



General Purpose Type Photocoupler

LTV4N35/LTV4N37

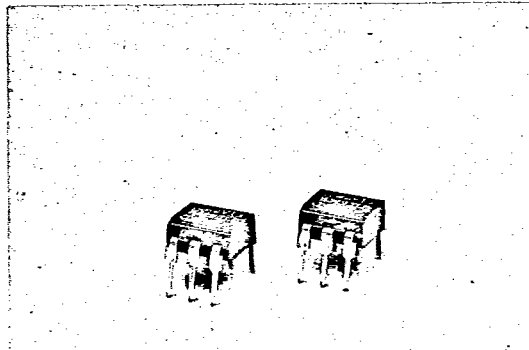
T-41-83

■ FEATURES

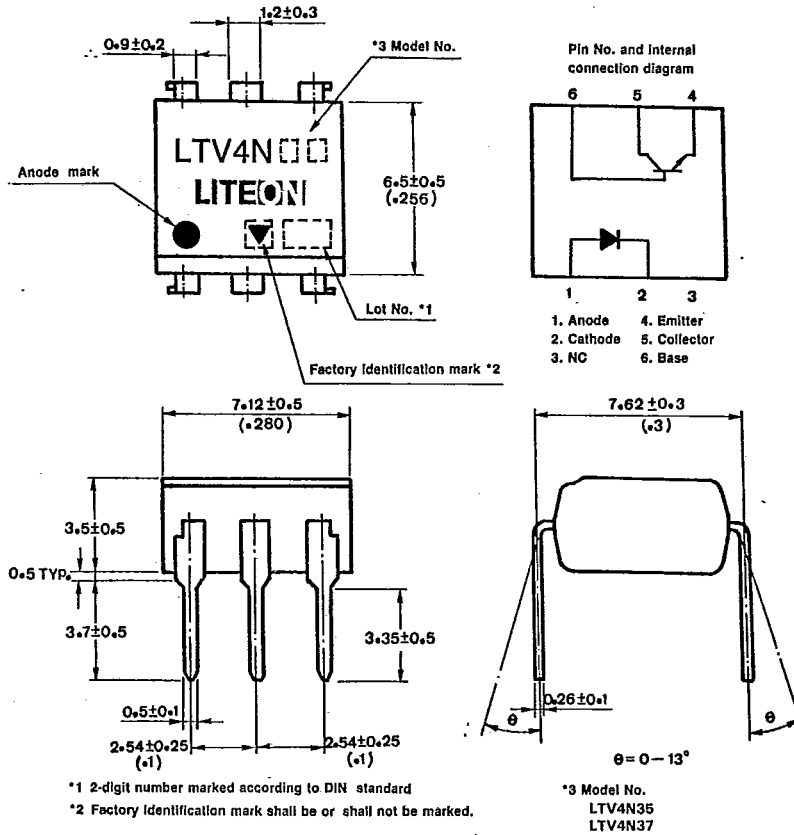
1. High current transfer ratio
(CTR; MIN. 100% at $I_F = 10\text{mA}$, $V_{CE} = 10\text{V}$)
2. Response time
 t_{on} ; TYP. $3\mu\text{s}$ at $V_{CC} = 10\text{V}$, $I_C = 2\text{mA}$, $R_L = 100\Omega$
3. Input-output isolation voltage: LTV4N35 (V_{iso} : 3,550Vrms)
LTV4N37 (V_{iso} : 1,500Vrms)
4. 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)





■ RATINGS AND CHARACTERISTICS

• Absolute maximum ratings

(Ta=25°C)

