

## FEATURES

Dec.2008

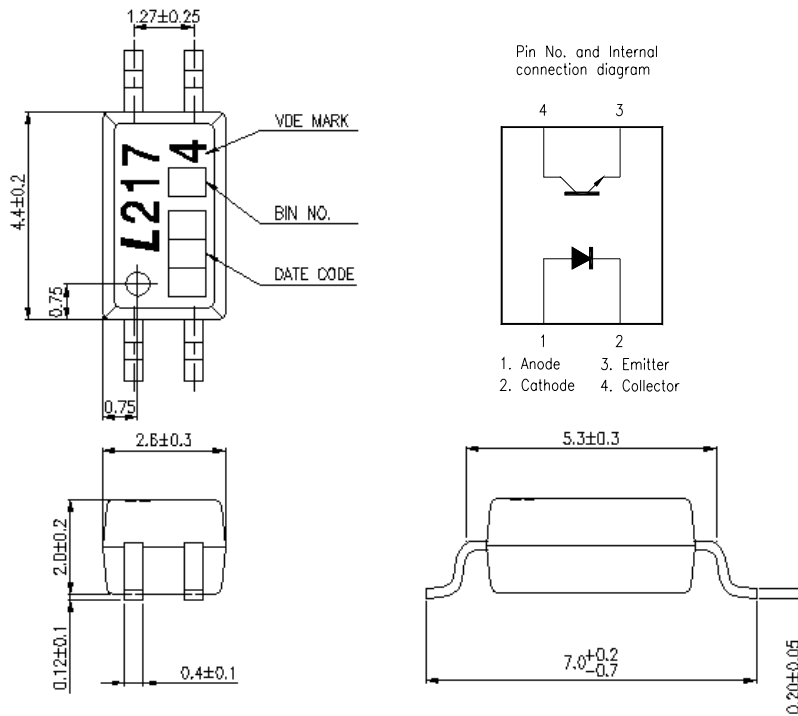
- \* Current transfer ratio  
( CTR : MIN. 50% at  $I_F = 5\text{mA}$ ,  $V_{CE} = 5\text{V}$  )
  
- \* Isolation voltage between input and output  
(  $V_{iso} = 3\text{KV}_{rms}$  )
  
- \* Compact dual-in-line package  
LTV-217: 1 channel type  
LTV-227: 2 channels type  
LTV-247: 4 channels type
  
- \* Employs double transfer mold technology
  
- \* Safety approved  
FIMKO \ VDE approved  
UL \ CUL under construction until Mar 2009.
  
- \* ROHS compliance

## Application

1. Computer terminals
2. System appliances, measurements.
3. Programmable logic controller
4. Signal transmission between circuits of different potentials and impedances.

## OUTLINE DIMENSIONS

LTV-217 :

