



ORIENT

Photo coupler

Product Data Sheet

Part Number: OR-3H7-(GK)

Customer: _____

Date: _____

一级代理商：

深圳市弗瑞鑫电子有限公司

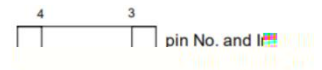
地址：深圳市宝安区西乡大道 号金源商务大厦B座三楼

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www.frxelec.com

- (1) Current transfer ratio(CTR) : MIN. 50% at $I_F = 5\text{mA}$, $V_{CE} = 5\text{V}$, $T_a=25\text{ }^\circ\text{C}$
- (2) High input-output isolation voltage.($V_{ISO}=3,750\text{Vrms}$)
- (3) Collector and emitter Voltage : 80V(MIN)
- (4) Operating Temperature :-55 $^\circ\text{C}$ to 125 $^\circ\text{C}$
- (5) ESD pass HBM 8000V/MM 2000V
- (6) Safety approval
 - UL approved(No.E323844)
 - VDE approved(No.40029733)
 - CQC approved (No.CQC19001231254)
- (7) In compliance with RoHS, REACH standards
- (8) MSL Class I



The OR-3H7-(GK) series device contains an infrared led and a photo transistor detector.They are encapsulated in a 4-pin SOP, free of halogens and Sb_2O_3

- (1) Mixed PCB substrate requiring high density installation
- (2) Programmable controller
- (3) System apparatus and measuring instruments

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Input	Forward Current	I_F	50	mA
	Peak forward current($t=10\mu\text{s}$)	I_{FM}	1	A
	Reverse Voltage	V_R	6	V
	Power Dissipation	P	70	mW
	Junction Temperature	T_j	125	$^\circ\text{C}$
Output	Collector and emitter Voltage	V_{CEO}	80	V
	Emitter and collector Voltage	V_{ECO}	7	
	Collector Current	I_C	50	mA
	Power Dissipation	P_C	150	mW
	Junction Temperature	T_j	125	$^\circ\text{C}$
Total Power Dissipation		P_{tot}	200	mW
*1 Insulation Voltage		V_{iso}	3750	Vrms
Rated Impulse Insulation Voltage		V_{IORM}	630	V
Operating Temperature		T_{opr}	-55 to + 125	$^\circ\text{C}$
Storage Temperature		T_{stg}	-55 to + 150	
*2 Soldering Temperature		T_{sol}	260	

*1. AC For 1 Minute, R.H. = 40 ~ 60%

Isolation voltage shall be measured using the following method.

Short between anode and cathode on the primary side and between collector and emitter on the secondary side

The isolation voltage tester with zero-cross circuit shall be used.

The waveform of applied voltage shall be a sine wave.

*2.soldering time is 10 seconds

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	Forward Voltage	V_F	---	1.2	1.4	V	$I_F=20mA$
	Reverse Current	I_R	---	---	5	μA	$V_R=5V$
	Terminal Capacitance	C_t	---	30	250	pF	$V=0, f=1KHz$
	Collector Dark Current	I_{CEO}	---	---	100	nA	$V_{CE}=20V$ $I_F=0mA$
	Collector-Emitter Breakdown Voltage	BV_{CEO}	80	---	---	V	$I_C=0.1mA$ $I_F=0mA$
	Emitter-Collector Breakdown Voltage	BV_{ECO}	7	---	---	V	$I_E=0.1mA$ $I_F=0mA$
	*1 Current Transfer Ratio	CTR	50	---	600	%	$I_F=5mA$ $V_{CE}=5V$
	Collector Current	I_C	2.5	---	30	mA	
	Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	---	---	0.4	V	$I_F=8mA$ $I_C= 2.4mA$
	Insulation Impedance	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	t_r	---	2.9	10	μs	$V_{CE}=10V$ $I_C=2mA$ $R_L=100\Omega$
	Descend Time	t_f	---	4.5	10	μs	

- Current Conversion Ratio = $I_C / I_F \times 100\%$



MODEL NO.	CTR Rank	Min.	Max.	Condition	Unit
OR-3H7	A	80	160	IF=5mA, V _{CE} =5V, Ta=25°C	%
	B	130	260		
	C	200	400		
	D	300	600		
	No Mark	50	600	IF=0.5mA, V _{CE} =5V, Ta=25°C	
	AL	100	200		
	BLL	200	400	IF=5mA, V _{CE} =5V, Ta=25°C	
	GB	100	600	IF=0.5mA, V _{CE} =5V, Ta=25°C	

