

LITEON**General Purpose Type Photocoupler****LTV4N35/LTV4N37**

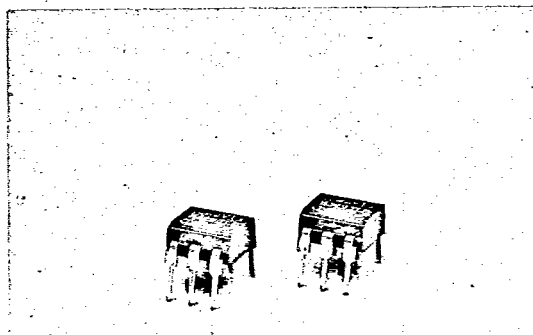
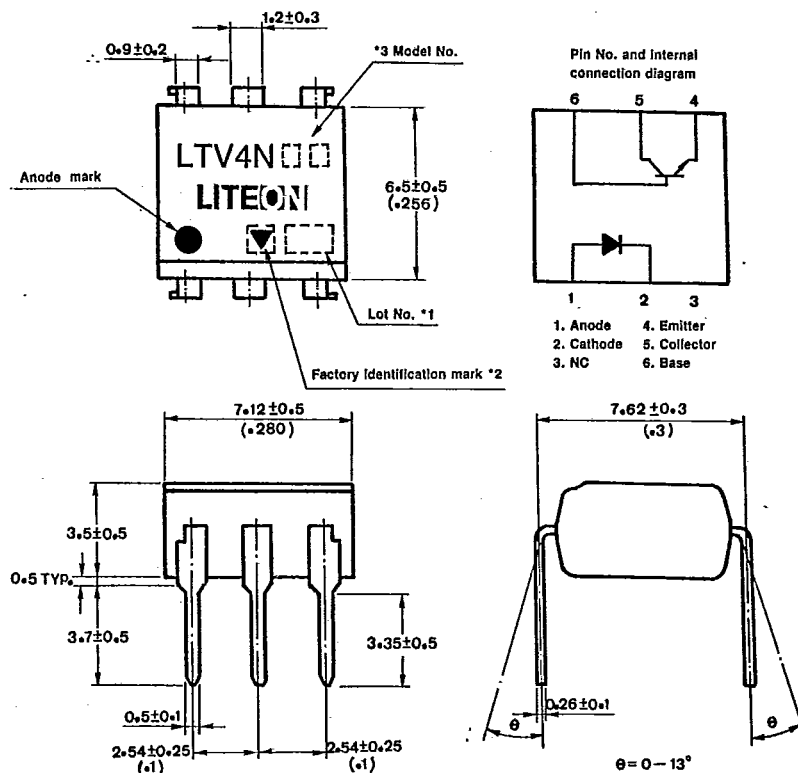
T-41-83

■ 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)**

*1 2-digit number marked according to DIN standard

*2 Factory identification mark shall be or shall not be marked.

*3 Model No.
LTV4N35
LTV4N37

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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.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	$V = 0, f = 1\text{MHz}$
Output	Collector dark current	I_{CEO}	—	—	50	nA	$V_{CE} = 10\text{V}$
			—	—	500	μA	$V_{CE} = 30\text{V}$
	Collector-emitter breakdown voltage	BV_{CEO}	30	—	—	V	$I_C = 0.1\text{mA}$ $I_F = 0$
	Emitter-collector breakdown voltage	BV_{ECO}	7	—	—	V	$I_E = 10\mu\text{A}$ $I_F = 0$
Transfer characteristics	Collector-base breakdown voltage	BV_{CBO}	70	—	—	V	$I_C = 0.1\text{mA}$ $I_F = 0$
	*1 Collector Current	I_C	10	—	—	mA	$I_F = 10\text{mA}$ $V_{CE} = 10\text{V}$
			4	—	—		
			4	—	—		
	Collector-emitter saturation voltage	$V_{CE(sat)}$	—	—	0.3	V	$I_F = 50\text{mA}$ $I_C = 2\text{mA}$
	Isolation resistance	R_{iso}	5×10^{10}	1×10^{11}	—	Ω	DC500V, 40~60% R.H.
	Floating capacitance	C_f	—	1.0	2.5	pF	$V = 0, f = 1\text{MHz}$
	Response time (Turn-on time)	t_{on}	—	3	10	μs	$V_{CC} = 10\text{V}$ $R_{BE} = \infty$ $R_L = 100\Omega$ $I_C = 2\text{mA}$
	Response time (Turn-off time)	t_{off}	—	3	10	μs	

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

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■ 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.

