

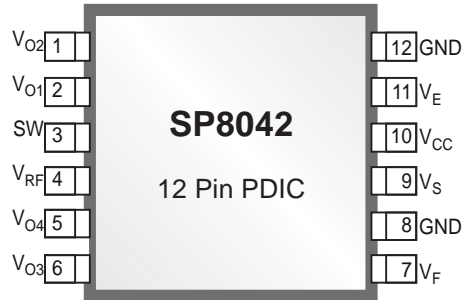
12 Channel, PDIC

FEATURES

- Suitable for dual wave length laser diode
- Compact package
- Optical light detector
- 6x read speed for DVD

APPLICATIONS

- DVD Player



ABSOLUTE MAXIMUM RATINGS

Supply Voltage, V_{CC} 6.0V
 Output Voltage (*This rating applies to V_{O1} , V_{O2} , V_{O3} , V_{O4} , V_E and V_F*)..... V_{CC}
 Operating Temperature, T_{OPR} -30 to +80°C
 Storage Temperature, T_{STG} -40 to +100°C

These are stress ratings only and functional operation of the device at these ratings or any other above those indicated in the operation sections of the specifications below is not implied. Exposure to absolute maximum rating conditions for extended periods of time may affect reliability.

RECOMMENDED OPERATING CONDITIONS

Unless otherwise noted: $T_A = 25^\circ\text{C}$

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT
V_{CC} recommended operating voltage 1	V_{CC}	4.5	5.0	5.5	V
V_S recommended operating voltage 2	V_S	2.0	2.1	2.2	V

ELECTRICAL SPECIFICATIONS

Unless otherwise noted: $V_{CC} = 5V$, $V_S = 2.1V$, $R_L = 10k\Omega$ (VRF:Open), $C_L = 10pF$

