

## Thermal Sensors for High Energy Density Lasers



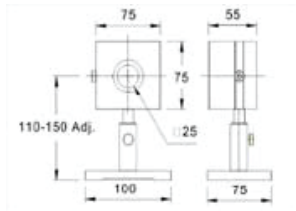
- Designed for High Peak Power Lasers
- Avg.Power and Single Shot Energy Measurement
- High damage volume absorbers :
  - \*peak power damage thresholds to 100GW/cm<sup>2</sup>
  - \*energy damage thresholds to 4J/cm<sup>2</sup> with nsec pulses
- Energy measurement up to 10 joules with nsec pulses
- NIST and PTB (Physikalisch-Technische Bundesanstalt) traceability

Sensor Code	Power Range	Max Avg Power Density (KW/cm <sup>2</sup> )	Max Peak Power Density (GW/cm <sup>2</sup> )	Energy Range*	Max Energy Density Rep. Pulse (J/cm <sup>2</sup> )*	Aperture	Spectral Range**	Cooling
10BB-D12-L	10mW - 10W	0.1	30	25mJ-30J	8	Ø12mm	0.4-2.1µm	convection
A30-D12-SHC-L	10mW - 30W	100	5	25mJ-4J	2.5	Ø12mm	0.25-2.1µm	convection

### NOTES:

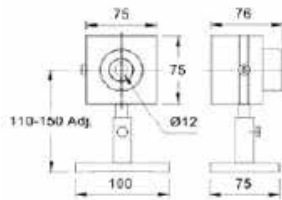
Ratings are wavelength dependent  
 \* Values for nsec pulses  
 \*\* Possible extension of wavelength range to 3 µm

### Sensor 10BB-D12-L



Max. Continuous Power:	10 W
Intermittent Power Use:	15 W (a)
Power Resolution:	10mW
Max. Energy (Single Pulse):	30 J
Energy Resolution:	10 mJ ( with PLUS Monitor)
Energy Threshold:	25 mJ ( with PLUS Monitor)
Absorber Type:	BB: Broadband-Volume
Wavelength Range:	250-2100 nm (b)
Max. Average Power Density:	100 W/cm <sup>2</sup>
Max. Peak Power Density:	30 GW/cm <sup>2</sup>
Max. Energy Density (Repetitive Pulses):	8J/cm <sup>2</sup> ( c)
Max. Energy Density (Single Pulse):	30 J/cm <sup>2</sup> ( c)
NEP(Noise Equivalent Power):	±1mW
Calibration Accuracy (%):	± 3%
Response Time with Display (0-90%):	4 sec.
Linearity:	±1%
Input Diameter:	12mm
Cooling	Convection
Notes :	a 2 minutes max b.for uncoated optics. Wavelength range extendible to 3 microns. Single wavelength, high damage thresholds coatings available on request. c.Ratings are wavelength dependent.

### Sensor A30-D12-SHC-L

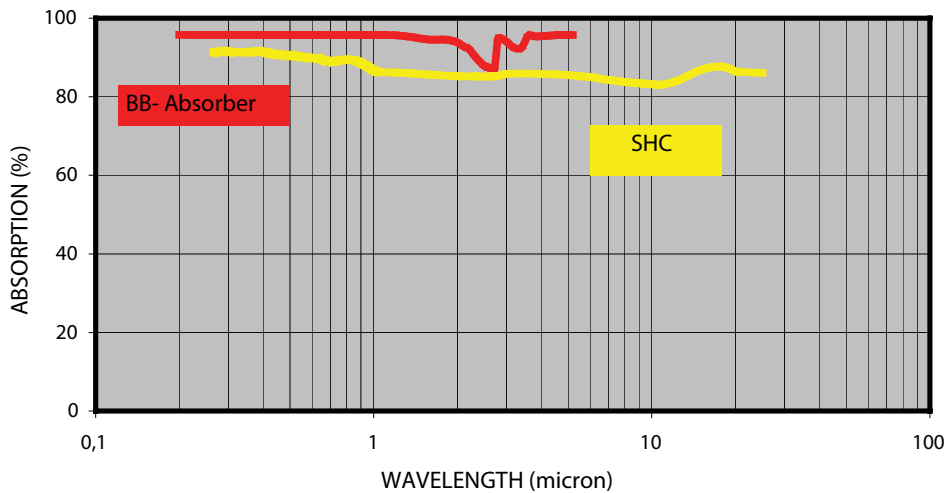


Max. Continuous Power:	30 W
Intermittent Power Use:	45 W (a)
Power Resolution:	10mW
Max. Energy (Single Pulse):	4 J (nsec pulses)- 30J Long Pulses
Energy Resolution:	10 mJ ( with PLUS Monitor)
Energy Threshold:	25 mJ ( with PLUS Monitor)
Absorber Type:	SHC: Super Hard Coating
Wavelength Range:	250-2100 nm (b)
Max. Average Power Density:	100 KW/cm <sup>2</sup>
Max. Peak Power Density:	5 GW/cm <sup>2</sup>
Max. Energy Density (Repetitive Pulses):	2 ,5J/cm <sup>2</sup> ©
Max. Energy Density (Single Pulse):	5 J/cm <sup>2</sup> ©
NEP(Noise Equivalent Power):	±4mW
Calibration Accuracy (%):	± 3%
Response Time with Display (0-90%):	2 sec.
Linearity:	±1%
Input Diameter:	12mm
Cooling	Convection
Notes :	a 2 minutes max b. for uncoated optics. Wavelength range extendible to 3 microns. Single wavelength, high damage thresholds coatings available on request. c. atings are wavelength dependent.

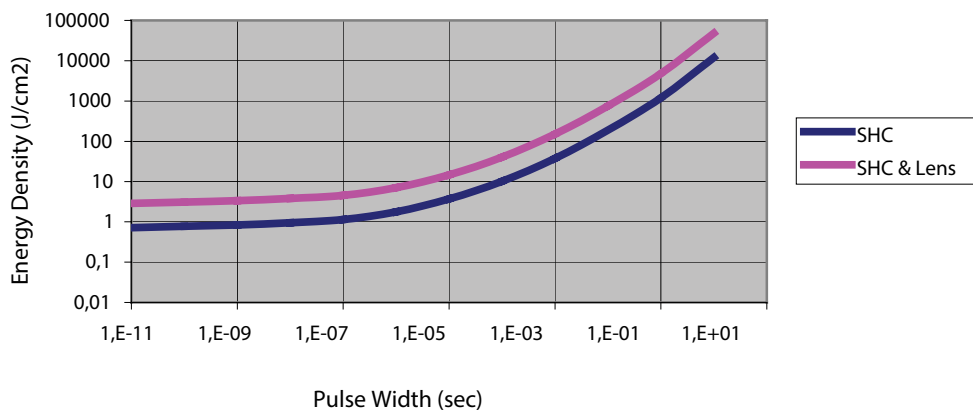
## Absorption and Damage Threshold Curves

### General Absorption Curves

SHC and BB Absorber : Spectral Responsivity



A30-D12-SHC-L vs A30-D12-SHC: Damage Thresholds



10BB-D12-L vs 10BB-D25 : Damage Thresholds