Parameter		Symbol	Rating	Unit
Input	Forward current	I_F	60	mA
	*1 Peak forward current	I_{FM}	3	A
	Reverse voltage	V_R	6	V
	Power dissipation	P	100	mW
Output	Collector-emitter voltage	V_{CEO}	30	V
	Collector-base voltage	V_{CBO}	70	V
	Emitter-collector voltage	V_{ECO}	7	V
	Collector current	I_C	100	mA
	Collector power dissipation	P_C	300	mW
Total power dissipation		P_{tot}	350	mW
* 2 Isolation voltage	LTV4N35	V_{iso}	3,550	V_{rms}
	LTV4N37		1,500	
Operating temperature		T_{opr}	-55 ~ +100	°C
Storage temperature		T_{stg}	-55 ~ +150	°C
* 3 Soldering temperature		T_{sol}	260	°C

*1 Pulse width $\leq 1 \mu s$, Duty ratio: 0.001

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

*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 = 10mA	
	Reverse current	I _R	—	—	10	μA	V _R = 4V	
	Terminal capacitance	C _t	—	50	—	pF	V = 0, f = 1 MHz	
Output	Collector dark current	I _{CEO}	Ta = 25°C	—	—	50	nA	V _{CE} = 10V,
			Ta = 100°C	—	—	500	μA	V _{CE} = 30V
	Collector-emitter breakdown voltage	BV _{CEO}	30	—	—	V	I _C = 0.1mA I _F = 0	
	Emitter-collector breakdown voltage	BV _{ECO}	7	—	—	V	I _E = 10μA I _F = 0	
Collector-base breakdown voltage	BV _{CBO}	70	—	—	V	I _C = 0.1mA I _F = 0		
Transfer characteristics	*1 Collector Current	I _C	Ta = 25°C	10	—	—	mA	I _F = 10mA V _{CE} = 10V
			Ta = -55°C	4	—	—		
			Ta = 100°C	4	—	—		
	Collector-emitter saturation voltage	V _{CE(sat)}	—	—	0.3	V	I _F = 50mA I _C = 2mA	
	Isolation resistance	R _{iso}	5 × 10 ¹⁰	1 × 10 ¹¹	—	Ω	DC500V, 40 ~ 60% R.H.	
	Floating capacitance	C _f	—	1.0	2.5	pF	V = 0, f = 1MHz	
	Response time (Turn-on time)	t _{on}	—	3	10	μs	V _{CC} = 10V R _{BE} = ∞ R _L = 100Ω I _C = 2mA	
	Response time (Turn-off time)	t _{off}	—	3	10	μs		

*1 Pulse test: Input pulse width = 300μs Duty ratio ≤ 0.02, 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 zero-cross circuit shall be used.
- (3) The waveform of applied voltage shall be a sine wave.

