Chip
Glass attach glue
die thickness
0.01 = die attach glue
Die attach glue must not touch sidewalls!
(Bonds must be visible!)
SECTION S1-S1
Borosilicate Glass D263
Max ∠ 0.5° coplanarity error
of glass-lid to ceramic substrate!
0.305 = Air gap
"Position of ARC-layer"
Bottom View
Pin 1- marking (fired tungsten)
SCALE 15.000
SEE DETAIL D1
Glue for glass attach, see note 5
Die MLX75012
SECTION S2-S2
Ceramic
Glass
Glue
200um
DETAIL D1
SCALE 20.000
1. General tolerance: ±0.2mm (unless specified otherwise)
2. Glass and die centered on package.
3. Chip Position accuracy: ±10um, Rotation ∠: max. ±2°
4. Guiding in Handler System will be done to max 1mm from outer package edge on the glass side!
5. No glue is allowed on top of the glass!
6. Max. depth of chipping is 50% of glass thickness!
CSP 20lead - 4x4.5
Part description
Designer
Burt Delbaere
Karl-Ulrich Stahl
File: CERAMIC_4X4P5_75012
XP#: CERAMIC_4X4P5_75012
Class: CONFIDENTIAL
Quantity 1
Material Kyocera Ceramic A440 Black
Date 23-Mar-06
Scale See drw
Projection
Dimensions mm
Melexis
Project name: 75012
Subassy name: Ceramic
ASSEM name: CERAMIC_4X4P5_75012
Rev. 8
sheet1/1

12 Disclaimer

Devices sold by Melexis are covered by the warranty and patent indemnification provisions appearing in its Term of Sale. Melexis makes no warranty, express, statutory, implied, or by description regarding the information set forth herein or regarding the freedom of the described devices from patent infringement. Melexis reserves the right to change specifications and prices at any time and without notice. Therefore, prior to designing this product into a system, it is necessary to check with Melexis for current information. This product is intended for use in normal commercial applications. Applications requiring extended temperature range, unusual environmental requirements, or high reliability applications, such as military, medical life-support or life-sustaining equipment are specifically not recommended without additional processing by Melexis for each application.
The information furnished by Melexis is believed to be correct and accurate. However, Melexis shall not be liable to recipient or any third party for any damages, including but not limited to personal injury, property damage, loss of profits, loss of use, interrupt of business or indirect, special incidental or consequential damages, of any kind, in connection with or arising out of the furnishing, performance or use of the technical data herein. No obligation or liability to recipient or any third party shall arise or flow out of Melexis' rendering of technical or other services.
© 2005 Melexis NV. All rights reserved.

For the latest version of this document, go to our website at
www.melexis.com

Or for additional information contact Melexis Direct:

Europe, Africa, Asia:
Phone: +32 1367 0495
E-mail: sales_europe@melexis.com

America:
Phone: +1 603 223 2362
E-mail: sales_usa@melexis.com

ISO/TS 16949 and ISO14001 Certified