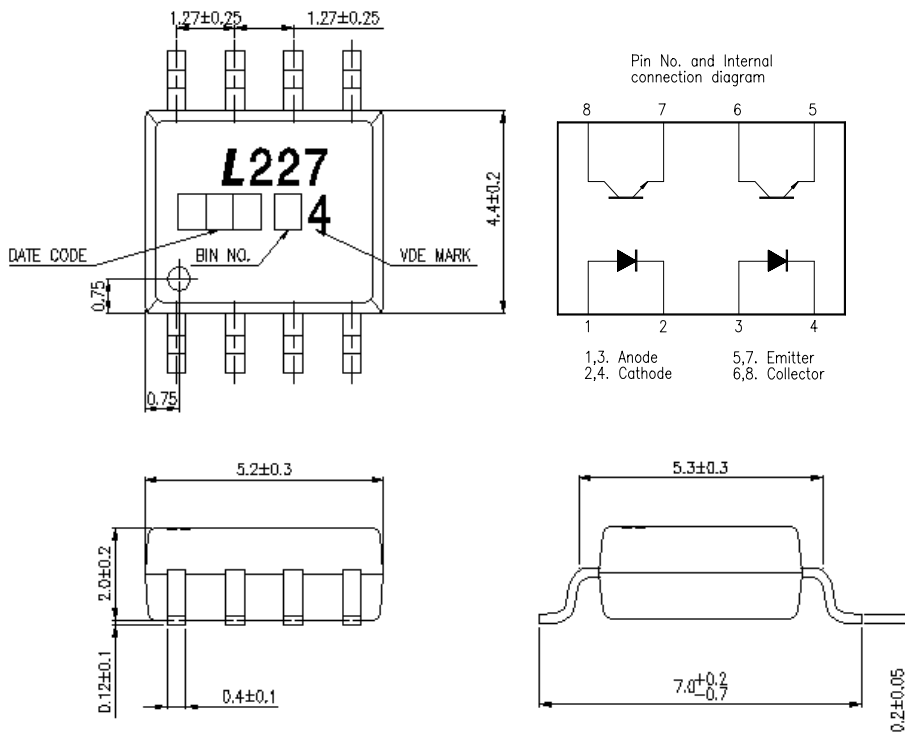


\*1. 3-digit date code.

\*2. Rank shall be or shall not be marked.

## OUTLINE DIMENSIONS

LTV-227 :

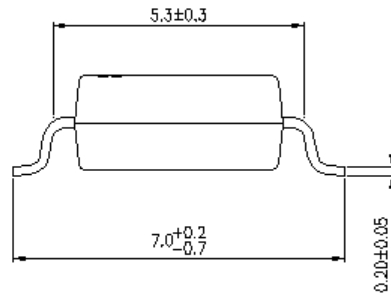
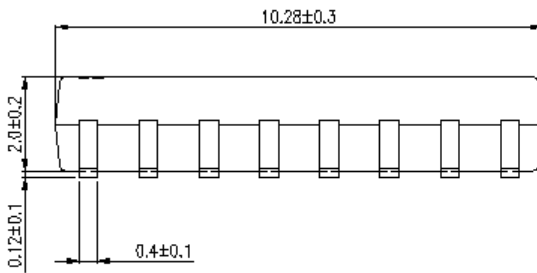
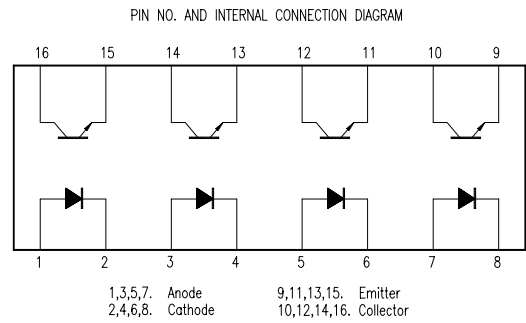
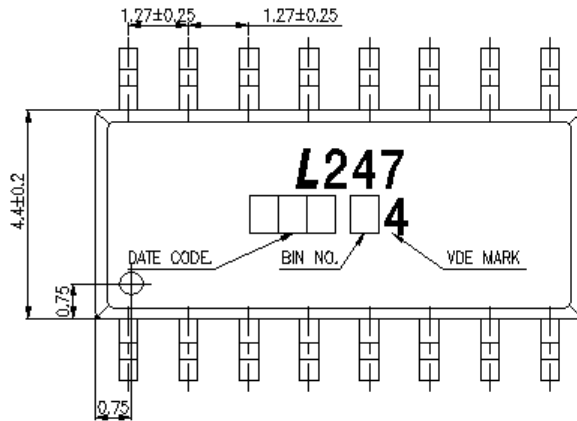


\*1. 3-digit date code.

\*2. Rank shall be or shall not be marked.

