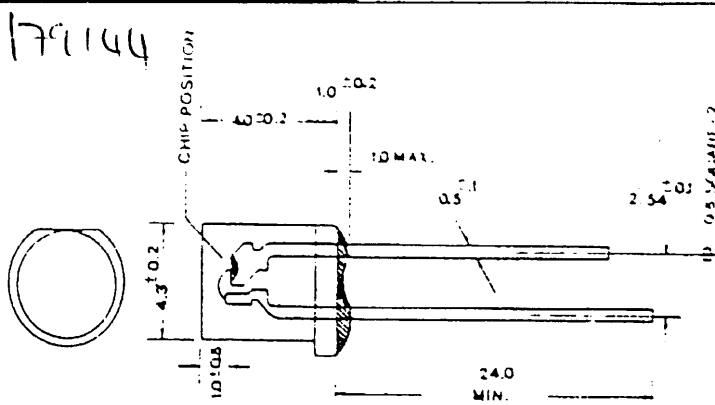


FIBRE OPTIC. VISIBLE GaAlAs LED
ULTRA HIGH POWER 660 nm

TYPE: FFT 2000 BHR

FEATURES:

- * FAST RESPONSE TIME
- * 660nm OUTPUT-OPTIMISED FOR POLYMER FIBRE
- * ULTRA HIGH OUTPUT (1mW INTO 1mm FIBRE)
- * HI REL EPOXY ENCAPSULATION



DESCRIPTION:

This device provides users with a universal L.E.D. emitter designed primarily for maximising the applications of polymer optical fibre. It will also launch good levels of power into other multimode fibre types, and the fast response time makes it suitable for data rates up to 10 MB/s.

MAXIMUM RECOMMENDED RATINGS: (TA = 25°C Unless otherwise noted)

Reverse Voltage	4.0 V
Continuous Forward Current	50 mA (SEE NOTE 1)
Storage Temperature Range	-55°C to +100°C
Operating Temperature Range	-40°C to +85°C
Lead Solder Temperature	240°C
(1.6mm from case for 5 seconds with soldering iron)	
Power Dissipation	70 mW

OPTO/ELECTRICAL CHARACTERISTICS

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS
RADIANT OUTPUT POWER	P _o	500	900	—	μW	I _F = 50 mA (NOTE 2)
FORWARD VOLTAGE	V _F	—	2.0	2.5	V	I _F = 30 mA
PEAK EMISSION WAVELENGTH	λ _p	—	660	—	nm	I _F = 30 mA
SPECTRAL LINE HALFWIDTH	Δλ	—	30	—	nm	I _F = 30 mA
OUTPUT RISE TIME	t _r	—	100	—	nS	I _{F,P} = 50 mA
OUTPUT FALL TIME	t _f	—	100	—	nS	I _{F,P} = 50 mA
CUT OFF FREQUENCY	f _c	—	25	—	MHz	NOTE 3

NOTES: 1. Long term stability of light output is greatly improved at lower currents, or with pulsed operation.
2. Measured from 1 metre EH4001 with FSMA connectors properly terminated & polished.
3. I_F = 40 mA plus 10 mA peak to peak.



Features

- High power LED sends 115µW into 100/140 micron fibre.
- High speed - 85MHz
- Optimized for 50mA operation

Recommended Maximum Ratings

Reverse voltage	1-0V @ 10µA
Continuous forward current	50mA
Continuous forward current (Heat sink)	100mA
Storage temperature range	-40°C to +100°C
Case operating temperature	-40°C to +100°C
Lead soldering temperature	+260°C for 10 secs.

