Specifications and Quality Assurance

InGaAs Photodiode Die (500μm)
Part No. **KPDE050GC-15M**

Rev.	Date	Remarks	KYOSEMI Approval	Customer Approval	
				Signed by	Date
0	2010.10.12	First issue	T. Tanaka		

Kyosemi Corporation

Specifications and quality assurance described hereunder are applied to the InGaAs photodiode die with the 500μm diameter of the sensitive area.

1. Specifications

1-1. Absolute Maximum Ratings

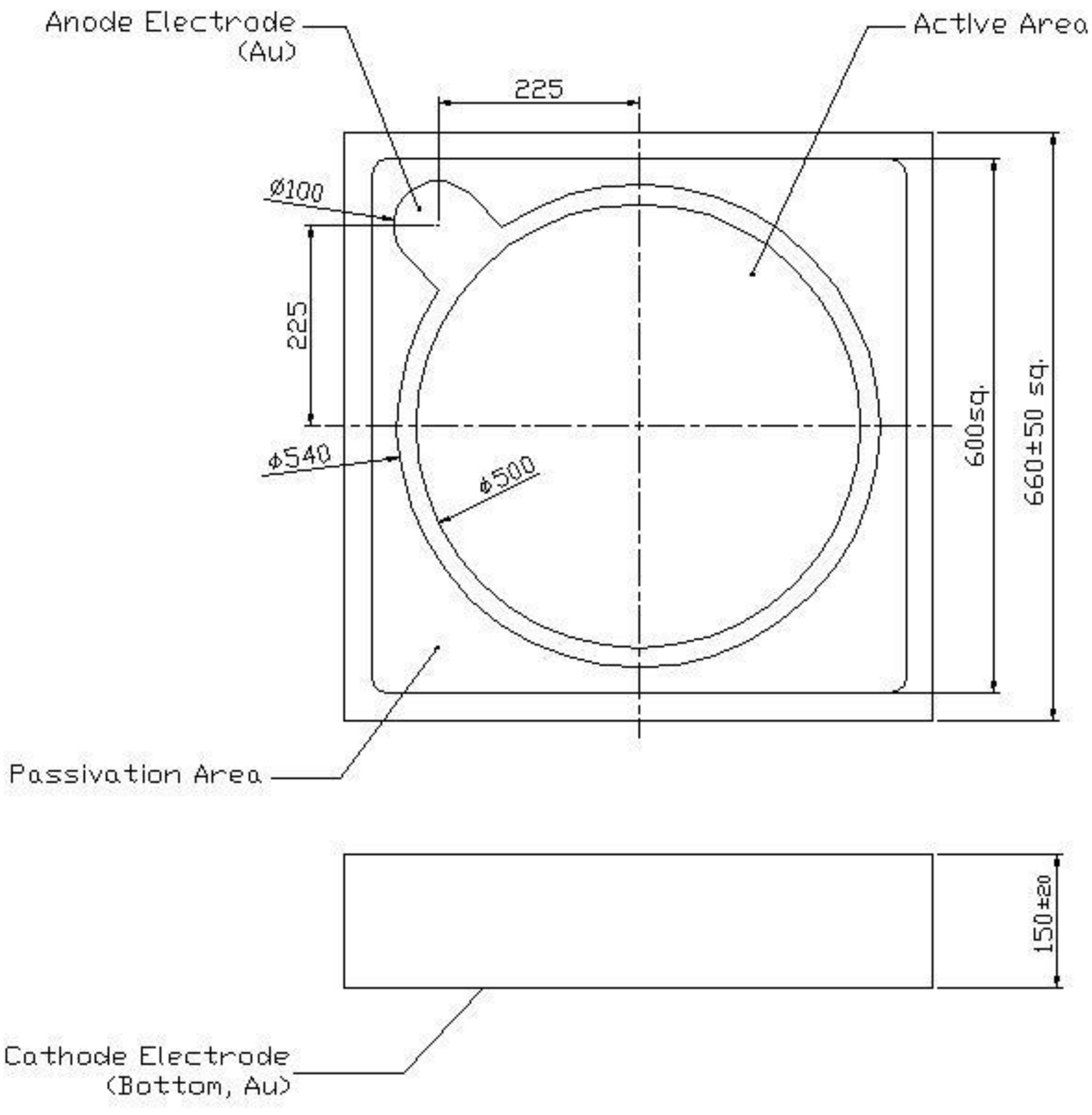
Parameter	Symbol	Rating	Unit	Notes
Reverse Voltage	V_R	20	V	
Reverse Current	I_R	10	mA	
Forward Current	I_F	50	mA	
Max. Optical Input Power	P_{MAX}	30	mW	
Operating Temperature	T_{OP}	-40 to +85	^oC	
Storage Temperature	T_{STR}	-40 to +85	^oC	
Soldering Temperature	T_{SOL}	320	^oC	5sec max.

