Slotted Photointerrupters

LTH-301A/LTH-301-05/LTH-301-07/LTH-301-19
LTH-301-23/LTH-301-32/LTH-306-01/LTH-306-02

Features

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

Application

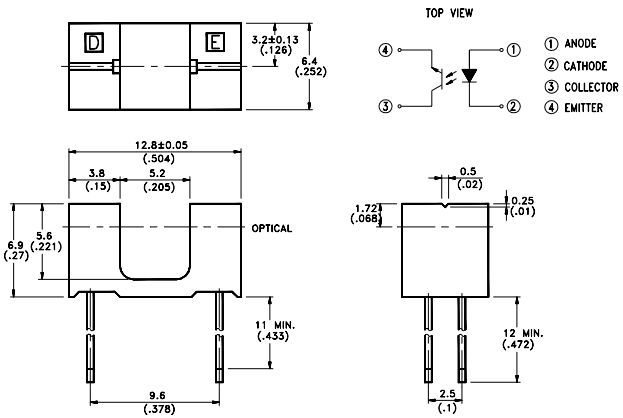
- Scanner
- Printer
- FAX machine
- Counter

Description

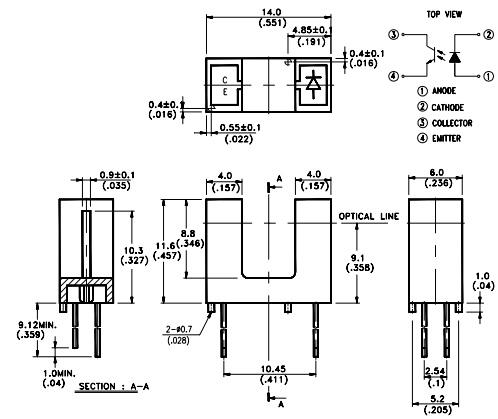
The LTH-301/LTH-306 series consist of Gallium Arsenide infrared emitting diode and a NPN sillicon phototransistor mounted in a black plastic housing. Phototransistor switching takes place whenever an opaque object passes through the slot. These series are designed for direct soldering into PC board or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

Package Dimensions

LTH-301A



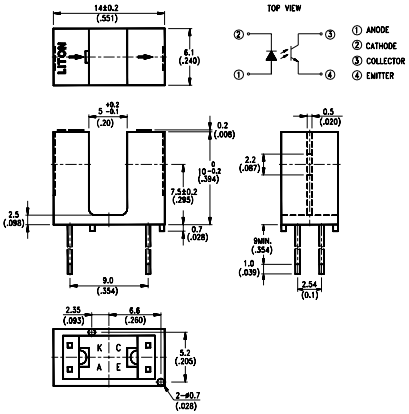
LTH-301-05



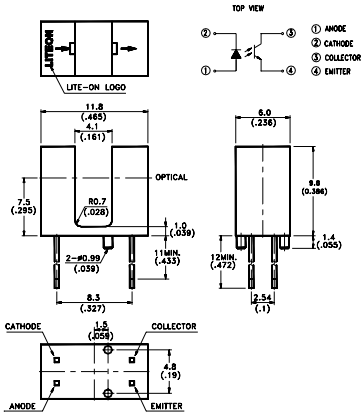
Notes:

1.All dimensions are in millimeters (inches).
2.Tolerance is ± 0.25 mm (.010").
3.Lead spacing is measured where the leads emerge from the package.
4.Specifications are subject to change without notice.

