

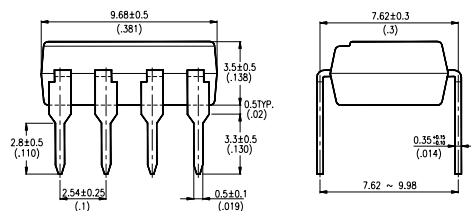
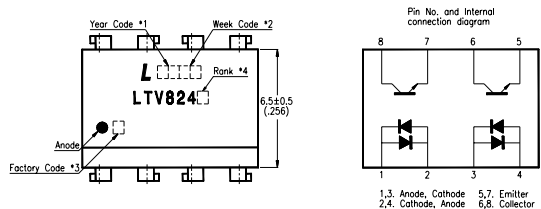
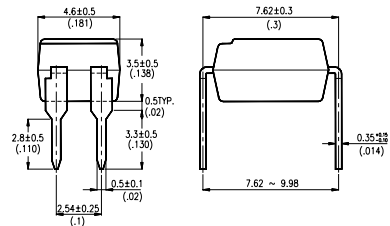
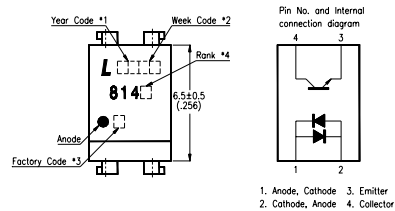
Features

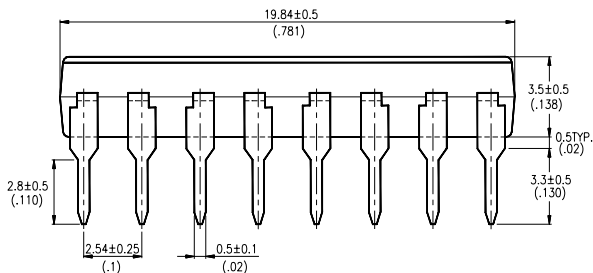
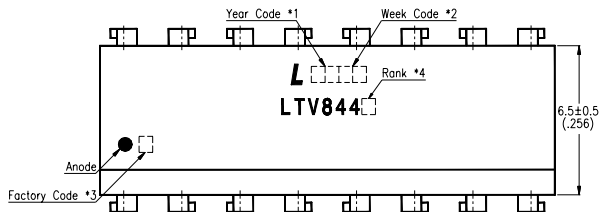
- AC input response
- High input-output isolation voltage:
($V_{iso} : 5,000V_{rms}$)
- Low collector dark current
($I_{CEO} : MAX. 10^{-7}A$ at $V_{CE}=20V$)
- Current transfer ratio
(CTR : MIN. 20% at $I_F = \pm 1mA, V_{CE}=5V$)
- Compact dual-in-line package
LTV-814 : 1-channel type
LTV-824 : 2-channel type
LTV-844 : 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

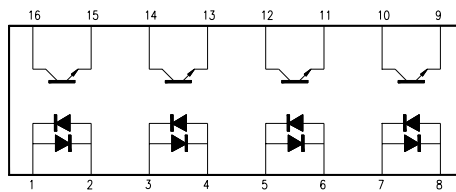
1. Telephone sets, telephone exchangers.
2. Sequence controllers.
3. System appliances, measuring instruments.
4. Signal transmission between circuits of different potentials and impedances.

Package Dimensions

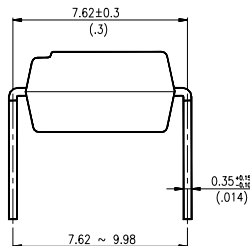




PIN NO. AND INTERNAL CONNECTION DIAGRAM



1,3,5,7, Anode,Cathode 9,11,13,15. Emitter
 2,4,6,8. Cathode,Anode 10,12,14,16. Collector



Note:

1. Year date code.
2. 2-digit work week.
3. Factory code shall be marked (Z : Taiwan, Y : Thailand).
4. Rank shall be or shall not be marked.
5. All dimensions are in millimeters (inches).
6. Tolerance is $\pm 0.25\text{mm}$ (.010") unless otherwise noted.
7. Specifications are subject to change without notice.

