

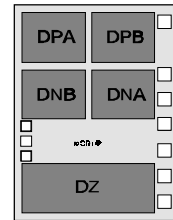
FEATURES

- ◆ Monolithic integrated photodiodes
- ◆ Excellent matching
- ◆ High sensitivity for visible light and near infrared
- ◆ Low dark currents
- ◆ Element size $0.95 \times 0.74\text{mm}^2$
(DZ: $2.0 \times 0.74\text{mm}^2$)
- ◆ Compatible to standard code wheels
- ◆ Option: extended temperature range of $-25..125^\circ\text{C}$

APPLICATIONS

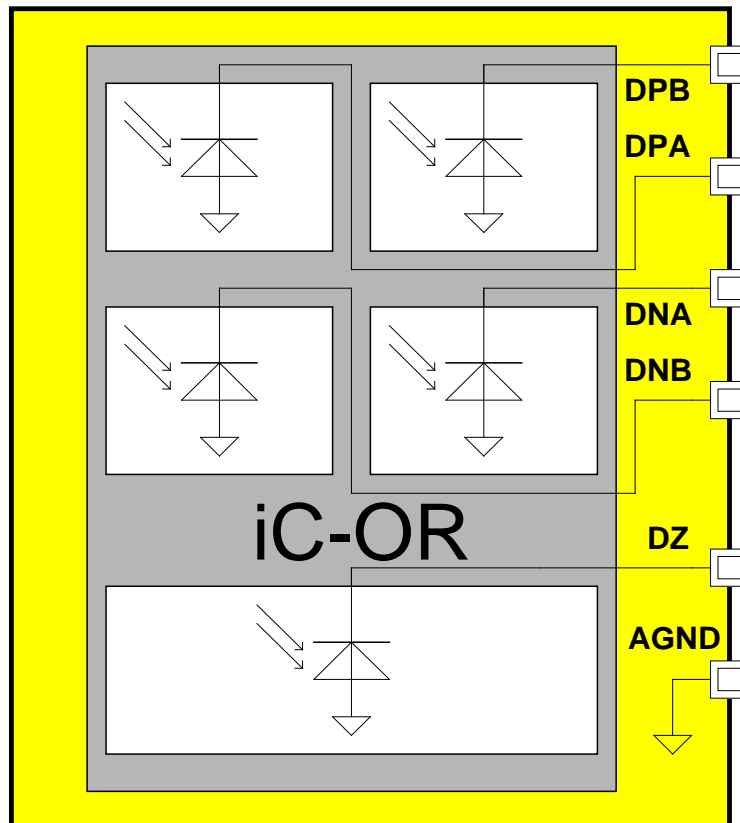
- ◆ Photodiode Array for Incremental Encoders

PACKAGES



customized COB
(chip size $2.46\text{mm} \times 3.24\text{mm}$)

BLOCK DIAGRAM



DESCRIPTION

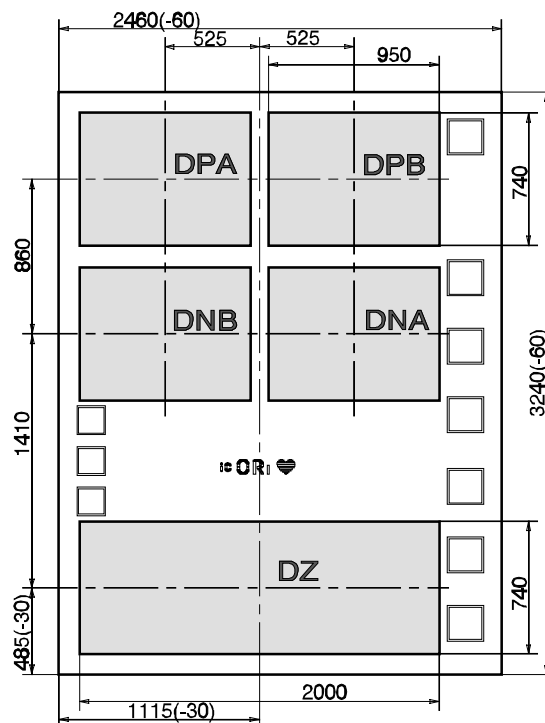
The device iC-OR is a monolithic integrated photodiodes array for incremental encoders. The array comprises five photodiodes, two of which for differential evaluation each for track A and track B and one for constant-light evaluation of index track Z.

Due to the minimized dark-currents in the nA range, the operating temperature is extended up to 125°C.

The iC-OR package design might be SMD made to customers specification; samples are available in a 14 terminal chip carrier.