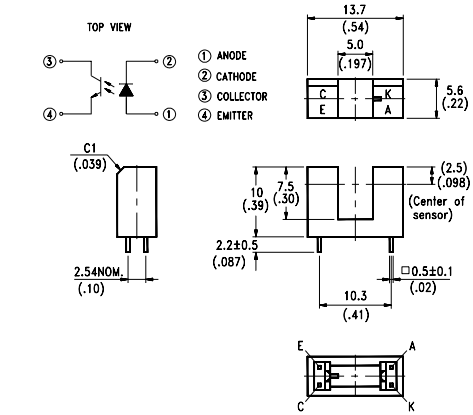
LTH-301-07



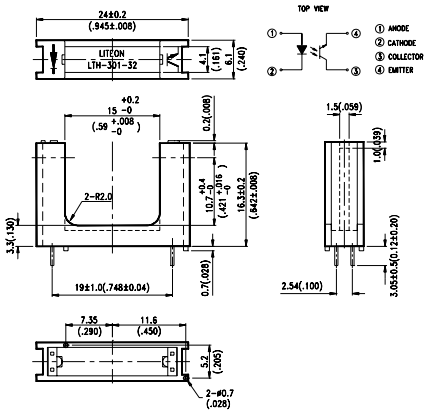
LTH-301-19



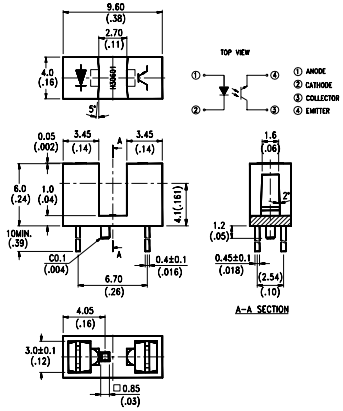
LTH-301-23



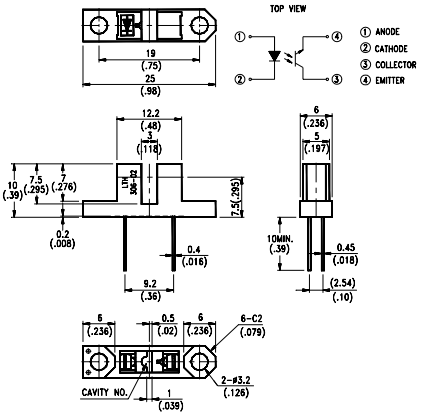
LTH-301-32



LTH-306-01



LTH-306-02



Absolute Maximum Ratings at Ta=25℃

Parameter		Symbol	Maximum Rating	Unit
Input LED	Continuous Forward Current	I_F	60	mA
	Reverse Voltage	V_R	5	V
	Peak Forward Current (Pulse Wide=10 μ S,300PPS)	I_{CP}	1	A
	Power Dissipation	P_D	75	mW
Output phototransistor	Collector Current	I_C	20	mA
	Power Dissipation	P_C	100	mW
	Collector-emitter Voltage	V_{CEO}	30	V
	Emitter-collector Voltage	V_{ECO}	5	V
Operating Temperature Range		T_{opr}	-25℃ to + 85℃	
Storage Temperature Range		T_{stg}	-40℃ to + 100℃	
Lead Soldering Temperature [1.6mm(.063 in.)from body]		Ts	260℃ for 5 Seconds	

Electrical Optical Characteristics at Ta=25℃

Parameter		Symbol	Part No.	Min.	Typ.	Max.	Unit	Test Condition
Input LED								
Forward Voltage		V_F			1.2	1.6	V	I_F=20mA
Reverse Current		I_R				100	μ A	V_R=5V
Output phototransistor								
Collector Dark Current		I_{CEO}				100	nA	V_{CE}=10V
Coupler								
Collector-Emitter Saturation Voltage		$V_{CE(sat)}$	LTH-301A			0.4	V	I_C=0.25mA,I_F=20mA
			LTH-301-05			0.4		I_C=0.25mA,I_F=20mA
			LTH-301-07			0.4		I_C=0.25mA,I_F=20mA
			LTH-301-19			0.4		I_C=0.75mA,I_F=20mA
			LTH-301-23			0.4		I_C=0.2mA,I_F=20mA
			LTH-301-32			0.4		I_C=0.2mA,I_F=20mA
			LTH-306-01			0.4		I_C=2.5mA,I_F=20mA
			LTH-306-02			0.4		I_C=0.25mA,I_F=20mA
On State Collector Current		$I_{C(ON)}$	LTH-301A	0.5			mA	V_{CE}=5V,I_F=20mA
			LTH-301-05	0.5				
			LTH-301-07	0.4				
			LTH-301-19	1.5				
			LTH-301-23	0.4				
			LTH-301-32	0.4				
			LTH-306-01	5.0				
			LTH-306-02	0.5				
Response Time	Rise Time	tr			3	15	μ S	V_{CE}=5V,I_C=2mA R_L=100 Ω
	Fall Time	tf			4	20		

Typical Electrical/Optical Characteristic Curves (25℃ Ambient Temperature Unless Otherwise Noted)

