

## HSL-12-7.1 Hyperhemispherical Silicon Lens with diameter 12 mm and height 7.1 mm

### Hyperhemispherical silicon lens

material	undoped HRFZ-silicon
specific resistance $\rho$	>10 k $\Omega$ ·cm
refractive index $n$	3.41
diameter $2 \cdot r$	12 mm $\pm$ 0.01 mm
height $h$	7.1 mm $\pm$ 0.01 mm
distance $d$	7.7 mm
surface	polished
PCA chip thickness $t$	0.6 mm



### Terahertz beam

collection angle $\alpha$	73°
divergence angle $\beta$	17°
virtual focus length $L$	26.5 mm

### Relations for hyperhemispherical lens

$$d = r \cdot \left( \frac{n+1}{n} \right) \quad L = r \cdot (n+1) \quad \alpha = \arctan(n) \quad \beta = \arcsin\left(\frac{1}{n}\right)$$

