

Conduction-cooled QCW Stacked Array

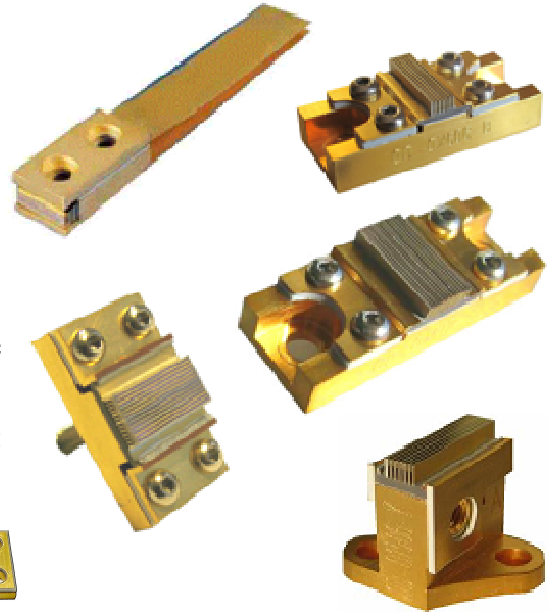
QD-Q1yzz-A / QD-Q1yzz-B / QD-Q1yzz-BS / QD-Q1yzz-G / QD-Q1yzz-K

DESCRIPTION

QD-Q1yzz-A, QD-Q1yzz-B, QD-Q1yzz-BS, QD-Q1yzz-G and QD-Q1yzz-K are a variety of conductively cooled laser diode stacked arrays. These Stacks can be built from 1 to 19 diode bars of 60W QCW to 400W QCW. The laser diode bar arrays benefit from a fully mastered technology, with the appropriate design for improved efficiency and reliable operation. Packaging and heat-sink have been optimized to reduce the overall thermal resistance. Assembly in a compact and rugged package, using AuSn hard solder, allows easy connection to a heat exchanger to get good thermal control.

This technology of stacks has been successfully submitted to specific environmental tests requested for Space missions (long life-tests, endurance under vacuum, irradiations...) with NASA or ESA.

These stacks are ideal for different applications under severe conditions: pumping rods or slabs solid state lasers, illuminators...for aerospace, industrial, space applications.



MAIN FEATURES

- QCW operation
- 60W to 400W QCW per diode bar
- Standard wavelength: from 790 to 980 nm
- Vacuum qualified technology
- Low thermal resistance assembly
- Mechanically robust, shock and vibration resistant

x =	1	2	3	4	5	6	
λ	808	790	830	915	940	980	nm
y =	2	3	4	5	6	7	8
P/bar	60	80	100	125	150	200	300
							400 W

SPECIFICATIONS

PARAMETERS @ 25°C	QD-Qxyzz-A	QD-Qxyzz-B	QD-Qxyzz-BS	QD-Qxyzz-G	QD-Qxyzz-K	Units
Number of Diode bars zz =	2 to 06	1 to 12	1 to 19	1 to 16	1 to 08	
Pitch between diode bars	330 to few 1000s					μm
Emitting area	10 x (zz - 1)* pitch					mm ²
QCW Optical Power per Diode Bar	up to 400					W
QCW Optical Power	up to 2 400	up to 4 400	up to 7 000	up to 6 000	up to 1 600	W
Operating current @ 100W / bar	95 A Typical - 115A Max					A
Operating current @ 200W / bar	185 A Typical - 215A Max					A
Operating current @ 400W / bar	370 A Typical - 390A Max					A
Operating voltage	<2 V /bar					V
Total efficiency	58% @ 808 nm, 65% @ 940/980 nm					%
Wavelength	790 to 980					nm
Spectral width (FWHM)	3					nm
Beam divergence (FWHM)	9 X 36					deg.

Note :

- Standard Polarisation: TM or TE mode @ 808 nm, TE @ 9xx nm
- Variation of wavelength with temperature is approximately 0.26 nm/°C
- Tolerance on wavelength is +/- 3nm, +/- 1.5 nm on demand
- Double or Triple Quantum Well bars available (ex: 400W @ 200A & 4V)
- Specifications are for nominal lifetime > 1. 10⁹ pulses (for 200μs pulse width)

Quantel Laser Diodes reserves the right to change specifications without prior notice

ABSOLUTE MAXIMUM RATINGS

PARAMETERS	QD-Qxyzz-A	QD-Qxyzz-B	QD-Qxyzz-BS	QD-Qxyzz-G	QD-Qxyzz-K
Pulse width	500				μs
Maximum duty cycle	3	4			%
Reverse voltage	3				Volt
Storage temperature	-55 to +85				°C

