FEATURES

Dec.2008

* Current transfer ratio
(CTR : MIN. 50% at I_F = 5mA, V_{CE} = 5V)

* Isolation voltage between input and output
(Viso = 3KVrms)

* 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.

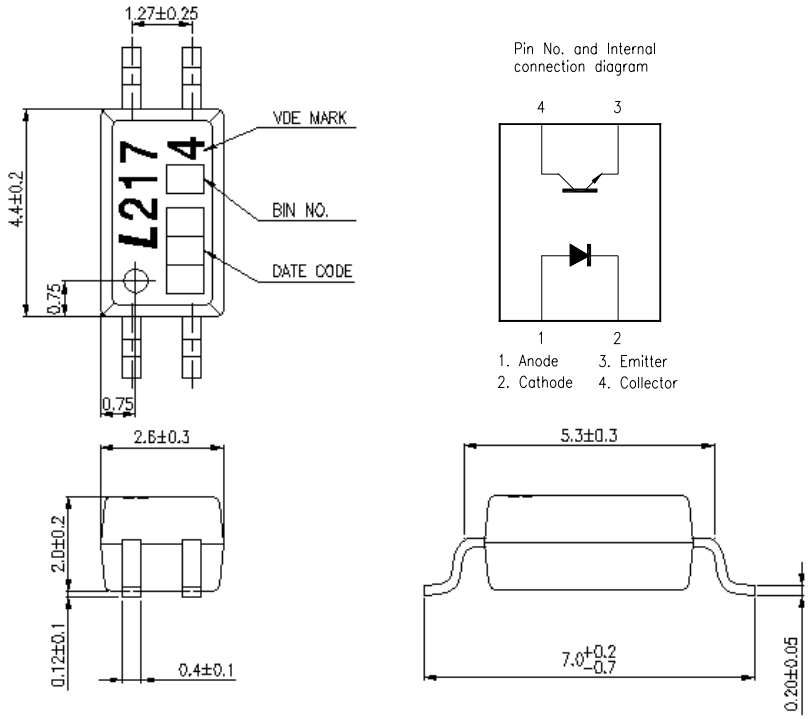
* ROHS compliance

Application

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

OUTLINE DIMENSIONS

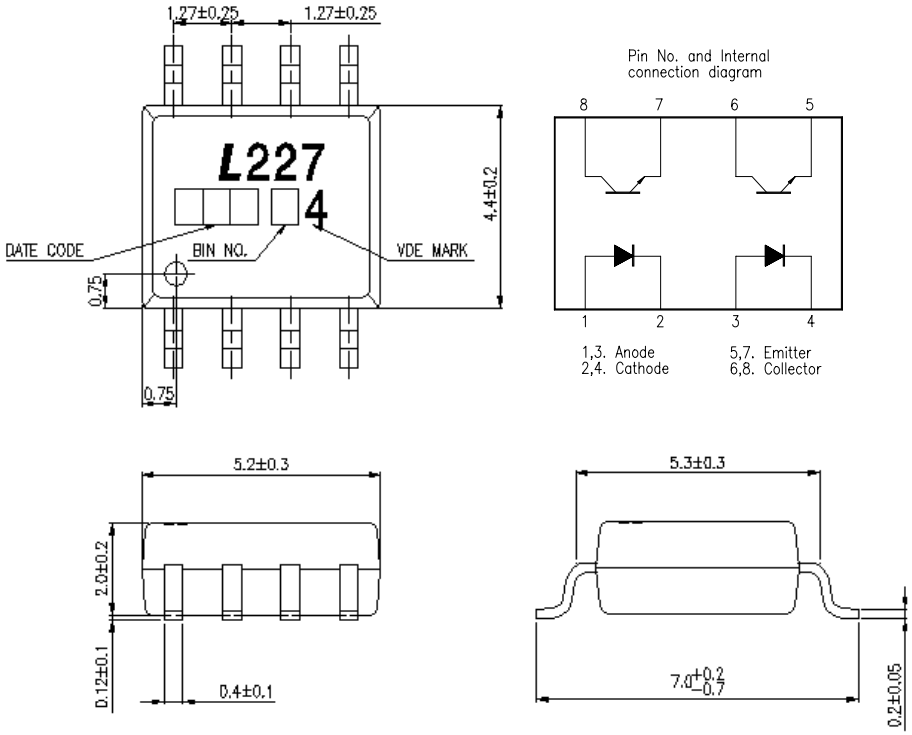
LTV-217 :