• Inspection standard

Incoming 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

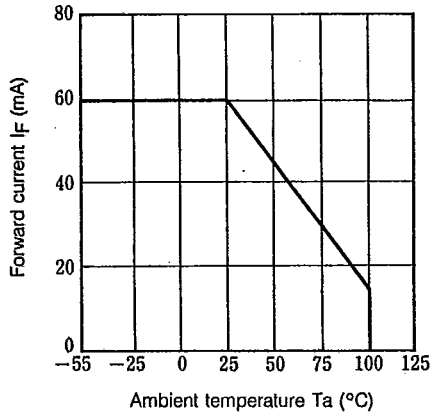


Fig. 2 Collector Power Dissipation vs. Ambient Temperature

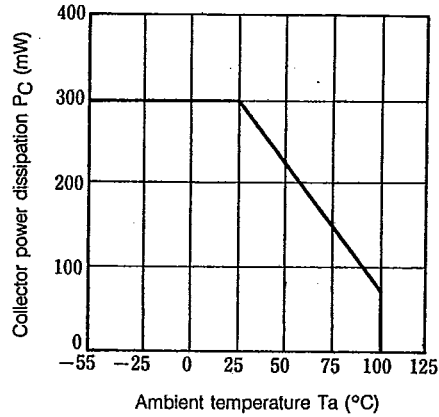


Fig. 3 Forward Current vs. Forward Voltage

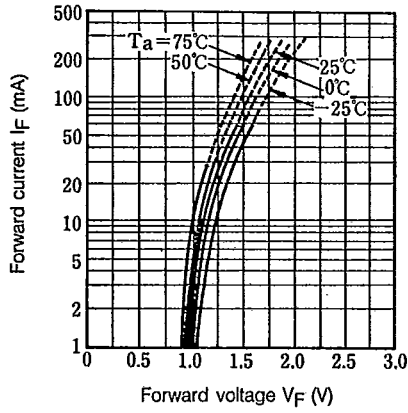


Fig. 4 Current Transfer Ratio vs. Forward Current

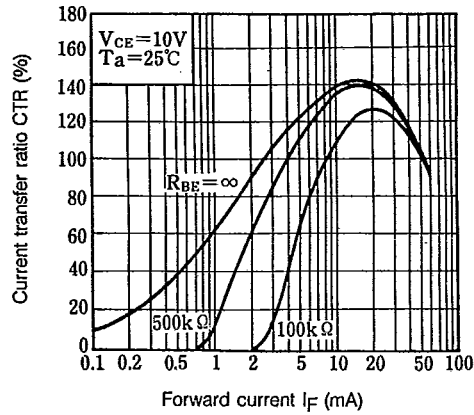


Fig. 5 Collector Current vs. Collector-emitter Voltage

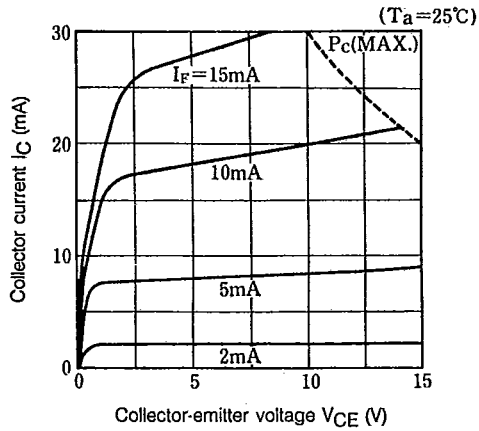


Fig. 6 Relative Current Transfer Ratio vs. Ambient Temperature