Ordering Information

Part Number	Package	Safety Standard Approval	Application part number	
LTV-814 LTV-814M LTV-814S LTV-814S-TA LTV-814S-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-814	
LTV-824 LTV-824M LTV-824S LTV-824S-TA LTV-824S-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-824	
LTV-844 LTV-844M LTV-844S LTV-844S-TA LTV-844S-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-844	
LTV814-V LTV814M-V LTV814S-V LTV814STA-V LTV814STA1-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-814
LTV824-V LTV824M-V LTV824S-V LTV824STA-V LTV824STA1-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-824
LTV844-V LTV844M-V LTV844S-V LTV844STA-V LTV844STA1-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-844

Absolute Maximum Ratings

(Ta=25°C)

Parameter		Symbol	Rating	Unit
Input	Forward Current	I _F	± 50	mA
	Power Dissipation	P	70	mW
Output	Collector-Emitter Voltage	V _{CEO}	35	V
	Emitter-Collector Voltage	V _{ECO}	6	V
	Collector Current	I _C	50	mA
	Collector Power Dissipation	P _C	150	mW
Total Power Dissipation		P _{tot}	200	mW
Operating Temperature		T _{opr}	-30~+100	°C
Storage Temperature		T _{stg}	-55~+125	°C
*1.Isolation Voltage		V _{iso}	5	KV _{rms}
*2.Soldering Temperature		T _{sol}	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	V _F	—	1.2	1.4	V	I _F = ± 20mA
	Terminal Capacitance	C _t	—	50	250	pF	V=0, f=1KHz
Output	Collector Dark Current	I _{CEO}	—	—	100	nA	V _{CE} =20V
	Collector-Emitter Breakdown Voltage	BV _{CEO}	35	—	—	V	I _C =0.1mA
	Emitter-Collector Breakdown Voltage	BV _{ECO}	6	—	—	V	I _E =10 μA
Transfer Characteristics	Collector Current	I _C	0.2	—	3	mA	I _F = ± 1mA V _{CE} =5V
	*Current Transfer Ratio	CTR	20	—	300	%	
	Collector-emitter Saturation Voltage	V _{CE(sat)}	—	0.1	0.2	V	I _F = ± 20mA, V _{CE} =1V
	Isolation Resistance	R _{iso}	5 × 10 ¹⁰	10 ¹¹	—	Ω	DC500V, 40~60% R.H.
	Floating Capacitance	C _f	—	0.6	1.0	pF	V=0, f=1MHz
	Cut-off Frequency	f _c	15	80	—	KHz	V _{CE} =5V, I _C =2mA R _L =100 Ω, -3dB
	Response Time (Rise)	t _r	—	4	18	μs	V _{CE} =2V, I _C =2mA
	Response Time (Fall)	t _f	—	3	18	μs	R _L =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