(Ta=25°C)

Electrical & Optical Characteristics

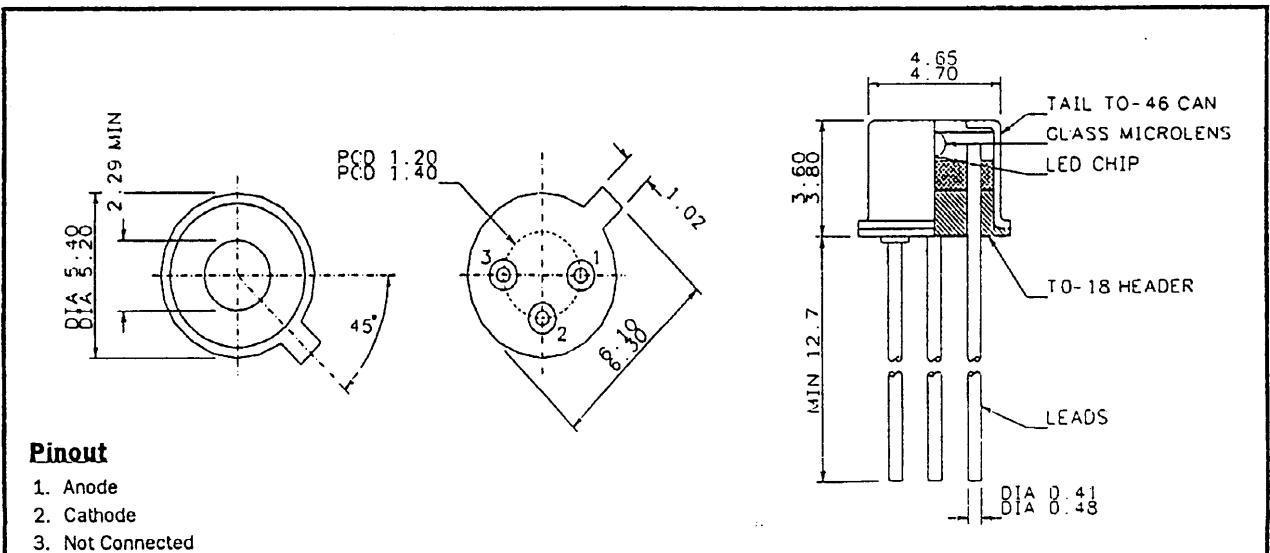
Parameter	Symbol	Min	Typ	Max	Units	Test Conditions
Fibre Coupled Power						
FDE 853 LBF	Poc	10 -20.0	20 -17.0		µW dBm	IF = 50mA 50/125 micron (1), 0.20 NA fibre (2)
Forward voltage	VF		1.6	1.9	V	IF = 50mA
Reverse voltage	BVR	1.0	5.0		V	IR = 10µA
Peak wavelength	λp		850		nm	IF = 50mA DC
Spectral Bandwidth (2)	Δλ		50		nm	IF = 50mA DC
Response Time						
T=25°C, 10-90%	tr		4	8	ns	1V Prebias, 100mA peak.
T=25°C, 90-10%	tf		6	10		
Analog Bandwidth	BWE		85		MHz	IF = 100mA DC, Sinusoidal modulation. (2)
Po Temperature Coefficient	ΔPo/ΔT		-0.005		dB/°C	IF = 50mA, +25°C <Ta <+80°C
Series Resistance	rs		4.0		Ω	DC
Capacitance	C		70.0		pF	VR = 0V, f = 1MHz

(Ta=25°C)

Notes

1. FDE853LBF is tested using a 10 meter length of 50/125µm dia fibre cable terminated in a precision ST ferrule. Actual coupled power values may vary due to alignment procedures and/or receptacle and fibre tolerances.
2. FDE853LBF must be heat sunked for continuous $I_f > 50mA$ operation for maximum reliability. (i.e. mounted in a metal connector with thermally conductive epoxy.

