



SLOTTED OPTICAL SWITCH

LTH-301A/LTH-301-05/LTH-301-07/LTH-301-19/LTH-301-23/
LTH-306-01/LTH-306-02

FEATURE

- Non-contact switching.
- For direct PC board or dual-in-line socket mounting.
- Fast switching speed.

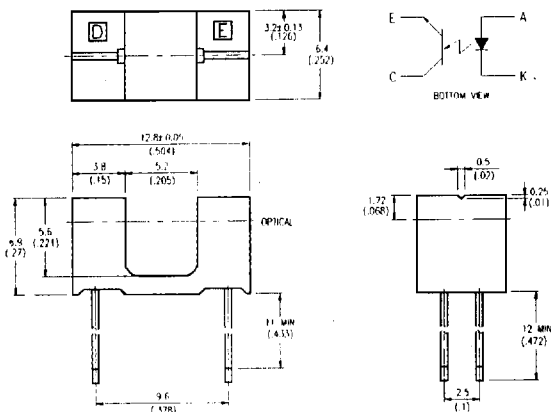
DESCRIPTION

The LTH-301/LTH-306 series consist of a Gallium Arsenide infrared emitting diode and a NPN silicon phototransistor mounted in a black plastic housing. Phototransistor switching takes place whenever an opaque object passes through the slot. These series are designed for direct soldering into PC boards or mounting in standard dual-in-line sockets.



PACKAGE DIMENSIONS

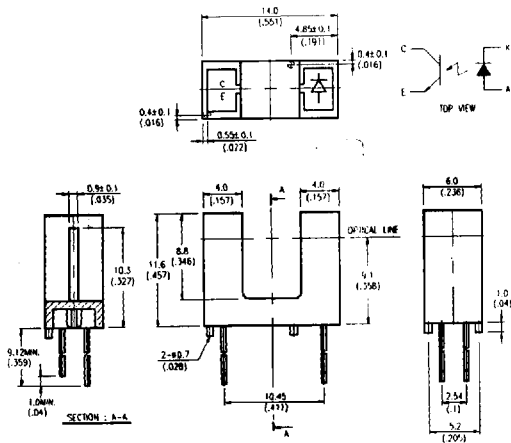
LTH-301A



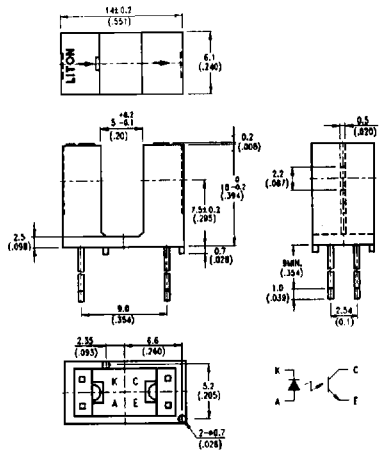
NOTES:

1. All dimensions are in millimeters (inches).
2. Tolerance is $\pm 0.25\text{mm}$ (.010") unless otherwise noted.
3. Lead spacing is measured where the leads emerge from the package.
4. Specifications are subject to change without notice.