Fig.1 Power Dissipation vs. Ambient Temperature

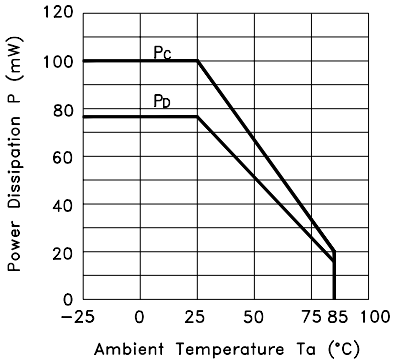


Fig.2 Forward Current vs. Forward Voltage

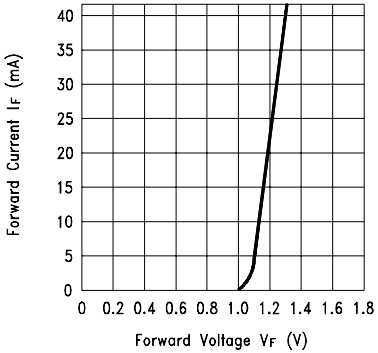


Fig.3 Collector Current vs. Collector−emitter Voltage

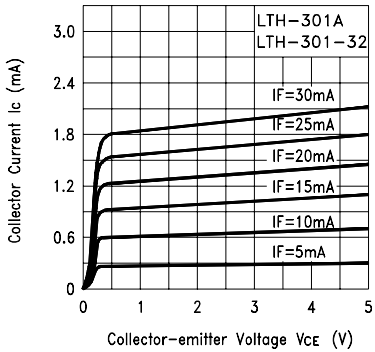


Fig.4 Collector Current vs. Collector−emitter Voltage

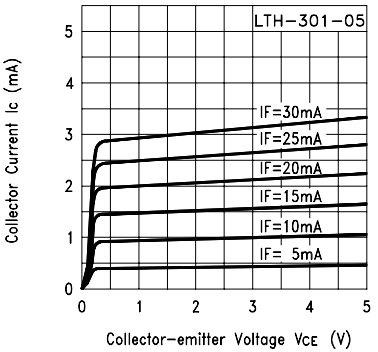


Fig.5 Collector Current vs. Collector−emitter Voltage

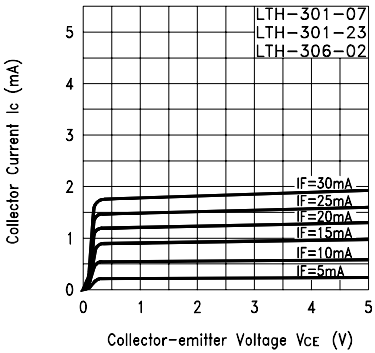
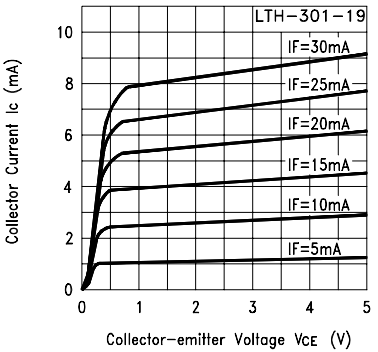


Fig.6 Collector Current vs. Collector−emitter Voltage



Typical Electrical/Optical Characteristic Curves (25℃ Ambient Temperature Unless Otherwise Noted)

Fig.7 Collector Current vs. Collector-emitter Voltage

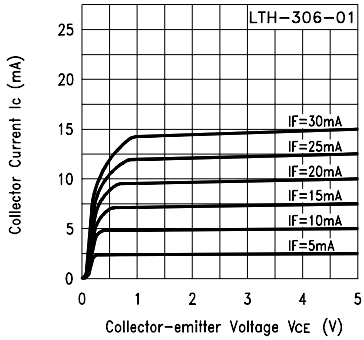


Fig.8 Collector Current vs. Ambient Temperature

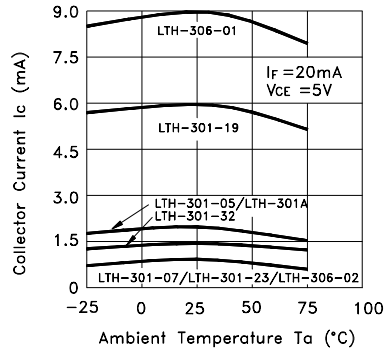


Fig.9 Collector-emitter Saturation Voltage vs. Ambient Temperature

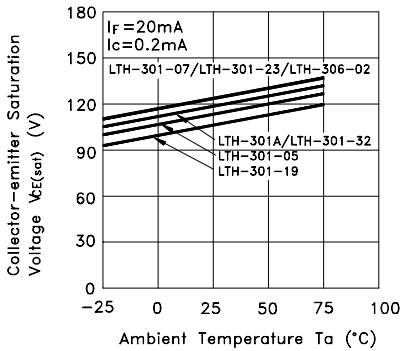
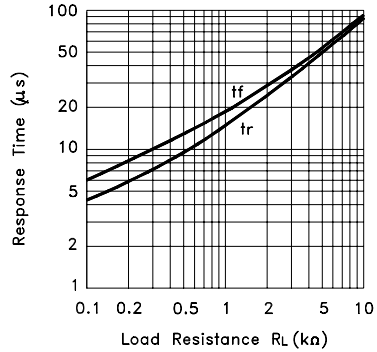


Fig.10 Response Time vs. Load Resistance



Test Circuit for Response Time