

Features

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

Application

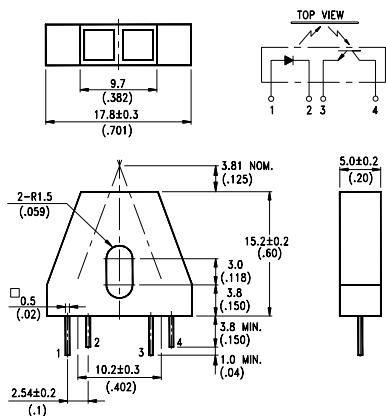
- FAX machine
- Printer
- COPY machine
- Counter

Description

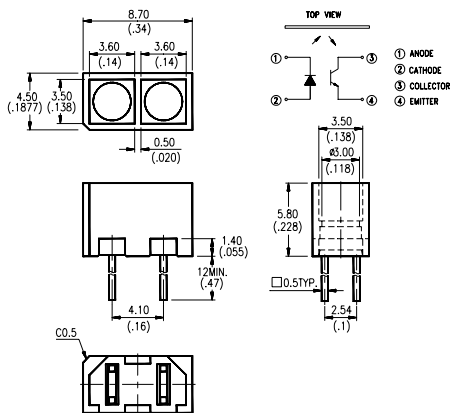
The LTH-209-01/LTH-1550-01/LTH-1650-01 reflective object sensors consist of an infrared emitting diode and a NPN silicon phototransistor mounted side by side on converging optical axis in a black plastic housing.

Package Dimensions

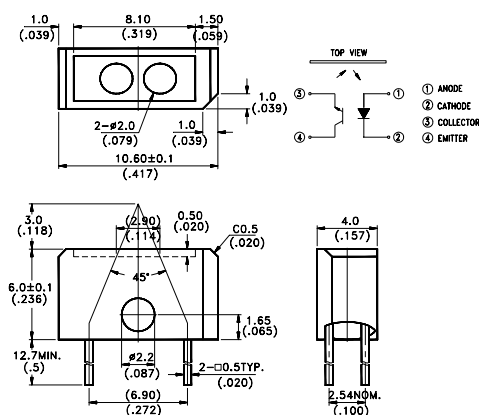
LTH-209-01



LTH-1550-01



LTH-1650-01



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.

Absolute Maximum Rating at Ta=25°C

Parameter	Symbol	Maximum Rating	Unit
Continuous Forward Current	IF	60	mA
Reverse Voltage	VR	5	V
Peak Forward Current (Pulse Wide=10 μs, 300PPS)	ICP	1	A
Power Dissipation	PD	75	mW
Collector Current	IC	20	mA
Power Dissipation	PC	100	mW
Collector-emitter Voltage	VCEO	30	V
Emitter-collector Voltage	VECO	5	V
Operating Temperature Range	Topr	-25°C to + 85°C	
Storage Temperature Range	Tstg	-40°C to + 100°C	
Lead Soldering Temperature [1.6mm(.063 in.)from body]	Ts	260°C for 5 Seconds	

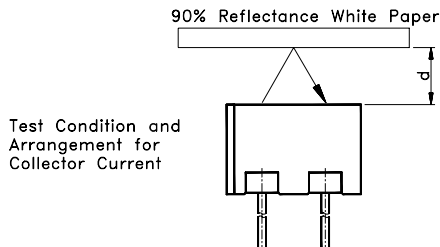
Electrical Optical Characteristics at Ta=25°C

Parameter	Symbol	Part No.	Min.	Typ.	Max.	Unit	Test Condition	Bin No.		
Input LED										
Forward Voltage	VF			1.2	1.6	V	IF=20mA			
Reverse Current	IR				100	μA	VR=5V			
Output phototransistor										
Collector Dark Current	ICEO				100	nA	VCE=10V			
Coupler										
Collector-Emitter Saturation Voltage	VCE(sat)	LTH-209-01			0.4	V	IC=0.08mA, IF=20mA			
		LTH-1550-01			0.4		IC=0.10mA, IF=20mA			
		LTH-1650-01			0.4		IC=0.05mA, IF=20mA			
On State Collector Current	IC(ON)	LTH-209-01		160		μA	NOTE1			
				200	400			400	NOTE2	BINA
				300				600		BINB
		LTH-1550-01		500			1000	BINC		
				800			1600	BIND		
			LTH-1650-01		100			300	NOTE3	BINA
				200			600	BINB		
				400			1200	BINC		
		Response Time	Rise Time	tr			3	15	μS	VCE=5V, IC=2mA RL=100 Ω
Fall Time	tf			4	20					

NOTE1: VCE=5V, IF=20mA, d=3.81MM, 90% Reflectance White Paper

NOTE2: VCE=5V, IF=20mA, d=3.50MM, 90% Reflectance White Paper

NOTE3: VCE=5V, IF=20mA, d=3.00MM, 90% Reflectance White Paper



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

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Fig.1 Power Dissipation vs. Ambient Temperature

