STCE

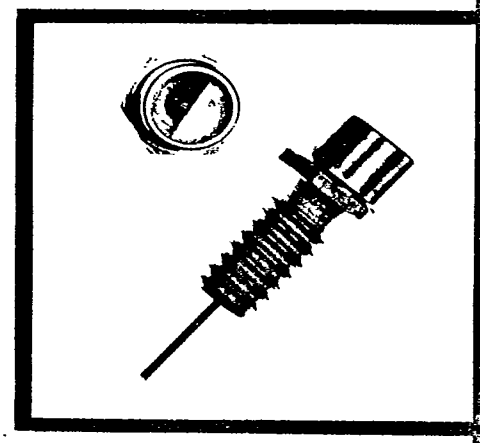
T-41-05

# Laser Diodes

## 850nm Pulsed Window output

-05

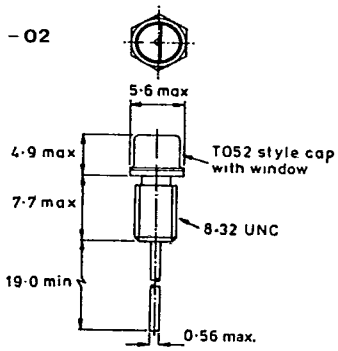
## LB Series



### FEATURES:

- GaAs/GaAlAs double heterostructure laser design
- High peak output power for short pulse applications
- High pulse repetition rate capability
- Single chip devices
- Mounted in standard rugged, fully hermetic window capped cases
- Ideally suited to free-space communications, infra-red illumination, non-contact measurement, robotic and pollution control applications.

### ENGINEERING REFERENCE (Dimensions mm)



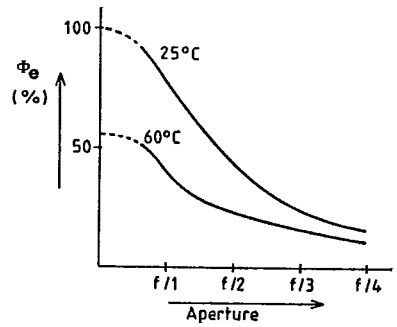




Fig 1 Normalised Output Power vs. Collection Aperture

POLARITY: case positive
Case must be mounted on a heat sink.
The OPTICAL distance from the emitting face of the laser to the seating face of the flange is nominally 3.4 mm.
CONCENTRICITY of the centre of the emitting face with the centre axis, in any direction, is 0.3 mm max.

WAVELENGTH at peak intensity
850 nm nominal; 800 min; 900 max.
LBL series – 800nm min; 860nm max.
LBH series – 840nm min; 900nm max.

### TYPICAL OPERATING DATA

$T_{case}$ = 25°C
Peak current ($I_F$) = 1.3A
Peak width ($t_w$) = 350ns
Duty factor (D) = 6%
Collection aperture on axis = f/0.75

Minimum peak output: $\Phi_e$ LB1 100 mW
LB2 200 mW
LB3 250 mW

| Parameter | Symbol | Min. | Typ. | Max. | Units |
|---|---|---|---|---|---|
| Peak forward voltage | $V_F$ | | 3.5 | 5 | V |
| Threshold current | $I_{TH}$ | | 500 | 700 | mA |
| Spectral width at 50% intensity | $\Delta\lambda$ | | 5 | 9 | nm |
| Included angles at 50% intensity:— | | | | | |
| Perpendicular to junction plane | $\alpha j$ | | 50 | | Degrees |
| Parallel to junction plane | $\alpha p$ | | 20 | | Degrees |
| Emitting length | s | | 100 | | µm |
| Emitting width | d | | 0.5 | | µm |

# LB Series Laser Diodes

## Limit Ratings

**Absolute maximum ratings**
(at $T_{case}$ = 25°C unless otherwise stated)

| Parameter | Symbol | Min. Value | Max. Value | Units |
|---|---|---|---|---|
| Peak output power at $t_w$ = 350ns, D = 6% | $\Phi_e$ | | 500 | mW |
| Peak current at $t_w$ = 350ns, D = 6% | $I_{FM}$ | | 2 | A |
| Duty factor at $t_w$ = 350ns, $I_F$ = 1.3A | D | | 15 | % |
| Pulse width D = 6%, $I_F$ = 1.3A | $t_w$ | | 500 | ns |
| Operating temperature | $T_{case}$ | −20 | +70 | °C |
| Storage temperature | $T_{amb}$ | −55 | +70 | °C |
| Insertion torque | | | 0,6 | Nm |