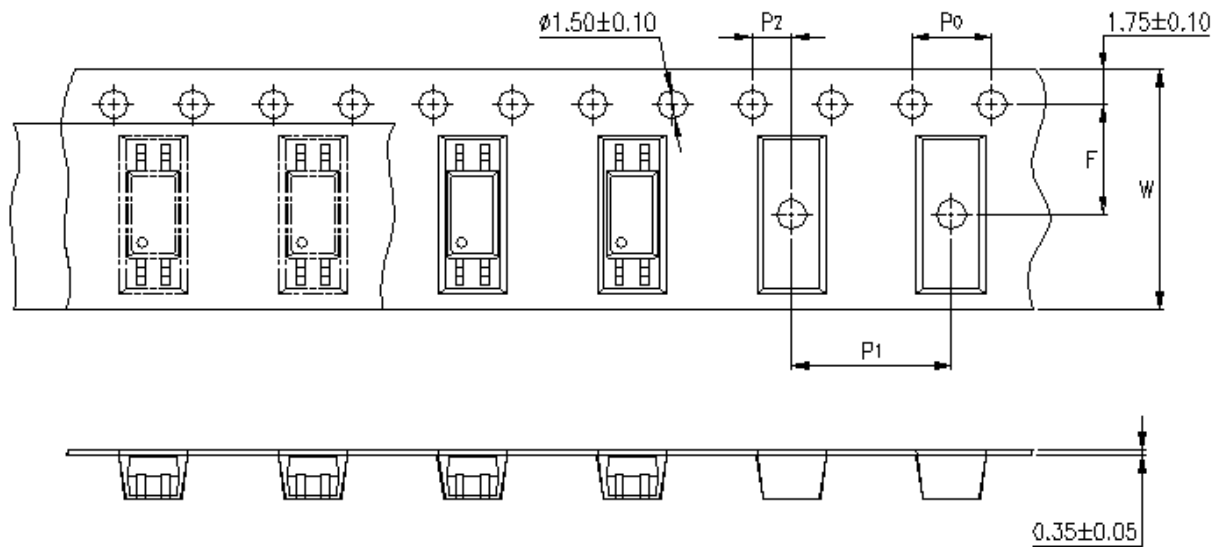
## OUTLINE DIMENSIONS

LTV-247 :



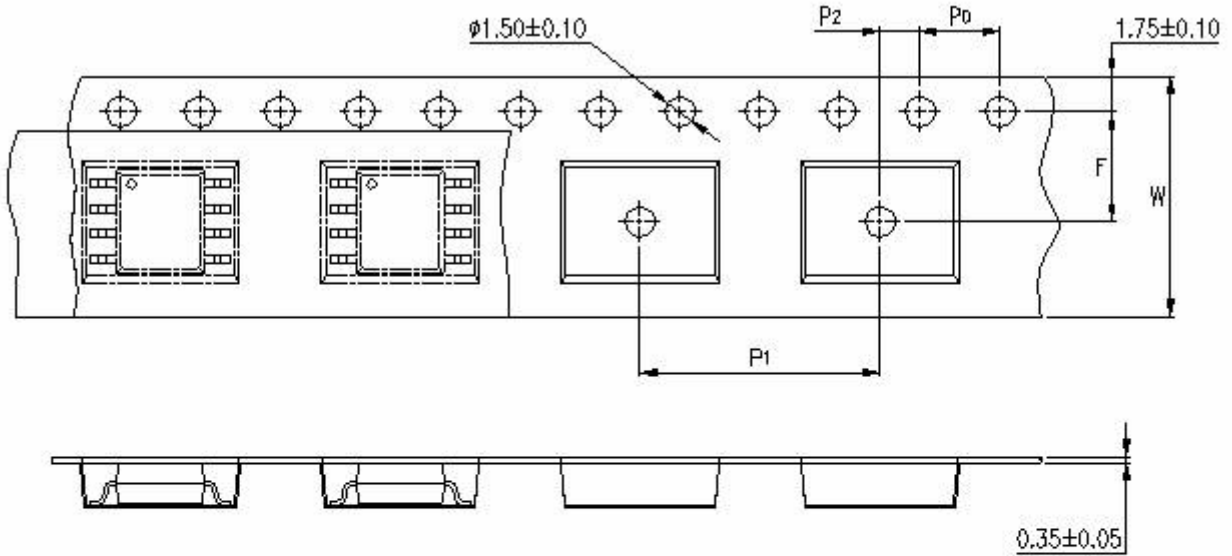
- \*1. 3-digit date code.
- \*2. Rank shall be or shall not be marked.