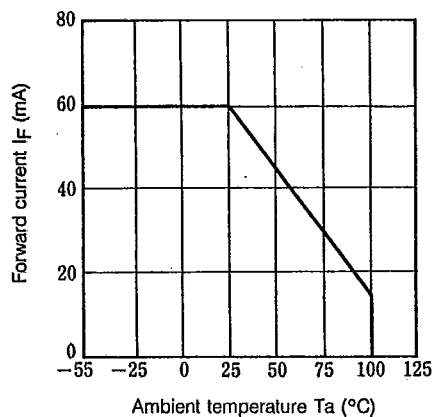
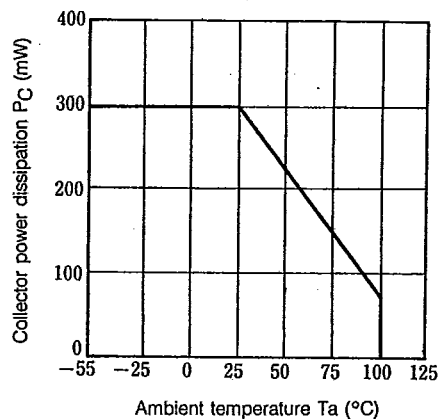
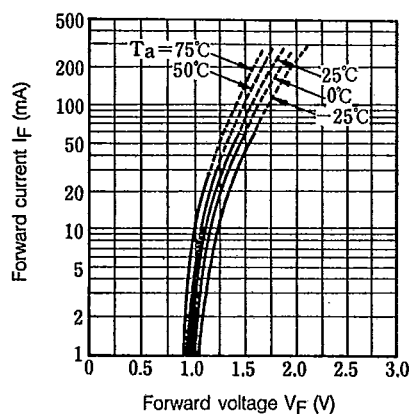
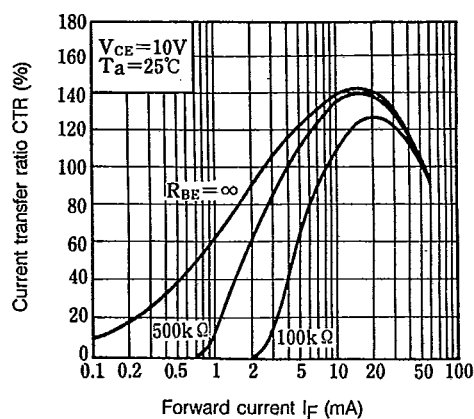
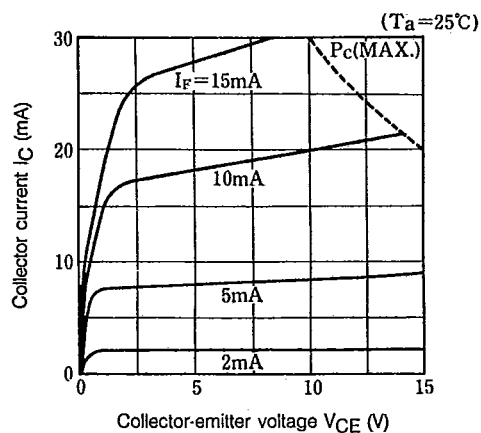
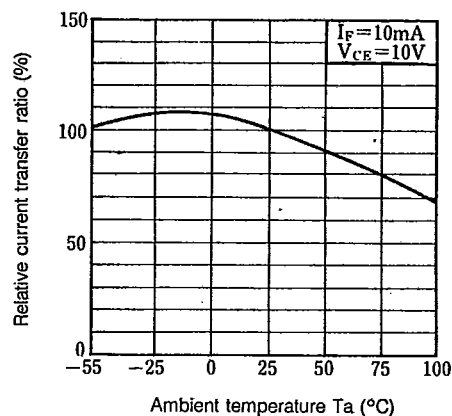
• Inspection standard

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.