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

OUTLINE DIMENSIONS

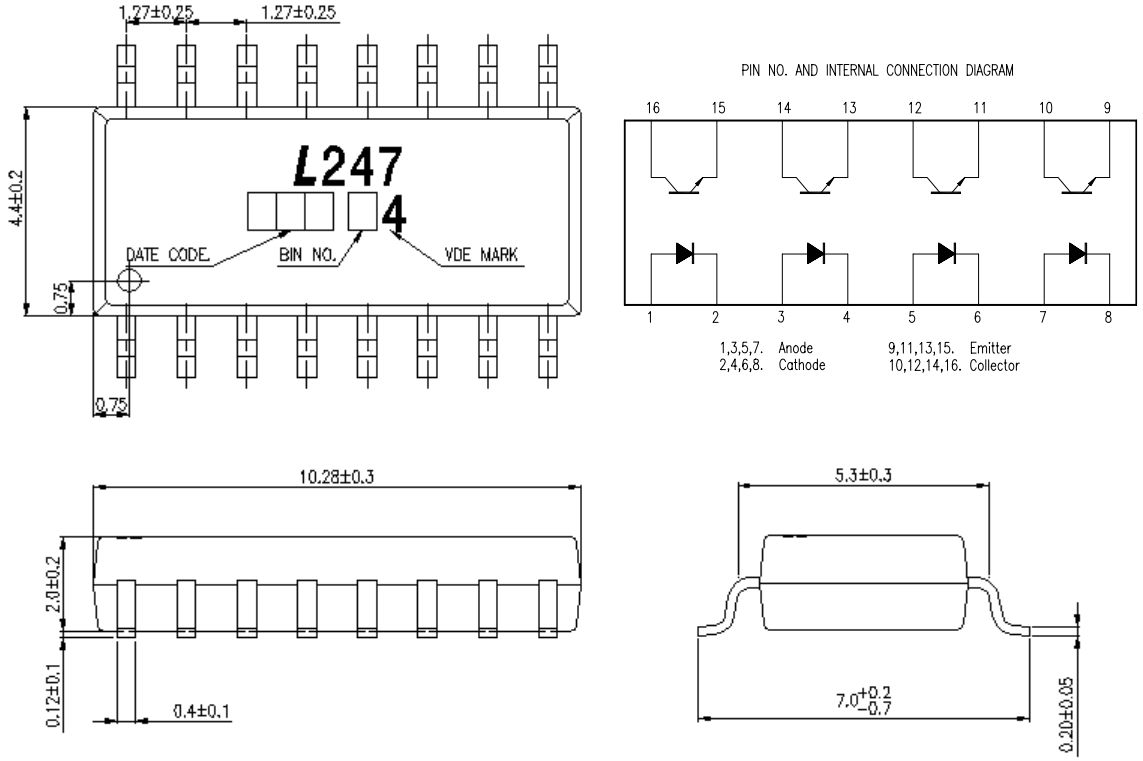
LTV-227 :



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

OUTLINE DIMENSIONS

LTV-247 :



