



AC Input Type Photocoupler

LTV-814H Series

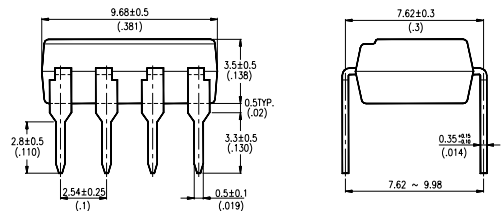
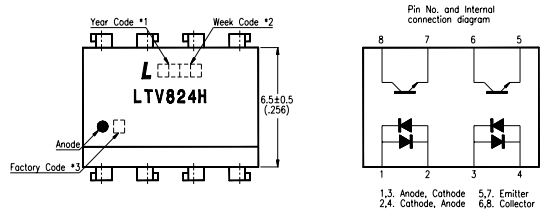
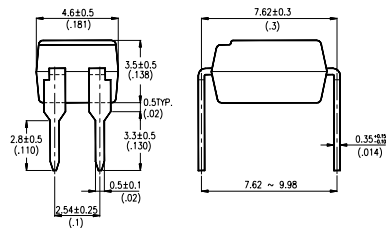
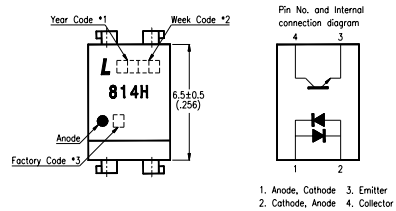
Features

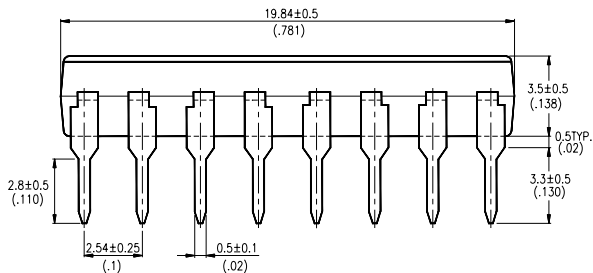
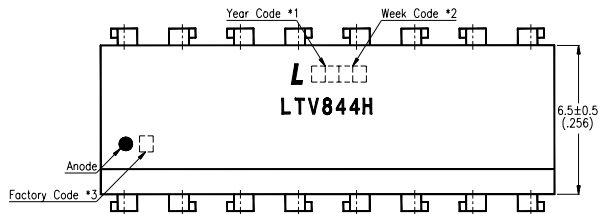
- AC input response
- High input current
(I_F : MAX. 150mA)
- High input-output isolation voltage:
(V_{ISO} : 5,000V_{rms})
- Low collector dark current
(I_{CEO} : MAX. 10^{-7} A at $V_{CE}=20V$)
- Current transfer ratio
(CTR : MIN. 20% at $I_F = \pm 100mA$, $V_{CE}=2V$)
- Compact dual-in-line package
LTV814H : 1-channel type
LTV824H : 2-channel type
LTV844H : 4-channel type
- UL approved (No. E113898) 814H only
- CSA approved (No. LR91533) 814H only
- 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

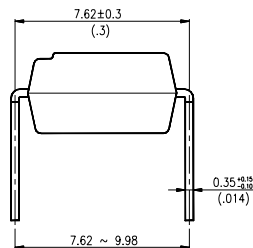
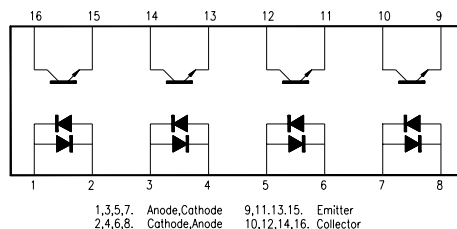
1. Telephone sets, telephone exchangers.
2. System appliances, measuring instruments.
3. Signal transmission between circuits of different potentials and impedances.

