

Integrated module of photoconductive switch and lens for terahertz electromagnetic wave

Features

- Suitable for both emission and detection
- Small size module helps easy installation
Small as 30 mm× 30 mm×13 mm
- Easy connection to other devices
SMA connector facilitates the connection with other equipments

Applications

- Far-infrared spectroscopy
- Material analysis
- Nondestructive and non-contact inspection
- Structure inspection
- Security, etc.

Outlines

G10620 series are terahertz (THz) electromagnetic waves emission/detection modules, in which a low-temperature-grown GaAs (LT-GaAs) based photoconductive switch (sometimes called as photoconductive antenna) and a lens for THz electromagnetic wave are integrated. Small size (30 mm × 30 mm × 13 mm except the protuberance) helps easy installation in a system. This module also has a SMA connector, which facilitates easy connection to other equipments. M6 and M2 tapping holes are prepared on three faces to help easy setup.

There are three prepared electrode patterns of photoconductive switches; Dipole: G10620-11 and Bow-tie: G10620-12, and Spiral: G10620-13.



Absolute maximum ratings

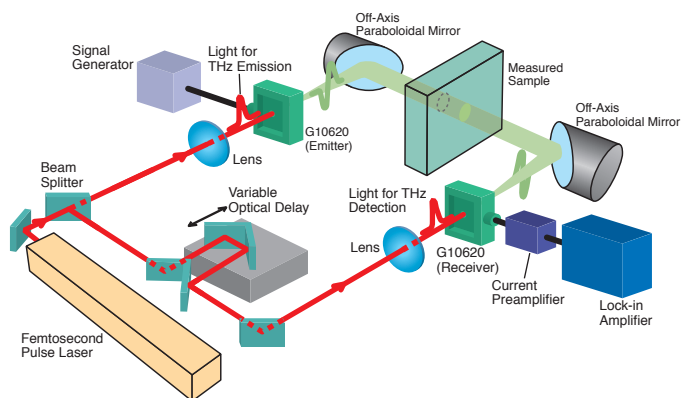
Parameter	Symbol	Value	Unit
Applied voltage *1)	V_{op}	±15	V
Average input optical power *2) *3) *4)	P_{ave}	15	mW
Operating temperature *5)	$T_{op(c)}$	+5 to +35	°C
Storage temperature *5)	T_{stg}	-20 to +40	°C

- *1) Recommended value is ±10 V.
- *2) Recommended value is 10 mW.
- *3) The beam diameter on the chip surface should be larger than 10 μm (1/e²).
- *4) Use a femtosecond laser with repetition rate from 50 MHz to 150 MHz.
- *5) No condensation.

Characteristics ($T_{op(c)}=25\text{ °C}$)

Parameter	Symbol	Min.	Typ.	Max.	Unit
Dark resistance	R_t	20	-	-	MΩ

Example of experimental setup

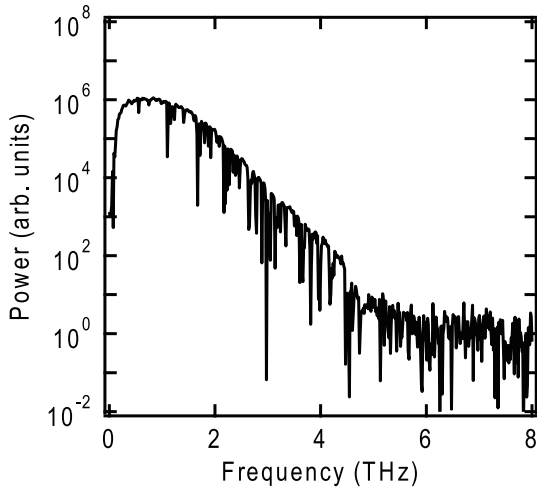


Terahertz photoconductive switch modules (emission/detection modules for terahertz electromagnetic wave) G10620 series

