High Density Mounting Type Photocoupler

LTV-816 Series

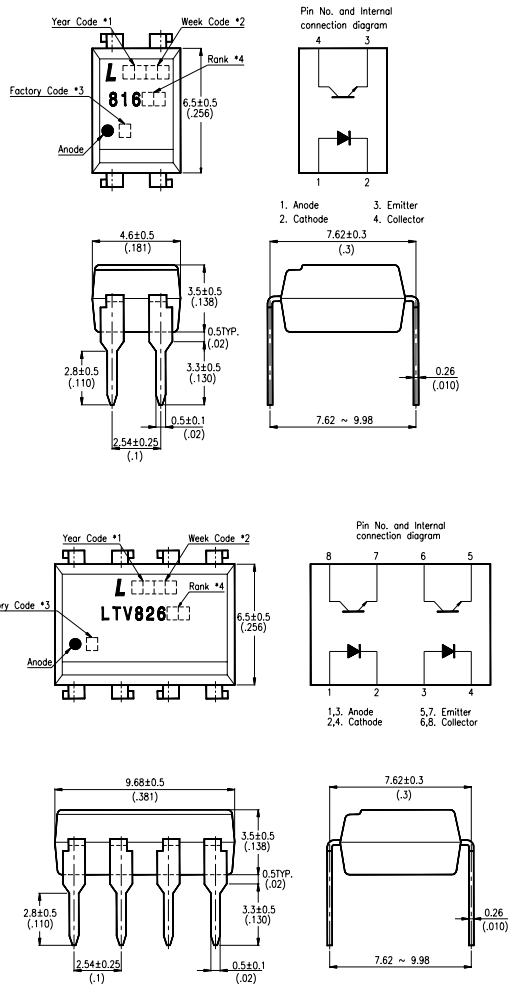
Features

- 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-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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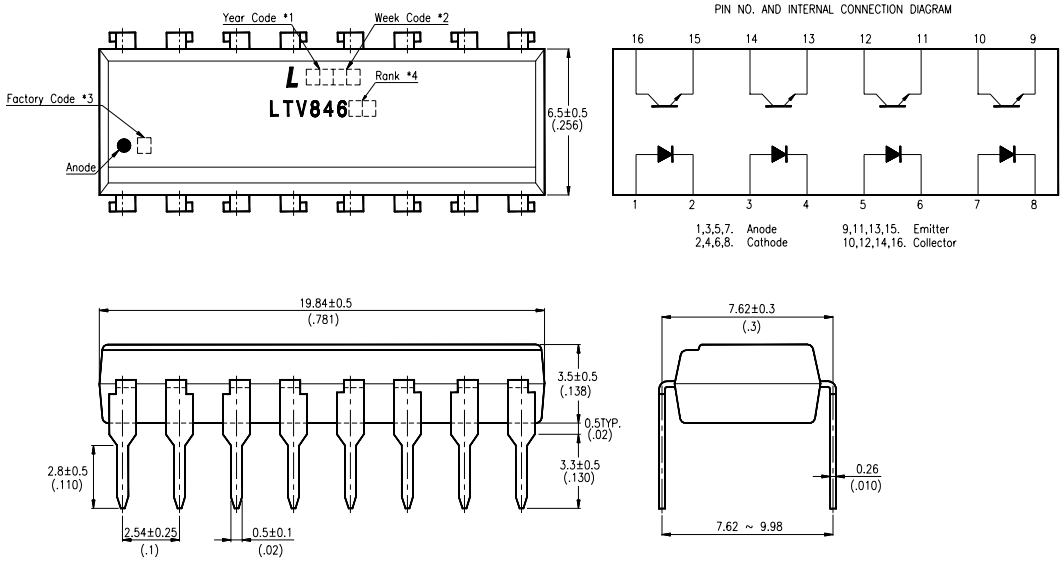


Note:

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 ± 0.25mm (.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)	• VDE approved	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℃)

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	℃
Storage Temperature		T_{stg}	-55~+125	℃
*2.Soldering Temperature		T_{sol}	260	℃

*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 volttage shall be a sine wave.

*2. For 10 seconds.

Electrical/Optical Characteristics

(Ta=25℃)

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 μ A
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℃

