



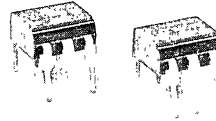
High Transfer Efficiency, General Purpose Type Photocoupler LTV4N32/LTV4N33

FEATURES

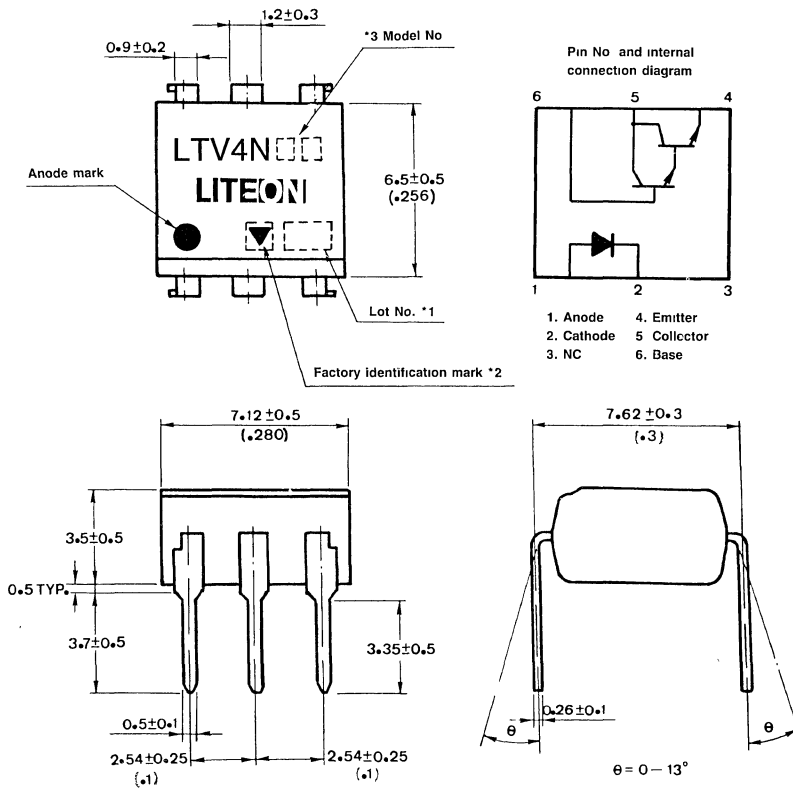
1. High current transfer ratio
LTV4N32, LTV4N33
(CTR:MIN. 500% at $I_F = 10\text{mA}$, $V_{CE} = 10\text{V}$)
2. Response time t_{ON} :MAX. $5\mu\text{s}$ at $I_F = 200\text{mA}$
 $V_{CC} = 10\text{V}$, $I_C = 50\text{mA}$
3. UL approved (No E113898 (S))

APPLICATIONS

1. I/O interfaces for computers
2. System appliances, measuring instruments
3. Signal transmission between circuits of different potentials and impedances



OUTLINE DIMENSIONS (UNIT: mm)



*1 2-digit number marked according to DIN standard
*2 Factory identification mark shall be or shall not be marked

*3 Model No.
LTV4N32
LTV4N33

■ RATINGS AND CHARACTERISTICS

• Absolute maximum ratings

(T_a = 25°C)

Parameter		Symbol	Rating	Unit
Input	Forward current	I _F	80	mA
	*1 Peak forward current	I _{FM}	3	A
	Reverse voltage	V _R	6	V
	Power dissipation	P	150	mW
Output	Collector-emitter voltage	V _{CEO}	30	V
	Collector-base voltage	V _{CBO}	30	V
	Emitter-collector voltage	V _{ECO}	5	V
	Collector current	I _C	100	mA
	Collector power dissipation	P _C	150	mW
Total power dissipation		P _{tot}	250	mW
* 2 Isolation voltage	LTV4N32	V _{ISO}	2500	V _{rms}
	LTV4N33		1500	
Operating temperature		T _{opr}	-55 ~ +100	°C
Storage temperature		T _{stg}	-55 ~ +150	°C
* 3 Soldering temperature		T _{sol}	260	°C

*1 Pulse width ≤ 1 μs Duty ratio 0.001

*2 AC for 1 minute 40 ~ 60% R.H.;

*3 For 10 seconds

• Electro-optical characteristics

(Ta = 25°C)