Package Dimensions





PIN NO. AND INTERNAL CONNECTION DIAGRAM



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-814H LTV-814HM LTV-814HS LTV-814HS-TA LTV-814HS-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-814H
LTV-824H LTV-824HM LTV-824HS LTV-824HS-TA LTV-824HS-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-824H
LTV-844H LTV-844HM LTV-844HS LTV-844HS-TA LTV-844HS-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-844H
LTV814H-V LTV814HM-V LTV814HS-V LTV814HSTA-V LTV814HSTA1-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-814H
LTV824H-V LTV824HM-V LTV824HS-V LTV824HSTA-V LTV824HSTA1-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-824H
LTV844H-V LTV844HM-V LTV844HS-V LTV844HSTA-V LTV844HSTA1-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-844H

PHOTOCOUPLER

Absolute Maximum Ratings

(Ta=25°C)

Parameter		Symbol	Rating	Unit
Input	Forward Current	I _F	± 150	mA
	Power Dissipation	P	230	mW
Output	Collector-Emitter Voltage	V _{CEO}	35	V
	Emitter-Collector Voltage	V _{ECO}	6	V
	Collector Current	I _C	80	mA
	Collector Power Dissipation	P _C	160	mW
Total Power Dissipation		P _{tot}	320	mW
*1.Isolation Voltage		V _{iso}	5,000	V _{rms}
Operating Temperature		T _{opr}	-30~+100	°C
Storage Temperature		T _{stg}	-55~+125	°C
*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	—	1.4	1.7	V	I _F = ± 100mA
	Terminal Capacitance	C _t	—	50	400	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	20	—	80	mA	I _F = ± 100mA V _{CE} =2V
	*Current Transfer Ratio	CTR	20	—	80	%	
	Collector-emitter Saturation Voltage	V _{CE(sat)}	—	0.1	0.2	V	I _F = ± 100mA, I _C =1mA
	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 R _L =100 Ω
	Response Time (Fall)	t _f	—	3	18	μs	