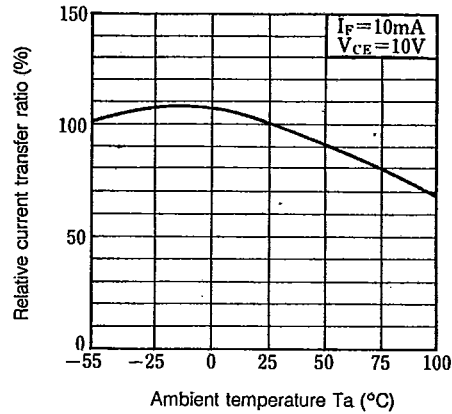




Fig. 7 Collector-emitter Saturation Voltage vs. Ambient Temperature

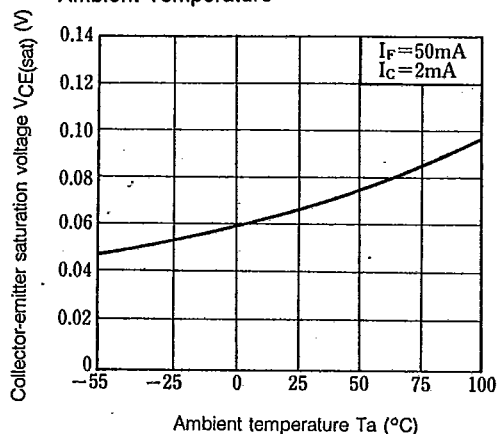


Fig. 8 Collector Dark Current vs. Ambient Temperature

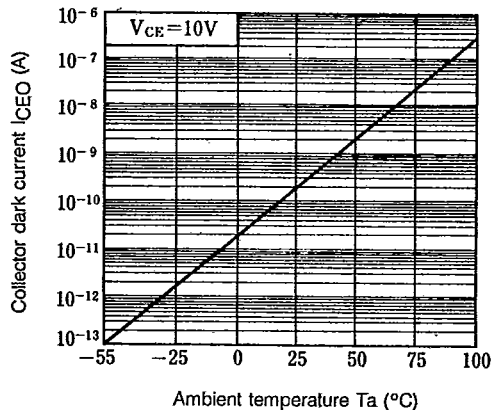


Fig. 9 Response Time vs. Load Resistance

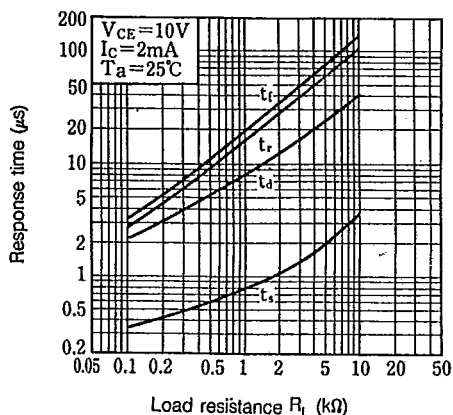


Fig. 10 Frequency Response

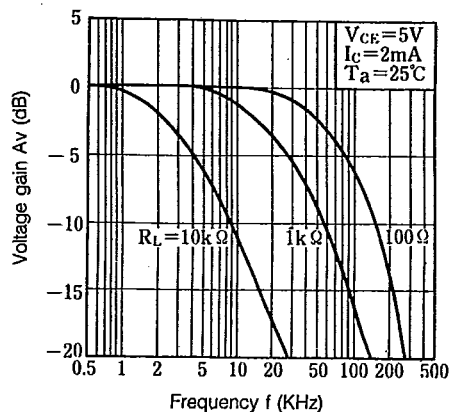
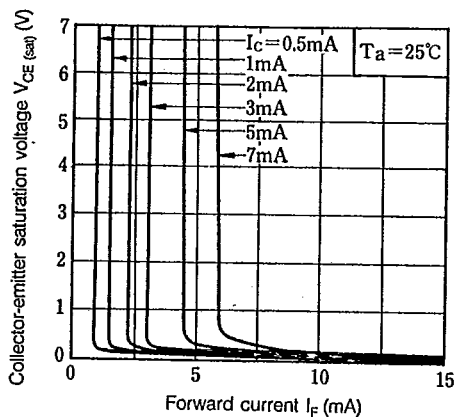
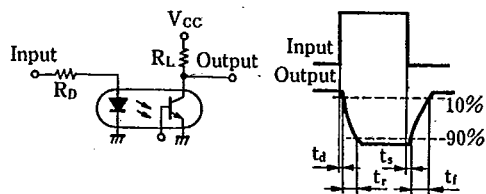


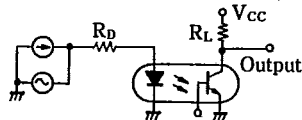
Fig. 11 Collector-emitter Saturation Voltage vs. Forward current