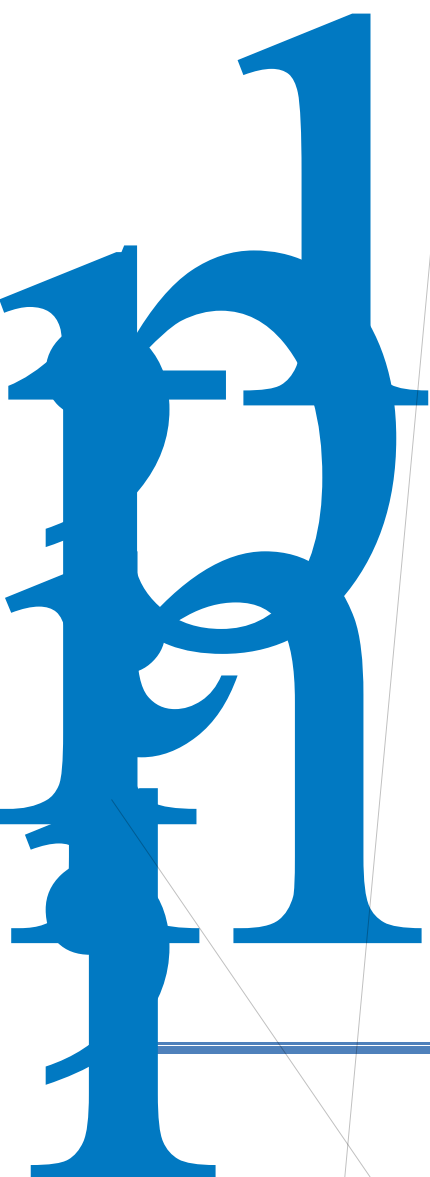
- Current Conversion Ratio = $I_C / I_F \times 100\%$

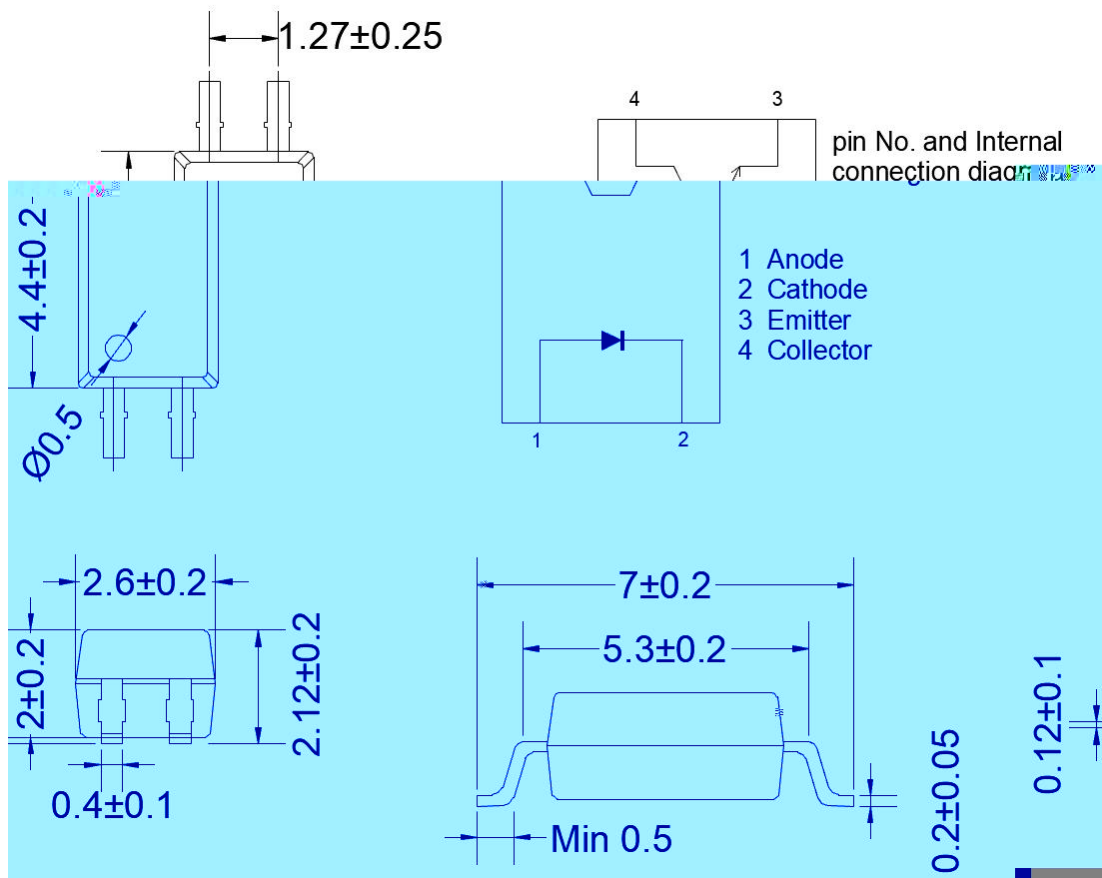
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X = CTR Rank (A, B, C, D, AL, BLL, GB or none)
W = Tape and reel option (TP or TP1).
Y = 'V' code for VDE safety (This options is not necessary).
Z = 'G' code for Halogen free.
GK = Field code.