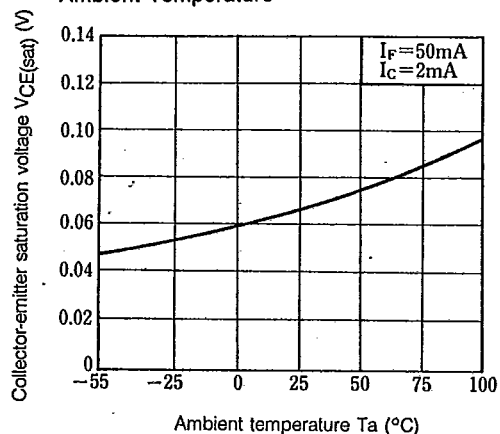
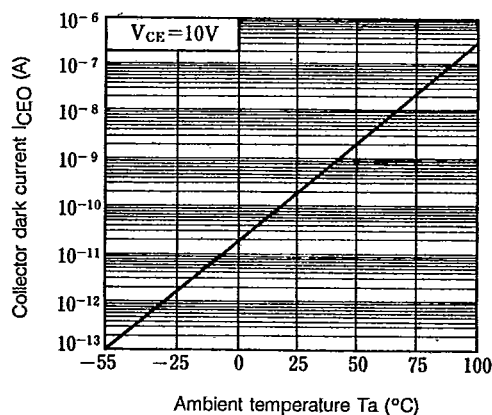
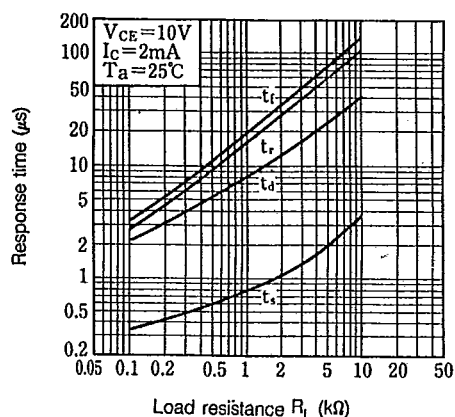
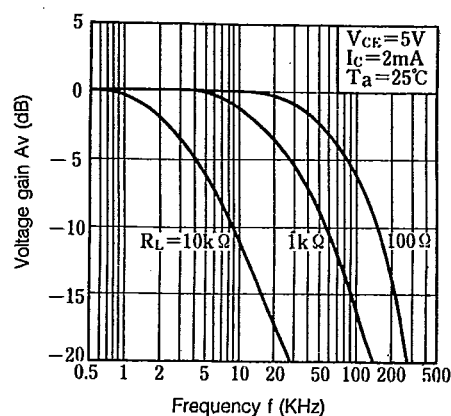
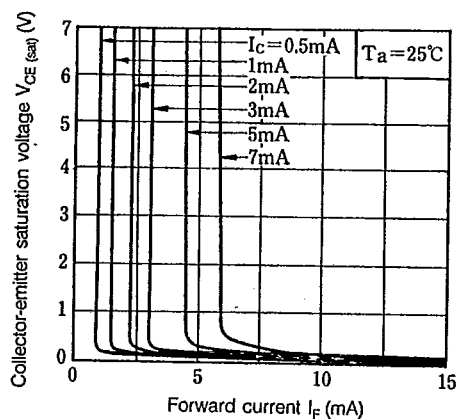
Defect	Inspection item	AQL(%)	Judgement criterion
Major defect	<ul style="list-style-type: none">• Electrical characteristics• Unreadable marking• Open short	0.25	Depend on the specification
Minor defect	<ul style="list-style-type: none">• Appearance• Dimension	0.4	

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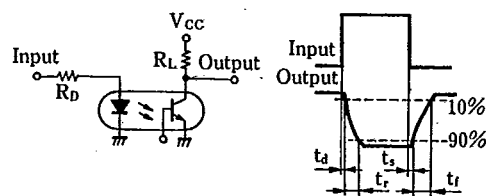
Fig. 1 Forward Current vs. Ambient Temperature**Fig. 2** Collector Power Dissipation vs. Ambient Temperature**Fig. 3** Forward Current vs. Forward Voltage**Fig. 4** Current Transfer Ratio vs. Forward Current**Fig. 5** Collector Current vs. Collector-emitter Voltage**Fig. 6** Relative Current Transfer Ratio Ambient Temperature

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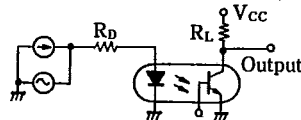
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Fig. 7 Collector-emitter Saturation Voltage vs. Ambient Temperature**Fig. 8** Collector Dark Current vs. Ambient Temperature**Fig. 9** Response Time vs. Load Resistance**Fig. 10** Frequency Response**Fig. 11** Collector-emitter Saturation Voltage vs. Forward current

Test Circuit for Response Time



Test Circuit for Frequency Response



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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 3.17mm and 635mm greater than the length of the component involved.