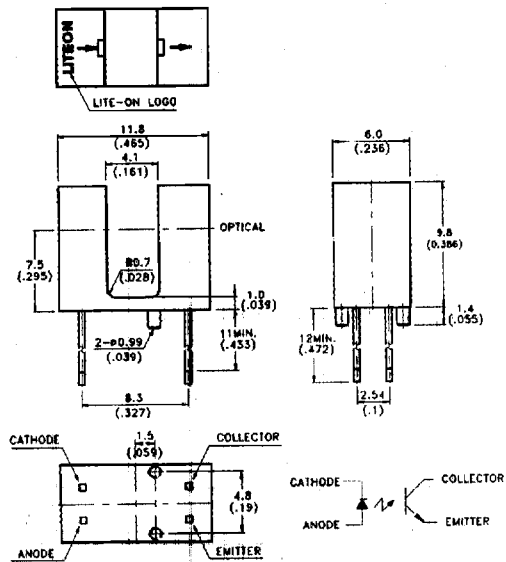
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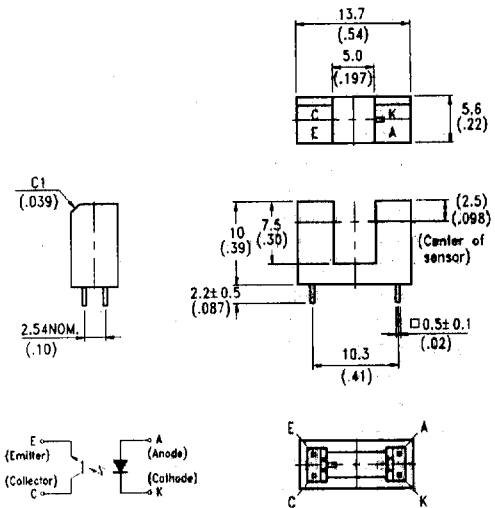
LTH-301-07



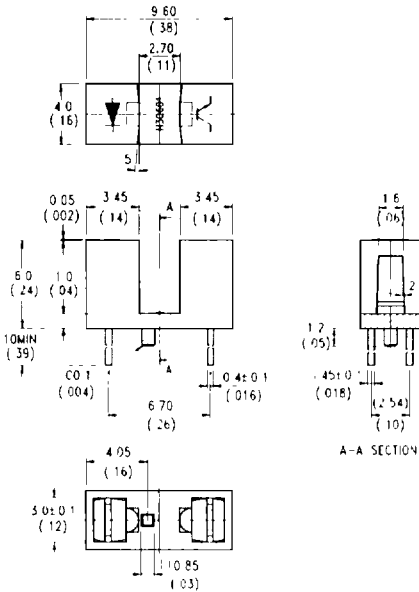
LTH-301-19



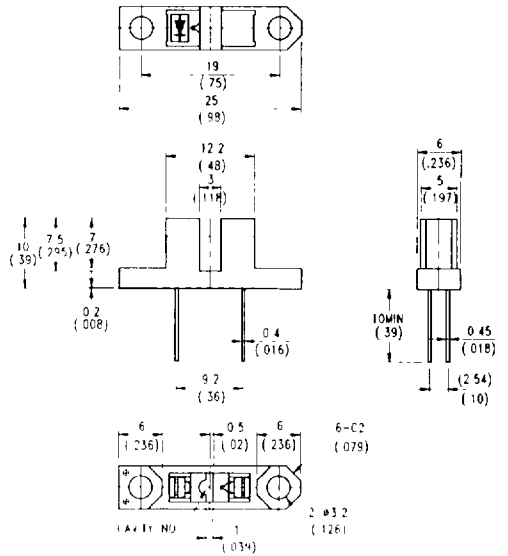
LTH-301-23



LTH-306-01



LTH-306-02



ABSOLUTE MAXIMUM RATINGS AT T_A=25°C

PARAMETER	MAXIMUM RATING	UNIT
IR Diode Continuous Forward Current	50	mA
IR Diode Reverse Voltage	5	V
IR Diode Peak Forward Current (Pulse Wide = 10 μs, 300 pps)	1	A
Diode Power Dissipation	75	mW
Transistor Collector Current	20	mA
Transistor Power Dissipation	100	mW
Phototransistor Collector-Emitter Voltage	30	V
Phototransistor Emitter-Collector Voltage	5	V
Operating Temperature Range	-55°C to + 100°C	
Storage Temperature Range	-55°C to + 100°C	
Lead Soldering Temperature {1.8mm (.063 in.) from body}	260°C for 5 Seconds	

