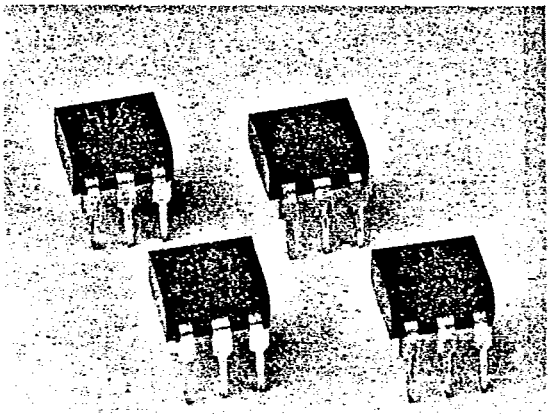
LITE-ON LED SPECIALIST

General Purpose Type Photocoupler

LTK4N25/LTK4N26/LTK4N27/LTK4N28

■ FEATURES

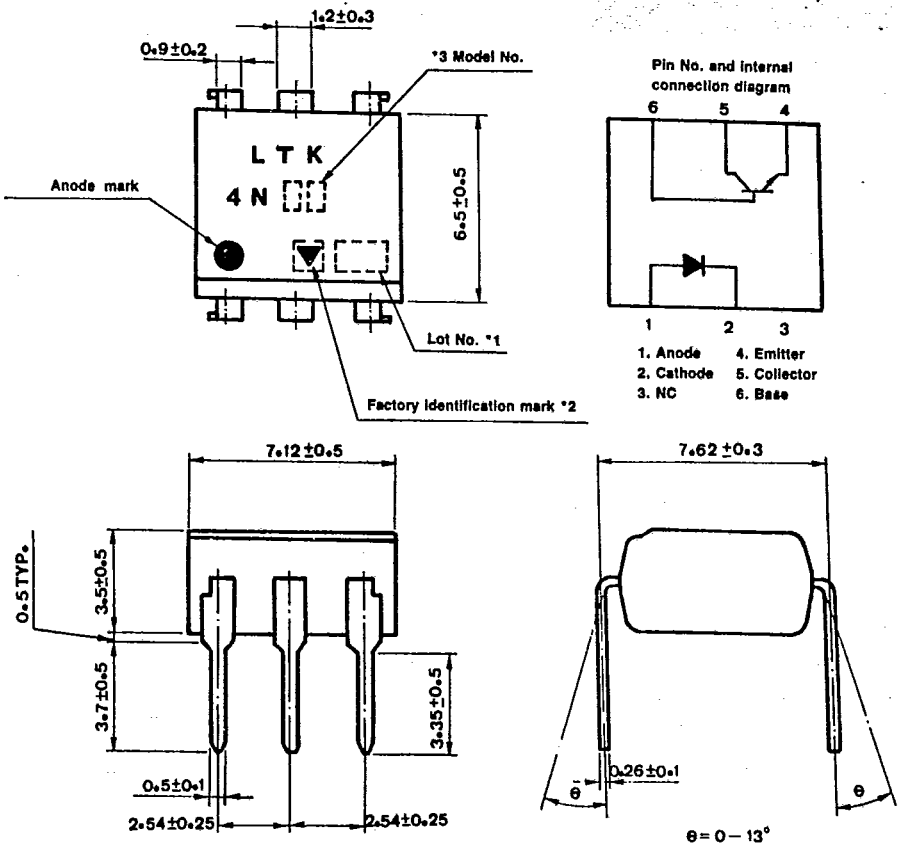
1. Response time
   tr: TYP. 3μs at V_{CE} = 10V, I_C = 2mA, R_L = 100Ω
2. UL approved (No. E113898(s))



■ 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.

* Model No.
LTK4N25
LTK4N26
LTK4N28

■ RATINGS AND CHARACTERISTICS

• Absolute maximum ratings

(Ta=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}	70	V
	Emitter-collector voltage		V_{ECO}	7	V
	Collector current		I_C	100	mA
	Collector power dissipation		P_C	150	mW
Total power dissipation			P_{tot}	250	mW
*2 Isolation voltage		LTK4N25	V_{iso}	2,500	V_{rms}
		LTK4N26		1,500	
		LTK4N27		1,500	
		LTK4N28		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 ≤ 1μs, Duty ratio: 0.001
*2 AC for 1 minute, RH = 40 ~ 60% RH
*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=1kHz
Output	Collector dark current	LTK4N25/26/27	I_{CEO}	—	—	50	nA	V_{CE}=10V, I_F=0
		LTK4N28		—	—	100		
	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	LTK4N25/26	I_C	2	—	—	mA	I_F=10mA, V_{CE}=10V
		LTK4N27/28		1	—	—		
	Collector-emitter saturation voltage		V_{CE} (sat)	—	0.1	0.5	V	I_F=50mA, I_C=2mA
	Isolation resistance		R_{ISO}	5×10^{10}	1×10^{11}	—	Ω	DC500V, 40~60%RH
	Floating capacitance		C_f	—	1.0	—	pF	V=0, f=1MHz
	Response time (Rise)		t_r	—	3	—	μs	V_{CE}=10V, R_{BE}=∞, R_L=100Ω, I_C=2mA
	Response time (Fall)		t_f	—	3	—	μs	