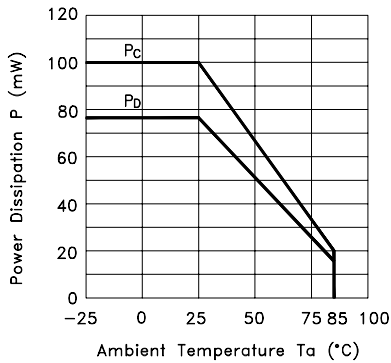


Fig.2 Forward Current vs. Forward Voltage

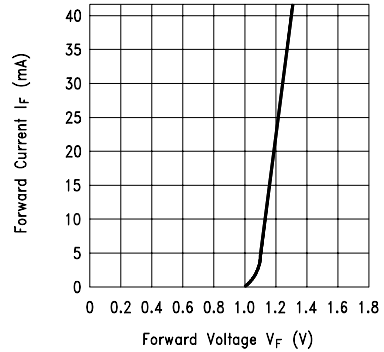


Fig.3 Collector Current vs. Collector-emitter Voltage

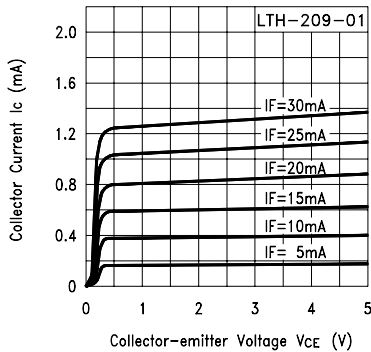


Fig.4 Collector Current vs. Collector-emitter Voltage

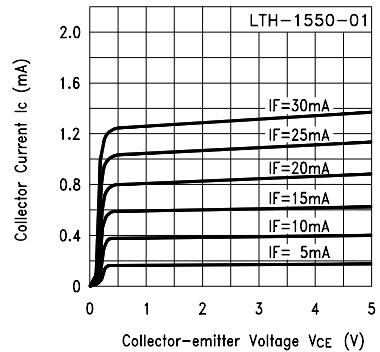


Fig.5 Collector Current vs. Collector-emitter Voltage

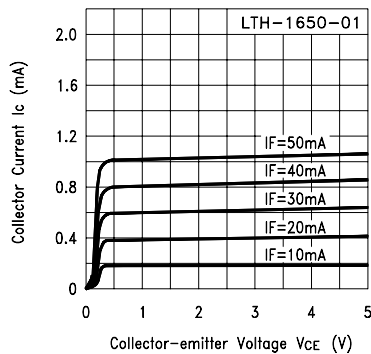
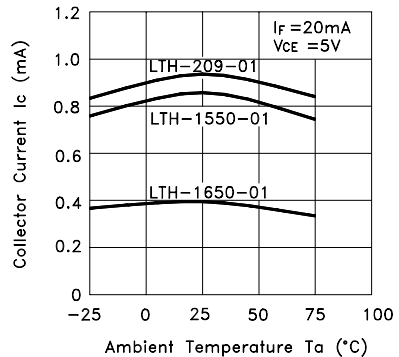


Fig.6 Collector Current vs. Ambient Temperature



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

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Fig.7 Collector-emitter Saturation Voltage vs. Ambient Temperature

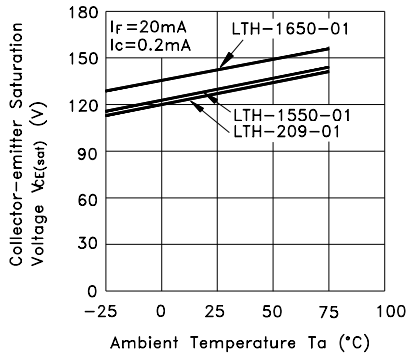


Fig.8 Relative Collector Current vs. Object Distance

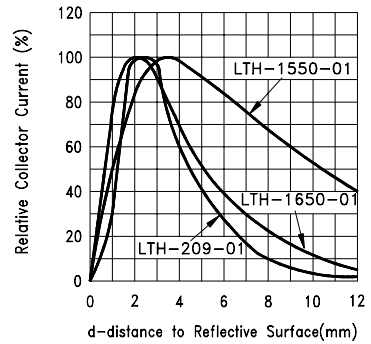
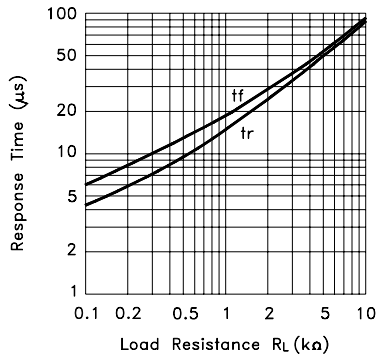


Fig.9 Response Time vs. Load Resistance



Test Circuit for Response Time