ELECTRICAL OPTICAL CHARACTERISTICS AT T_A=25°C

PARAMETER	SYMBOL	PART NO.	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
INPUT DIODE							
Forward Voltage	V _F			1.2	1.6	V	I _F =20mA
Reverse Current	I _R				100	μA	V _R =5V
OUTPUT PHOTOTRANSISTOR							
Collector-Emitter Breakdown Voltage	V(BR)CEO		30			V	I _C =1mA
Emitter-Collector Breakdown Voltage	V(BR)ECO		5			V	I _E =100 μA
Collector Emitter Saturation Voltage	I _{CEO}				100	nA	V _{CE} =10V
COUPLER							
Collector Emitter Saturation Voltage	V _{CE(SAT)}				0.4	V	I _C =0.5mA I _F =20mA
On State Collector Current	I _{C(ON)}	LTH-301A	0.5	1.0		mA	V _{CE} =5V I _F =20mA
		LTH-301-05	0.5	1.0			
		LTH-301-07	0.4	0.7			
		LTH-301-19	1.5				
		LTH-301-23	0.4		15		
		LTH-306-01	5.0	10			
		LTH-306-02	0.5	1.2			

INFRARED PRODUCTS

TYPICAL ELECTRICAL/OPTICAL CHARACTERISTIC CURVES (25°C Ambient Temperature Unless Otherwise Noted)

LTH-301A

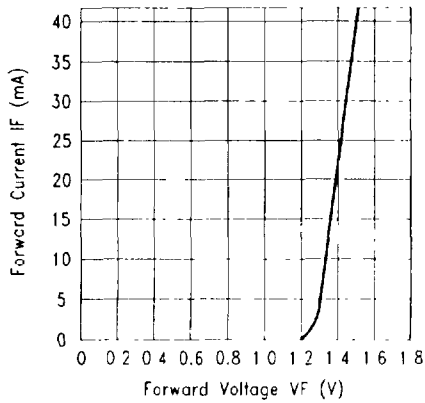


Fig.1 FORWARD CURRENT VS FORWARD VOLTAGE

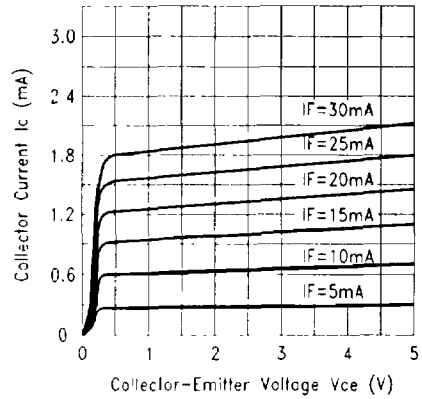


Fig.2 COLLECTOR CURRENT VS. COLLECTOR VOLTAGE

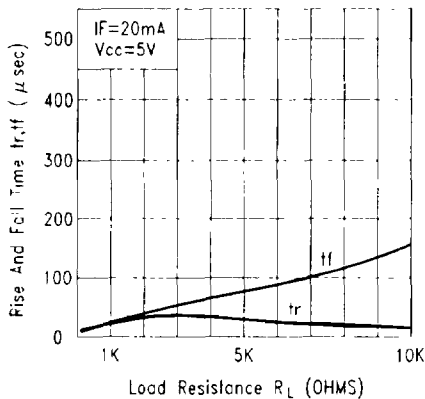


Fig.3 RISE AND FALL TIME VS. LOAD RESISTANCE

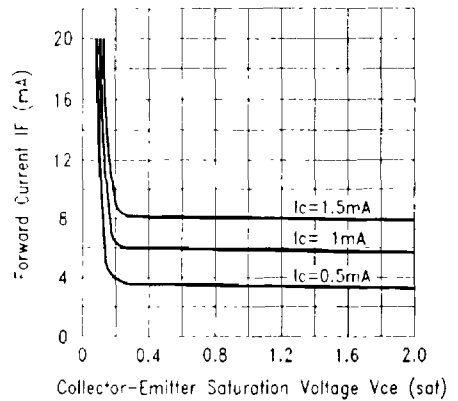


Fig.4 FORWARD CURRENT VS. Collector-Emitter Saturation Voltage

TYPICAL ELECTRICAL/OPTICAL CHARACTERISTIC CURVES (25°C Ambient Temperature Unless Otherwise Noted)