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

Fig.1 Forword Current vs. Ambient Temperatute

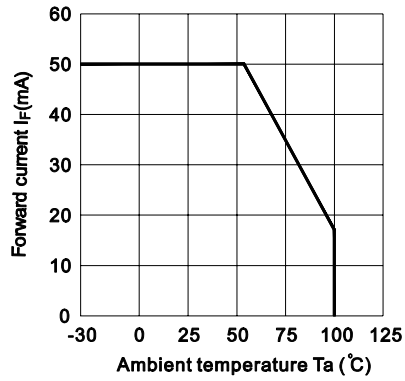


Fig.2 Collector Power Dissipation vs. Ambient Temperature

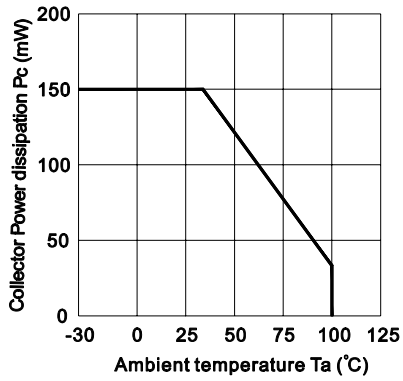


Fig.3 Collector-emitter Saturation Voltage vs. Forward Current

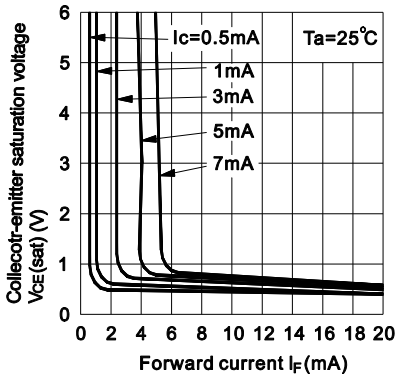


Fig.4 Forward Current vs. Forward Voltage

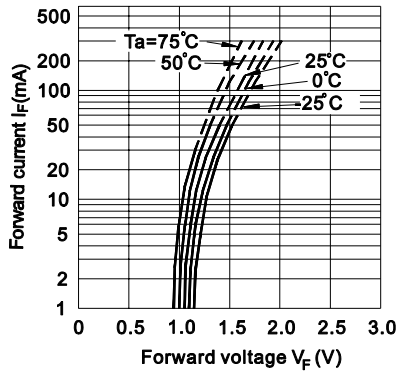


Fig.5 Current Transfer Ratio vs. Forward Current

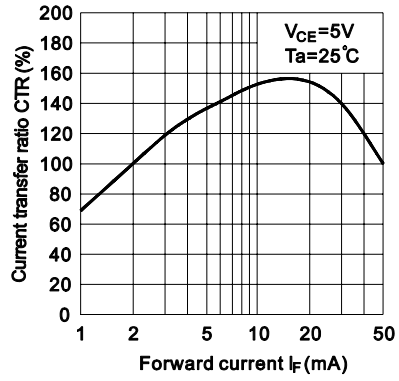


Fig.6 Collector Current vs. Collector-emitter Voltage

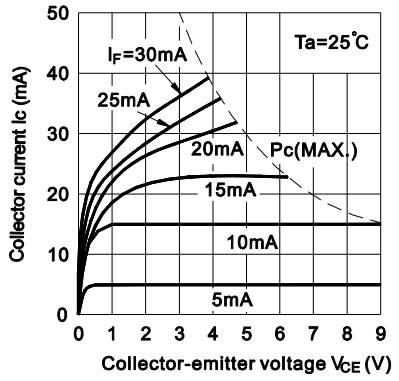


Fig.7 Relative Current Transfer Ratio vs. Ambient Temperature

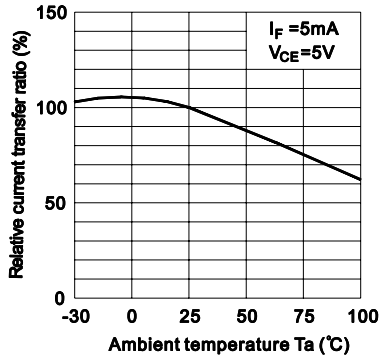


Fig.8 Collector-emitter Saturation Voltage vs. Ambient Temperature

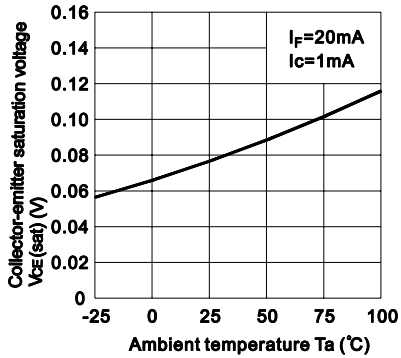


Fig.9 Collector Dark Current vs. Ambient Temperature

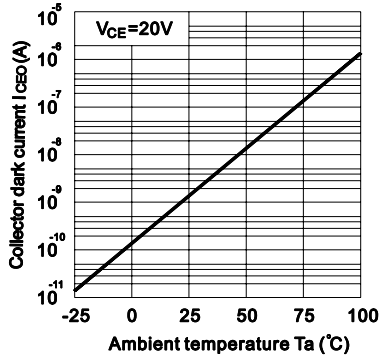


Fig.10 Response Time vs. Load Resistance

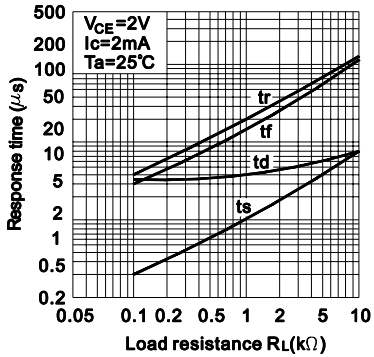
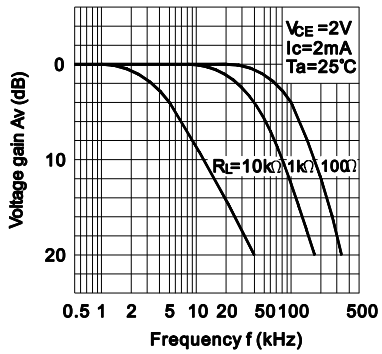
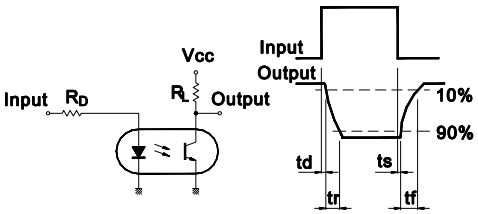


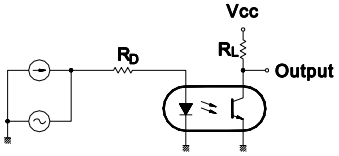
Fig.11 Frequency Response



Test Circuit for Response Time



Test Circuit for Frequency Response



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