442.
Accession number:13054086
Title:THz Imaging Using a Quantum-well Photodetector with Background Limited Performance
Authors:Zhou Tao (1); Zhang Rong (1); Guo Xu-Guang (1); Tan Zhi-Yong (1); Cao Jun-Cheng (1)
Author affiliation:(1) Key Lab. of Terahertz Solid-State Technol., Shanghai Inst. of Microsyst. & Inf. Technol, Shanghai, China
Source title:Chinese Physics Letters
Abbreviated source title:Chin. Phys. Lett. (China)
Volume:29
Issue:10
Publication date:Oct. 2012
Pages:104202 (3 pp.)
Language:English
ISSN:0256-307X
CODEN:CPLEEU
Document type:Journal article (JA)
Publisher:Chinese Physical Society
Country of publication:China
Material Identity Number:CY92-2012-010
Abstract:Terahertz (THz) quantum well photodetectors (QWPs) are an extension of quantum well infrared photodetectors in the THz region. We construct an imaging system based on a THz QWP with a narrow response range from 3 THz to 6 THz. The peak responsivity of the THz QWP having background-limited performance is about 0.5 A/W, and the corresponding detectivity reaches 10¹¹ cm·Hz^{1/2}/W at temperature of 4.2 K. We obtain the images of a concealed object by the imaging system and prove that THz QWPs have the potential for imaging applications.
Number of references:18
Inspec controlled terms:infrared detectors - photodetectors - quantum wells - terahertz wave imaging
Uncontrolled terms:terahertz quantum well photodetectors - THz imaging - infrared photodetectors - background-limited performance - concealed object - frequency 3 THz to 6 THz - temperature 4.2 K
Inspec classification codes:A0762 Detection of radiation (bolometers, photoelectric cells, i.r. and submillimetre waves detection) - A0720 Thermal instruments and techniques - B7230C Photodetectors - B7310N Microwave measurement techniques
Numerical data indexing:frequency 3.0E+12 6.0E+12 Hz;temperature 4.2E+00 K
Treatment:Practical (PRA); Theoretical or Mathematical (THR)
Discipline:Physics (A); Electrical/Electronic engineering (B)
DOI:10.1088/0256-307X/29/10/104202
Database:Inspec
IPC Code:G01J1/00; H01L31/101; H04N5/33