Note : Operation at temperature below dew point requests to use dry N2 environment

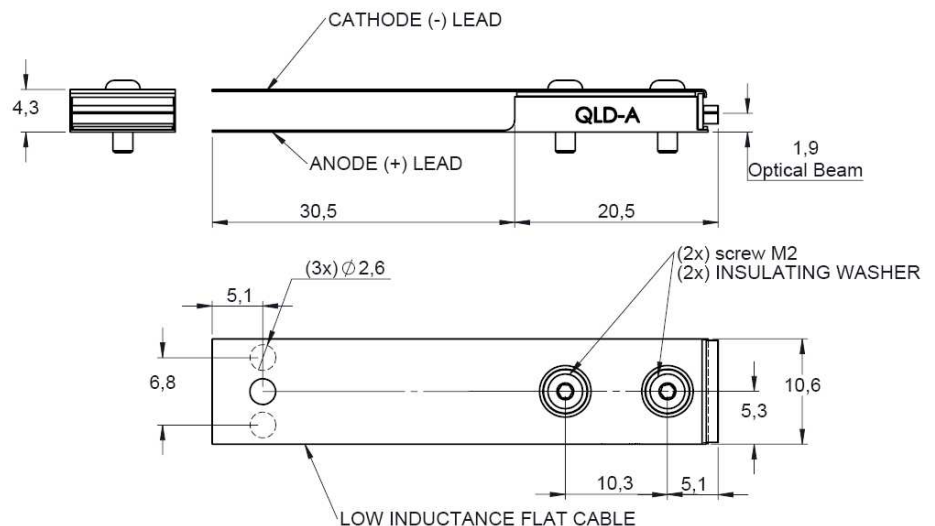
PACKAGE SPECIFICATIONS

- dimensions are in mm
- standard tolerances are ± 0.2 mm

QD-Q1yzz-A



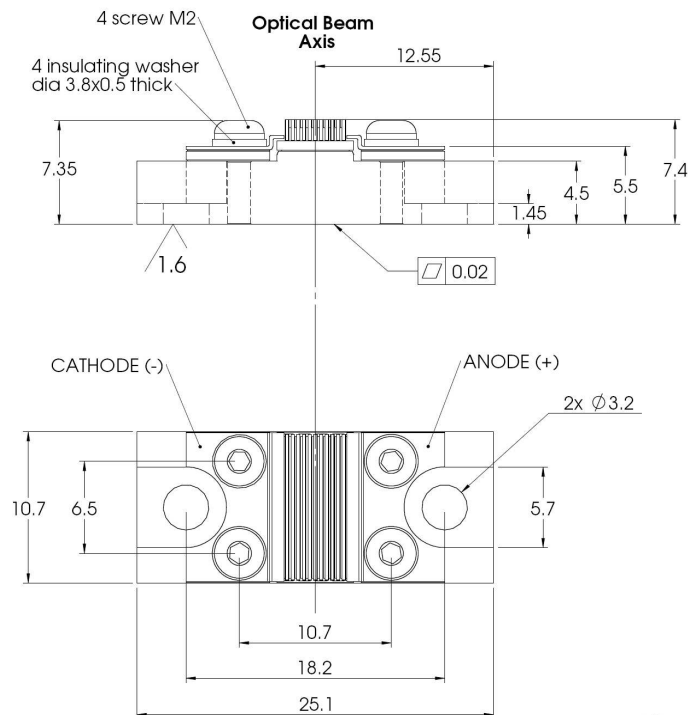
This stack "A" type with a very thin design can be proposed with a total number of 'zz' diode bars.
 'zz' = 1 to 6 bars at a pitch of 400μm,
 'zz' = 1 to 5 bars at a pitch of 500μm



