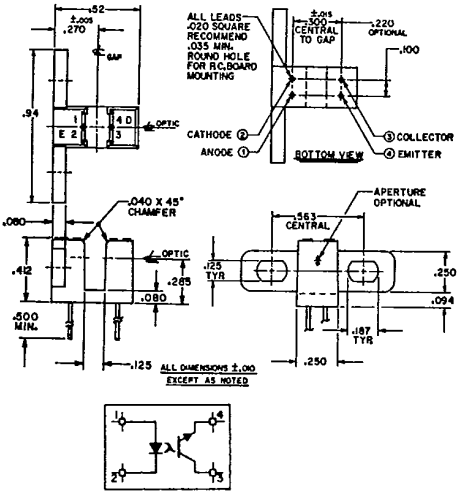
CLI800W
CLI810W
CLI820W
CLI830W
CLI835W

Optical Switches



GENERAL DESCRIPTION — This optical switch couples a gallium arsenide infrared emitting diode and a silicon phototransistor for a range of guaranteed minimum sensor currents. The CLI835W has a .010"[1] aperture over the sensor for precise position detector applications. The unique mechanical configurationn facilitates convenient mounting of the units to a vertical surface.

ABSOLUTE MAXIMUM RATINGS

Maximum Temperature:
- Storage – 55°C to + 150°C
- Operating Jct. Temperature + 100°C

EMITTER (GaAs Diode)

Power Dissipation:
- At 25°C Amb., Pd= 100mw, derate 1.33mw/°C

Maximum Voltage:
- V_R Reverse Voltage= 4.0 volts

Maximum Current:
- I_F D.C. Forward Current= 60ma cont.

Note: 1 .005 inch optional

DETECTOR

Power Dissipation:
- At 25°C amb., Pd= 150mw, derate 2.0mw/°C

Maximum Voltages:
- V_{CEO}= 30V, V_{ECO}= 5V

Maximum Current:
- I_C, Collector Current 100ma pulsed

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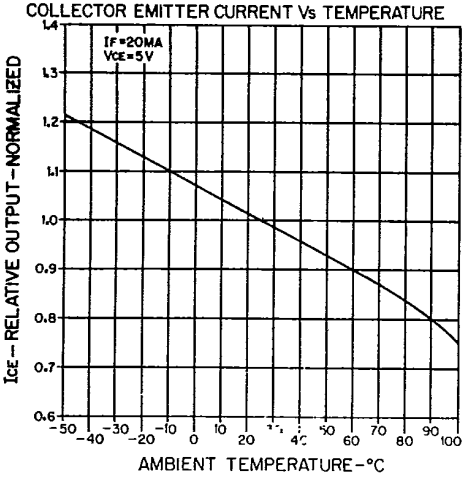
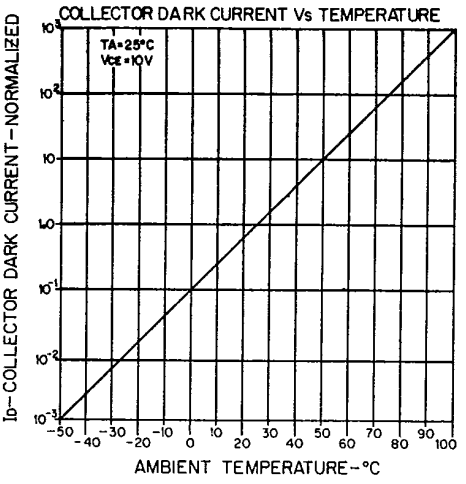
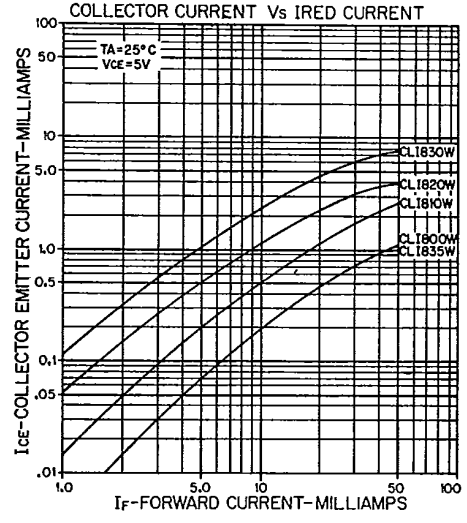
ELECTRICAL CHARACTERISTICS 25°C Free Air

