

LITEON

High Density Mounting Type Photocoupler LTV-816 Series

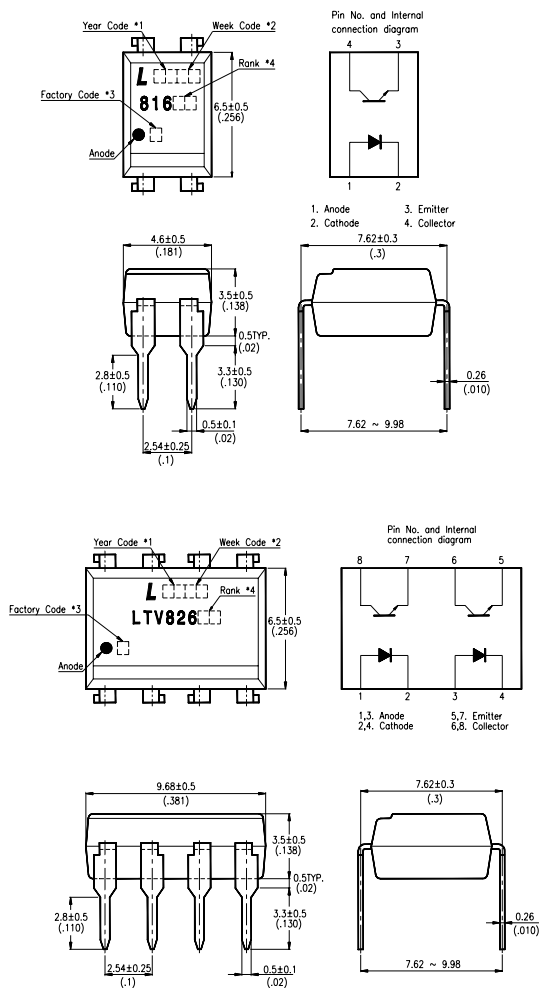
Features

- Current transfer ratio
(CTR : MIN. 50% at $I_F = \pm 5\text{mA}$, $V_{CE}=5\text{V}$)
- High input-output isolation voltage:
(V_{iso} : 5,000V_{rms})
- Compact dual-in-line package
LTV-816 : 1-channel type
LTV-826 : 2-channel type
LTV-846 : 4-channel type
- UL approved (No. E113898)
- CSA approved (No. CA91533-1)
- FIMKO approved (No. 202944)
- NEMKO approved (No. P98101732)
- DEMKO approved (No. 307926)
- SEMKO approved (No. 9833163/01-03)
- 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)

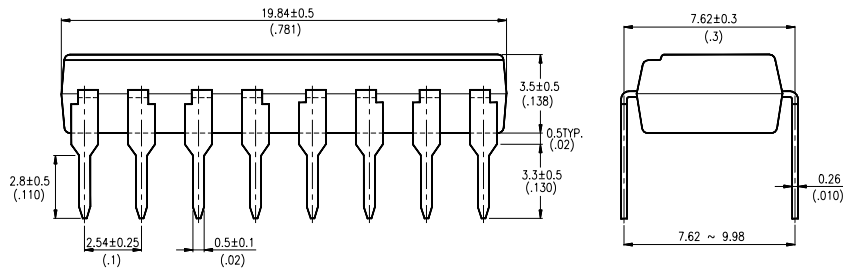
Applications

1. Programmable controllers, computers.
2. System appliances, measuring instruments.
3. Signal transmission between circuits of different potentials and impedances.