*1. 3-digit date code.
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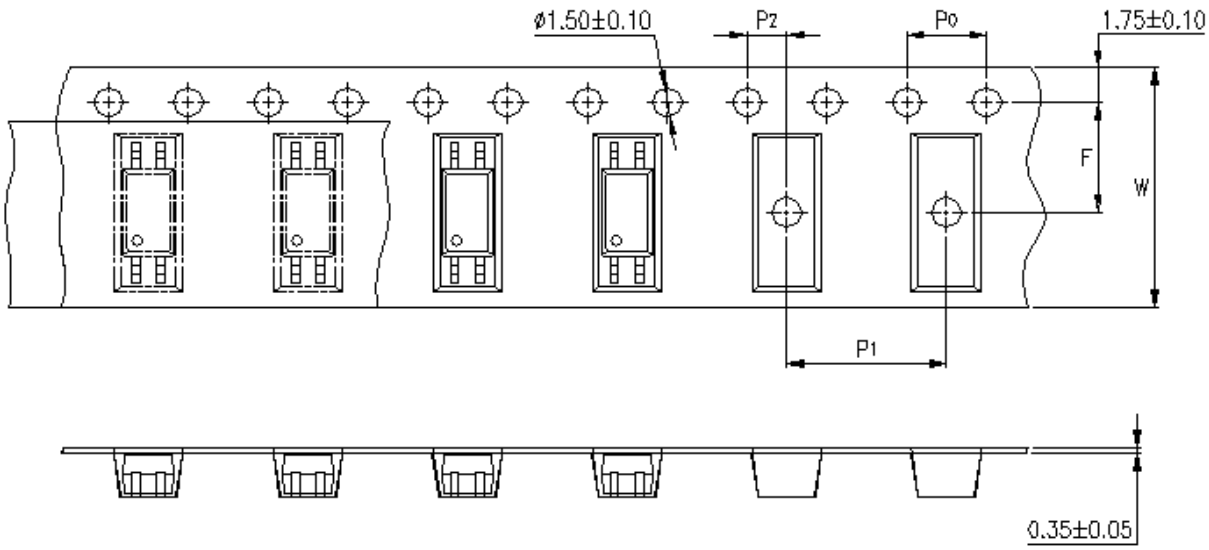
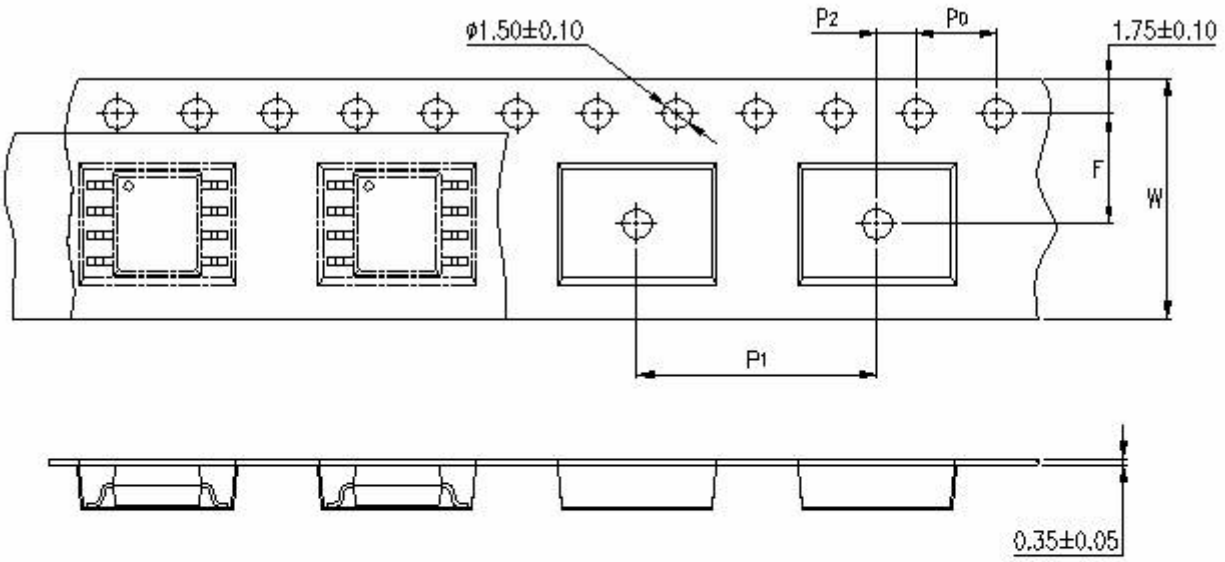
TAPING DIMENSIONS