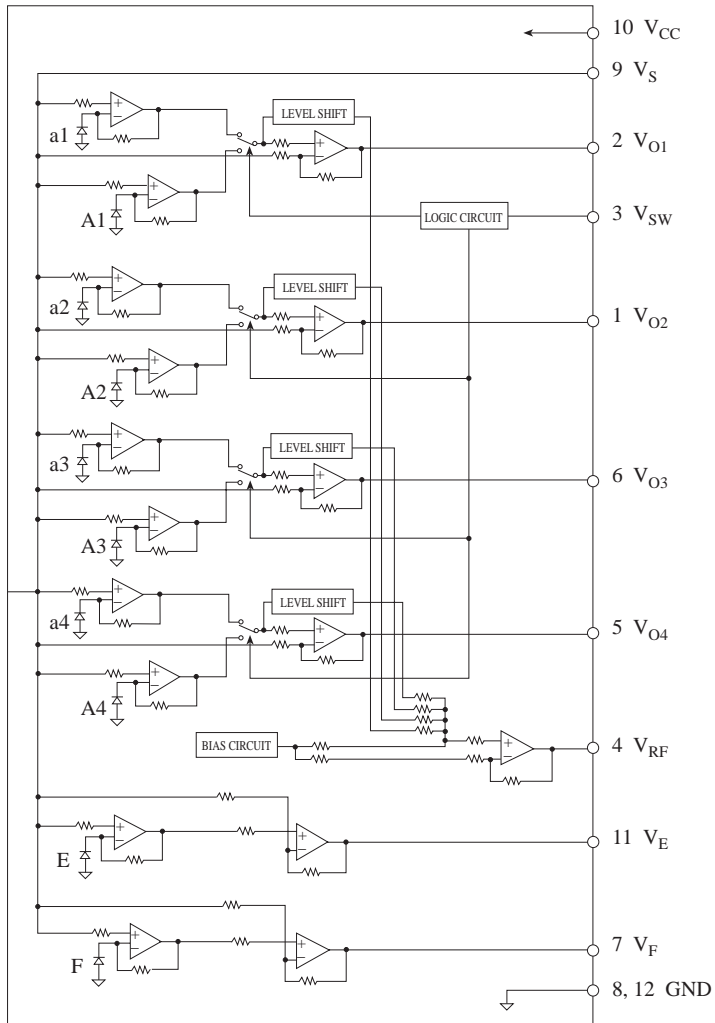
PARAMETER	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT	APPLICABLE TERMINALS
3.3 Electro-optical characteristics 1: 100% inspection items ($V_{CC} = 5V$, $V_S = 2.1V$, $R_L = 10k\Omega$ (VRF:Open), $C_L = 10pF$, $T_A = 25^\circ\text{C}$)							
Supply Current	I_{CC}	-	-	23	30	mA	V_{CC}
Output off-set voltage 1	V_{OD1}	Specified by voltage difference with V_S	-25	0	+25	mV	V_{O1} to V_{O4}
Output off-set voltage 2	V_{OD2}	Specified by voltage difference with V_S	-25	0	+25	mV	V_E , V_F
Output off-set voltage 3	V_{OD3}	GND reference	1.1	1.4	1.7	V	V_{RF}
Extremes of off-set voltage	ΔV_{OD1}	$V_{O1} - V_{O2}$	-15	0	+15	mV	V_{O1} , V_{O2}
	ΔV_{OD2}	$V_{O3} - V_{O4}$	-15	0	+15	mV	V_{O3} , V_{O4}
	ΔV_{OD3}	$V_E - V_F$	-15	0	+15	mV	V_E , V_F
3.4 Electro-optical characteristics 2: Sampled; not 100% tested ($V_{CC} = 5V$, $V_S = 2.1V$, $R_L = 10k\Omega$ [VRF:Open], $C_L = 10pF$, Unspecified $T_A = 25^\circ\text{C}$)							
Maximum output voltage 1	V_{OH1}	-	3.8	-	-	V	V_{O1} to V_{O4}
Maximum output voltage 2	V_{OH2}	-	3.8	-	-	V	V_{RF}
Output noise level 1	V_{N1}	$f = 18\text{MHz}$, $BW = 30\text{kHz}$	-	-72	-67	dBm	V_{O1} to V_{O4}
Output noise level 2	V_{N2}	$f = 18\text{MHz}$, $BW = 30\text{kHz}$	-	-62	-57	dBm	V_{RF}
Input Emitting Peak Wave Length $\lambda = 780\text{nm}$							
Sensitivity 1 (Note 3,4)	Rp1	-	23.8	34.0	44.2	mV/ μW	V_{O1} to V_{O4}
Sensitivity 2 (Note 3,4)	Rp2	-	62.3	89.0	115.7	mV/ μW	V_E , V_F
Sensitivity 3 (Note 3,4)	Rp3	-	41.7	59.5	77.4	mV/ μW	V_{RF}
Response Frequency 1 (Note 4,5,6)	fc1	-3dB	23	34	-	mHz	V_{O1} to V_{O4}
Response Frequency 2 (Note 4,5,6)	fc2	-3dB	23	34	-	mHz	V_{O1} to V_{O4}
Response Frequency 3 (Note 4,5,6)	fc3	-3dB	1	2	-	mHz	V_E , V_F
Sensitivity Rresponse 1 (Note 4, 6)	Δ Rp1	$f = 1$ to 18 MHz	-0.1	+0.1	+2.0	dB	V_{O1} to V_{O4}
Sensitivity Rresponse 2 (Note 4, 6)	Δ Rp2	$f = 1$ to 18 MHz	-0.1	+0.1	+2.0	dB	V_{RF}