*1 Pulse test: input pulse width = 300μs, Duty ratio≤0.02, CTR = $\frac{IC}{IF}\times$ 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
Major defect	• Electrical characteristics • Unreadable marking • Open, short	0.25	Depend on the specification
Minor defect	• Appearance • Dimension	0.4	

Fig. 1 Forward Current vs. Ambient Temperature

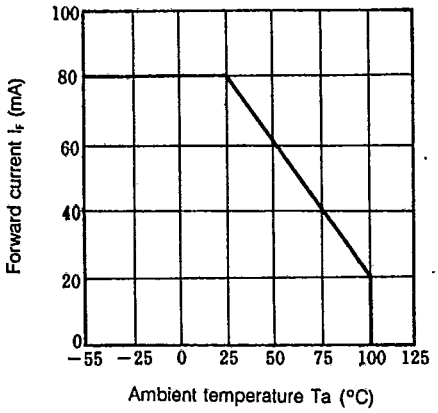


Fig. 2 Collector Power Dissipation vs. Ambient Temperature

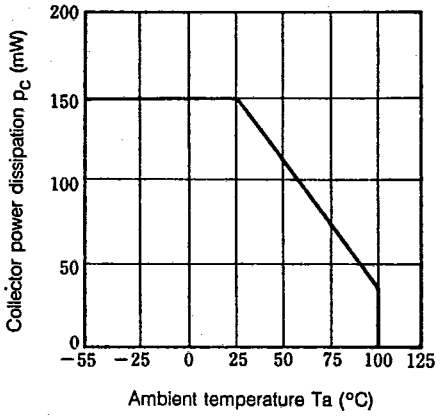


Fig. 3 Forward Current vs. Forward Voltage

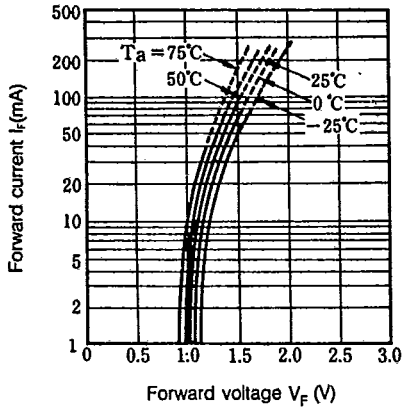


Fig. 4 Current Transfer Ratio vs. Forward Current

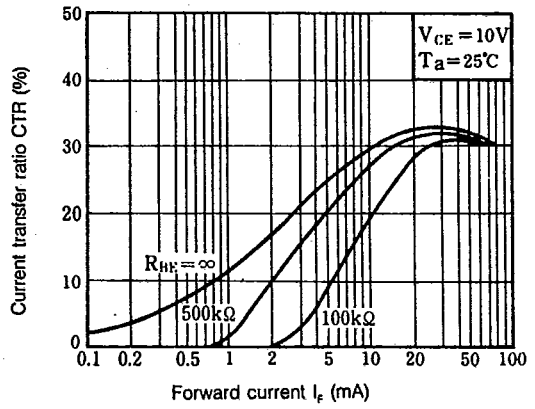


Fig. 5 Collector Current vs. Collector-emitter Voltage