### TAPING DIMENSIONS



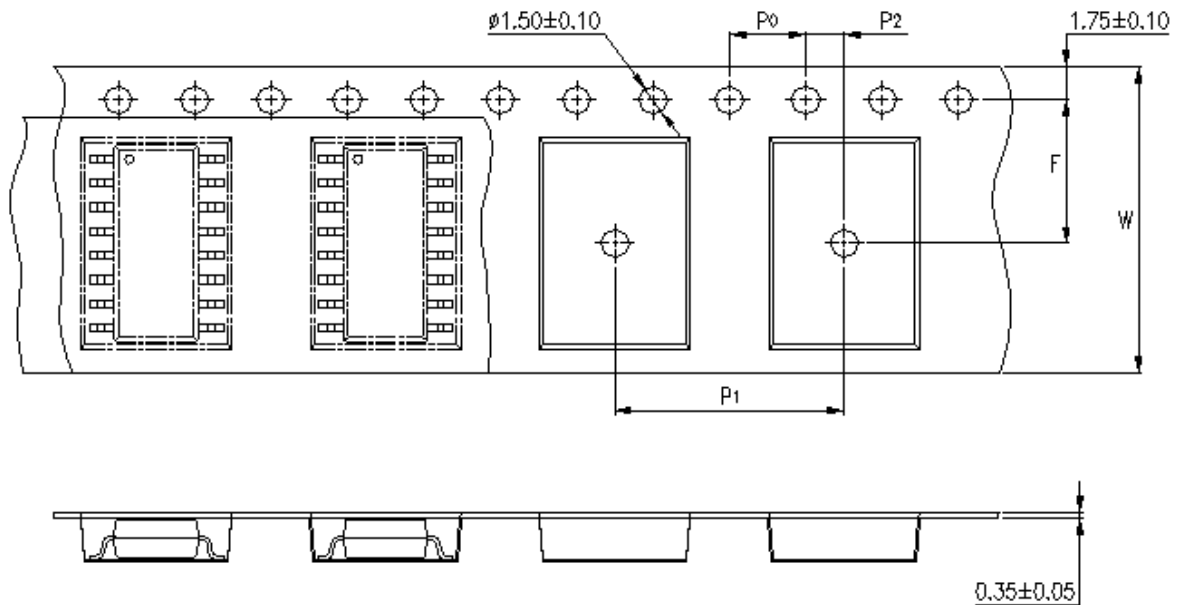
Description	Symbol	Dimension in mm (inches)
Tape wide	W	12 ± 0.3 (.47)
Pitch of sprocket holes	P <sub>0</sub>	4 ± 0.1 (.15)
Distance of compartment	F	5.5 ± 0.1 (.217)
	P <sub>2</sub>	2 ± 0.1 (.079)
Distance of compartment to compartment	P <sub>1</sub>	8 ± 0.1 (.315)

**TAPING DIMENSIONS**



Description	Symbol	Dimension in mm (inches)
Tape wide	W	12 ± 0.3 (.47)
Pitch of sprocket holes	P <sub>0</sub>	4 ± 0.1 (.15)
Distance of compartment	F P <sub>2</sub>	5.5 ± 0.1 (.217) 2 ± 0.1 (.079)
Distance of compartment to compartment	P <sub>1</sub>	12 ± 0.1 (.315)

### TAPING DIMENSIONS



Description	Symbol	Dimension in mm (inches)
Tape wide	W	16 ± 0.3 (.47)
Pitch of sprocket holes	P <sub>0</sub>	4 ± 0.1 (.15)
Distance of compartment	F	7.5 ± 0.1 (.217)
	P <sub>2</sub>	2 ± 0.1 (.079)
Distance of compartment to compartment	P <sub>1</sub>	12 ± 0.1 (.63)