Package Dimensions



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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-816 LTV-816M LTV-816S LTV-816S-TA LTV-816S-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 approved • TUV approved • CSA approved • FIMKO approved • NEMKO approved • SEMKO approved • DEMKO approved	LTV-816
LTV-826 LTV-826M LTV-826S LTV-826S-TA LTV-826S-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-826
LTV-846 LTV-846M LTV-846S	16-pin DIP 16-pin (leads with 0.4" spacing) 16-pin (lead bends for surface mount)		LTV-846
LTV816-V LTV816M-V LTV816S-V LTV816STA-V LTV816STA1-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-816
LTV826-V LTV826M-V LTV826S-V LTV826STA-V LTV826STA1-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-826
LTV846-V LTV846M-V LTV846S-V	16-pin DIP 16-pin (leads with 0.4" spacing) 16-pin (lead bends for surface mount)		LTV-846

Absolute Maximum Ratings

(Ta=25°C)

Parameter		Symbol	Rating	Unit
Input	Forward Current	I _F	50	mA
	Reverse Voltage	V _R	6	V
	Power Dissipation	P	70	mW
Output	Collector-Emitter Voltage	V _{CEO}	80	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
*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	—	1.2	1.4	V	I _F =20mA
	Reverse Current	I _R	—	—	10	μA	V _R =4V
	Terminal Capacitance	C _t	—	30	250	pF	V=0, f=1KHz
Output	Collector Dark Current	I _{CEO}	—	—	100	nA	V _{CE} =20V
	Collector-Emitter Breakdown Voltage	BV _{CEO}	80	—	—	V	I _C =0.1mA
	Emitter-Collector Breakdown Voltage	BV _{ECO}	6	—	—	V	I _E =10 μA
Transfer Characteristics	Collector Current	I _C	2.5	—	30	mA	I _F =5mA V _{CE} =5V
	*Current Transfer Ratio	CTR	50	—	600	%	
	Collector-emitter Saturation Voltage	V _{CE(sat)}	—	0.1	0.2	V	I _F =20mA, 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	pF	V=0, f=1MHz
	Cut-off Frequency	f _c	—	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

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

■ Supplement

Rank Table of Current Transfer Ratio CTR

Model No.	Rank Mark	CTR(%)
LTV-816	L	50~100
LTV-816	A	80~160
LTV-816	B	130~260
LTV-816	C	200~400
LTV-816	D	300~600
LTV-816	L or A or B or C or D	50~600
Conditions		I _F =5mA V _{CE} =5V Ta=25°C

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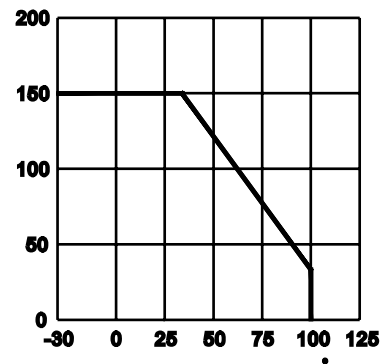
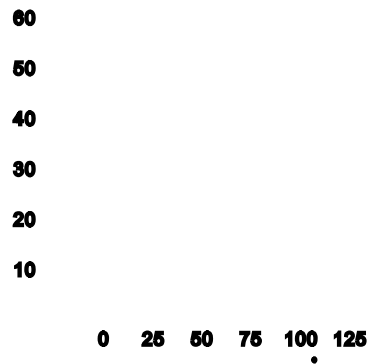
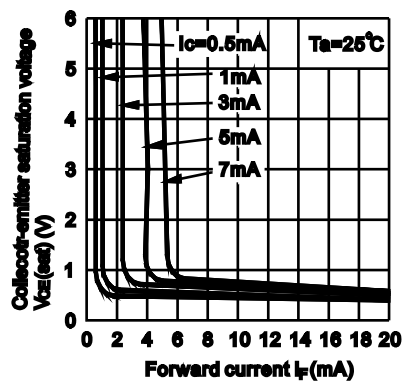