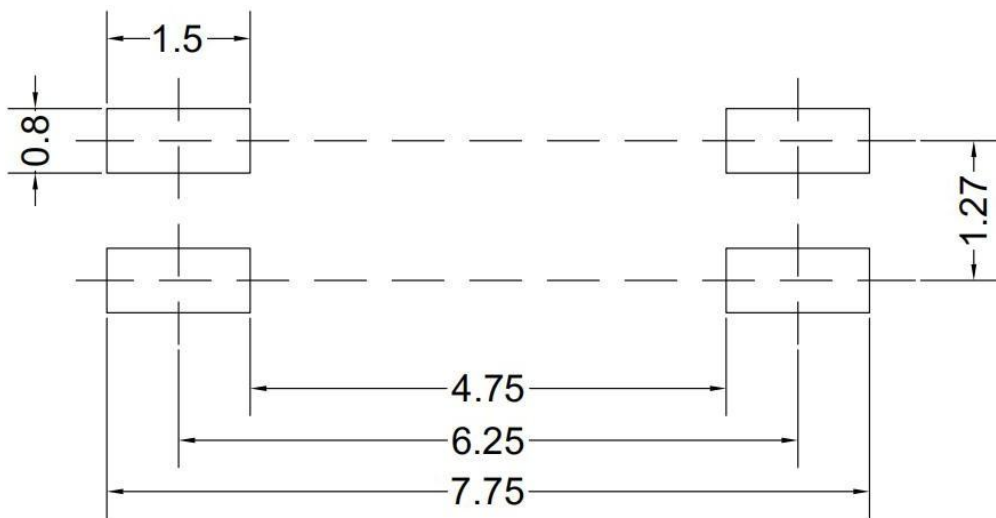
* VDE Code can be selected.

TP	Surface mount lead form (low profile) + TP tape & reel option	3000 units per reel
TP1	Surface mount lead form (low profile) + TP1 tape & reel option	3000 units per reel