Description	Symbol	Dimension in mm (inches)
Tape wide	W	12 ± 0.3 (.47)
Pitch of sprocket holes	P_0	4 ± 0.1 (.15)
Distance of compartment	F P_2	5.5 ± 0.1 (.217) 2 ± 0.1 (.079)
Distance of compartment to compartment	P_1	8 ± 0.1 (.315)

TAPING DIMENSIONS



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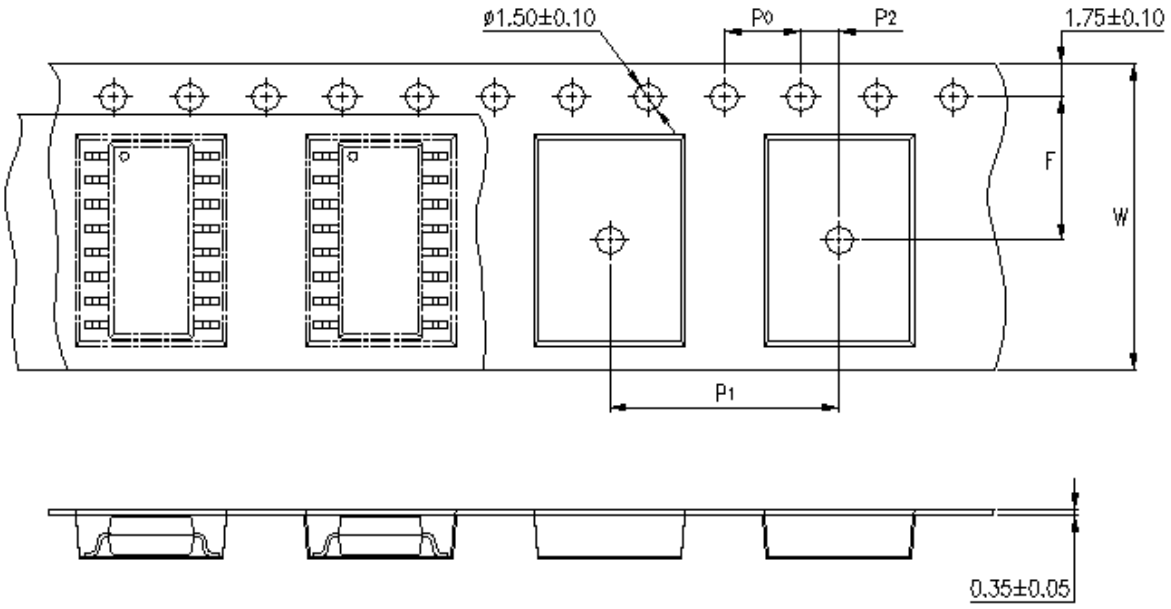
Tape wide	W	12 ± 0.3 (.47)
Pitch of sprocket holes	P_0	4 ± 0.1 (.15)
Distance of compartment	F P_2	5.5 ± 0.1 (.217) 2 ± 0.1 (.079)
Distance of compartment to compartment	P_1	12 ± 0.1 (.315)