Fig.3 Collector-emitter Saturation Voltage vs. Forward Current



Voltage

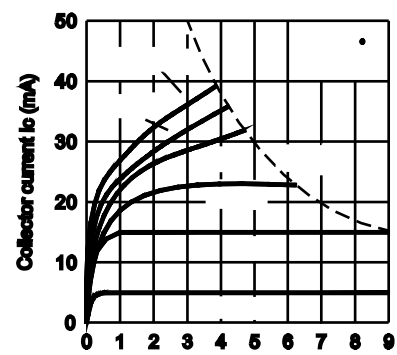
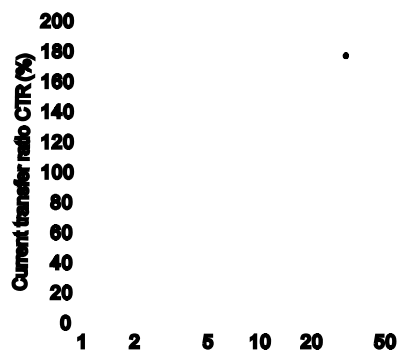
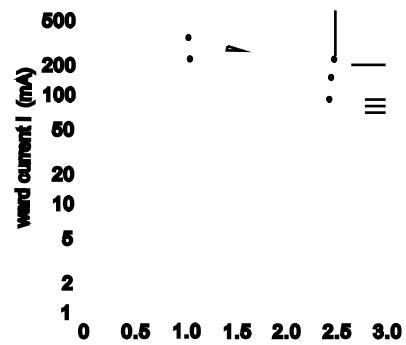


Fig.7 Relative Current Transfer Ratio vs. Ambient Temperature

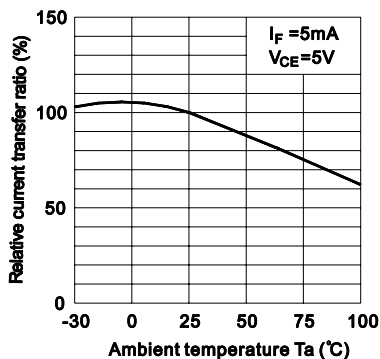


Fig.8 Collector-emitter Saturation Voltage vs. Ambient Temperature

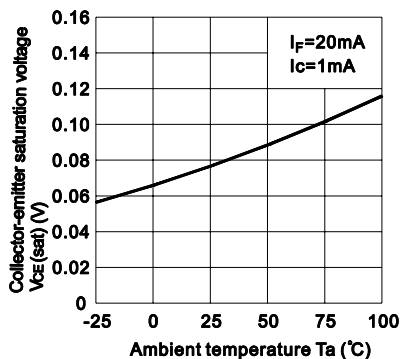


Fig.9 Collector Dark Current vs. Ambient Temperature

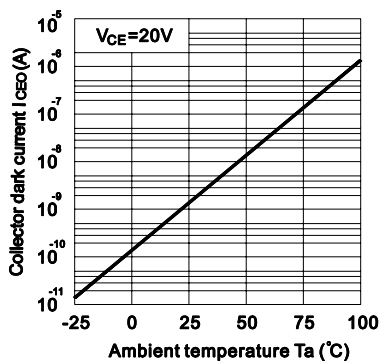


Fig.10 Response Time vs. Load Resistance

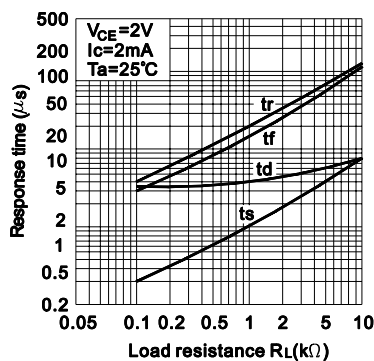
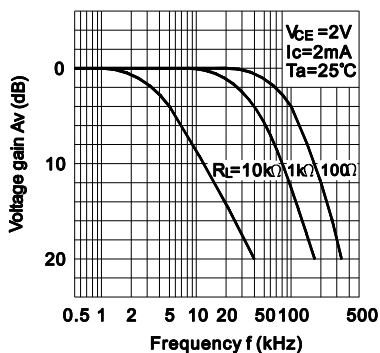
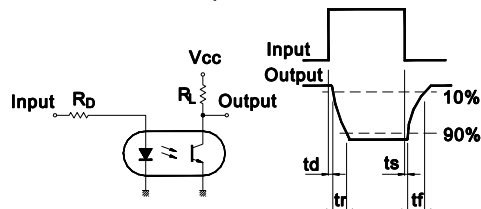


Fig.11 Frequency Response



Test Circuit for Response Time



Test Circuit for Frequency Response