Package Dimensions



Pinout

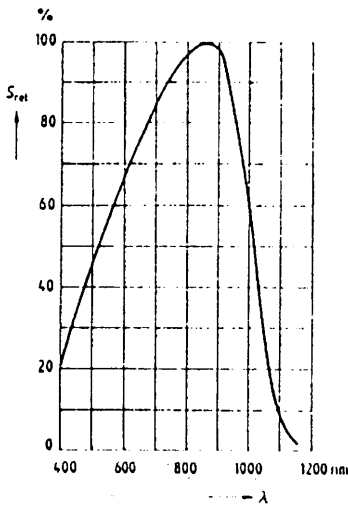
1. Anode
2. Cathode
3. Not Connected

All dimensions are in mm.

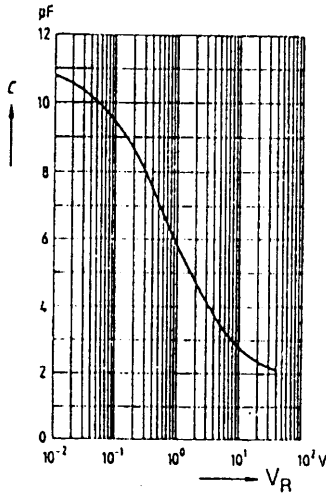
FIBRE OPTIC. Si PIN PHOTODIODE

TYPE: FDR 850 IR

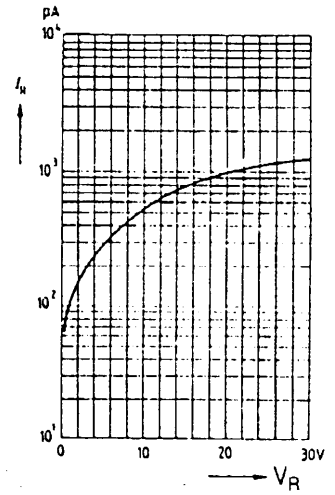
Relative Spectral Sensitivity
 $S_{rel} = f(\lambda)$



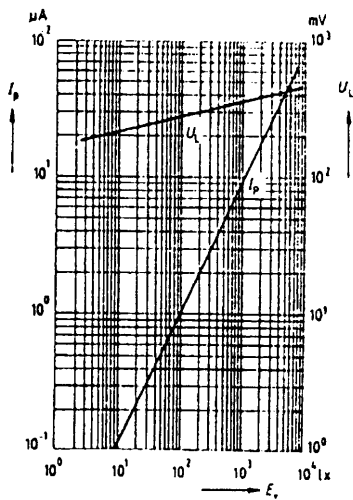
Capacity $C = f(V_R)$
 $T_{amb} = 25^\circ C$