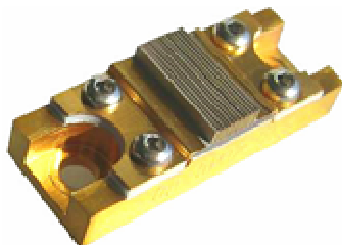
QD-Q1yzz-B



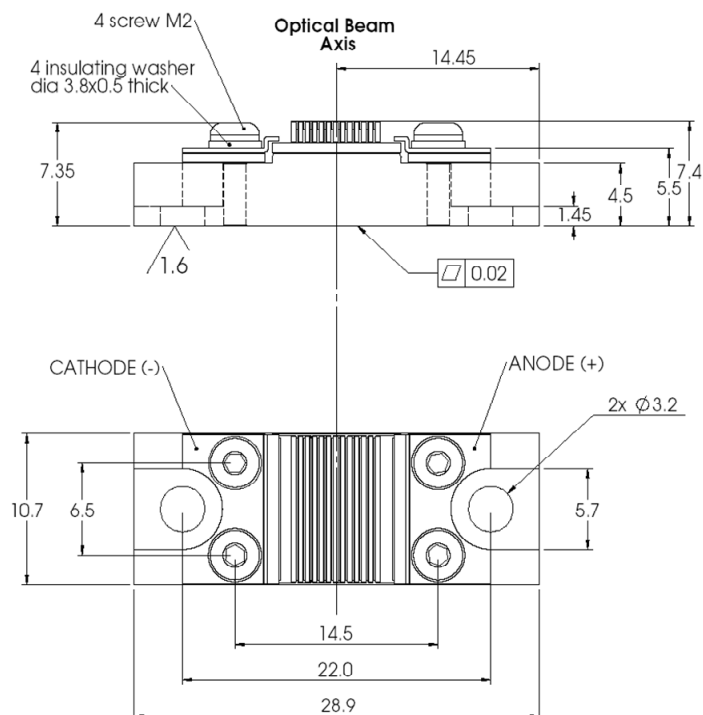
This stack “B” type can be proposed with a variable number (‘zz’) of diode bars:
 ‘zz’ = 1 to 12 bars at a pitch of 330µm,
 ‘zz’ = 1 to 11 bars at a pitch of 400µm,
 ‘zz’ = 1 to 8 bars at a pitch of 500µm



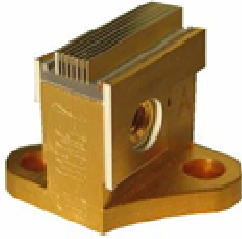
QD-Q1yzz-BS



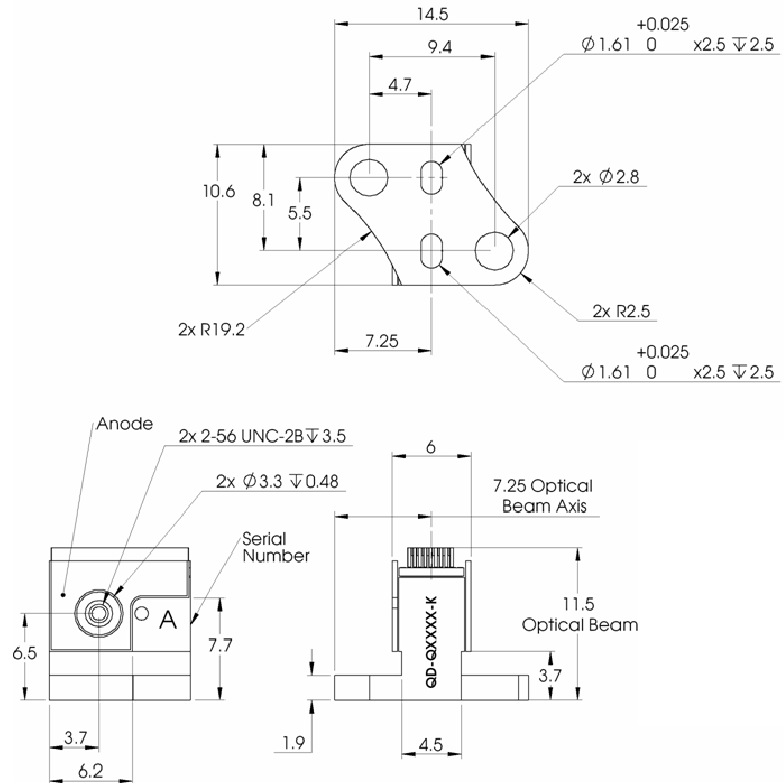
This stack “BS” type can be proposed with a variable number (‘zz’) of diode bars:
 ‘zz’ = 1 to 19 bars at a pitch of 400µm,
 ‘zz’ = 1 to 15 bars at a pitch of 500µm,
 ‘zz’ = 1 to 6 bars at a pitch of 1000µm



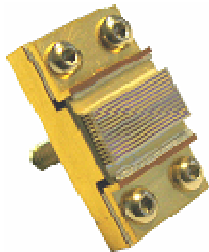
QD-Q1yzz-K



This stack “Z” type offers a very small foot-print.
It can be proposed with a variable number of ‘zz’ diode bars:
‘zz’ = 1 to 8 bars at a pitch of 400µm,
‘zz’ = 1 to 6 bars at a pitch of 500µm



QD-Q1yzz-G



This stack “BS” type can be proposed with a variable number (‘zz’) of diode bars:
‘zz’ = 1 to 19 bars at a pitch of 400µm,
‘zz’ = 1 to 15 bars at a pitch of 500µm
‘zz’ = 1 to 6 bars at a pitch of 1000µm

