

Receivers for use with ESKA™ Products: MIC-D92
Description and Features

The MIC-D92 is a high-sensitivity phototransistor detector housed in a connector-less style plastic fiber optic package. Its optical response extends from 400 nm to 1100 nm, making it compatible with a wide range of visible and near-infrared LED and laser diode sources. These include 650 nm visible-red LEDs used for optimum transmission with PMMA plastic optical fiber. The detector package features an internal micro-lens and a precision-molded PBT housing, ensuring efficient coupling with standard 1000µm core plastic fiber cable.

High optical sensitivity	Requires no optical design
Mates with standard 1000 µm core jacketed plastic fiber optic cable	Light-tight housing provides interference-free transmission
Uses inexpensive, rugged plastic connector housing	Internal micro-lens makes for efficient optical coupling
Fiber termination is connector-less, thus less expensive	

Applications
Highlights

This product is suitable for digital data links at rates up to 25 kbps. Analog bandwidths greater than 15 kHz are possible, making it suitable for high-frequency audio transmission. Phototransistor operation provides high internal gain, reducing the amount of post-amplification required in many circuits. The MIC-D92's integrated design makes it a simple, cost-effective solution in a variety of analog and digital applications.

Low-speed digital data links	Automotive electronics
Process control	Robotics communications
Motor controller triggering	EMC / EMI signal isolation
Audio links	Electronic games
Medical instruments	

Characteristics (T_A = 25°C)

Parameters	Symbol	Min.	Typ.	Max.	Unit
Wavelength for Maximum Photosensitivity	λ_{PEAK}	--	870	--	nm
Spectral Bandwidth S=10% of S _{MAX}	$\Delta \lambda$	400	---	1100	nm
Switching Times 10% to 90% and 90% to 10% R _L =1kΩ, I _C =1.0mA, V _{CE} =5V and λ=950nm	t _r , t _f	--	20	--	µs
Collector Dark Current V _{CE} =15V	I _{CEO}	--	--	100	nA
Responsivity Minimum @ 880nm	R	--	100	---	µA/ µW
Responsivity Minimum at @ 632nm			50		
Breakdown Voltage I _C =100 µA	BV _{CEO}	30	--	--	V
	BV _{ECO}	5	--	--	V
Saturation Voltage I _C =250µA, H=100µW	V _{CE SAT}	--	0.15	--	V

Maximum Ratings (T_A = 25°C)

Temperature Range for Operation and for Storage (T _{OP} , T _{STG})	-40° to 85°C
Junction Temperature (T _J)	85°C
Soldering Temperature (2mm from case bottom) (T _S) t≤5s	240°C
Collector Emitter Voltage (V _{CEO})	30V
Emitter Collector Voltage (V _{ECO})	5V
Collector Current (I _C)	50mA
Collector Peak Current (I _{CM}) t=1ms	100mA
Power Dissipation (P _{TOT}) T _A = 25°C	100mW
De-rate above 25°C	1.33mW/°C



The information contained herein is presented as a guide to product selection. It is subject to change without notice, and should not be regarded as a representation, warranty or guarantee with regard to the quality, characteristics or use of this product

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Transmitters for use with ESKA™ Products: **MIC-D92**

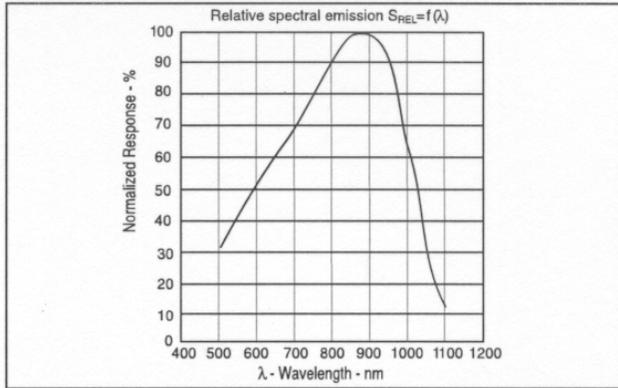


FIGURE 1. Typical detector response versus wavelength.