TAPING DIMENSIONS



Description	Symbol	Dimension in mm (inches)
Tape wide	W	16 ± 0.3 (.47)
Pitch of sprocket holes	P_0	4 ± 0.1 (.15)
Distance of compartment	F P_2	7.5 ± 0.1 (.217) 2 ± 0.1 (.079)
Distance of compartment to compartment	P_1	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_F	50			mA
	Reverse Voltage	V_R	6			V
	Power Dissipation	P	70			mW
OUTPUT	Collector - Emitter Voltage	V_{CEO}	70			V
	Emitter - Collector Voltage	V_{ECO}	7			V
	Collector Current	I_C	50			mA
	Collector Power Dissipation	P_C	150		100	mW
Total Power Dissipation		Ptot	200		170	mW
*1 Isolation Voltage		V_{iso}	3,000			Vrms
Operating Temperature		T_{opr}	-55 ~ +100			°C
Storage Temperature		T_{stg}	-55 ~ +150			°C
*2 Soldering Temperature		T_{sol}	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_F	—	1.2	1.4	V	I_F=20mA
	Reverse Current	I_R	—	—	10	μA	V_R=4V
	Terminal Capacitance	C_t	—	30	250	pF	V=0, f=1KHz
OUTPUT	Collector Dark Current	I_{CEO}	—	—	100	nA	V_{CE}=V, I_F=0
	Collector-Emitter Breakdown Voltage	BV_{CEO}	80	—	—	V	I_C=0.1mA I_F=0
	Emitter-Collector Breakdown Voltage	BV_{ECO}	7	—	—	V	I_E=10μA I_F=0
TRANSFER CHARACTERISTICS	Collector Current	I_C	2.5	—	30	mA	I_F=5mA V_{CE}=5V
	*1 Current Transfer Ratio	CTR	50	—	600	%	
	Saturated Current	$I_{C(sat)}$	—	4.8	—	mA	I_F=8mA V_{CE}=2.4V
	Saturated CTR	$CTR_{(sat)}$	—	60	—	%	
	Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	—	—	0.4	V	I_F=2.4mA I_C=8mA
	Isolation Resistance	R_{iso}	5×10^{10}	1×10^{11}	—	Ω	DC500V 40 ~ 60% R.H.
	Floating Capacitance	C_f	—	0.6	1	pF	V=0, f=1MHz
	Response Time (Rise)	tr	—	2	—	μs	V_{CE}=10V, I_C=2mA R_L=100Ω
	Response Time (Fall)	tf	—	3	—	μs	
	Turn-On Time	t_{ON}	—	3	—	us	
	Turn-Off Time	t_{OFF}	—	3	—	us	
	Turn-On Time	t_{ON}	—	2	—	us	V_{CE}=5V, I_C=16mA R_L=1.9KΩ
	Storage Time	ts	—	25	—	us	
	Turn-Off Time	t_{OFF}	—	40	—	us	