LTH-301-05

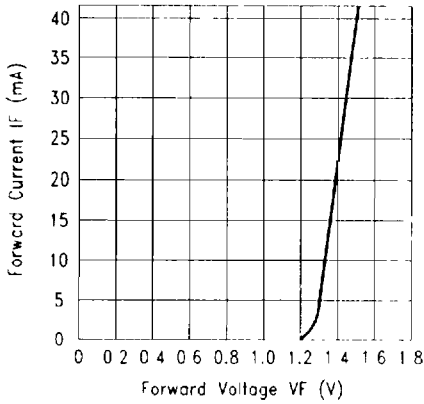


Fig.1 FORWARD CURRENT VS. FORWARD VOLTAGE

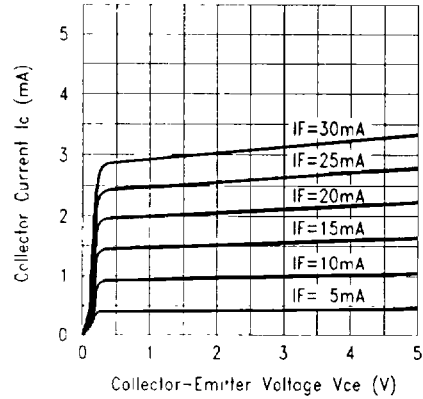


Fig.2 COLLECTOR CURRENT VS. COLLECTOR VOLTAGE

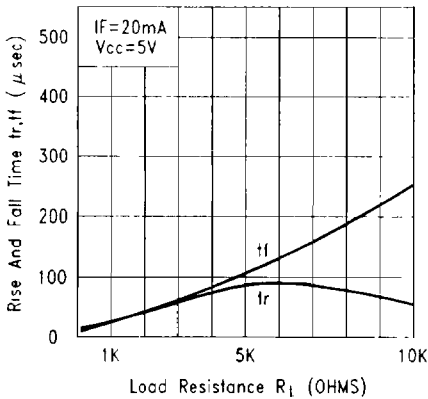


Fig.3 RISE AND FALL TIME VS. LOAD RESISTANCE

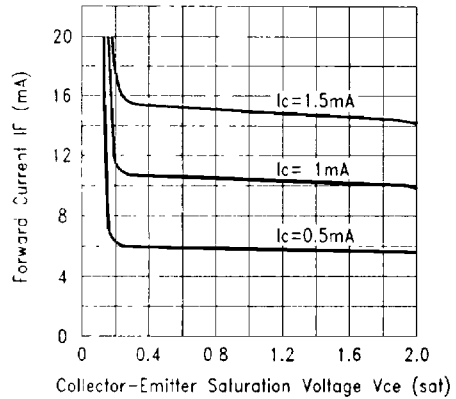


Fig.4 FORWARD CURRENT VS. Collector-Emitter Saturation Voltage

INFRARED PRODUCTS

TYPICAL ELECTRICAL/OPTICAL CHARACTERISTIC CURVES (25°C Ambient Temperature Unless Otherwise Noted)