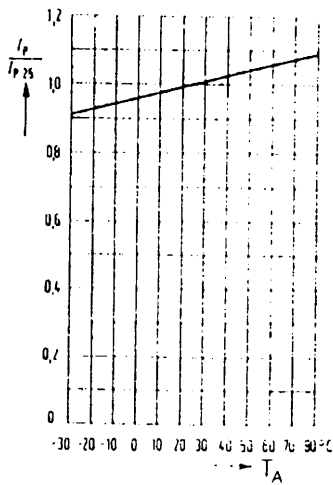
Dark Current $I_R = f(V_R)$



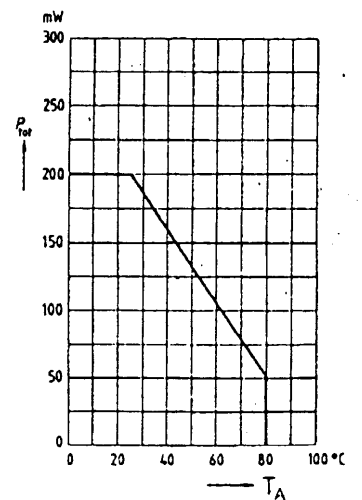
Photocurrent $I_P = f(E_V)$



Photocurrent $\frac{I_P}{I_{P25}} = f(T_A)$



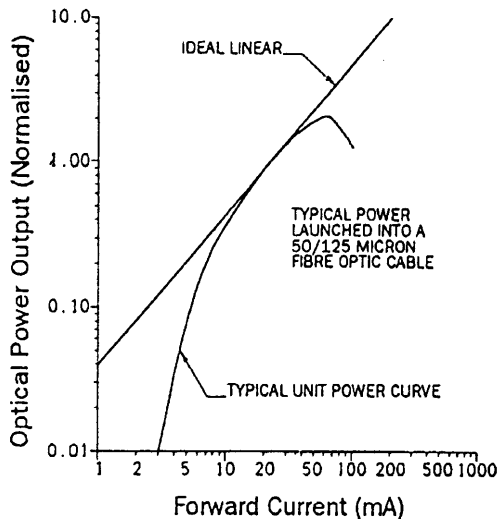
Power Dissipation
 $P_{tot} = f(T_A)$



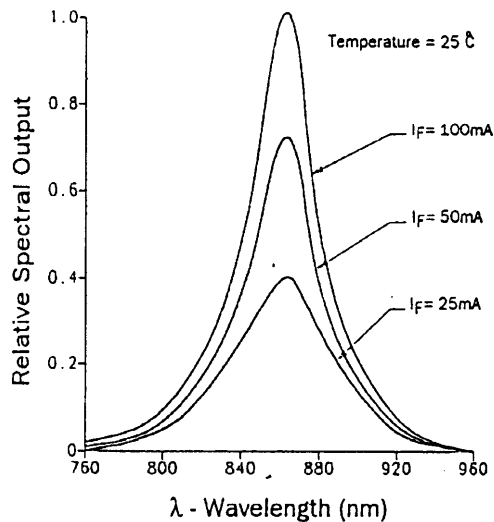


Electrical & Optical Characteristics

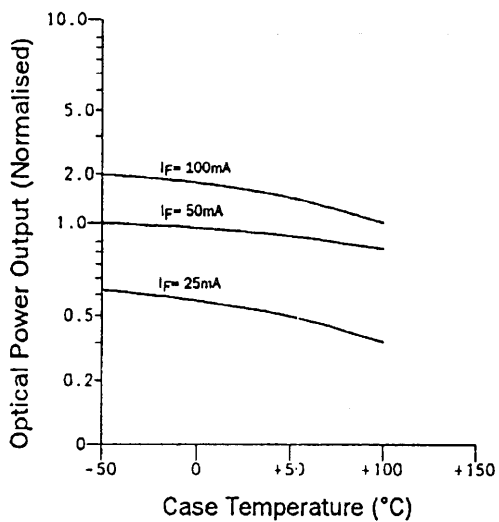
Typical Optical Power Output vs Forward Current



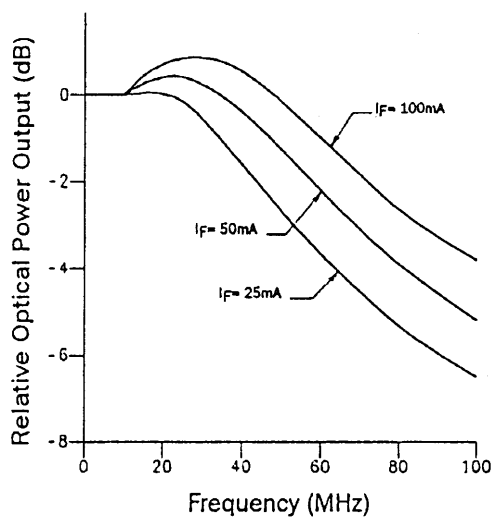
Typical Spectral Output vs Wavelength



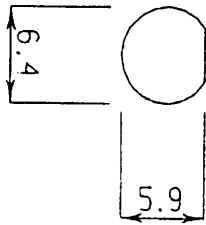
Typical Optical Power Output vs Case Temperature



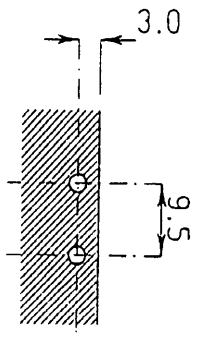
Typical Relative Power Output vs Frequency