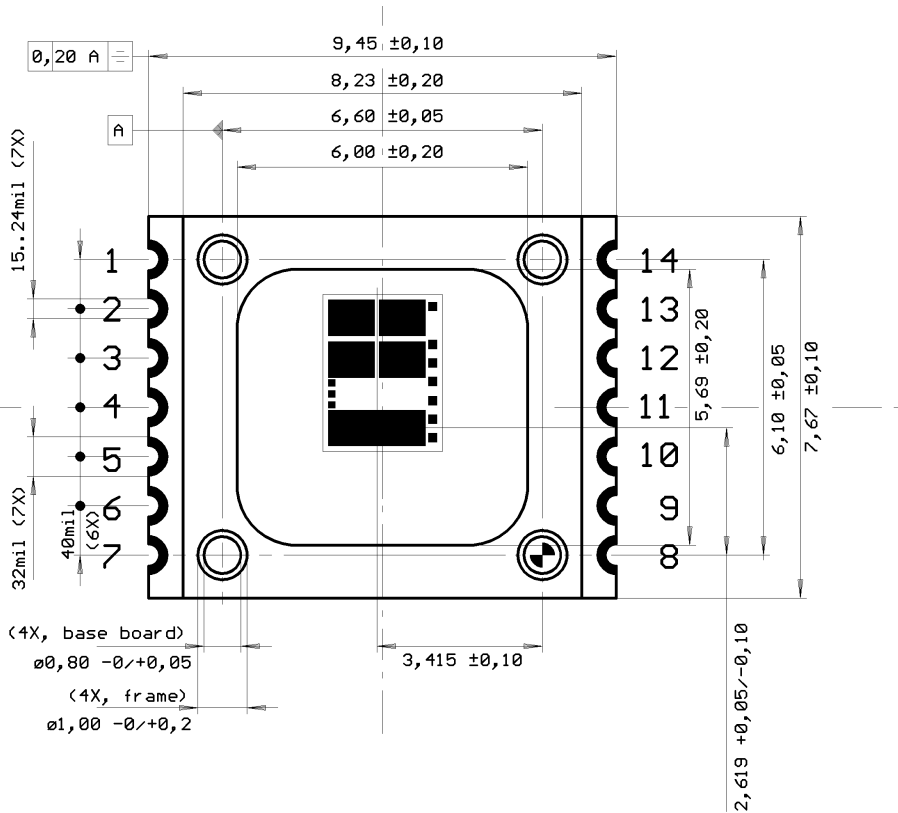
CHIP LAYOUT

PHYSICAL DIMENSIONS (in μm)



PACKAGES BLCC OVC (for samples only)

PHYSICAL DIMENSIONS (in mm, mil)
(top view)



(see iC-OV data sheet for complete dimensions)

PIN FUNCTIONS

No. Name Function

No.	Name	Function
1	n.c.	
2	n.c.	
3	n.c.	
4	n.c.	
5	n.c.	
6	n.c.	
7	n.c.	
8	n.c.	
9	AGND	Common Anode, Ground
10	DNA	Cathode Photodiode DNA
11	DPA	Cathode Photodiode DPA
12	DNB	Cathode Photodiode DNB
13	DPB	Cathode Photodiode DPB
14	DZ	Cathode Photodiode DZ

ABSOLUTE MAXIMUM RATINGS

Values beyond which damage may occur; device operation is not guaranteed.

Item	Symbol	Parameter	Conditions	Fig.			Unit
					Min.	Max.	
G001	Vr()	Reverse Voltage at DPA, DPB, DNA, DNB, DZ	Ir< 10nA, Tj= 25°C			25	V
TG1	Pmax	Max. Power Dissipation	Ta= 70°C			150	mW

THERMAL DATA

Operating Conditions:

Item	Symbol	Parameter	Conditions	Fig.				Unit
					Min.	Typ.	Max.	
T1	Ta	Operating Ambient Temperature Range (extended temperature range on request)	BLCC OVC package		-25		90	°C

ELECTRICAL CHARACTERISTICS

Operating Conditions: $\lambda = 850\text{nm}$, Vr= 5V, Tj= -25..125°C, unless otherwise noted.

Item	Symbol	Parameter	Conditions	Tj °C	Fig.				Unit	
						Min.	Typ.	Max.		
Total Device										
001	S(λ)max	Spectral Sensitivity	$\lambda = 850\text{nm}$				0.5			A/W
002	Se(λ)	Range of Spectral Sensitivity	Se(λ)= 0.1 × S(λ)max			500		1050		nm
Photodiodes DPA, DNA, DPA, DPB										
101	Aph()	Radiant Sensitive Area				0.95 × 0.74				mm ²
102	Ierr()	Dark Current	Ee= 0mW/cm ²	-25			0.02			nA
				27			0.06			nA
				85			0.30			nA
				125			30			nA
103	Iph()	Photocurrent	Ee= 0.1mW/cm ²				0.35			μA
104	tr()	Photo-current Rise Time	RL= 1kΩ, Iph= 100μA				0.9			μs
105	tf()	Photo-current Fall Time	RL= 1kΩ, Iph= 100μA				0.9			μs
106	C0()	Capacitance	Vr= 0V				60			pF

All voltages are referenced to ground unless otherwise noted.

All currents into the device pins are positive; all currents out of the device pins are negative.

ELECTRICAL CHARACTERISTICSOperating Conditions: $\lambda = 850\text{nm}$, $V_r = 5\text{V}$, $T_j = -25..125^\circ\text{C}$, unless otherwise noted.

Item	Symbol	Parameter	Conditions	Tj °C	Fig.				Unit
						Min.	Typ.	Max.	
Photodiode DZ									
201	Aph()	Radiant Sensitive Area				2.00 × 0.74			mm ²
202	Ierr()	Dark Current	Ee= 0mW/cm ²	-25 27 85 125			0.04 0.12 0.60 60		nA nA nA nA
203	Iph()	Photocurrent	Ee= 0.1mW/cm ²				0.7		µA
204	tr()	Photo-current Rise Time	RL= 1kΩ, Iph= 100µA				0.9		µs
205	tf()	Photo-current Fall Time	RL= 1kΩ, Iph= 100µA				0.9		µs
206	C0()	Capacitance	Vr= 0V				120		pF

ORDERING INFORMATION

Type	Package	Order designation
iC-OR	BLCC OVC	iC-OR-BLCC OVC (for samples only)
iC-OR	customized COB	iC-OR-BLCC type, iC-OR-BMST type

For information about prices, terms of delivery, options for other case types, etc., please contact:

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