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

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

Fig.1 Forward Current vs. Ambient Temperature

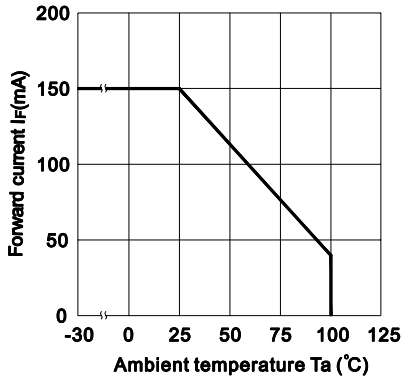


Fig.2 Collector Power Dissipation vs. Ambient Temperature

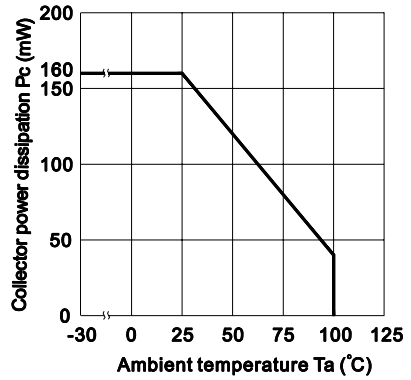


Fig.3 Collector-emitter Saturation Voltage vs. Forward Current

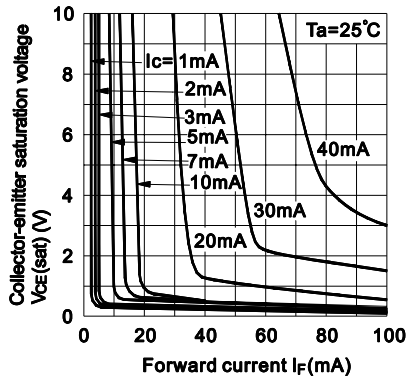


Fig.4 Forward Current vs. Forward Voltage

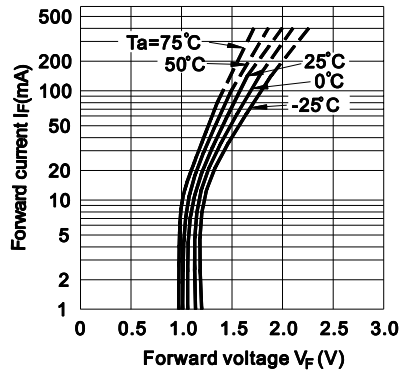


Fig.5 Current Transfer Ratio vs. Forward Current

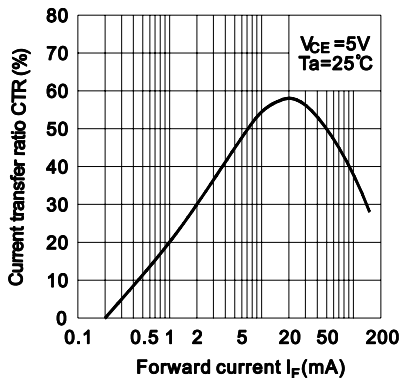


Fig.6 Collector Current vs. Collector-emitter Voltage

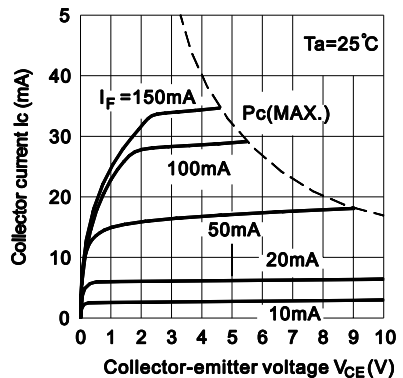


Fig.7 Relative Current Transfer Ratio vs. Ambient Temperature

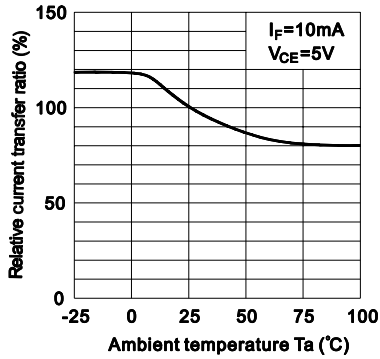


Fig.8 Collector-emitter Saturation Voltage vs. Ambient Temperature

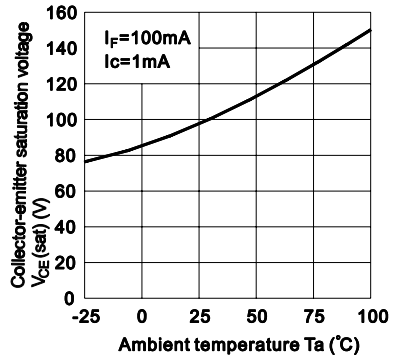


Fig.9 Collector Dark Current vs. Ambient Temperature

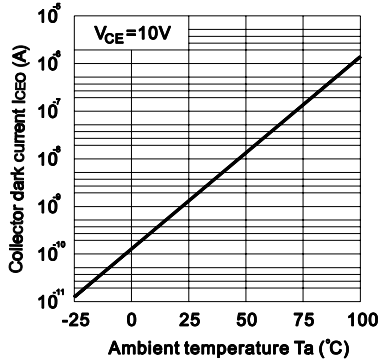


Fig.10 Response Time vs. Load Resistance

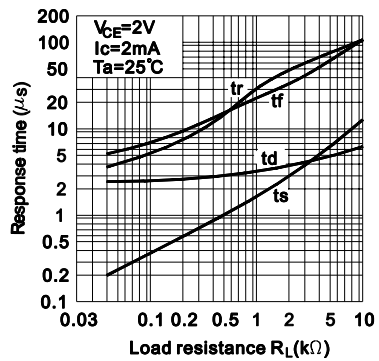
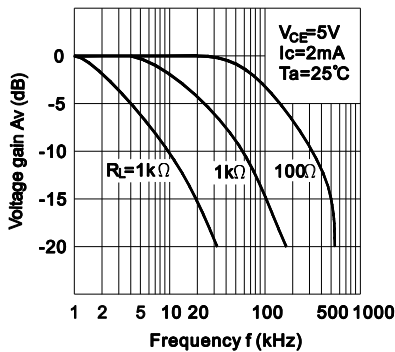
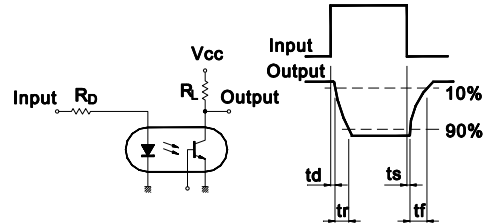


Fig.11 Frequency Response



Test Circuit for Response Time



Test Circuit for Frequency Response