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

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

CONDITIONS	IF = 5 mA VCE = 5 V Ta = 25 °C

CHARACTERISTICS CURVES

Fig1. Forward current vs. ambient temperature

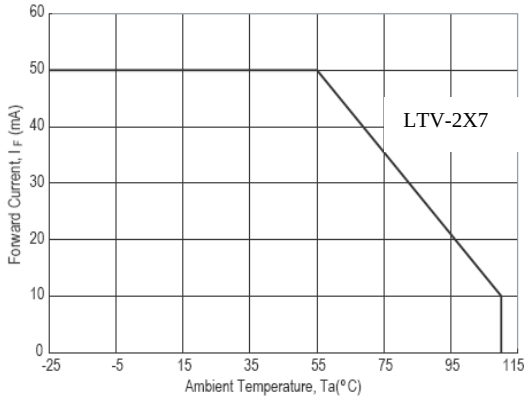


Fig2. Collector power dissipation vs. ambient temperature

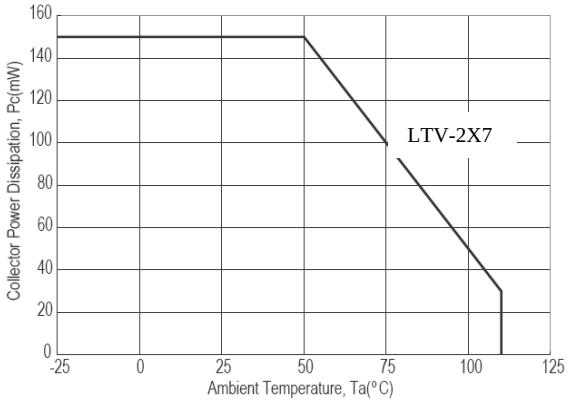


Fig3. Pulse forward current vs. duty cycle

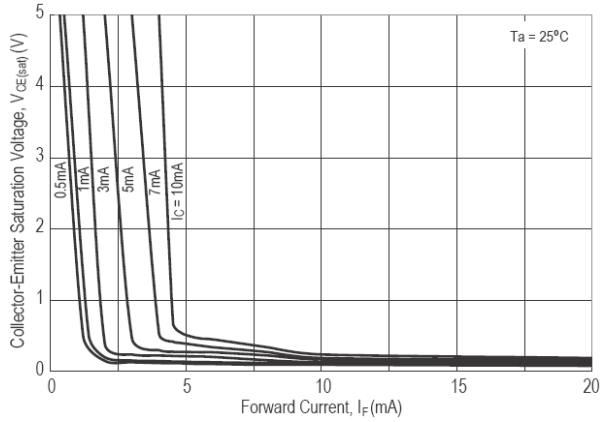


Fig4. Forward current vs. forward voltage

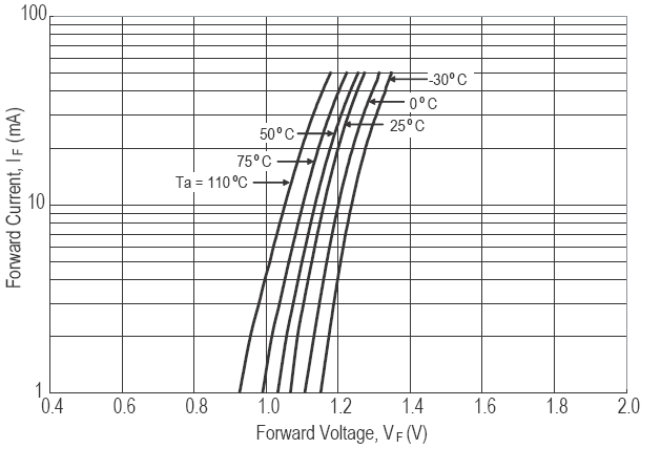


Fig5. Current transfer ratio vs. forward current

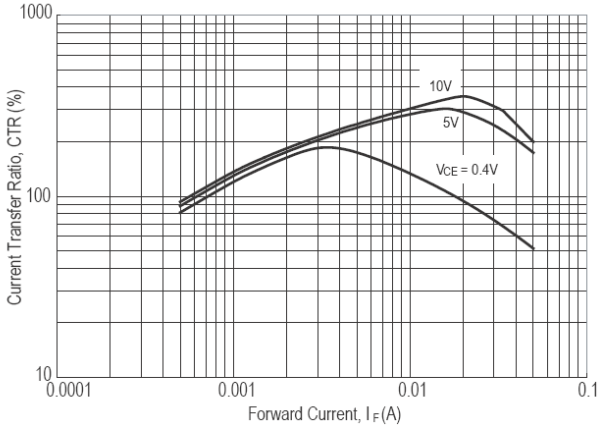
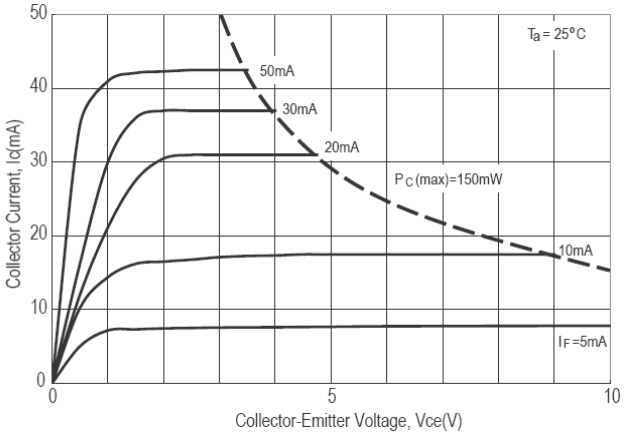