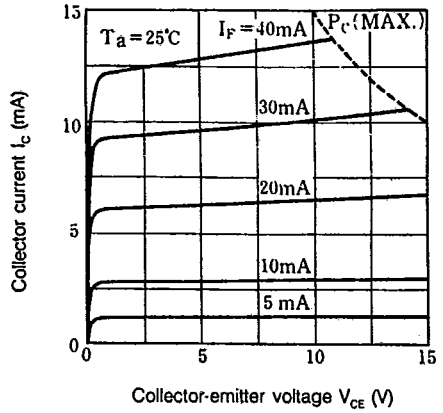


Fig. 6 Relative Current Transfer Ratio vs. Ambient Temperature

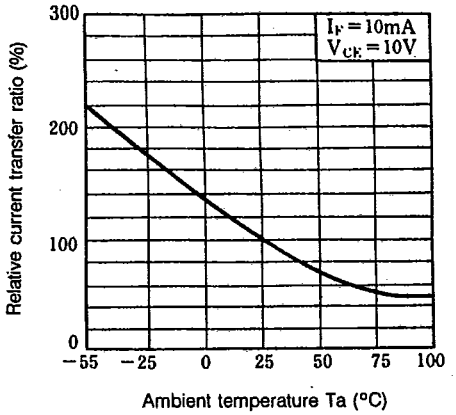


Fig. 7 Collector-emitter Saturation Voltage vs. Ambient Temperature

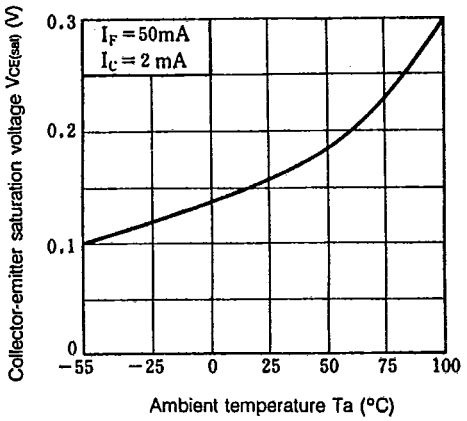


Fig. 8 Collector Dark Current vs. Ambient Temperature

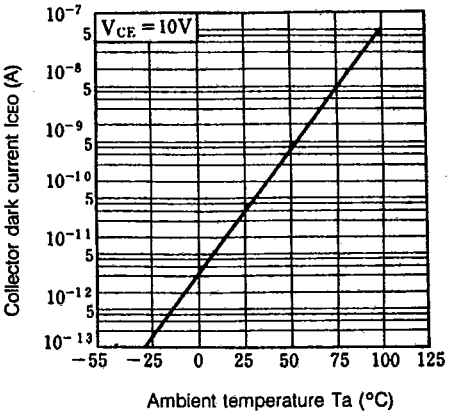


Fig. 9 Response Time vs. Load Resistance

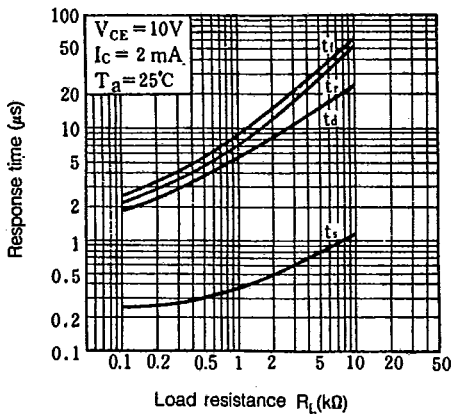


Fig. 10 Frequency Response

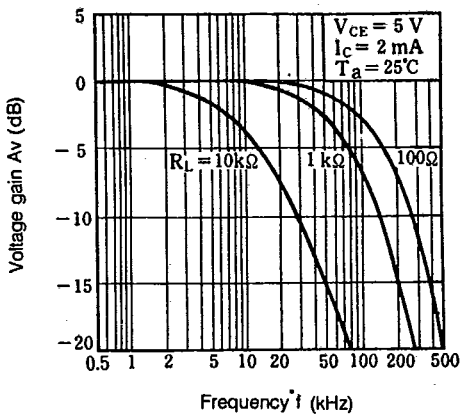
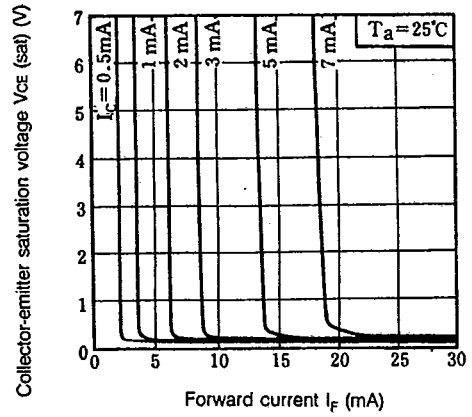
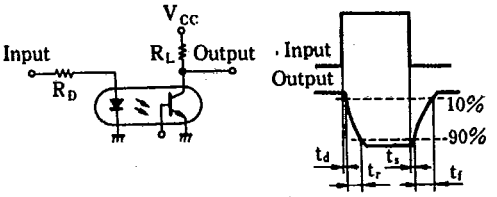


Fig. 11 Collector-emitter Saturation Voltage vs. Forward Current



Test Circuit for Response Time



Test circuit for Frequency Response