LTV-200/205/206/207/208

Optocouplers, Phototransistor Output, Dual Channel, SOP8 Package

Description

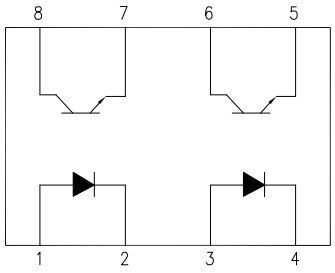
The LTV-200/205/206/207/208 are consist of a high efficient Gallium Arsenide Infrared LED and a Silicon NPN phototransistor. This design provides excellent isolation between the input and output sides of the Optocoupler.

The LTV-200/205/206/207/208 come in a standard SOP8 small outline package for surface mounting which makes it ideally suited for high density application with limited space.

A Specific CTR range allows a narrow tolerance in the electrical design of the adjacent circuits.

Functional Diagram

Pin No. and Internal connection diagram



1,3. Anode
2,4. Cathode
5,7. Emitter
6,8. Collector

Features

- Two Channel Coupler
- SOP8 surface mountable Package
- Isolation Voltage 3.75KV
- UL, CSA in progress

Application

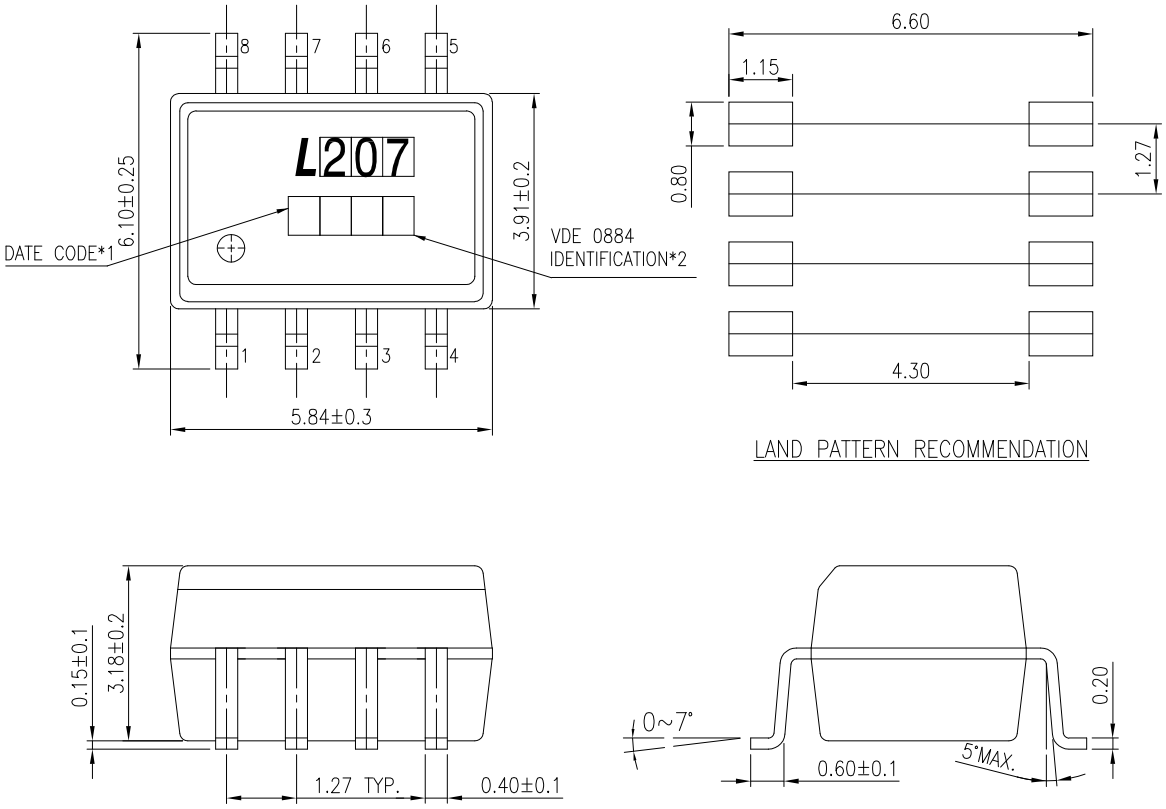
- Feedback Control Circuits
- Feedback element in switching mode power supplier
- Monitor & Detection Circuits

