

High Density Mounting Type Photocoupler LTV-819 Series

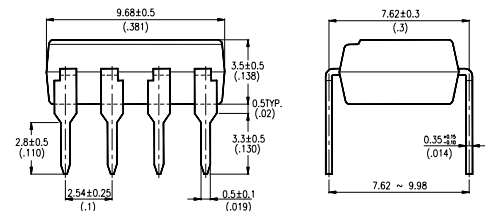
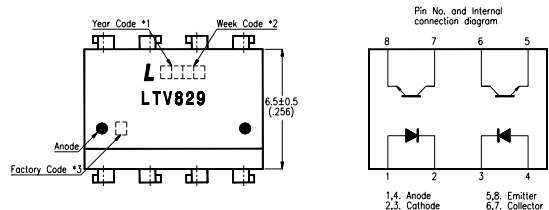
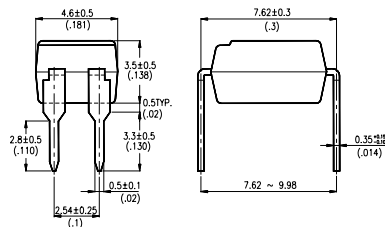
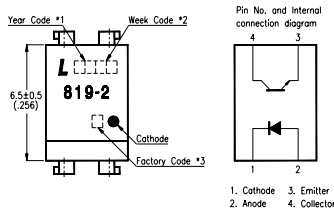
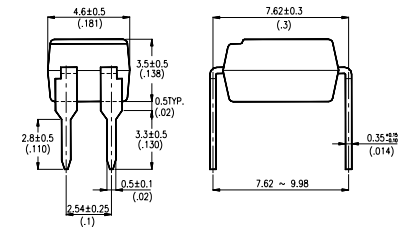
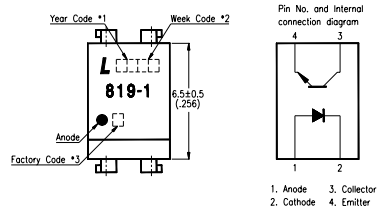
Features

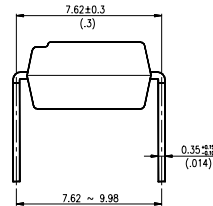
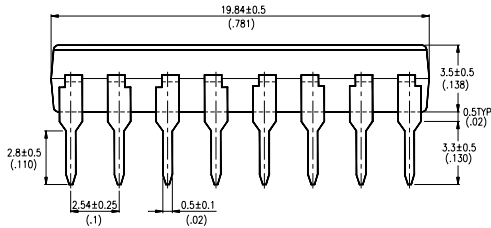
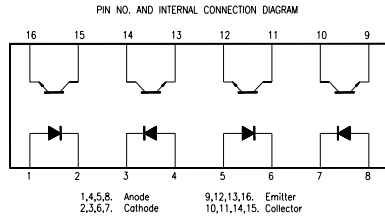
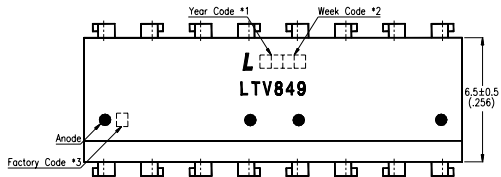
- Current transfer ratio
(CTR : MIN. 50% at $I_F=5mA$, $V_{CE}=5V$)
- High input-output isolation voltage:
(V_{ISO} : 5,000V_{rms})
- Compact dual-in-line package
LTV-819-1 : 1-channel type
LTV-819-2 : 1-channel type
LTV-829 : 2-channel type
LTV-849 : 4-channel type
- UL approved (No. E113898)
- TUV approved (No. R9653630)
- CSA approved (No. CA91533-1)
- FIMKO approved (No. 193422)
- NEMKO approved (No. P96103013)
- DEMKO approved (No. 303986)
- SEMKO approved (No. 9646047/01-30)
- VDE approved (No. 094722)
- Options available :
-Leads with 0.4"(10.16mm)spacing (M Type)
-Leads bends for surface mounting(S Type)
-Tape and Reel of Type I for SMD(Add"-TA"Suffix)
-Tape and Reel of Type II for SMD(Add"-TA1"Suffix)
-VDE 0884 approvals (Add"-V"Suffix)

Applications

1. Telephone exchanges.
2. Computer terminals.
3. System appliances, measuring instruments.
4. Signal transmission between circuits of different potentials and impedances.