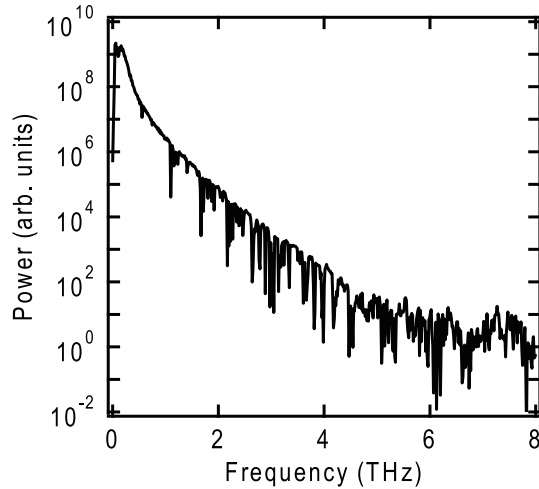
Typical measurement results of frequency spectrum

* These are typical measurement results. Under improper experimental conditions, the similar results cannot be obtained.
* To acquire these data, a pair of pallaboloidal mirrors are used between emission and detection modules.

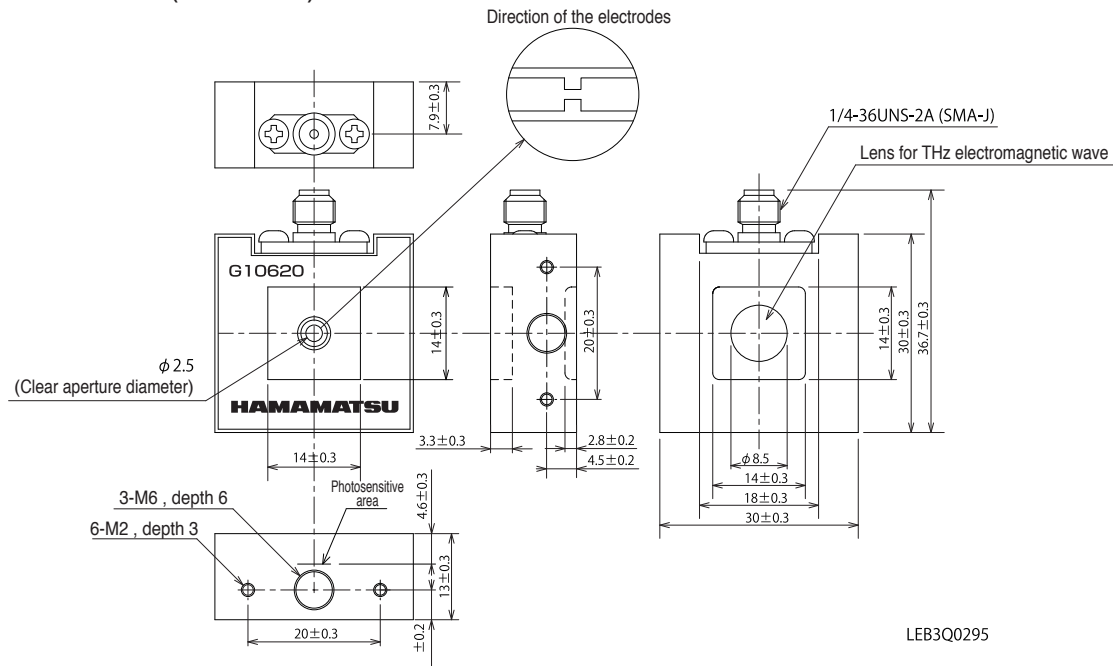
● G10620-11 emitter 5 mW, receiver 5 mW



● G10620-12 emitter 5 mW, receiver 5 mW

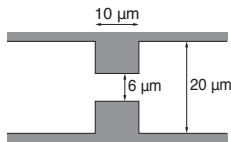


Dimensional outline (Unit: mm)

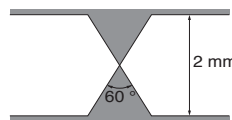


Prepared electrode patterns of photoconductive switch / schematic figure of photoconductive part

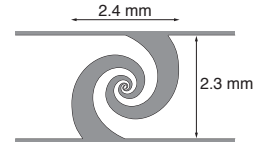
● Dipole:
G10620-11



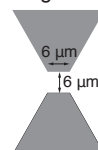
● Bow-tie:
G10620-12



● Spiral:
G10620-13



Magnified



Magnified



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