Fig6. Collector current vs. collector-emitter voltage



CHARACTERISTICS CURVES

Fig7. Collector-emitter saturation voltage vs. ambient temperature

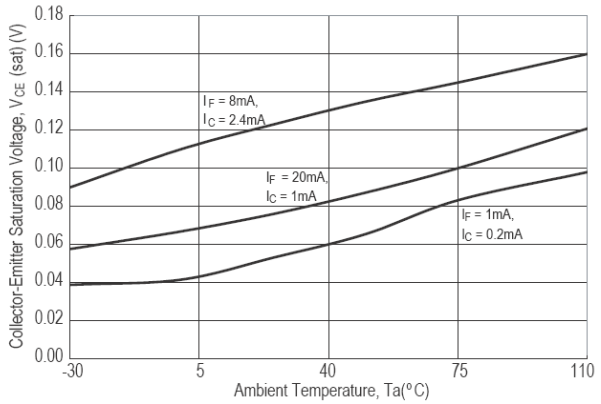


Fig8. Collector dark current vs. ambient temperature

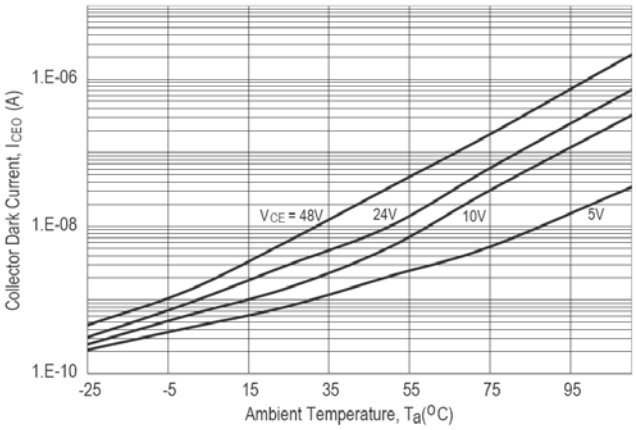


Fig9. Response time vs. load resistance

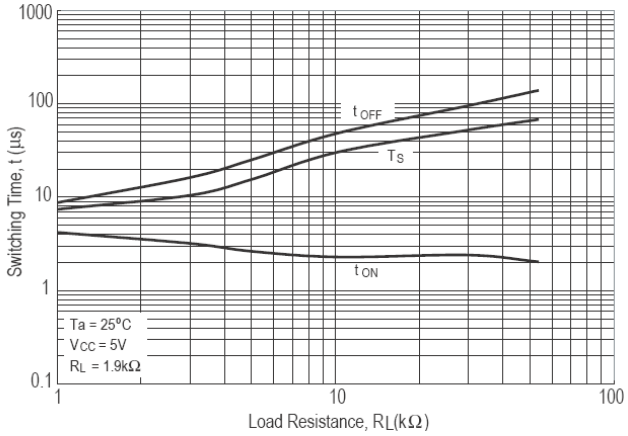
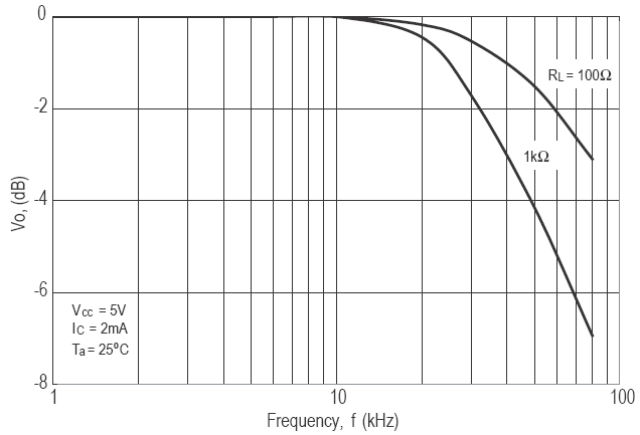
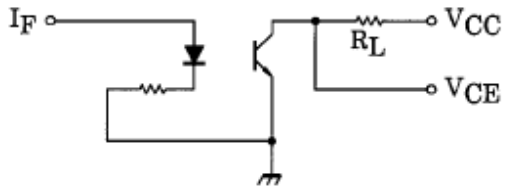
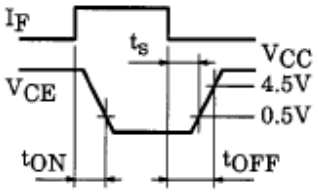


Fig10. Frequency Response

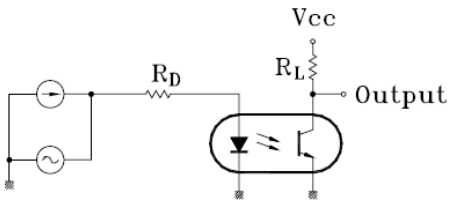


SWITCHING TIME TEST CIRCUIT





Test Circuit for Frequency Response



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