ELECTRICAL SPECIFICATIONS: Continued

PARAMETER	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT	APPLICABLE TERMINALS
Peaking 1 (Note 4, 6)	Δ Rp3	Reference at 1MHz	-	-	+3.0	dB	V_{O1} to V_{O4}
Peaking 2 (Note 4, 6)	Δ Rp4	Reference at 1MHz	-	-	+3.0	dB	V_{RF}
Group Delay Deviation 1 (Note 4,6)	tg d1	f = 1 to 18MHz	-	4.0	9.0	ns	V_{O1} to V_{O4}
Group Delay Deviation 2 (Note 4,6)	tg d2	f = 1 to 18MHz	-	4.0	9.0	ns	V_{RF}
Input Emitting Peak Wave Length $\lambda=650\text{nm}$							
Sensitivity 4 (Note 3,4)	Rp4	-	18.9	27.0	35.1	mV/ μ W	V_{O1} to V_{O4}
Sensitivity 5 (Note 3,4)	Rp5	-	50.8	72.5	94.3	mV/ μ W	V_E, V_F
Sensitivity 6 (Note 3,4)	Rp6	-	33.1	47.0	61.5	mV/ μ W	V_{RF}
Response Frequency 4 (Note 4,5,6)	fc4	-3dB	25	36	-	MHz	V_{O1} to V_{O4}
Response Frequency 5 (Note 4, 6)	fc5	-3dB	25	36	-	MHz	V_{RF}
Response Frequency 6 (Note 4,5,6)	fc6	-3dB	1	2	-	MHz	V_E, V_F
Sensitivity Rresponse 3 (Note 4, 6)	Δ Rp5	f = 1 to 18 MHz	-0.1	+2.0	+3.0	dB	V_{O1} to V_{O4}
Sensitivity Rresponse 4 (Note 4, 6)	Δ Rp6	f = 1 to 18 MHz	-0.1	+2.0	+3.0	dB	V_{RF}
Peaking 3 (Note 4, 6)	Δ Rp7	Reference at 1MHz	-	-	+4.0	dB	V_{O1} to V_{O4}
Peaking 4 (Note 4, 6)	Δ Rp8	Reference at 1MHz	-	-	+4.0	dB	V_{RF}
Grop Delay Deviation 3 (Note 4,6)	tg d3	f = 1 to 18MHz	-	4.0	9.0	ns	V_{O1} to V_{O4}
Grop Delay Deviation 4 (Note 4,6)	tg d4	f = 1 to 18MHz	-	4.0	9.0	ns	V_{RF}

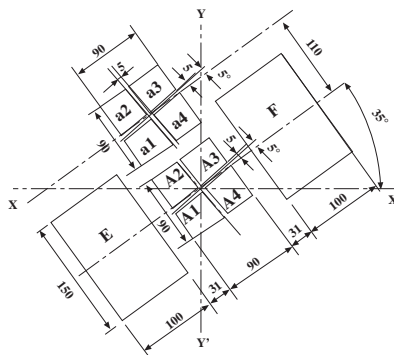
Notes:

- 3.) 30 μm and 5 μW of DC lights applied to center of each photodiode under conditions defined as ? output voltage at above conditions defined as V_p and the output voltage at dark V_{OD} , the sensitivity Rp is given by using the following formula: $R_p = (V_p - V_{OD}) / 5\mu\text{W}$
- 4.) Laser diode light source, $\lambda = 780\text{nm}$ or 650nm .
- 5.) Frequency when sensitivity is 3dB, based on sensitivity at $f=1\text{MHz}$.
- 6.) 30 μm and 10 μW of DC light plus 4 μW peak to peak of AC light applied to the center of each photodiode. BW = 10kHz.
For V_{RF} measurement, the signal light is irradiated on photodiode A and V_{RF} measured.



DETECTING PATTERN OF PHOTODIODE

(Unit: μm)





SIGNAL PROCESSING EXCELLENCE

Sipex Corporation

**Headquarters and
Sales Office**

233 South Hillview Drive
Milpitas, CA 95035
TEL: (408) 934-7500
FAX: (408) 935-7600

Sales Office

22 Linnell Circle
Billerica, MA 01821
TEL: (978) 667-8700
FAX: (978) 670-9001
e-mail: sales@sipex.com

Sipex Corporation reserves the right to make changes to any products described herein. Sipex does not assume any liability arising out of the application or use of any product or circuit described herein; neither does it convey any license under its patent rights nor the rights of others.