#### Quantities per Reel :

Package Type	LTV-217	LTV-227	LTV-247
Quantities (pcs)	3000	2000	2000

## ABSOLUTE MAXIMUM RATING

( Ta = 25°C )

PARAMETER		SYMBOL	RATING			UNIT
			217	227	247	
INPUT	Forward Current	I <sub>F</sub>	50			mA
	Reverse Voltage	V <sub>R</sub>	6			V
	Power Dissipation	P	70			mW
OUTPUT	Collector - Emitter Voltage	V <sub>CEO</sub>	70			V
	Emitter - Collector Voltage	V <sub>ECO</sub>	7			V
	Collector Current	I <sub>C</sub>	50			mA
	Collector Power Dissipation	P <sub>C</sub>	150	100		mW
Total Power Dissipation		P <sub>tot</sub>	200	170		mW
*1	Isolation Voltage	V <sub>iso</sub>	3,000			V <sub>rms</sub>
Operating Temperature		T <sub>opr</sub>	-55 ~ +100			°C
Storage Temperature		T <sub>stg</sub>	-55 ~ +150			°C
*2	Soldering Temperature	T <sub>sol</sub>	260 (10s)			°C

\*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 and emitter 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.

\*2. For 10 Seconds



## ELECTRICAL - OPTICAL CHARACTERISTICS

( Ta = 25°C )

PARAMETER		SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS
INPUT	Forward Voltage	V <sub>F</sub>	—	1.2	1.4	V	I <sub>F</sub> =20mA
	Reverse Current	I <sub>R</sub>	—	—	10	μA	V <sub>R</sub> =4V
	Terminal Capacitance	C <sub>t</sub>	—	30	250	pF	V=0, f=1KHz
OUTPUT	Collector Dark Current	I <sub>CEO</sub>	—	—	100	nA	V <sub>CE</sub> =V, I <sub>F</sub> =0
	Collector-Emitter Breakdown Voltage	BV <sub>CEO</sub>	80	—	—	V	I <sub>C</sub> =0.1mA I <sub>F</sub> =0
	Emitter-Collector Breakdown Voltage	BV <sub>ECO</sub>	7	—	—	V	I <sub>E</sub> =10μA I <sub>F</sub> =0
TRANSFER CHARACTERISTICS	Collector Current	I <sub>C</sub>	2.5	—	30	mA	I <sub>F</sub> =5mA V <sub>CE</sub> =5V
	*1 Current Transfer Ratio	CTR	50	—	600	%	
	Saturated Current	I <sub>C(sat)</sub>	—	4.8	—	mA	I <sub>F</sub> =8mA V <sub>CE</sub> =2.4V
	Saturated CTR	CTR <sub>(sat)</sub>	—	60	—	%	
	Collector-Emitter Saturation Voltage	V <sub>CE(sat)</sub>	—	—	0.4	V	I <sub>F</sub> =2.4mA I <sub>C</sub> =8mA
	Isolation Resistance	R <sub>iso</sub>	5×10 <sup>10</sup>	1×10 <sup>11</sup>	—	Ω	DC500V 40 ~ 60% R.H.
	Floating Capacitance	C <sub>f</sub>	—	0.6	1	pF	V=0, f=1MHz
	Response Time (Rise)	t <sub>r</sub>	—	2	—	μs	V <sub>CE</sub> =10V, I <sub>C</sub> =2mA R <sub>L</sub> =100Ω
	Response Time (Fall)	t <sub>f</sub>	—	3	—	μs	
	Turn-On Time	t <sub>ON</sub>	—	3	—	us	
	Turn-Off Time	t <sub>OFF</sub>	—	3	—	us	
	Turn-On Time	t <sub>ON</sub>	—	2	—	us	
	Storage Time	t <sub>s</sub>	—	25	—	us	V <sub>CE</sub> =5V, I <sub>C</sub> =16mA R <sub>L</sub> =1.9KΩ
Turn-Off Time	t <sub>OFF</sub>	—	40	—	us		