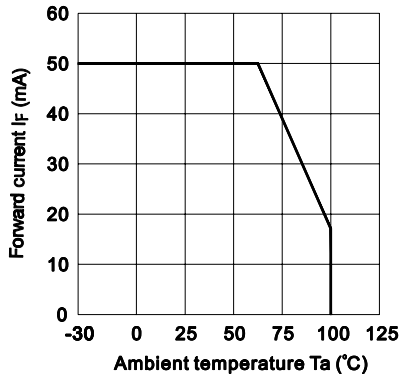


Fig.2 Collector Power Dissipation vs. Ambient Temperature

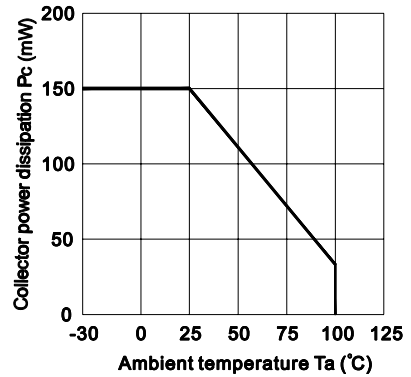


Fig.3 Collector-emitter Saturation Voltage vs. Forward Current

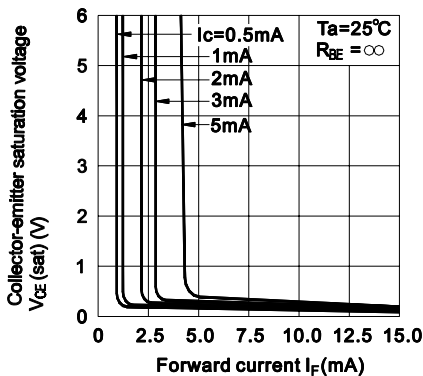


Fig.4 Forward Current vs. Forward Voltage

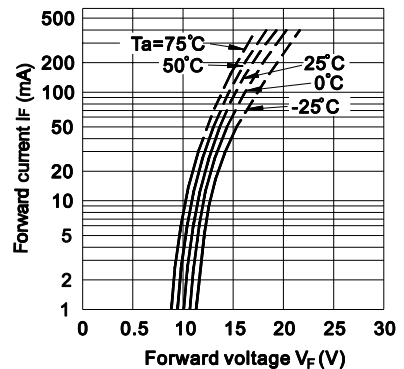


Fig.5 Current Transfer Ratio vs. Forward Current

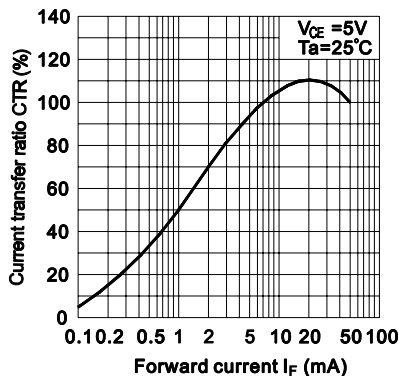


Fig.6 Collector Current vs. Collector-emitter Voltage

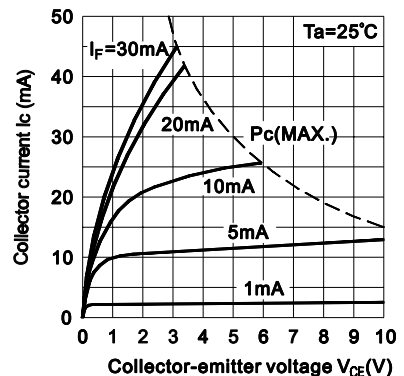


Fig.7 Relative Current Transfer Ratio vs. Ambient Temperature

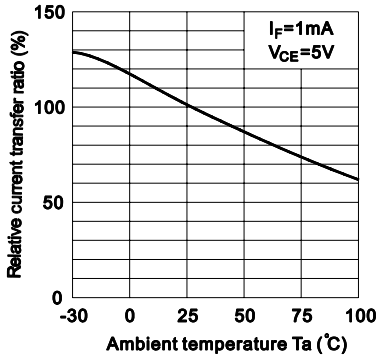


Fig.8 Collector-emitter Saturation Voltage vs. Ambient Temperature

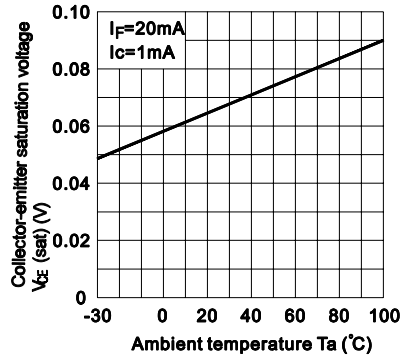


Fig.9 Collector Dark Current vs. Ambient Temperature

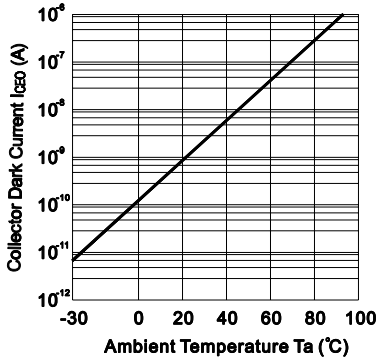


Fig.10 Response Time vs. Load Resistance

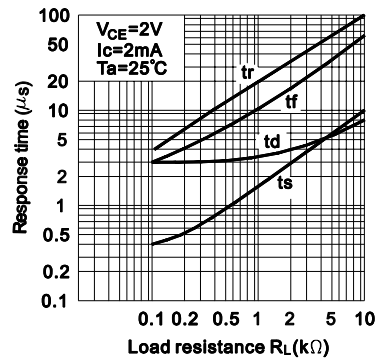
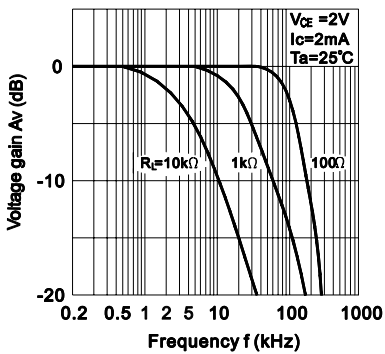
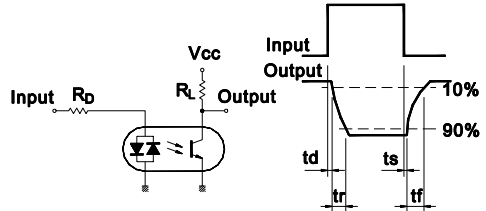


Fig.11 Frequency Response



Test Circuit for Response Time



Test Circuit for Frequency Response