### MAXIMUM RATINGS

The maximum values given in the table apply to each parameter in isolation. That is when all other maximum rated parameters have the value given under 'Typical Performance Data'. It may not be assumed that maximum values of more than one parameter can be applied to a device at the same time.

Detailed study of the graphs and data is required to determine permissible operating conditions other than those under which the device is characterised.

It is recommended that advice is sought from the manufacturer before final commitment is made to non standard conditions.

### OPTICAL OUTPUT POWER

Within the maximum operating current rating, the permissible optical output power is limited by the 'burn-off' tolerance of the diode. The 'burn-off' level is the value of peak optical output power at which catastrophic damage to the laser output facet occurs with a corresponding drop in lasing efficiency.

Burn-off tolerance is, to a first order, proportional to the total optical energy (Watts × seconds) in the output pulse. The maximum peak output is therefore dependent on the pulse width.

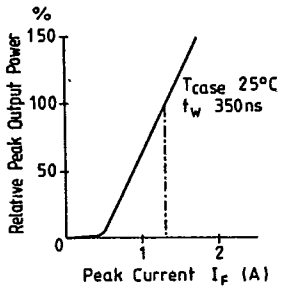



Fig. 2 Normalised Peak Output Power vs. Current

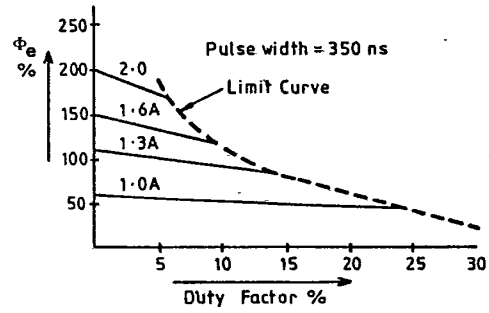



Fig. 3 Normalised Peak Output Power vs Duty Factor

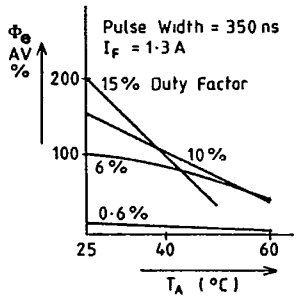



Fig. 4 Normalised Average Output Power vs. Temperature

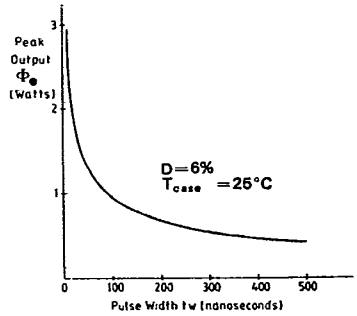
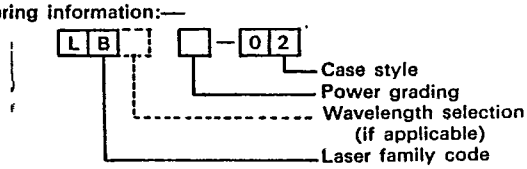



Fig. 5 "Burn Off" Power vs. Pulse Width

Ordering information:—




Example:—LBL2–02 = 800 to 860nm; 200 mW min. –02 case style.

**WARNING—Radiations emitted by these devices can be dangerous to the eyes and appropriate precautions must be taken in use. (ref. BS4803)**

INVISIBLE LASER RADIATION.
CLASS 3B LASER PRODUCT
AVOID EXPOSURE TO BEAM

**STC DEFENCE SYSTEMS**

OPTICAL DEVICES DIVISION
BRIXHAM ROAD
PAIGNTON
DEVON TQ4 7BE
TELEPHONE 0803 550762
TELEX 818746 STC CG G



LBF 101 E5