FIG. 1

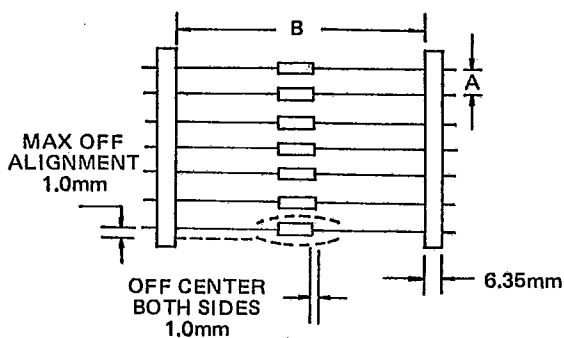


FIG. 2

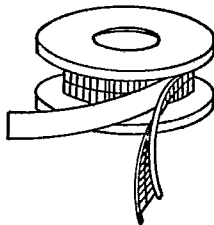
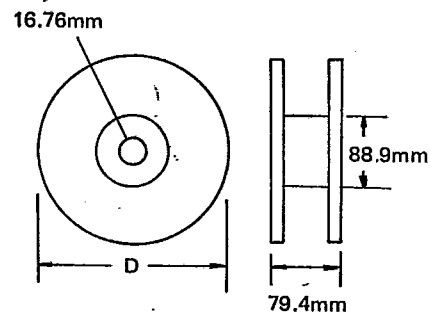


FIG. 3

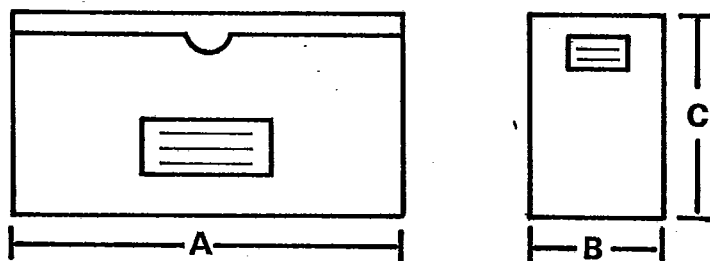


Bulk Packaging (Axial Lead Devices and Bridge Rectifiers)

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.

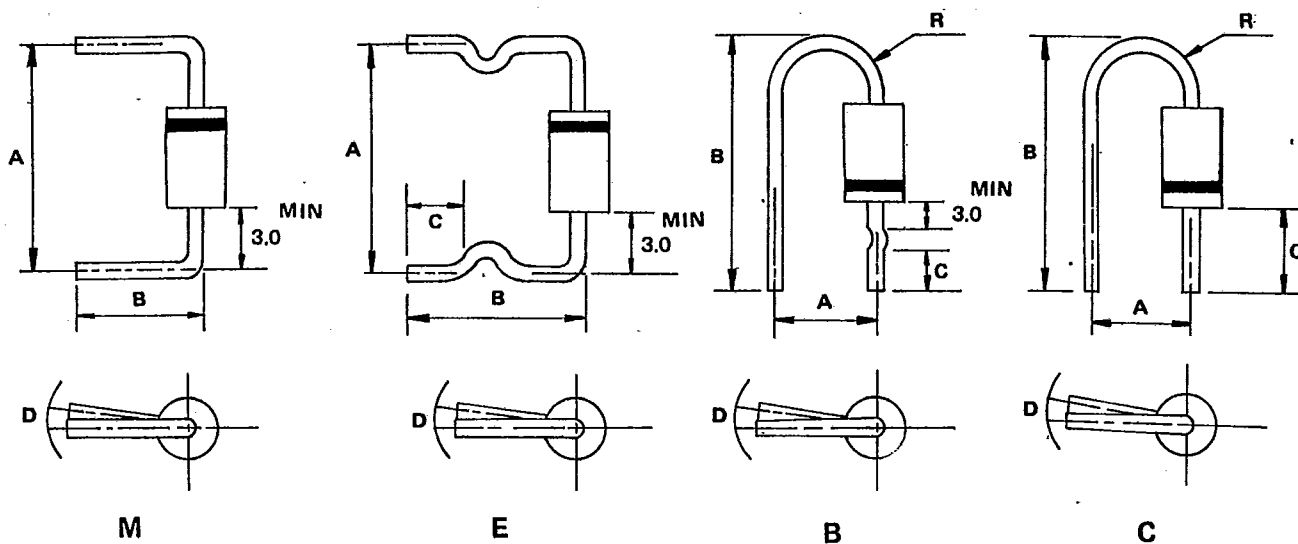
Packaging	Products Outline	Dimension *A*	Dimension *B*	Dimension *C*	Q'ty per BOX
26MM Horizontal Ammo Pack	DO-41 DO-41L(0.6mm Lead)	255	50	95	3K
					3K
52MM Horizontal Ammo Pack	DO-41and DO-41L DO 201AD	250	75	92	3K
					0.8K

CARTON SIZE

Unit:m. m.

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