1-2. Electro-Optical Characteristics (T_a=25 ^{o}C)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Active Area Diameter	-	-		500		μm
Responsivity	R	V_R=5V,λ=1310nm,P_{in}=-10dBm	0.8	0.9	-	A/W
		V_R=5V,λ=1550nm,P_{in}=-10dBm	0.9	1.0	-	A/W
Dark Current	I_D	V_R=5V	-	0.5	1.0	nA
Capacitance	C_T	V_R=5V, f =1MHz	-	12	15	pF
Bandwidth	BW	V_R=5V,R_L=50Ω,P_{in}=-10dBm	-	0.2	-	GHz

1-3. Dimensions

Refer to the attached drawing Fig. 1.



Tolerance: +/-5um (unless otherwise specified)

Unit: μm

Fig.1

2. Inspection

2-1. Electro-optical characteristics inspection

a) Dark current : All chips, by wafer probing.
b) Responsivity: Sampling, level S-2, AQL 2.5, by the wafer.
c) Capacitance: Sampling, level S-2, AQL 2.5, by the wafer.

Inspection criteria

Item	Symbol	Condition	Min.	Max.	Unit
Dark current	I_D	V_R=5V, Ta=25^{o}C	-	1	nA
Responsivity*	R	V_R=5V, λ=1550nm, Pin=-10dBm	0.9	-	A/W
Capacitance*	C	V_R=5V, f=1MHz	-	15	pF

* Sampled dies are mounted on KYOSEMI standard header with no resin for the inspection.

2-2. Visual inspection

Test instruments: Microscope 20x top light
Inspection quantities: Total inspection

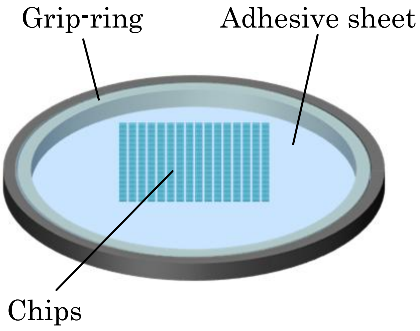
Quality characteristics		**Tolerances/ admissible values**
Active area	Particle	Admissible: < 50μmϕ
	Discoloration	Admissible: < 50μmϕ
	Crack or Scratch	None
Top Surface out of Active area (Except for Dicing area)	Particle or Discoloration	Admissible: < 100μmϕ
	Crack or Scratch	Admissible: < 100μm
p-Electrode	Scratch	Admissible: < 100μm (Admissible: Marks of probe needle)

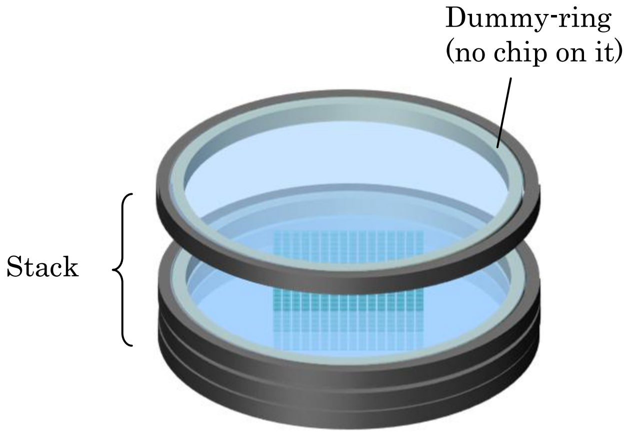
* Any cracks, scratches, particle or discolorations found on outer part of passivation area (so called Dicing area) shall be ignored.

3. Packing

Bare chip products are packed in our standard grip-ring form by the wafer. The grip-rings, usually as many as the number of wafers to be shipped, are all stacked up. At the top of the stack, dummy-ring without chip will be placed in order to avoid direct touch of outer packing materials on the product.

Grip-ring size: ϕ152mm(outer dia.) x ϕ140mm(inner dia.) x 6mm(thickness)





4. Warranty

As for any defect of this product for which Kyosemi Corporation is liable, Kyosemi Corporation shall, at its option, inspect or replace the product. This warranty shall be effective until the buyer inspects this product or for one (1) month after delivery, whichever comes first.

5. Precautions for use

a) While the product is on the adhesive sheet until its assembly, it must be stored in 20 to 30 °C, dry or vacuum environment, and electro-static level must be kept less than 250V.
b) In general, compound semiconductor product is fragile against the partial stress by tweezer's push or similar stress. Be careful not to crack or scratch the surface, and keep clean.
c) Machine and human body must be grounded while its assembly.
d) It is highly recommended that the chip and package constituent parts such as the lid or cap should be baked (120 to 150 °C, 24h, N_2 or vacuum) and sealed hermetically in the dry N_2 environment.

6. Notice

a) Kyosemi Corporation will ship the product based solely on this specification, not on other standards or specifications.

b) Kyosemi Corporation would assume this specification has been approved if no notification of approval or disapproval has reached within one month after issuing this specification.

c) If any malfunction out of this specification or necessity of the change of the specification arises, both parties shall first make a good faith attempt to solve the matter.

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