Test Circuit for Response Time



Test Circuit for Frequency Response



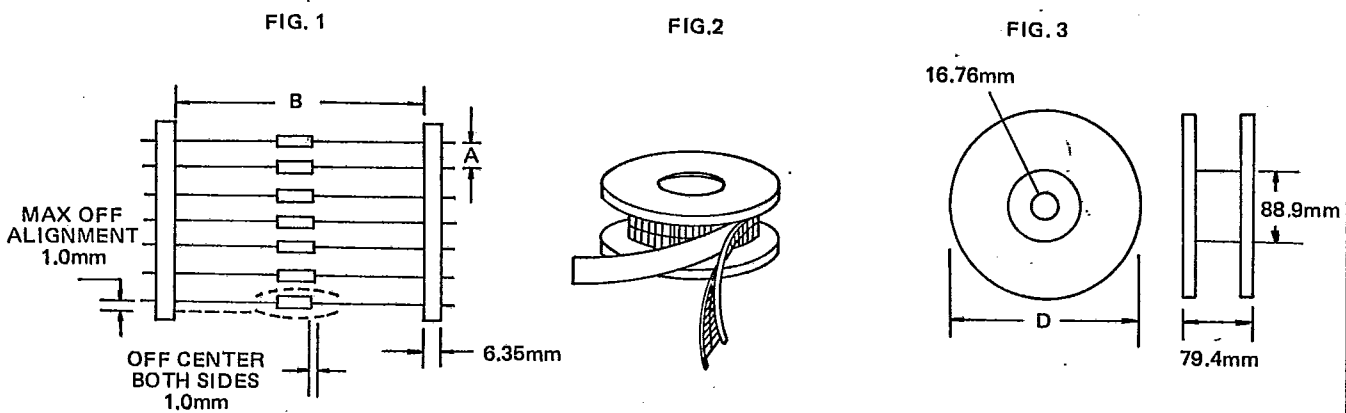
PACKAGING

T-90-20

Reel Packaging (Axial Lead Units)

DEVICE TYPE	COMPONENT SPACE (MM) "A"	TAPE SPACE (MM) "B"	REEL DIA (MM) "D"	QUANTITY (EA)		CARTON	
				REEL	CARTON	SIZE (MM)	WEIGHT (KG)
DO-41 DO-41L	5±0.5	52.4±1.5	326~336	5000	20K	355 x 355 x 355	10.5
DO-201AD	10±0.5	52.4±1.5	326~336	1200	4.8K	355 x 355 x 355	9.0
P6(Aleg)	10±0.5	52.4±1.5	326~336	700	2.8K	355 x 355 x 355	8.8

The C dimension of Fig. 3 is between 3.17m.m. and 635mm greater than the length of the component involved.

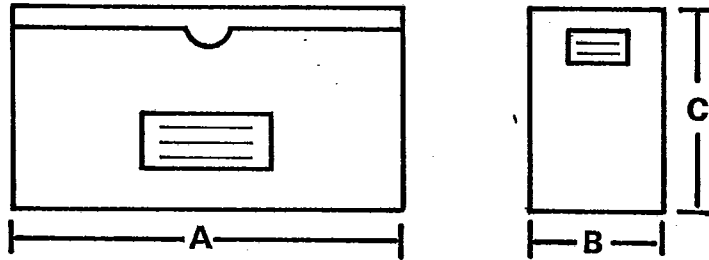


Bulk Packaging (Axial Lead Devices and Bridge Rectifiers)

DEVICE TYPE	PACKAGING SIZE (MM)		QUANTITY (EA)		APPROX GROSS WEIGHT (KG)	
	BOX	CARTON	BOX	CARTON	BOX	CARTON
DO-41 DO-41L	196 x 84 x 20	450 x 210 x 250	1000	50K	0.38	20
DO-201AD	305 x 93 x 59	355 x 355 x 355	1000	20K	1.35	28
P6(Aleg)	305 x 93 x 59	355 x 355 x 355	500	10K	1.2	24.5
PBM	357 x 125 x 60	530 x 360 x 340	1000	20K	1.5	32.3
PBDF	495 x 155 x 145	500 x 325 x 305	5000	20K	5.1	21.5
PBP	357 x 125 x 60	530 x 360 x 340	500	10K	1.5	31.5
PBL	375 x 220 x 155	470 x 385 x 455	1000	5K	5.7	30.5
PBPC-6	357 x 125 x 60	560 x 360 x 340	250	5K	1.1	22
PBPC-8	357 x 125 x 60	560 x 360 x 340	250	5K	1.7	35
KBPC	375 x 220 x 365	470 x 390 x 385	500	1K	15.1	31.5
KBPC-W	375 x 220 x 365	470 x 390 x 385	500	1K	14.5	30.0

AMMO BOX PACKAGING

BOX SIZE



Unit:m. m.