LTH-301-07/LTH-301-23/LTH-306-02

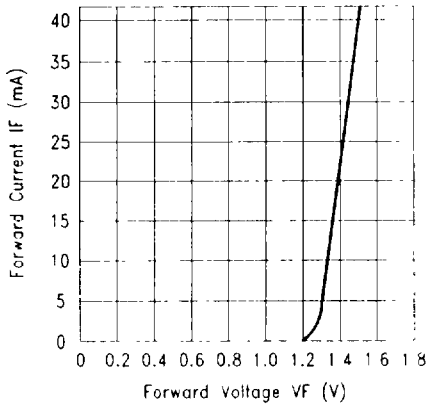


Fig.1 FORWARD CURRENT VS. FORWARD VOLTAGE

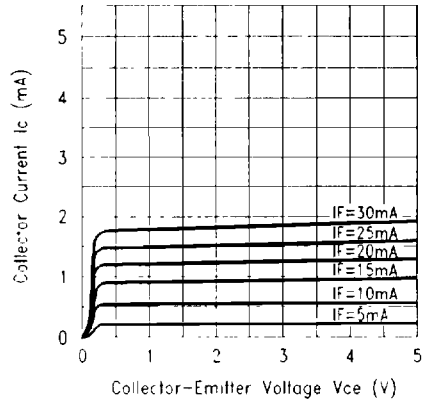


Fig.2 COLLECTOR CURRENT VS. COLLECTOR VOLTAGE

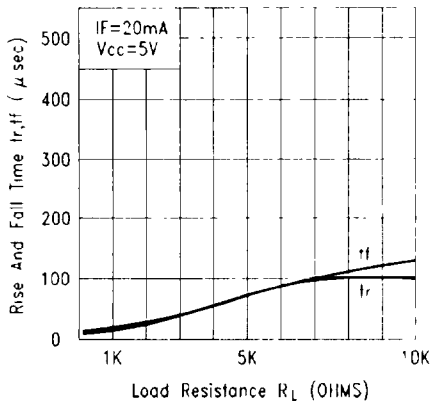


Fig.3 RISE AND FALL TIME VS. LOAD RESISTANCE

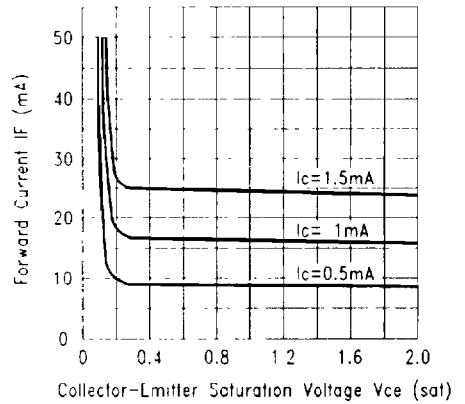


Fig.4 FORWARD CURRENT VS. COLLECTOR-EMITTER SATURATION VOLTAGE

TYPICAL ELECTRICAL/OPTICAL CHARACTERISTIC CURVES (25°C Ambient Temperature Unless Otherwise Noted)