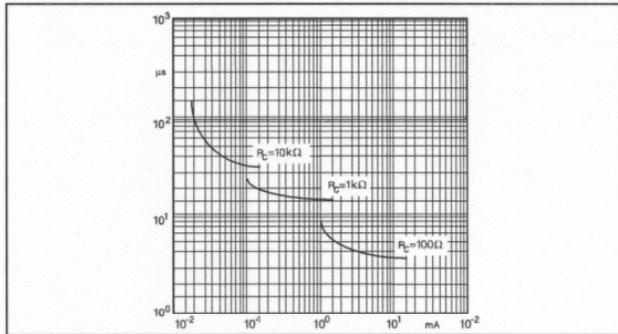


FIGURE 2. Rise and fall times of phototransistor.

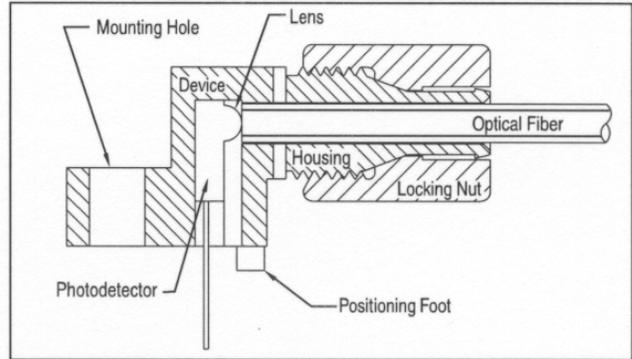


FIGURE 3. Cross-section of fiber optic device.

FIBER TERMINATION INSTRUCTIONS

1. Cut off the ends of the optical fiber with a single-edge razor blade or sharp knife. Try to obtain a precise 90-degree angle (square).
2. Insert the fiber through the locking nut and into the connector until the core tip seats against the internal micro-lens.
3. Screw the connector locking nut down to a snug fit, locking the fiber in place.

NOTES:

1. Y AND Z ARE DATUM DIMENSIONS AND T IS A DATUM SURFACE.
2. POSITIONAL TOLERANCE FOR D \varnothing (2 PL):
 $\varnothing 0.25 (0.010) \text{ M T Y M Z M}$
3. POSITIONAL TOLERANCE FOR F DIM (2 PL):
 $\varnothing 0.25 (0.010) \text{ M T Y M Z M}$
4. POSITIONAL TOLERANCE FOR H DIM (2 PL):
 $\varnothing 0.25 (0.010) \text{ M T Y M Z M}$
5. POSITIONAL TOLERANCE FOR Q \varnothing :
 $\varnothing 0.25 (0.010) \text{ M T Y M Z M}$
6. POSITIONAL TOLERANCE FOR B:
 $\varnothing 0.25 (0.010) \text{ M T}$
7. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
8. CONTROLLING DIMENSION: INCH

PACKAGE IDENTIFICATION:

- ◆ Black housing w/ White dot
- PIN 1. Emitter
- PIN 2. Collector

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	23.24	25.27	.915	.995
B	8.64	9.14	.340	.360
C	9.91	10.41	.390	.410
D	1.52	1.63	.060	.064
E	4.19	4.70	.165	.185
F	0.43	0.58	.017	.023
G	2.54 BSC		.100 BSC	
H	0.43	0.58	.017	.023
J	7.62 BSC		.300 BSC	
K	10.35	11.87	.408	.468
L	1.14	1.65	.045	.065
N	2.54 BSC		.100 BSC	
Q	3.05	3.30	.120	.130
R	10.48	10.99	.413	.433
S	6.98 BSC		.275 BSC	
U	0.83	1.06	.032	.042
V	6.86	7.11	.270	.280
W	5.08 BSC		.200 BSC	
X	10.10	10.68	.397	.427

FIGURE 4. Case outline.

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