PANEL CUTOUT



P.C.B. HOLE MOUNTING PATTERN



RECOMMENDED P.C.B. HOLE SIZE 2.4mm

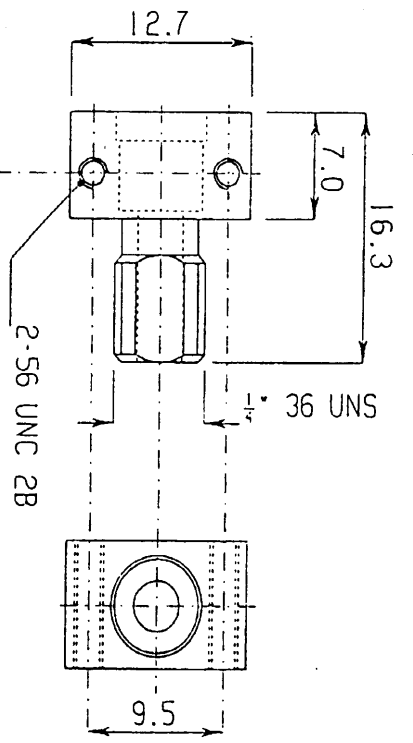
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1	NEW DRAWING	15

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 DATE 14/10/94

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 SHEET 1 OF 1

DRAWING NUMBER	C	1013
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NOTE 1: SUPPLIED WITH NUT FDH22N
 NOTE 2: SUPPLIED WITH WASHER FDH22V

THE FIBRE-DATA GROUP LTD. TEL. 0209 215424		TITLE	P.C.B. SMA HOUSING OUTLINE DRAWING, FDH22
DRAWN	P.B. HAITON	DATE	19-7-93
CHECKED	<i>[Signature]</i>	DATE	17/8/93
APPROVED	<i>[Signature]</i>	DATE	17/8/93
MATERIAL	BRASS, NICKEL PLATED 5 MIRCONS	TOLERANCES	±0.3 UNLESS OTHERWISE STATED.
APPROVAL NOT VALID UNLESS SIGNED IN COLOURED INK. CHECK FOR LATEST ISSUE IF THIS COPY IS NOT APPROVED. UNLESS OTHERWISE STATED, APPROVED COPIES WILL BE AUTOMATICALLY UPDATED.			

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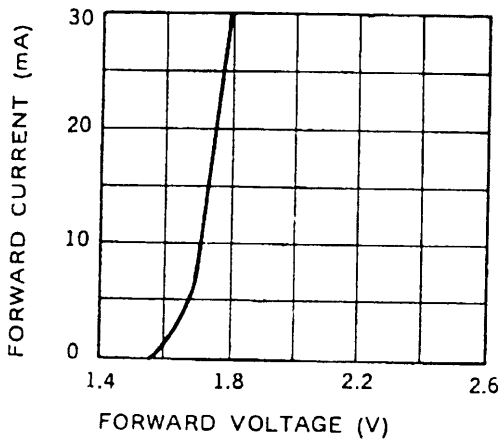
TYPE: FFT 2000 BHR

