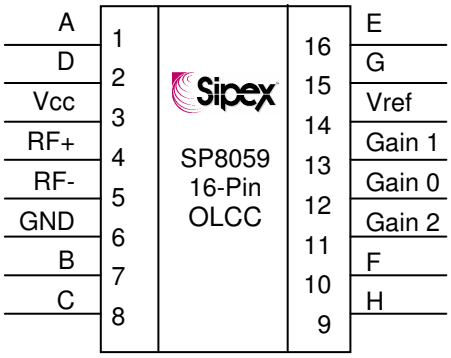
ADVANCED SP8059

10 Channel Photo Detector IC

FEATURES

- Triple wavelength support: 405, 650 and 780nm
- 72MHz Data channel bandwidth at -1dB linearity
- Selectable gain and Power Down Mode
- Available in wafer form or
  5.0 x 4.0 mm 16-pin OLCC package



APPLICATION

- 4X Blu-Ray Read/Write
- X16 DVD Read/Write
- X48 CD Read/Write

GENERAL DESCRIPTION

The SP8059 is a ten-channel photo detector IC (PDIC) designed for new generation of Blu-Ray DVD and standard DVD/CD applications and can operate at wavelengths of 405, 650 and 780 nm. The device contains three photo diode (sensor) arrays, one of them with four identical sensors A – D and the other two with two sensors each (E, F and G, H respectively). The ten channels consist of four high speed channels (A, B, C, and D), four slow channels (E, F, G, and H), and two RF channel with paraphrase output (RF+ and RF-). The high speed channels output a signal from one of the sensors A – D. The E, F, G, and H channel outputs are used for servo control. The RF channels output is the sum of A + B + C + D channels with identical weights given to all channels.

Three Gain select inputs allow the setting of eight gain modes and a Power Down mode with low power consumption if Gain 0 input is left floating.

Low noise operation enables data recovery at very low signal levels.

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PIN ASSIGNMENTS

Pin #	Pin Name	Pin Function
1	A	Output of A channel
2	D	Output of D channel
3	Vcc	Supply voltage. Bypass to GND with ceramic capacitor 0.1uF
4	RF+	Output of RF+ channel. RF+ = 0.375 (A + B + C + D)
5	RF-	Output of RF- channel. RF- = -0.375 (A + B + C + D)
6	GND	Ground pin
7	B	Output of B channel
8	C	Output of C channel
9	H	Output of H channel
10	F	Output of F channel
11	Gain 2	Gain switch input.
12	Gain 0	Gain switch input.
13	Gain 1	Gain switch input.
14	Vref	Reference voltage. Bypass to GND with ceramic capacitor 0.1uF
15	G	Output of G channel
16	E	Output of E channel

