SP8053

10 - Channel Photo Detector IC

FEATURES

- Dual wavelength 650 and 780nm
- 100MHz minimum Data channel bandwidth
- Built-in media switch
- Available in wafer form or
  5.0 x 4.0 mm 16-pin OPLGA package

APPLICATION

- DVD and CD recording capability

Vs	1	16	Vcc
SW1	2	15	D
SW2	3	14	C
H	4	13	RF+
G	5	12	RF-
F	6	11	B
E	7	10	A
Select	8	9	GND

SP8053 16-Pin OPLGA

GENERAL DESCRIPTION

The SP8053 is a 10-channel photo detector IC (PDIC) designed for DVD and CD recording applications and can operate at wavelengths of 650 and 780 nm. The device contains 20 photo detector elements, organized into six (sensor) arrays, four of them with four identical sensors (A – D, a – d, E1 – H1, and E2 - H2 respectively) and two with a two sensors (e, h and f, g). Sensors A – D, E1 – H1, and E2 – H2 are used in DVD mode, and sensors a – d, e – g are used in CD mode. The ten channels consist of four high speed channels (A, B, C, and D), four slow channels (E, F, G, H), and two balanced differential RF channels. The high speed channel outputs provide signals from one of the two sensor arrays (A – D or a – d), depending the position of the media switch (Select pin). A high logic level at the Select pin selects DVD mode (A – D sensors) while a low level selects CD mode (a – d sensors). The E - H channels output is used for a servo control. In CD mode channels E – H provide signal from e – h sensors respectively. In DVD mode these channels provide the signal that is sum of identically named channels (i.e. E = E1 + E2, F = F1 + F2, etc) The RF channels output is sum of ± (A + B + C + D) or ± (a + b + c + d) channels (depending upon Select level), with identical weights given to all channels.

The SP8053 is manufactured with an advanced BICMOS technology.

PIN ASSIGNMENTS

Pin #	Pin Name	Pin Function
1	Vs	Reference voltage input. Bypass to GND with ceramic capacitor 0.1uF
2	SW1	Gain select input
3	SW2	Gain select input
4	H	Output of H channel (H1+H2 or h sensor output depending upon Select position)
5	G	Output of G channel (G1+G2 or g sensor output depending upon Select position)
6	F	Output of F channel (F1+F2 or f sensor output depending upon Select position)
7	E	Output of E channel (E1+E2 or e sensor output depending upon Select position)
8	Select	Mode switch input. High logic level selects DVD mode, low – CD mode
9	GND	Ground pin
10	A	Output of A channel (A or a sensor output depending upon Select position)
11	B	Output of B channel (B or b sensor output depending upon Select position)
12	RF-	Output of RF- channel. RF = -(A + B + C + D) or RF = -(a + b + c + d) depending upon Select position
13	RF+	Output of RF+ channel. RF = A + B + C + D or RF = a + b + c + d depending upon Select position
14	C	Output of C channel (C or c sensor output depending upon Select position)
15	D	Output of D channel (D or d sensor output depending upon Select position)
16	Vcc	Supply voltage. Bypass to GND with ceramic capacitor 0.1uF

PACKAGE DIMENSIONS
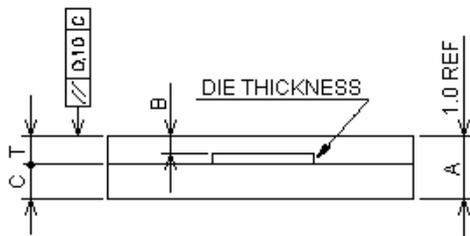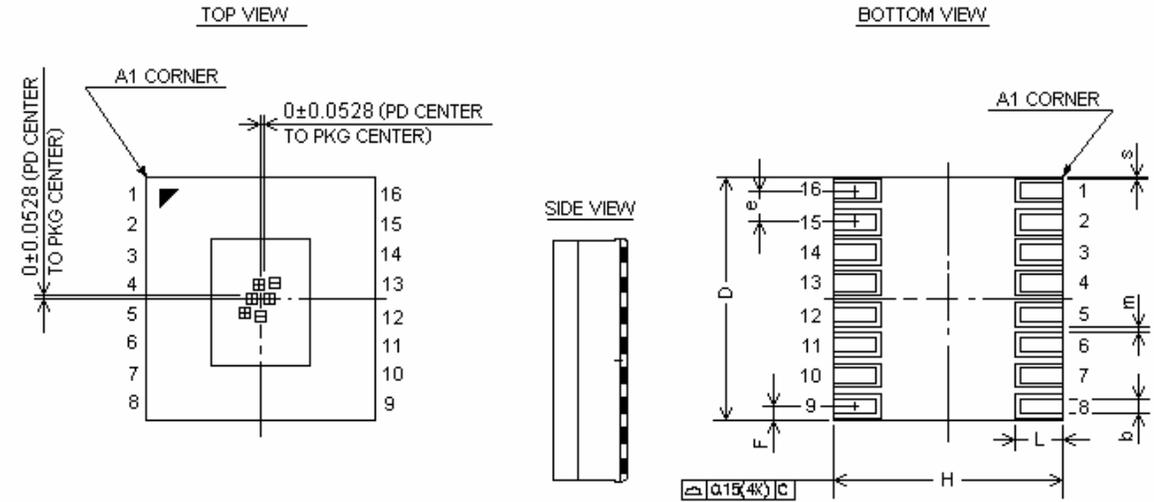
NOTE: DIE THICKNESS 0.2 mm (8mil)

SYMBOLS	DIMENSIONS IN MILLIMETERS		
	MIN	NOM	MAX
A	0.90	1.00	1.10
b	0.20	0.25	0.30
C	–	0.56	–
D	3.85	4.00	4.15
B	0.19		0.32
H	4.90	5.00	5.10
e	–	0.5	–
F	0.17	0.25	0.33
L	0.60	0.70	0.80
T	–	0.45	–
s	0.05	–	–
m	0.10	–	–

ORDERING INFORMATION

Part number	Temperature range	Package Type
SP8053DG	-30 + 80^{0}C	16-ld OPLGA Package