TYPICAL POWER COUPLED INTO OPTICAL FIBRE

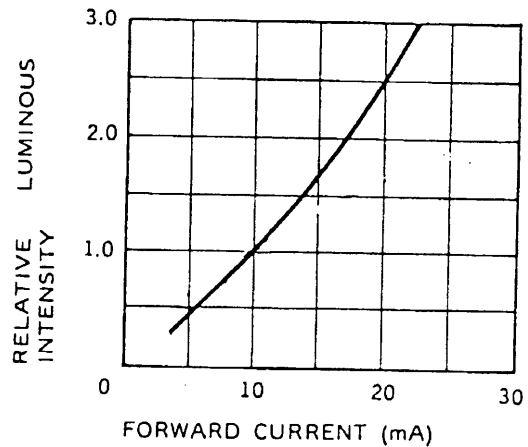
FIBRE TYPE	INDEX	NUMERICAL APERTURE	COUPLED POWER AT $I_F = 50\text{mA}$ 25 °C, FIBRE CORE ALIGNED
50/125 μ	GRADED	0.21	0.5 μW (-33 dBm)
62.5/125 μ	GRADED	0.28	1.0 μW (-30 dBm)
100/140 μ	GRADED	0.29	3.0 μW (-25 dBm)
200/380 μ P.C.S.	STEP	0.45	50 μW (-13 dBm)
1000 μ Polymer	STEP	0.54	1000 μW (0 dBm)

CHARACTERISTIC CURVES

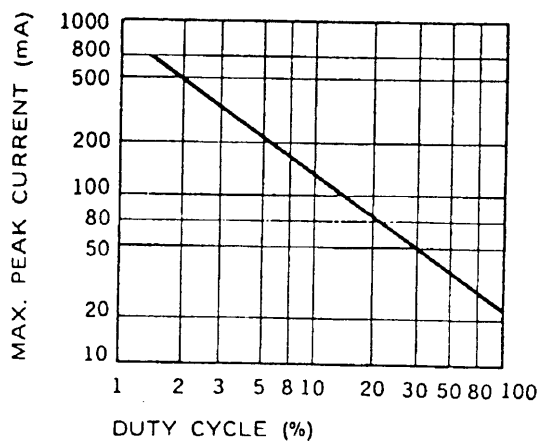
FORWARD CURRENT VS. FORWARD VOLTAGE



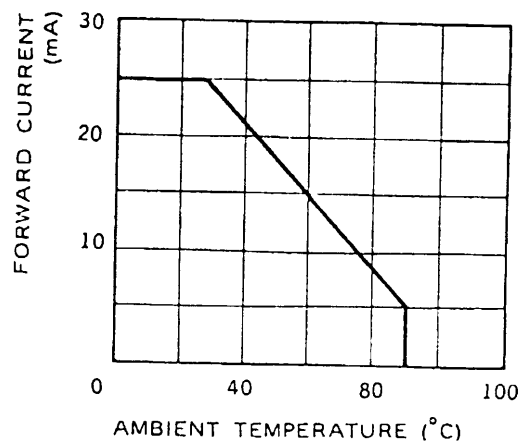
RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT



MAX PEAK CURRENT VS. DUTY CYCLE

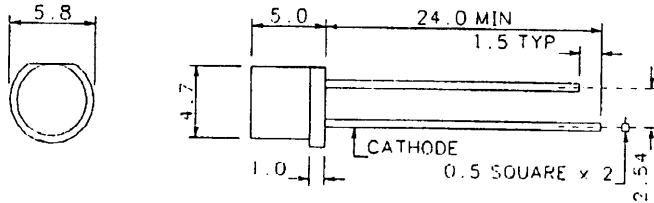


FORWARD CURRENT VS. TEMPERATURE



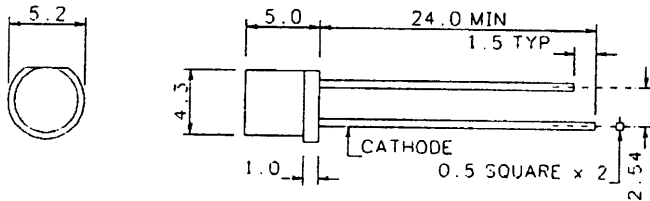


Package Dimensions - FFT 2000 AHR



1. All dimension are in mm, tolerance is ± 0.25 mm unless otherwise stated.
2. An epoxy meniscus may extend about 1.0mm down the leads.
3. Burr around bottom of epoxy body may be 0.5mm maximum.

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REFERENCE DOCUMENT ONLY ISSUE: 01

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