Parameter		Symbol	Min.	Typ.	Max.	Unit	Conditions
Input	Forward voltage	V_F	—	1.2	1.5	V	$I_F = 10\text{mA}$
	Reverse current	I_R	—	—	10	μA	$V_R = 4\text{V}$
	Terminal capacitance	C_t	—	50	—	pF	$V = 0, f = 1\text{ kHz}$
Output	Collector dark current	I_{CEO}	—	—	100	nA	$V_{CE} = 10\text{V}, I_F = 0$
	Collector-emitter breakdown voltage	BV_{CEO}	30	—	—	V	$I_C = 0.1\text{mA}$ $I_F = 0$
	Emitter-collector breakdown voltage	BV_{ECO}	5	—	—	V	$I_E = 10\mu\text{A}$ $I_F = 0$
	Collector-base breakdown voltage	BV_{CBO}	30	—	—	V	$I_C = 0.1\text{mA}$ $I_F = 0$
Transfer characteristics	*1 Collector current	I_C	50	—	—	mA	$I_F = 10\text{mA}$ $V_{CE} = 10\text{V}$
	Collector-emitter saturation voltage	$V_{CE(\text{sat})}$	—	—	1.0	V	$I_F = 8\text{mA}$ $I_C = 2\text{mA}$
	Isolation resistance	R_{iso}	5×10^{10}	1×10^{11}	—	Ω	DC500V 40 ~ 60% R.H.
	Floating capacitance	C_f	—	1.0	—	pF	$V = 0, f = 1\text{MHz}$
	Response time (Turn-on time)	t_{on}	—	—	5	μs	$I_F = 200\text{mA}$ ($t_w \approx 1.0\text{ms}$) $V_{CC} = 10\text{V}$ $I_C = 50\text{mA}$
	Response time (Turn-off time)	t_{off}	—	—	100	μs	

*1 Pulse test: Input pulse width = $300\mu\text{s}$ Duty ratio ≤ 0.02 , $\text{CTR} = \frac{I_C}{I_F} \times 100\%$

■ SUPPLEMENT

• Isolation voltage shall be measured in 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 a zero-cross circuit shall be used.
- (3) The waveform of applied voltage shall be a sine wave.

• Inspection standard

Outgoing inspection standard for LITON products are shown below.

- (1) A single sampling plan, normal inspection level II based on MIL-STD-105D is applied. The AQL according to the inspection items are shown below.

Defect	Inspection item	AQL(%)	Judgement criterion
Major defect	<ul style="list-style-type: none"> • Electrical characteristics • Unreadable marking • Open,short 	0.25	Depend on the specification
Minor defect	<ul style="list-style-type: none"> • Appearance • Dimension 	0.4	