Order Information

P/N	Remarks
LTV-200	CTR > 20%, SOP8
LTV-205	CTR 40-80%, SOP8
LTV-206	CTR 63-125%, SOP8
LTV-207	CTR 100-200%, SOP8
LTV-208	CTR 160-320%, SOP8

Package Dimensions

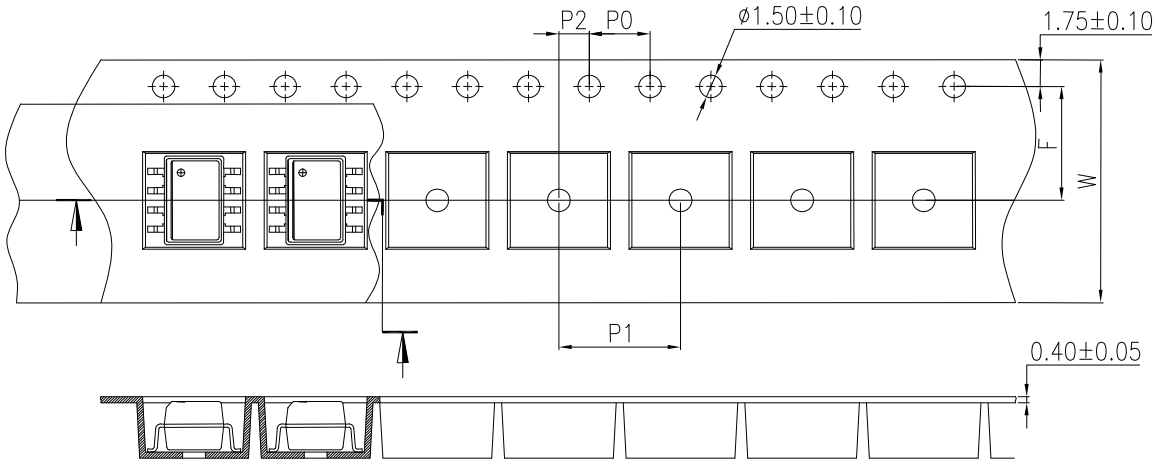
SOP8 Package (LTV-200/205/206/207/208)



*1. Date code
*2. “V” to represent VDE0884

Dimensions are all in Millimeters.

Taping Dimensions



Description	Symbol	Dimensions in millimeters (inches)
Tape wide	W	16.0±0.30(0.63)
Pitch of sprocket holes	P0	4.0±0.10(0.15)
Distance of compartment	F P2	7.5±0.10(0.295) 2±0.10(0.079)
Distance of compartment to compartment	P1	8.0±0.10(0.47)