Package Dimensions





Note:

1. Year date code.
2. 2-digit work week.
3. Factory code shall be marked (Z : Taiwan, Y : Thailand).
4. All dimensions are in millimeters (inches).
5. Tolerance is $\pm 0.25\text{mm}$ (.010") unless otherwise noted.
6. Specifications are subject to change without notice.

Ordering Information

Part Number	Package	Safety Standard Approval	Application part number	
LTV-819-1 LTV-819-1M LTV-819-1S LTV-819-1S-TA LTV-819-1S-TA1	4-pin DIP 4-pin (leads with 0.4" spacing) 4-pin (lead bends for surface mount) 4-pin (tape and reel packaging of type I) 4-pin (tape and reel packaging of type II)	<ul style="list-style-type: none"> • UL approved • TUV approved • CSA approved • FIMKO approved • NEMKO approved • SEMKO approved • DEMKO approved 	LTV-819-1	
LTV-819-2 LTV-819-2M LTV-819-2S LTV-819-2S-TA LTV-819-2S-TA1	4-pin DIP 4-pin (leads with 0.4" spacing) 4-pin (lead bends for surface mount) 4-pin (tape and reel packaging of type I) 4-pin (tape and reel packaging of type II)		LTV-819-2	
LTV-829 LTV-829M LTV-829S LTV-829S-TA LTV-829S-TA1	8-pin DIP 8-pin (leads with 0.4" spacing) 8-pin (lead bends for surface mount) 8-pin (tape and reel packaging of type I) 8-pin (tape and reel packaging of type II)		LTV-829	
LTV-849 LTV-849M LTV-849S LTV-849S-TA LTV-849S-TA1	16-pin DIP 16-pin (leads with 0.4" spacing) 16-pin (lead bends for surface mount) 16-pin (tape and reel packaging of type I) 16-pin (tape and reel packaging of type II)		LTV-849	
LTV8191-V LTV8191M-V LTV8191S-V LTV8191STA-V LTV8191STA1-V	4-pin DIP 4-pin (leads with 0.4" spacing) 4-pin (lead bends for surface mount) 4-pin (tape and reel packaging of type I) 4-pin (tape and reel packaging of type II)		<ul style="list-style-type: none"> • VDE approved 	LTV-819-1
LTV8192-V LTV8192M-V LTV8192S-V LTV8192STA-V LTV8192STA1-V	4-pin DIP 4-pin (leads with 0.4" spacing) 4-pin (lead bends for surface mount) 4-pin (tape and reel packaging of type I) 4-pin (tape and reel packaging of type II)			LTV-819-2
LTV829-V LTV829M-V LTV829S-V LTV829STA-V LTV829STA1-V	8-pin DIP 8-pin (leads with 0.4" spacing) 8-pin (lead bends for surface mount) 8-pin (tape and reel packaging of type I) 8-pin (tape and reel packaging of type II)			LTV-829
LTV849-V LTV849M-V LTV849S-V LTV849STA-V LTV849STA1-V	16-pin DIP 16-pin (leads with 0.4" spacing) 16-pin (lead bends for surface mount) 16-pin (tape and reel packaging of type I) 16-pin (tape and reel packaging of type II)			LTV-849

Absolute Maximum Ratings

(Ta=25°C)

Parameter		Symbol	Rating	Unit
Input	Forward Current	IF	50	mA
	Reverse Voltage	VR	6	V
	Power Dissipation	P	70	mW
Output	Collector-Emitter Voltage	VCEO	35	V
	Emitter-Collector Voltage	VECO	6	V
	Collector Current	IC	50	mA
	Collector Power Dissipation	PC	150	mW
Total Power Dissipation		Ptot	170	mW
*1.Isolation Voltage		Viso	5,000	Vrms
Operating Temperature		Topr	-25~+100	°C
Storage Temperature		Tstg	-40~+125	°C
*2.Soldering Temperature		Tsol	260	°C

*1. AC for 1 minute, R.H. = 40 ~ 60%

• Isolation voltage shall be measured using the following method.