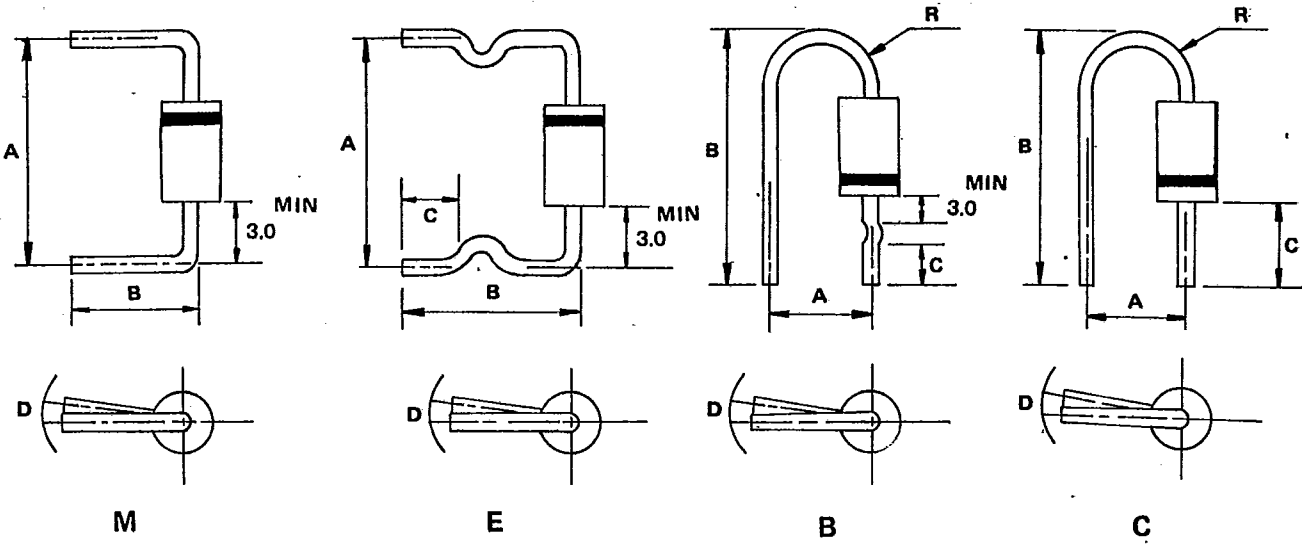
Packaging	Products Outline	Dimension *A*	Dimension *B*	Dimension *C*	Q'ty per BOX
26MM Horizontal Ammo Pack	DO-41	255	50	95	3K
	DO-41L(0.6mm Lead)				3K
52MM Horizontal Ammo Pack	DO-41and DO-41L	250	75	92	3K
	DO 201AD				0.8K

CARTON SIZE

Unit:m. m.

Packaging	Products Outline	length	Width	High	Q'ty Per Carton
26MM Horizontal Ammo Pack	DO-41	330	310	268	42K
	DO-41L(0.6mm Lead)				
52MM Horizontal Ammo Pack	DO-41and DO-41L	355	355	340	48K
	DO 201AD				12K

PREFORMED LEAD DRAWING



Case type	Preformed type	A (mm)		B (mm)		C (mm)		D (mm)		R (mm)	
		range	tolerance	range	tolerance	range	tolerance	range	tolerance	range	tolerance
D041	M	9.0-20.0	1.0	8.0-22.0	±0.5	-	-	1.5	max	-	-
	E	11.0-20.0	±1.0	11.0-16.0	±1.0	4.0-5.0	±0.5	1.5	max	-	-
	B	7.5	±0.5	19.0-22.0	±0.5	7.5	±0.5	1.5	max	2.5-4.0	Typ
	C	4.5	±0.8	18.0-19.0	±0.5	9.0	±0.5	1.5	max	2.5-4.0	Typ
D0201AD	M	15.0-20.0	±1.0	8.0-22.0	±1.0	-	-	2.0	max	-	-
	E	15.0-20.0	±1.0	10.0-22.0	±1.0	3.0-15.0	±0.5	2.0	max	-	-
P6(Aleg)	M	15.0-20.0	±1.0	8.0-22.0	±1.0	-	-	2.0	max	-	-