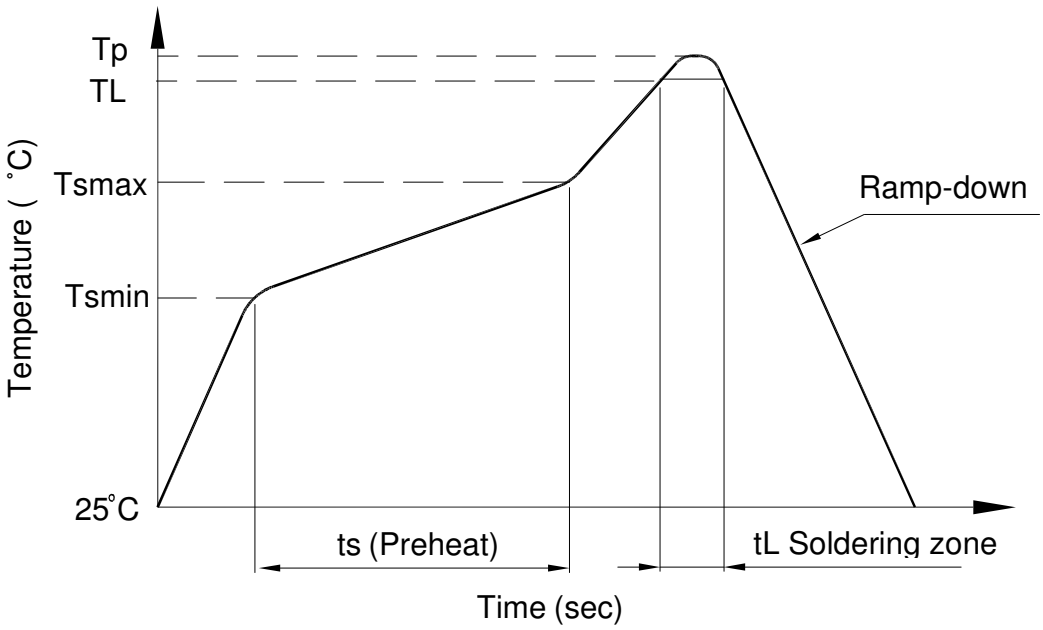
Quantities Per Reel

Package Type	LTV-200 / 205 / 206 / 207 / 208
Quantities (pcs)	**3000**

Recommended Lead Free Reflow Profile

One time soldering reflow is recommended within the conditions below:

Profile item	Conditions
Preheat - Temperature Min (Tsmin) - Temperature Max (Tsmax) - Time (Min to Max) (Ts)	 150˚C 180˚C 90±30˚C
Soldering zone - Temperature (TL) - Time (tL)	 250˚C 10~15 sec
Peak temperature (TP)	260˚C
Ramp-down rate	3˚~ 6˚C / sec



Absolute Maximum Ratings*1

Tamp.=25˚C

Parameter	Symbol	Value	Units	Note
Storage Temperature	T_{ST}	-55 ~ 150	°C	
Operating Temperature	T_A	-55 - 110	°C	
Isolation Voltage	V_{ISO}	3750	V_{RMS}	
Peak Pulse Current, 1us 300pps	Ipeak	1	A	
Lead Solder Temperature * 2		260	°C	2
Input				
Average Forward Input Current per channel	I_F	30	mA	
Reverse Input Voltage	V_R	6	V	
Input Power Dissipation	P_I	50	mW	
Output				
Corrector-emitter Breakdown Voltage	BVceo	80	V	
Emitter-corrector Breakdown Voltage	BVeco	7	V	
Output Collector Power Dissipation	P_O	125	mW	

1.Ambient temperature = 25°C, unless otherwise specified. Stresses exceeding the absolute maximum ratings can cause permanent damage to the device. Exposure to absolute maximum ratings for long periods of time can adversely affect reliability.

2.260°C for 10 seconds. Refer to Lead Free Reflow Profile.

Electrical Specifications

Parameters	Test Condition	Symbol	Min	Typ	Max	Units
Input						
Input Forward Voltage	I_F =10mA	V_F		1.2	1.55	V
Input Reverse Current	V_R = 6V	I_R		0.1	100	uA
Capacitance	V_R = 0V	Ci		25		pF
Detector						
Corrector-emitter Breakdown Voltage	Ic=10uA	BVceo	80			V
Emitter-corrector Breakdown Voltage	I_E=10uA	BVeco	7			V
Corrector-emitter Leakage Current	V_{CE}=10V, I_F=0mA	I_{CEO}		5	50	nA
Corrector-emitter Capacitance	V_{CE}=0V	C_{CE}		10		pF
Coupler						
Corrector-emitter Saturation Voltage	I_F=10mA, I_c=2.5mA	Vce(sat)			0.4	V
Input-output Capacitance		C_{IO}		0.5		pF
Isolation Test Voltage	RH ≤ 50%, t = 1min,	V_{ISO}	3750			V
Resistance, Input to Output	V_{I-O} = 500V DC	R_{ISO}		10^{12}		Ω