- (1) Short between anode and cathode on the primary side and between collector, emitter and base on the secondary side.
- (2) The isolation voltage tester with zero-cross circuit shall be used.
- (3) The waveform of applied voltage shall be a sine wave.

*2. For 10 seconds.

Electrical/Optical Characteristics

(Ta=25°C)

Parameter		Symbol	Min.	Typ.	Max.	Unit	Conditions
Input	Forward Voltage	VF	—	1.2	1.4	V	IF=20mA
	Reverse Current	IR	—	—	10	μA	VR=4V
	Terminal Capacitance	Ct	—	30	250	pF	V=0, f=1KHz
Output	Collector Dark Current	ICEO	—	—	100	nA	VCE=20V
	Collector-Emitter Breakdown Voltage	BVCEO	35	—	—	V	IC=0.1mA
	Emitter-Collector Breakdown Voltage	BVECO	6	—	—	V	IE=10 μA
Transfer Characteristics	Collector Current	IC	2.5	—	20	mA	IF=5mA, VCE=5V
	*Current Transfer Ratio	CTR	50	—	400	%	
	Collector-emitter Saturation Voltage	VCE(sat)	—	0.1	0.2	V	IF=20mA, IC=1mA
	Isolation Resistance	Riso	5 × 10 ¹⁰	10 ¹¹	—	Ω	DC500V, 40~60% R.H.
	Floating Capacitance	Cf	—	0.6	1	pF	V=0, f=1MHz
	Cut-off Frequency	fc	—	80	—	KHz	VCE=5V, IC=2mA RL=100 Ω, -3dB
	Response Time (Rise)	tr	—	4	—	μs	VCE=2V, IC=2mA
Response Time (Fall)	tf	—	3	—	μs	RL=100 Ω	