$$*1 \text{ CTR} = \frac{I_C}{I_F} \times 100\%$$

**RANK TABLE OF CURRENT TRANSFER RATIO CTR**

MODEL NO.	RANK MARK	CTR (%)
LTV-217	A	80 ~ 160
	B	130 ~ 260
	C	200 ~ 400
	D	300 ~ 600
	A or B or C or D or E or F or No mark	50 ~ 600
LTV-227 LTV-247	A or B or C or D or E or F or No mark	50 ~ 600

<b>CONDITIONS</b>	<p>IF = 5 mA</p> <p>VCE = 5 V</p> <p>Ta = 25 °C</p>
-------------------	---

## CHARACTERISTICS CURVES

Fig1. Forward current vs. ambient temperature

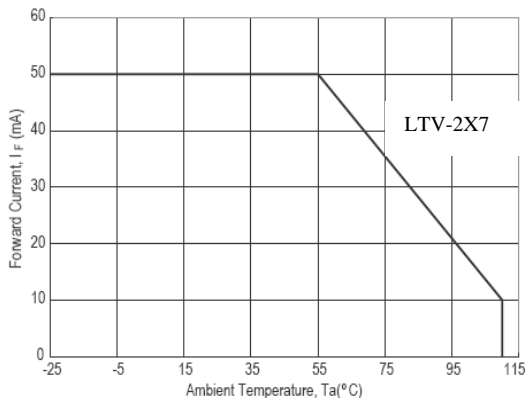


Fig2. Collector power dissipation vs. ambient temperature

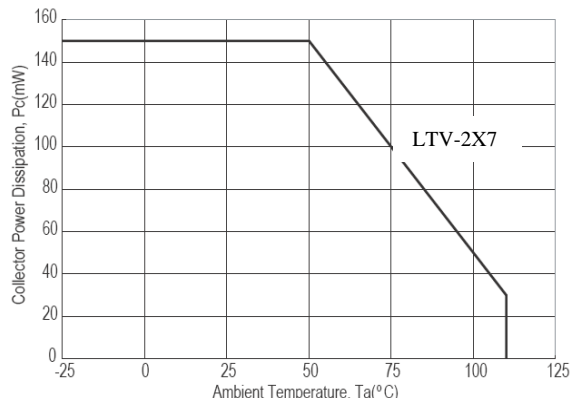


Fig3. Pulse forward current vs. duty cycle

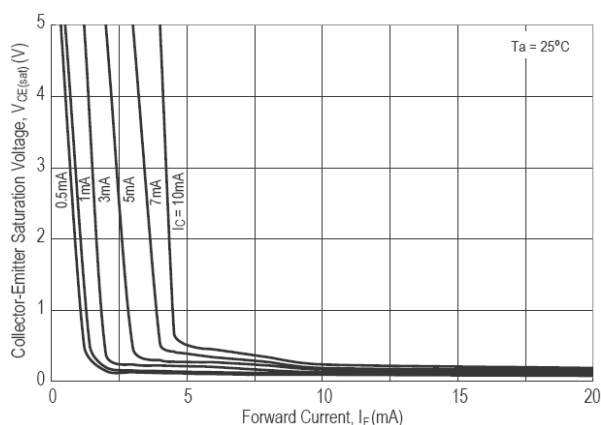


Fig4. Forward current vs. forward voltage

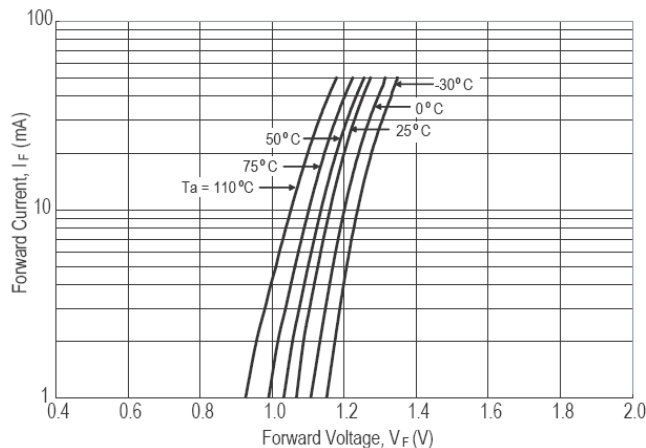


Fig5. Current transfer ratio vs. forward current

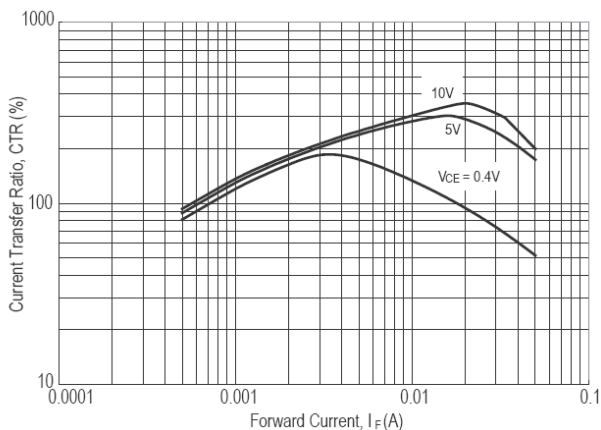
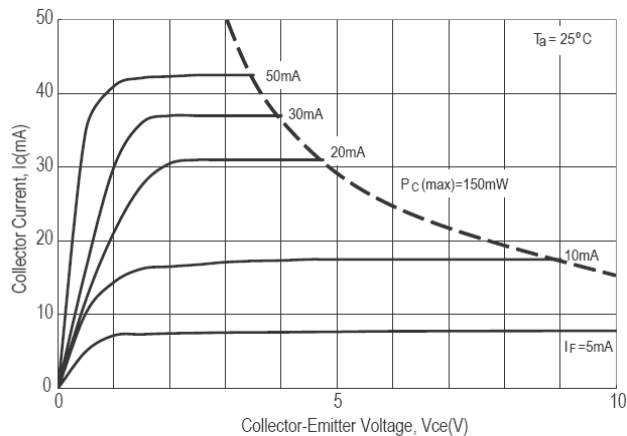


