

Features

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

Application

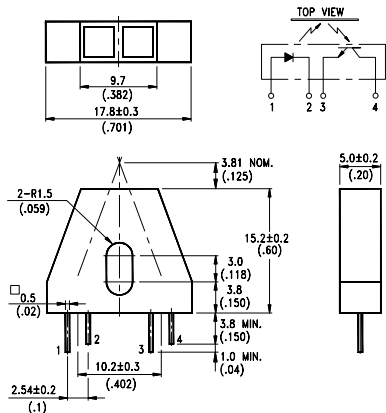
- FAX machine
- Printer
- COPY machine
- Counter

Description

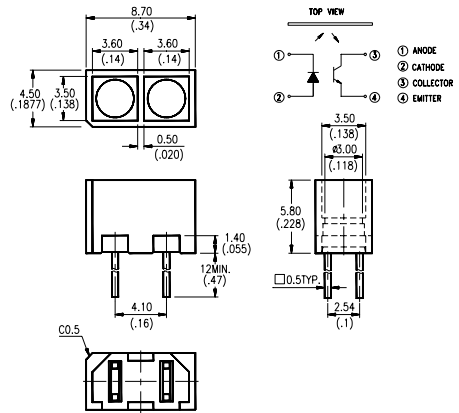
The LTH-209-01/LTH-1550-01/LTH-1650-01 reflective object sensors consist of an infrared emitting diode and a NPN silicon phototransistor mounted side by side on converging optical axis in a black plastic housing.

Package Dimensions

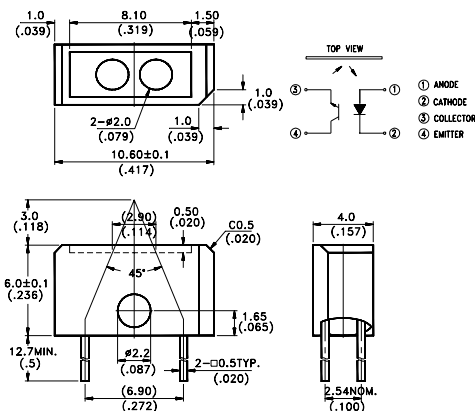
LTH-209-01



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
Input LED	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
Output phototransistor	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	

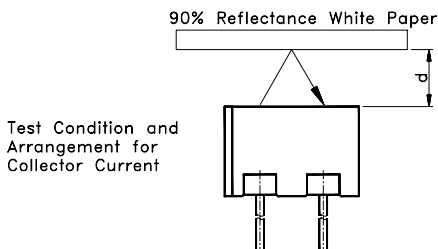
Electrical Optical Characteristics at Ta=25°C

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
		500		1000	BINC				
		LTH-1550-01	800		1600		NOTE3	BIND	
			100		300			BINA	
			200		600			BINB	
		LTH-1650-01	400		1200			BINC	
			Response Time		Rise Time		tr		3
		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)

Fig.1 Power Dissipation vs. Ambient Temperature

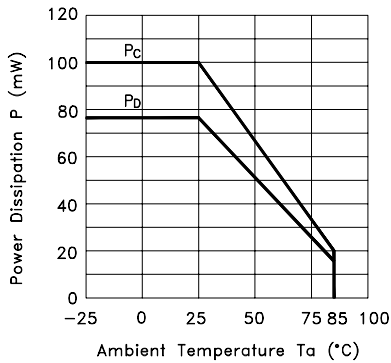


Fig.2 Forward Current vs. Forward Voltage

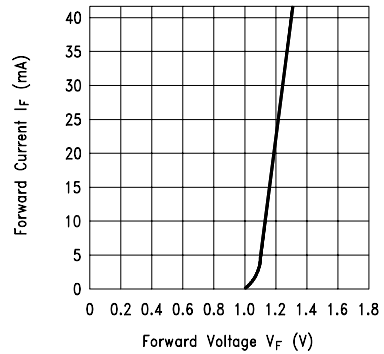


Fig.3 Collector Current vs. Collector-emitter Voltage

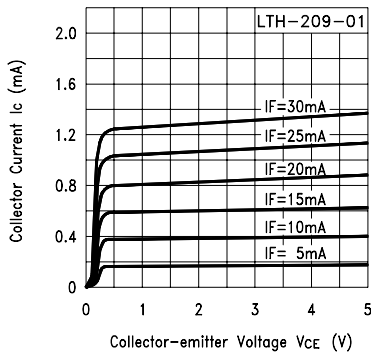


Fig.4 Collector Current vs. Collector-emitter Voltage

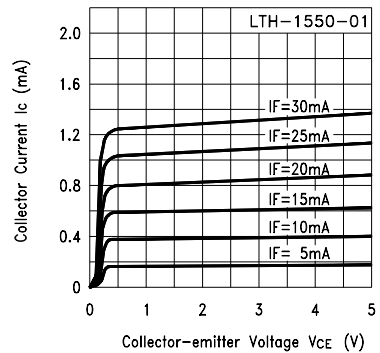


Fig.5 Collector Current vs. Collector-emitter Voltage

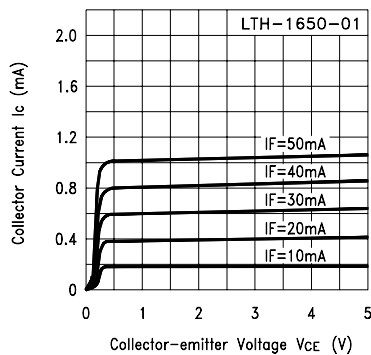
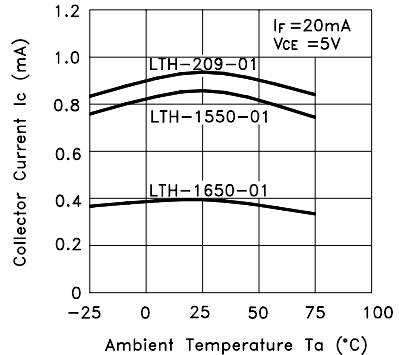


Fig.6 Collector Current vs. Ambient Temperature



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

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

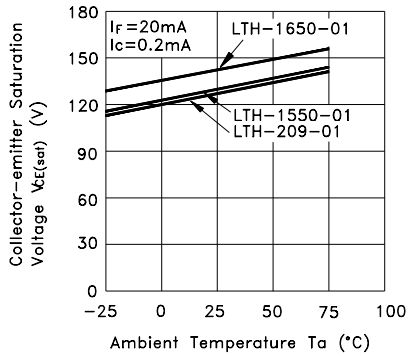


Fig.8 Relative Collector Current vs. Object Distance

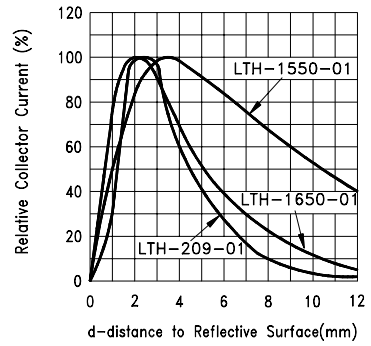
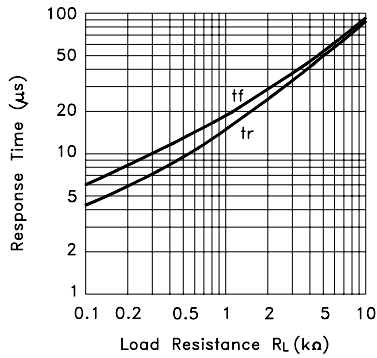


Fig.9 Response Time vs. Load Resistance



Test Circuit for Response Time

