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Abstract:We demonstrate room temperature single-mode THz emission at 4 THz based on intracavity difference-frequency generation from mid-infrared dual-wavelength quantum cascade lasers. An integrated dual-period distributed feedback grating is defined on the cap layer to purify both mid-infrared pumping wavelengths and in turn the THz spectra. Single mode operation of the pumping wavelengths results in a single-mode THz operation with a narrow linewidth of 6.6 GHz. A maximum THz power of 8.5 uW with a power conversion efficiency of 10 uW/W2 is obtained at room temperature.
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