LTH-301-19

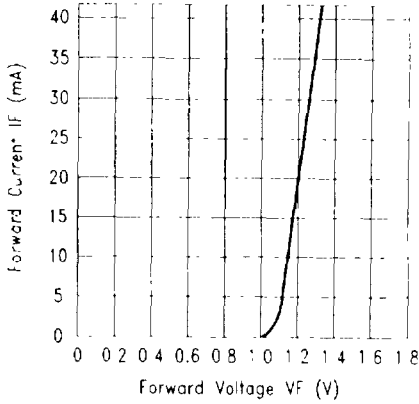


Fig.1 FORWARD CURRENT VS. FORWARD VOLTAGE

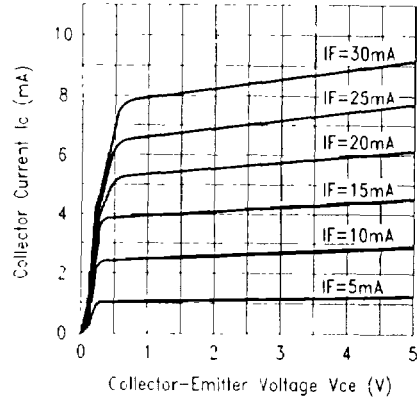


Fig.2 COLLECTOR CURRENT VS. COLLECTOR VOLTAGE

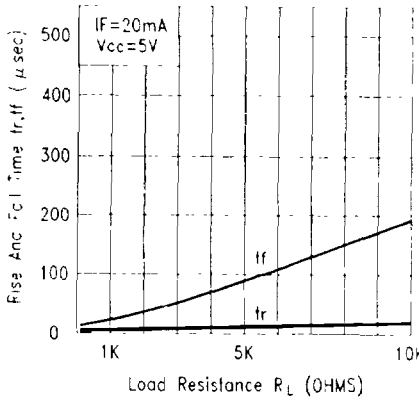


Fig.3 RISE AND FALL TIME VS. LOAD RESISTANCE

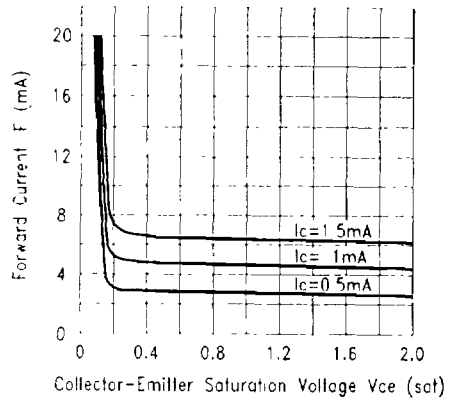


Fig.4 FORWARD CURRENT VS. COLLECTOR-EMITTER SATURATION VOLTAGE

INFRARED PRODUCTS

TYPICAL ELECTRICAL/OPTICAL CHARACTERISTIC CURVES (25°C Ambient Temperature Unless Otherwise Noted)

LTH-306-01

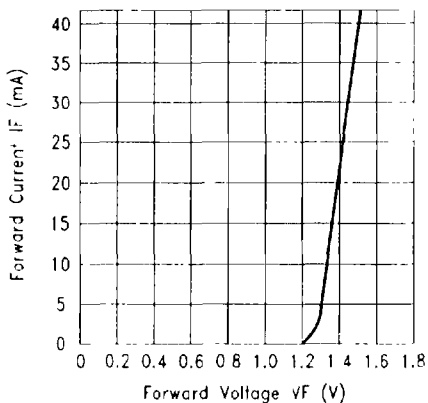


Fig.1 FORWARD CURRENT VS. FORWARD VOLTAGE

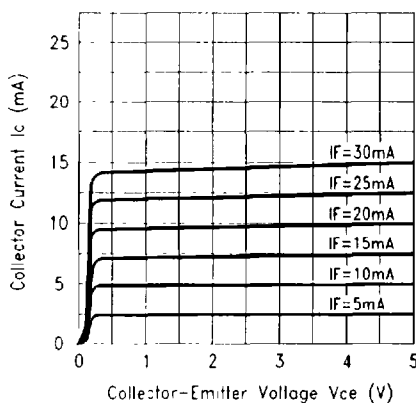


Fig.2 COLLECTOR CURRENT VS. COLLECTOR VOLTAGE

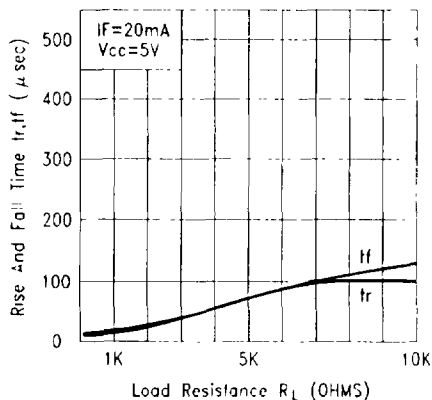


Fig.3 RISE AND FALL TIME VS. LOAD RESISTANCE

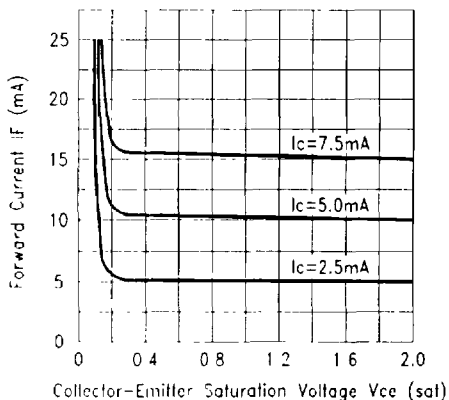


Fig.4 FORWARD CURRENT VS. COLLECTOR-EMITTER SATURATION VOLTAGE