Fig6. Collector current vs. collector-emitter voltage



## CHARACTERISTICS CURVES

Fig7. Collector-emitter saturation voltage vs. ambient temperature

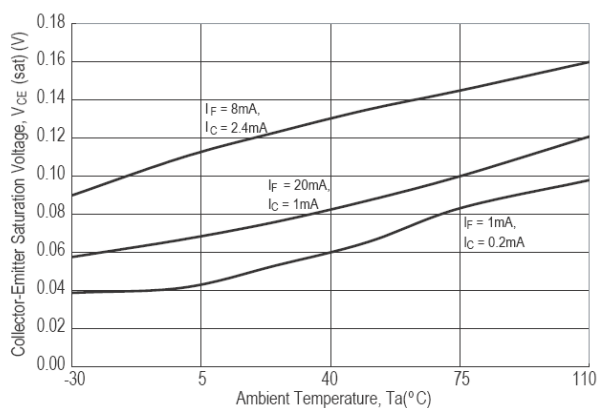


Fig8. Collector dark current vs. ambient temperature

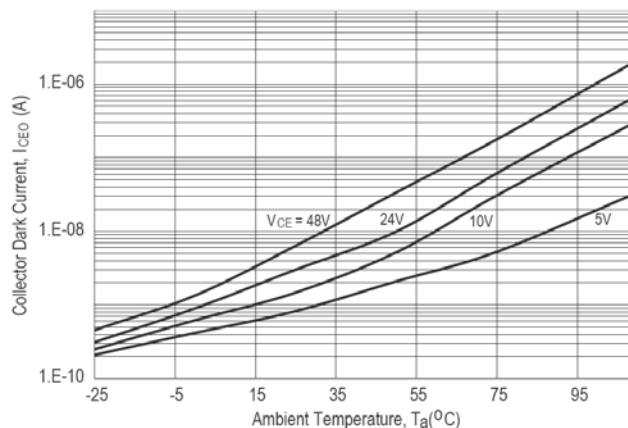


Fig9. Response time vs. load resistance

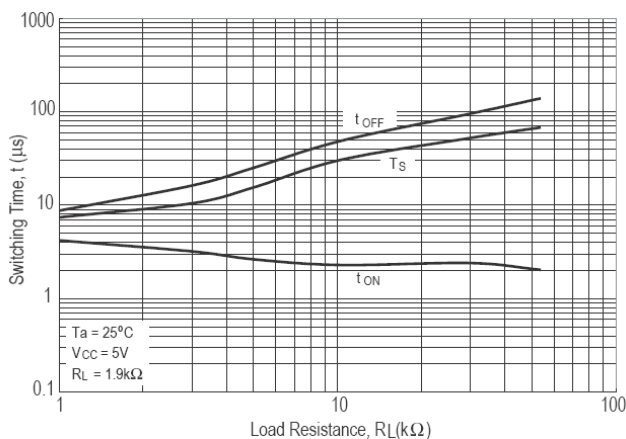
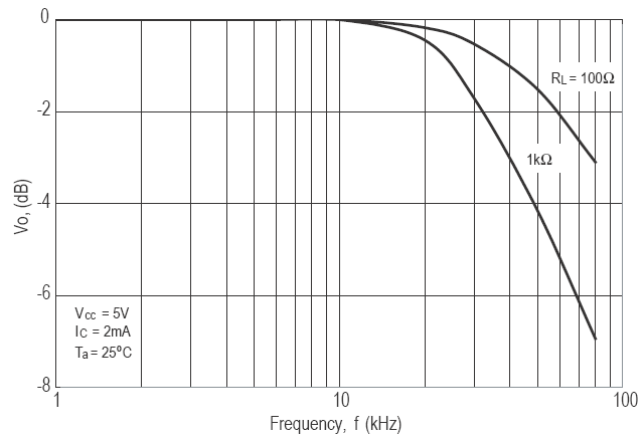
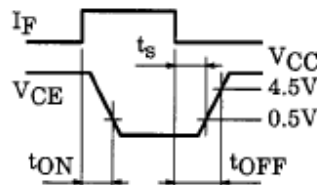
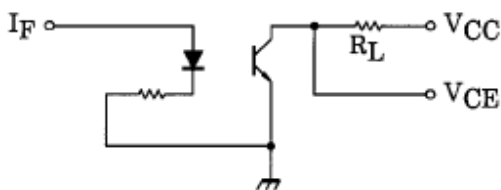


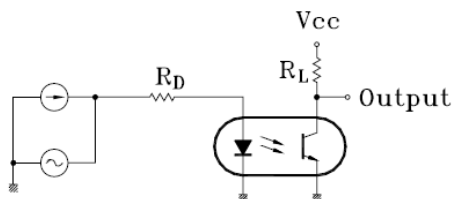
Fig10. Frequency Response



### SWITCHING TIME TEST CIRCUIT



### Test Circuit for Frequency Response



**Notes:**

- Lite-On is continually improving the quality, reliability, function or design and Lite-On reserves the right to make changes without further notices.
- The products shown in this publication are designed for the general use in electronic applications such as office automation equipment, communications devices, audio/visual equipment, electrical application and instrumentation.
- For equipment/devices where high reliability or safety is required, such as space applications, nuclear power control equipment, medical equipment, etc, please contact our sales representatives.
- When requiring a device for any " specific" application, please contact our sales in advice.
- If there are any questions about the contents of this publication, please contact us at your convenience.

The contents described herein are subject to change without prior notice.