*CTR= $\frac{I_C}{I_F} \times 100\%$

PHOTOCOUPLER

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

Fig.1 Forward Current vs. Ambient Temperature

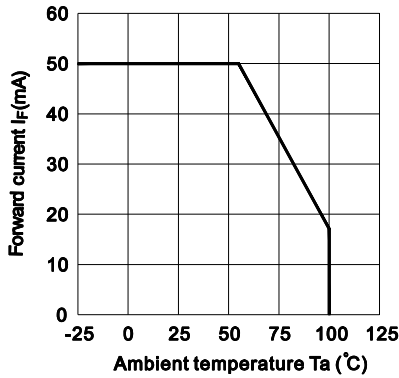


Fig.2 Collector Power Dissipation vs. Ambient Temperature

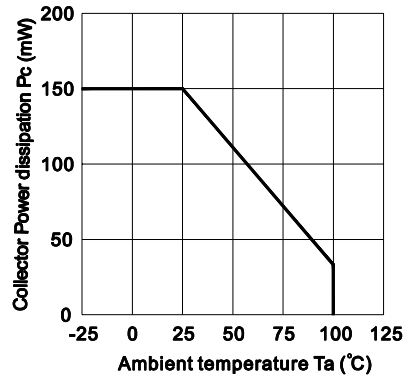


Fig.3 Collector-emitter Saturation Voltage vs. Forward Current

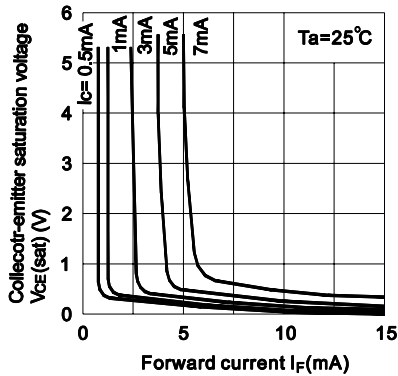


Fig.4 Forward Current vs. Forward Voltage

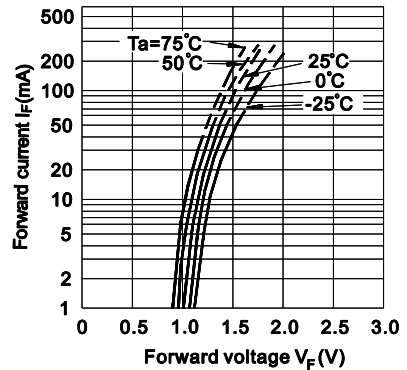


Fig.5 Current Transfer Ratio vs. Forward Current

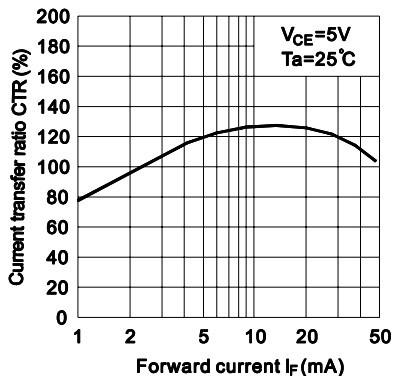


Fig.6 Collector Current vs. Collector-emitter Voltage

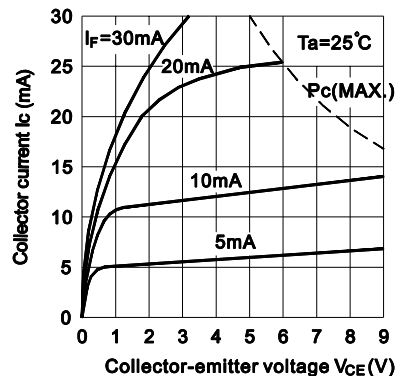


Fig.7 Relative Current Transfer Ratio vs. Ambient Temperature

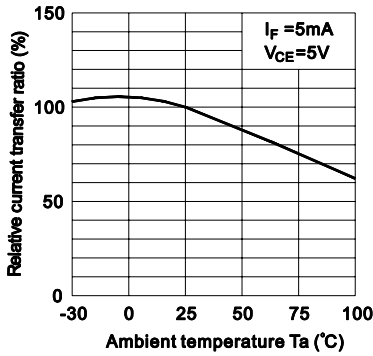


Fig.8 Collector-emitter Saturation Voltage vs. Ambient Temperature

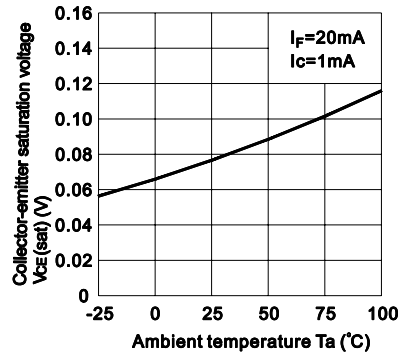


Fig.9 Collector Dark Current vs. Ambient Temperature

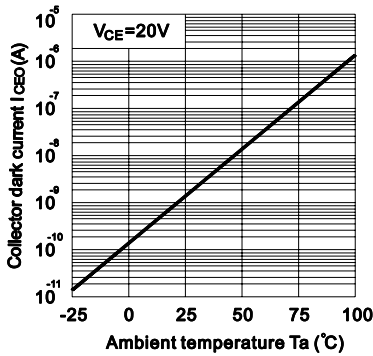


Fig.10 Response Time vs. Load Resistance

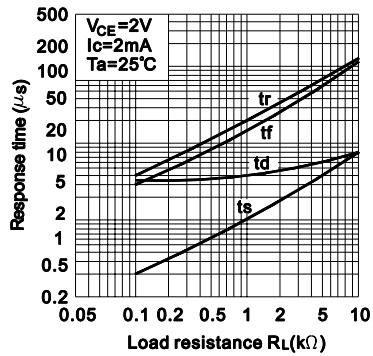
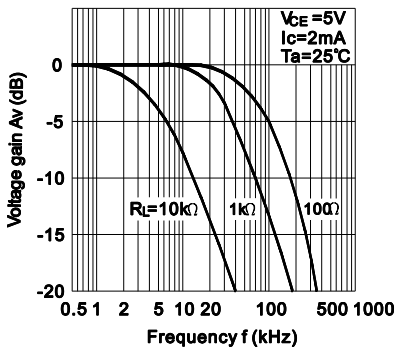
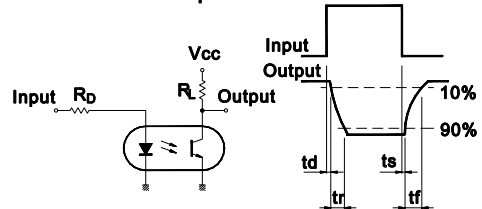


Fig.11 Frequency Response



Test Circuit for Response Time



Test Circuit for Frequency Response