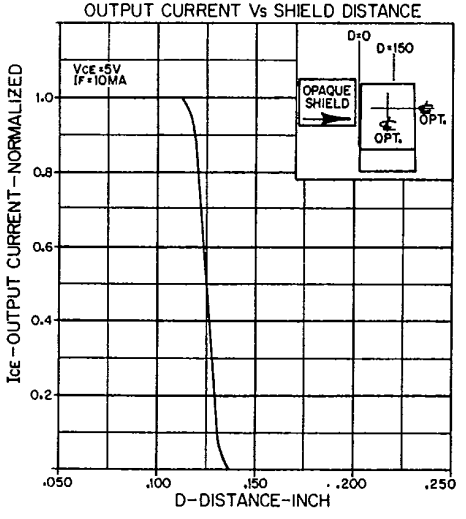
Symbol	Characteristics	Test Conditions	CLI-800W Min.	CLI-800W Max.	CLI-810W Min.	CLI-810W Max.	CLI-820W Min.	CLI-820W Max.	CLI-830W Min.	CLI-830W Max.	CLI-835W Min.	CLI-835W Max.	Units
EMITTER													
V_R	Reverse Voltage	I_R=10μa	4.0		4.0		4.0		4.0		4.0		volts
V_F	Forward Voltage	I_F=16ma		1.5		1.5		1.5		1.5		1.5	volts
SENSOR													
BV_{CEO}	Collector to Emitter Breakdown Voltage	I_C=100μa	30		30		30		30		30		volts
I_D	Leakage Current	V_{CE}=10V,		100		100		100		100		100	na
C_{CE}	Capacitance	V_{CE}=5V f=1MHZ		5		5		5		5		5	pf
COUPLED													
I_{CE}	Sensor Current	I_F=5ma, V_{CE}=5V				.2 Typ.		.5 Typ.		1.0 Typ.			ma
		I_F=20ma, V_{CE}=5V	0.4		1.0		2.0		4.0		0.4		ma
$V_{CE(SAT)}$	Collector to Emitter Saturation Voltage	I_F=30ma, I_C=.25ma		0.4		0.4		0.4		0.4		0.4	volts volts
T_R, T_F	Rise, Fall Time	I_C=2ma, V_{CC}=5V R_L=100 ohms		5 Typ.		5 Typ.		5 Typ.		5 Typ.		5 Typ.	μsec

Special electrical or mechanical characteristics always available - Consult factory


COLLECTOR EMITTER CURRENT Vs TEMPERATURE
IF=20MA
VCE=5V
ICE – RELATIVE OUTPUT – NORMALIZED
1.4
1.3
1.2
1.1
1.0
0.9
0.8
0.7
0.6
-50 -40 -30 -20 -10 0 10 20 40 50 60 70 80 90 100
AMBIENT TEMPERATURE – °C


COLLECTOR DARK CURRENT Vs TEMPERATURE
TA=25°C
VCE=10V
ID – COLLECTOR DARK CURRENT – NORMALIZED
10³
10²
10
1.0
10⁻¹
10⁻²
10⁻³
-50 -40 -30 -20 -10 0 10 20 30 40 50 60 70 80 90 100
AMBIENT TEMPERATURE – °C


COLLECTOR CURRENT Vs IRED CURRENT
TA=25°C
VCE=5V
CL1830W
CL1820W
CL1810W
CL1800W
CL1835W
ICE – COLLECTOR EMITTER CURRENT – MILLIAMPS
100
50
10
5.0
1.0
0.5
0.1
.05
.01
1.0 5.0 10 50 100
IF – FORWARD CURRENT – MILLIAMPS


OUTPUT CURRENT Vs SHIELD DISTANCE
VCE=5V
IF=10MA
D=0
D=150
OPAQUE SHIELD
OPT1
OPT2
ICE – OUTPUT CURRENT – NORMALIZED
1.0
0.8
0.6
0.4
0.2
.050 .100 .150 .200 .250
D – DISTANCE – INCH