*All Typical at T_A =25° C

Current Transfer Ratio

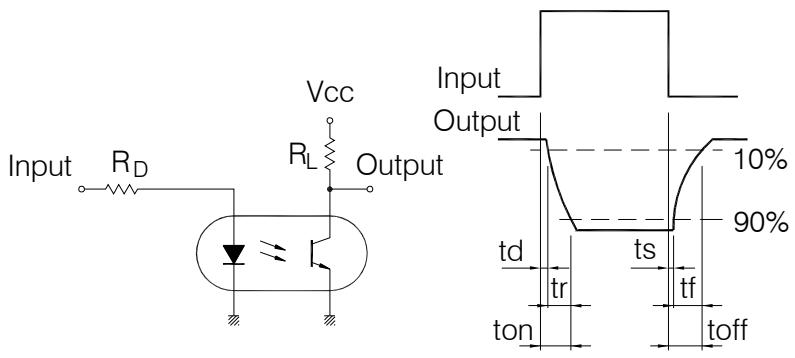
Parameter	Test Condition	Part	Min	Typ	Max	Units
DC Current Transfer Ratio	V_{CE} = 5V, I_F = 10mA	LTV-200	20			%
		LTV-205	40		80	%
		LTV-206	63		125	%
		LTV-207	100		200	%
		LTV-208	160		320	%
	V_{CE} = 5V, I_F = 1mA	LTV-205	13			%
		LTV-206	22			%
		LTV-207	34			%
		LTV-208	48			%

Switching Specifications

Parameter	Test Condition	Symbol	Min	Typ	Max	Units
Turn-on Time	Ic=2mA, R_L=100Ω Vcc=5V	ton		5		μs
Turn-off Time	Ic=2mA, R_L=100Ω Vcc=5V	toff		4		μs