Fig. 1 Forward Current vs. Ambient Temperature

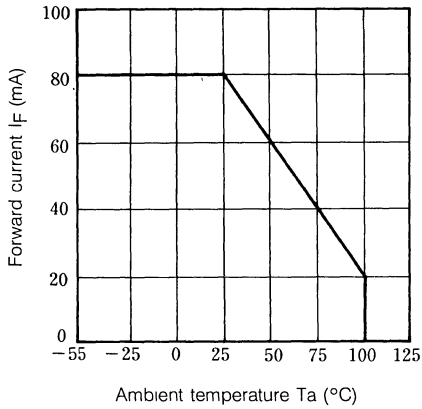


Fig. 2 Collector Power Dissipation vs. Ambient Temperature

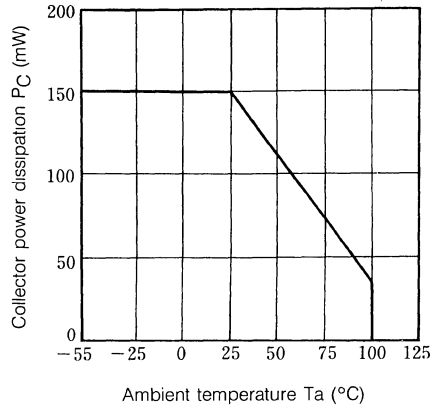


Fig. 3 Forward Current vs. Forward Voltage

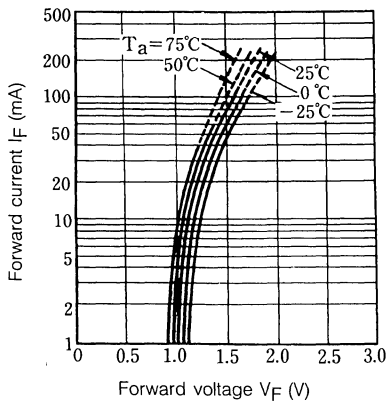


Fig. 4 Current Transfer Ratio vs. Forward Current

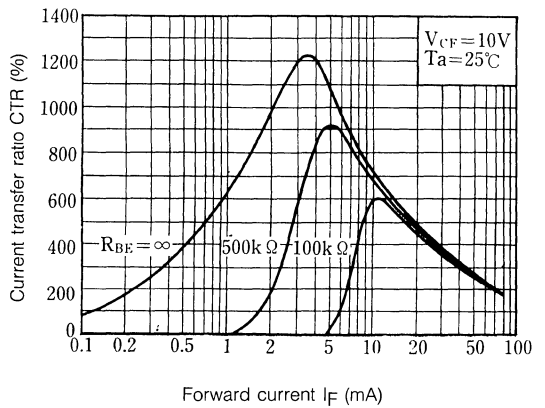


Fig. 5 Collector Current vs. Collector-emitter Voltage

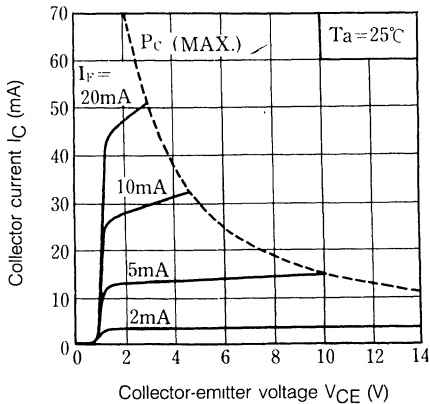


Fig. 6 Relative Current Transfer Ratio vs. Ambient Temperature

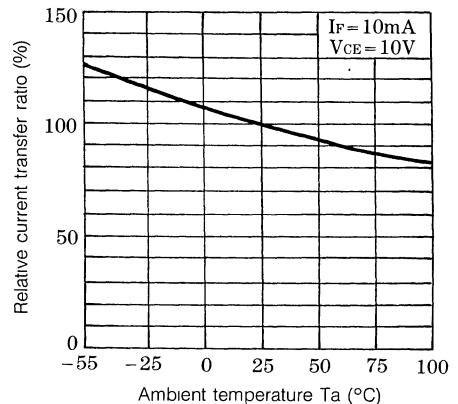


Fig. 7 Collector-emitter Saturation Voltage vs. Ambient Temperature

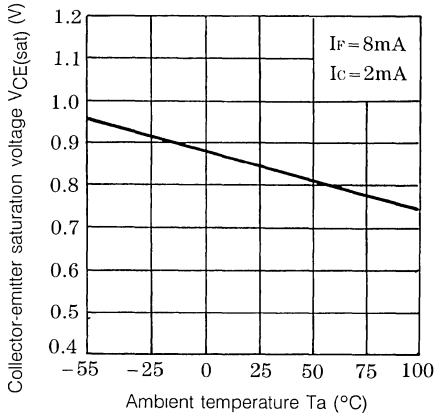


Fig. 8 Collector Dark Current vs. Ambient Temperature

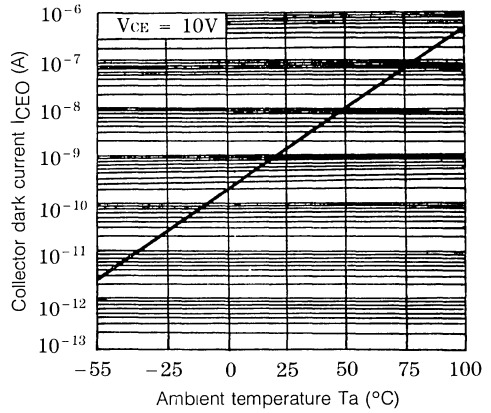


Fig. 9 Frequency Response

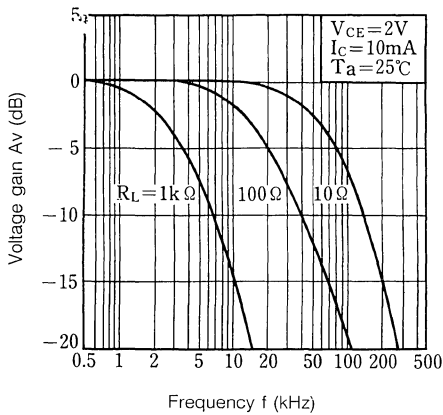


Fig. 10 Collector-emitter Saturation Voltage vs. Forward Current

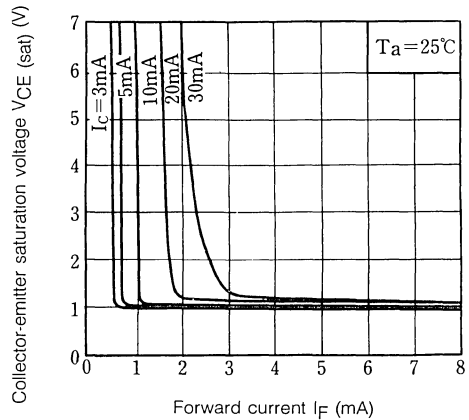


Fig.11 Test Circuit for Response Time

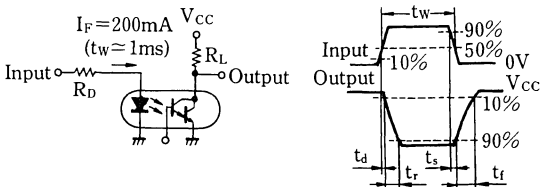


Fig. 12 Test Circuit for Frequency Response

