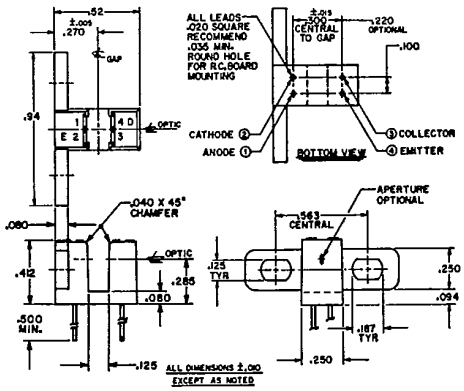
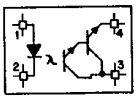
T-41-73

CLI840W
CLI850W
CLI860W
CLI870W





Optical Switches

GENERAL DESCRIPTION — This optical switch series couples a gallium arsenide infrared emitting diode and a silicon darlington phototransistor for a range of high guaranteed minimum sensor current. The CLI870W has a .010"[1] aperture over the sensor for precise position detection applications. The unique mechanical configuration 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-840W Min.	CLI-840W Max.	CLI-850W Min.	CLI-850W Max.	CLI-860W Min.	CLI-860W Max.	CLI-870W Min.	CLI-870W Max.	Units
EMITTER											
V_R	Reverse Voltage	I_R=10μa	4.0		4.0		4.0		4.0		volts
V_F	Forward Voltage	I_F=16ma		1.5		1.5		1.5		1.5	volts
SENSOR											
BV_{CEO}	Collector to Emitter Breakdown Voltage	I_C=100μa	30		30		30		30		volts
I_D	Leakage Current	V_{CE}=10V,		250		250		250		250	na
C_{CE}	Capacitance	V_{CE}=5V, f=1MHZ		8		8		8		8	pf
COUPLED											
I_{CE}	Sensor Current	I_F=5ma, V_{CE}=1.5V	2.5		5.0		10.0				ma
		I_F=10ma, V_{CE}=1.5V	10 Typ.		17 Typ.		30 Typ.		1.0		ma
$V_{CE(SAT)}$	Collector to Emitter Saturation Voltage	I_F=10ma, I_C=1.5ma		1.2		1.2		1.2			volts
		I_F=20ma, I_C=1.5ma								1.2	volts
T_R, T_F	Rise, Fall Time	I_C=2ma, V_{CC}=5V R_L=100 ohms	150 Typ.		150 Typ.		150 Typ.		150 Typ.		μsec

Special electrical or mechanical characteristics always available - consult factory

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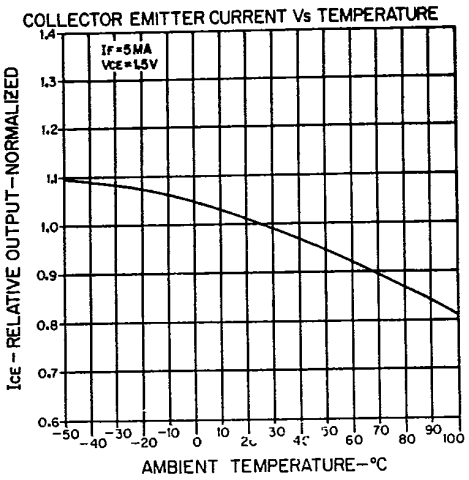
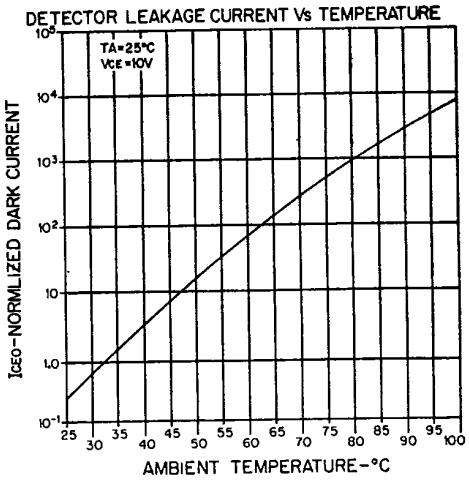
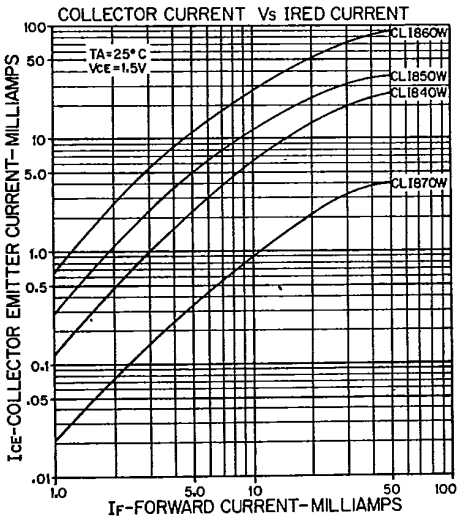
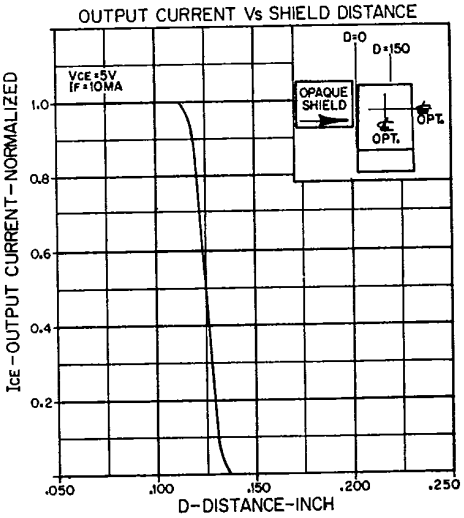

COLLECTOR EMITTER CURRENT Vs TEMPERATURE
IF=5MA
VCE=1.5V
ICE - RELATIVE OUTPUT-NORMALIZED
AMBIENT TEMPERATURE-°C


DETECTOR LEAKAGE CURRENT Vs TEMPERATURE
TA=25°C
VCE=10V
ICEO-NORMLIZED DARK CURRENT
AMBIENT TEMPERATURE-°C


COLLECTOR CURRENT Vs IRED CURRENT
TA=25°C
VCE=1.5V
CL1860W
CL1850W
CL1840W
CL1870W
ICE-COLLECTOR EMITTER CURRENT-MILLIAMPS
IF-FORWARD CURRENT-MILLIAMPS


OUTPUT CURRENT Vs SHIELD DISTANCE
VCE=5V
IF=10MA
D=0
D=150
OPAQUE SHIELD
OPT.
OPT.
ICE-OUTPUT CURRENT-NORMALIZED
D-DISTANCE-INCH