*All Typical at T_A =25°C

Test Circuit for Response Time



Characteristics Curves

Figure1. Forward Current vs. Forward Voltage

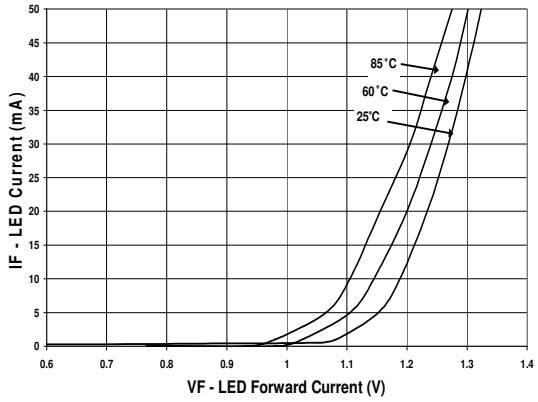


Figure2. Collector-Emitter Voltage vs. Collector Current

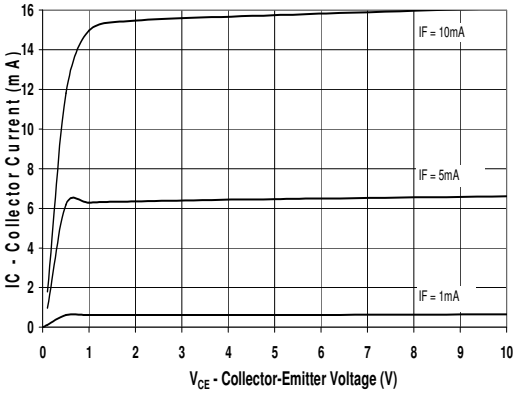


Figure3. CTR vs. Forward Current

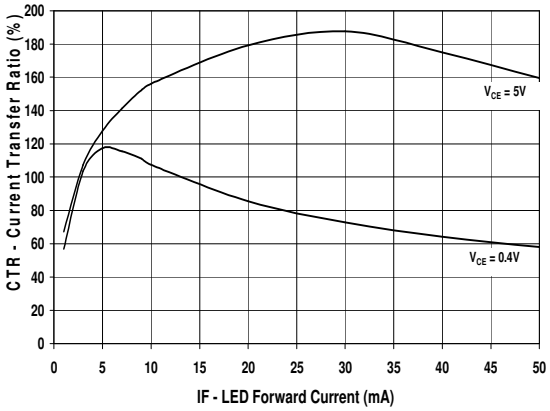


Figure4. Current Transfer Ratio vs. Ambient Temperature

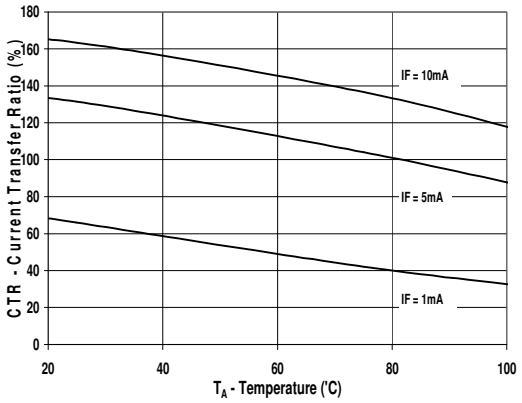


Figure5. Switching Speed vs. Load Resistor

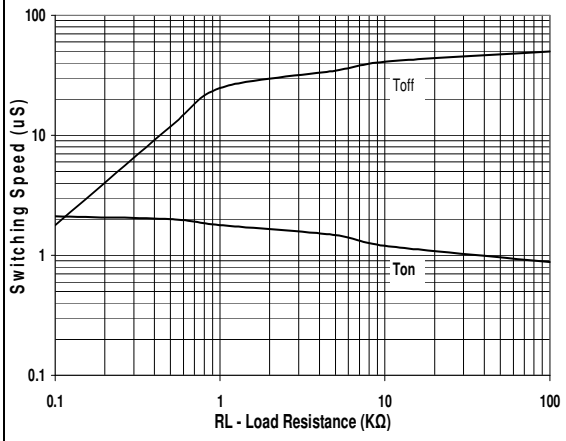
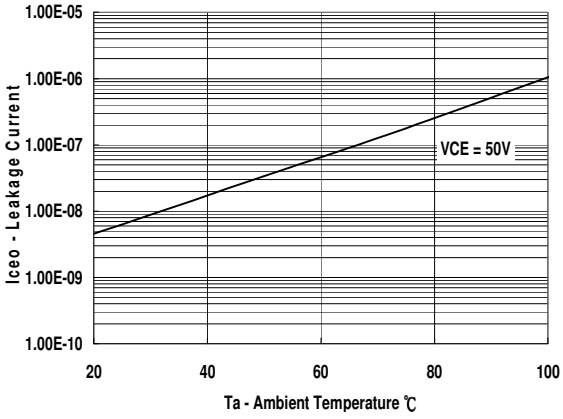
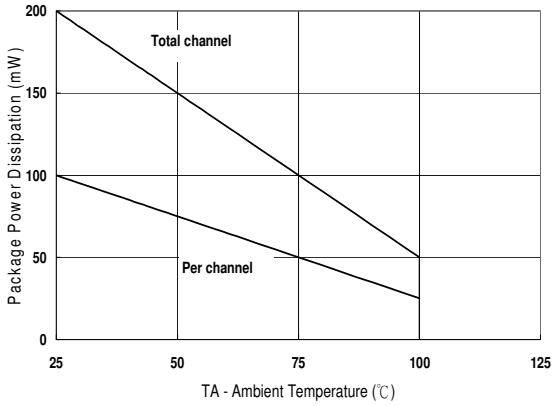


Figure6. Collector Leakage Current vs. Ambient Temperature



Characteristics Curves

Figure7. Power Dissipation vs. Ambient Temperature



Notice

Specifications of the products displayed herein are subject to change without notice.
The products shown in this publication are designed for the general use in electronic applications such as office automation equipment, communications devices, audio/visual equipment, electrical instrumentation and application. For equipment/devices where high reliability or safety is required, such as space applications, nuclear power control equipment, medical equipment, etc, please contact our sales representatives.