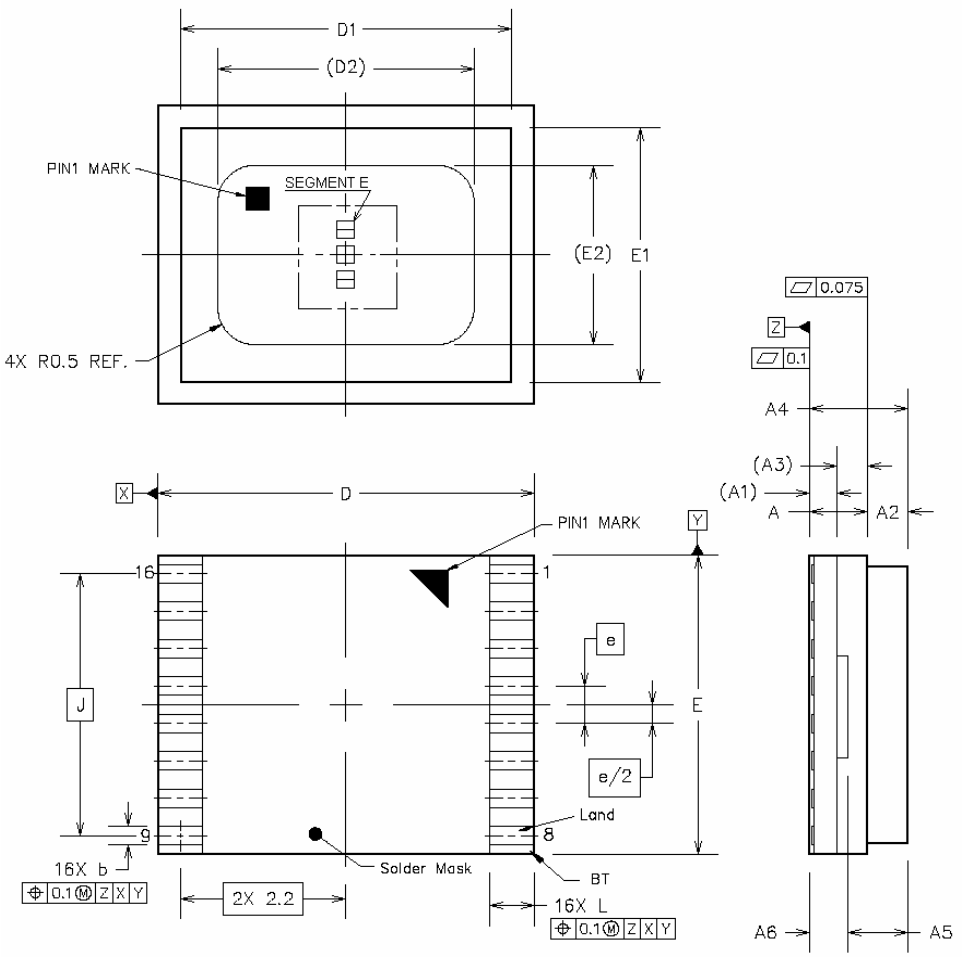
BOARD LAYOUT AND GROUNDING

To obtain the best performance from the SP8059, a printed circuit board with ground plane is required. Ground pins (pin #6) should be connected to the ground plane. High quality, low series resistance ceramic 0.1uF bypass capacitors should be used at the Vcc and Vref pins (pins #3 and #14). These capacitors must be located as close to the pins as possible. The traces connecting the pins to the ground plane, Vcc, Vref, and bypassing capacitors must be kept short and should be made as wide as possible.

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16-PIN ORGANIC LEADLESS CHIP CARRIER (OLCC) PACKAGE DIMENSIONS



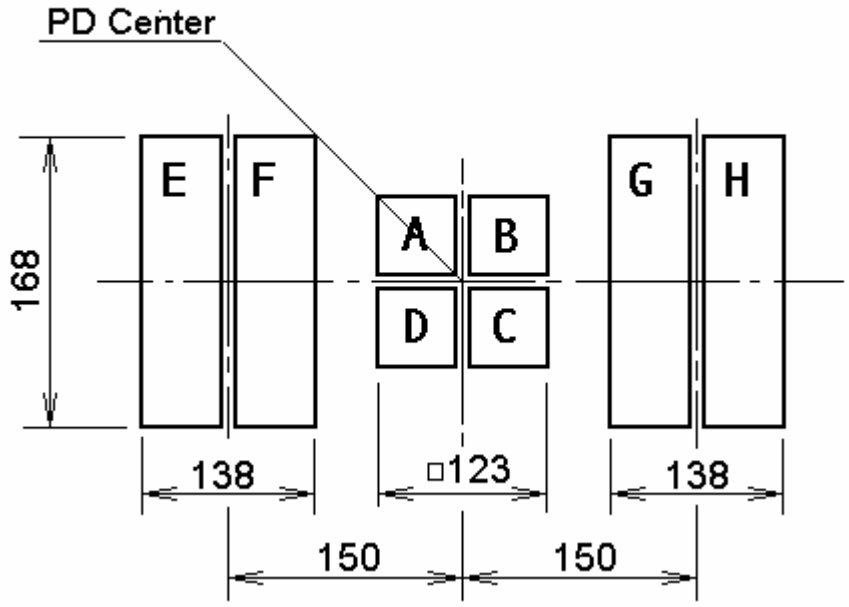
Dimensions, millimeters			
Dim.	Min.	Nom.	Max.
A	0.85	0.96	1.07
A1		0.36 ref	
A2	0.25	0.30	0.35
A3		0.6 ref	
A4	1.15	1.31	1.47
A5	0.54	0.68	0.82
A6	0.48	0.57	0.66
b	0.2	0.25	0.3
D	4.9	5.0	5.1
D1	4.3	4.4	4.5
D2		3.4 ref	
E	3.9	4.0	4.1
E1	3.3	3.4	3.5
E2		2.4ref	
e		0.5 BSC	
L	0.5	0.6	0.7
J		3.5 BSC	

Location of the photo detectors in a package	
X0 = 0 ± 50µm Y0 = 0 ± 50µm Z0 (A6) = 570 ± 90µm $\Theta = 0 \pm 1.0^0$	
Optical center stability X, Y to package soldering reference in any radial direction at overall operational temperature and life time ……	< TBD
Optical center stability Z to package soldering reference over operational temperature range, including optical window properties …	< TBD
Tilt to optical surface die with respect to soldering reference ……	< 1%

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PHOTO DETECTOR PATTERN



Note: 1. Detector size units: µm
2. Separation between segments: 5 µm
3. Photo detector is rotated 90 degrees clockwise in both packages on pages 8 and 9

ORDERING INFORMATION

Part number	Temperature range	Package Type
SP8059CE	0 + 70^{0}C	16-pin Organic Leadless Chip Carrier (OLCC)
SP8059W	-0 + 70^{0}C	Wafer

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