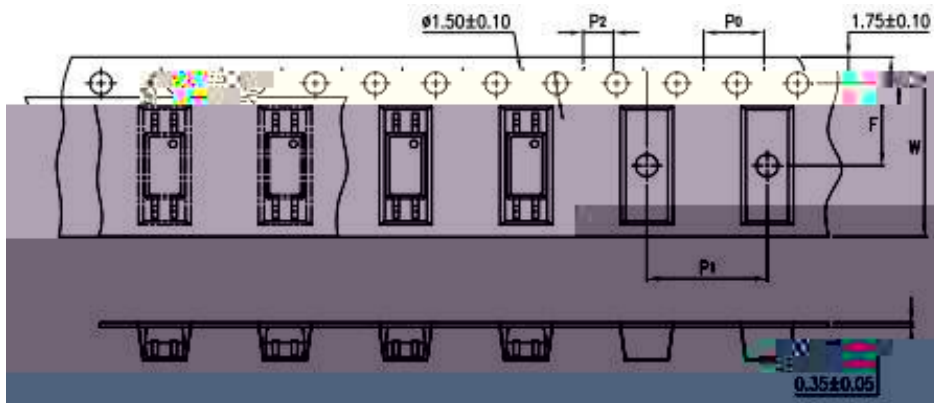




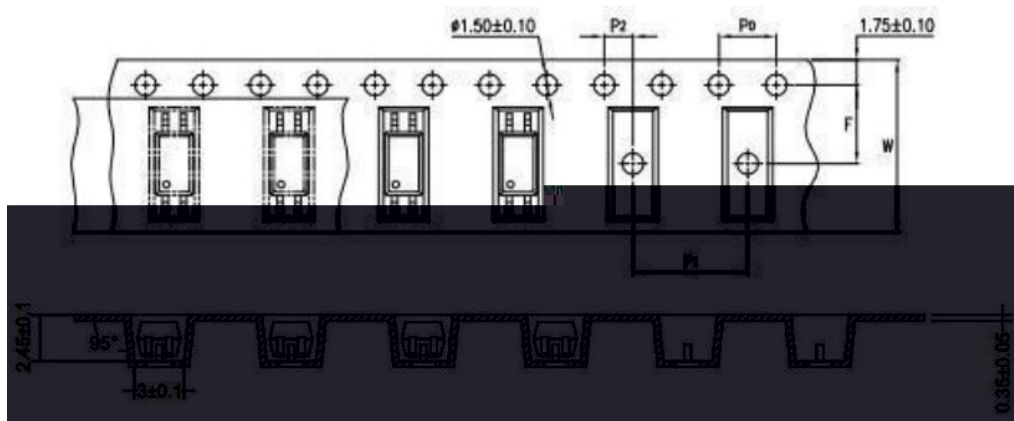
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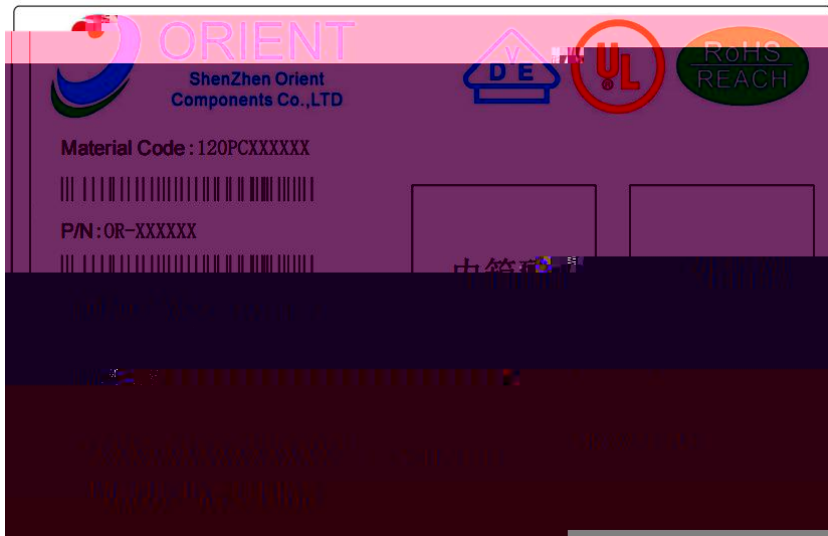
type	Symbol	Dimensions: mm (in.)
bandwidth	W	12±0.3 (0.47)
pitch	P0	4±0.1 (0.15)
pitch	F	5.5±0.1 (0.217)
	P2	2±0.1 (0.079)
interval	P1	8±0.1 (0.315)

Encapsulation type	TP/TP1
Quantity (pieces)	3000

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Packing type	Reel type
Tape Width	12mm
Qty per Reel	3,000pcs
Small box (inner) Dimension	345*345*45mm
Large box (Outer) Dimension	480x360x360mm
Max qty per small box	6,000pcs
Max qty per large box	60,000pcs

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1. Material Code :Product ID.
2. P/N :Contents with "Order Information" in the specification.
3. Lot No. :Product data.
4. D/C :Product weeks.
5. Quantity :Packaging quantity.

Reliability Testing

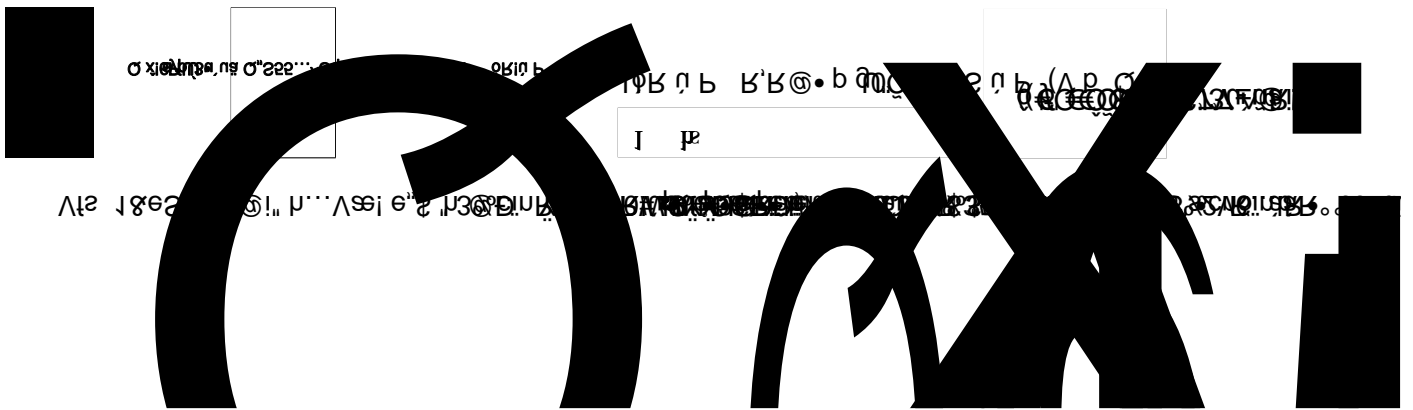
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260 5

10s/3

168 hrs

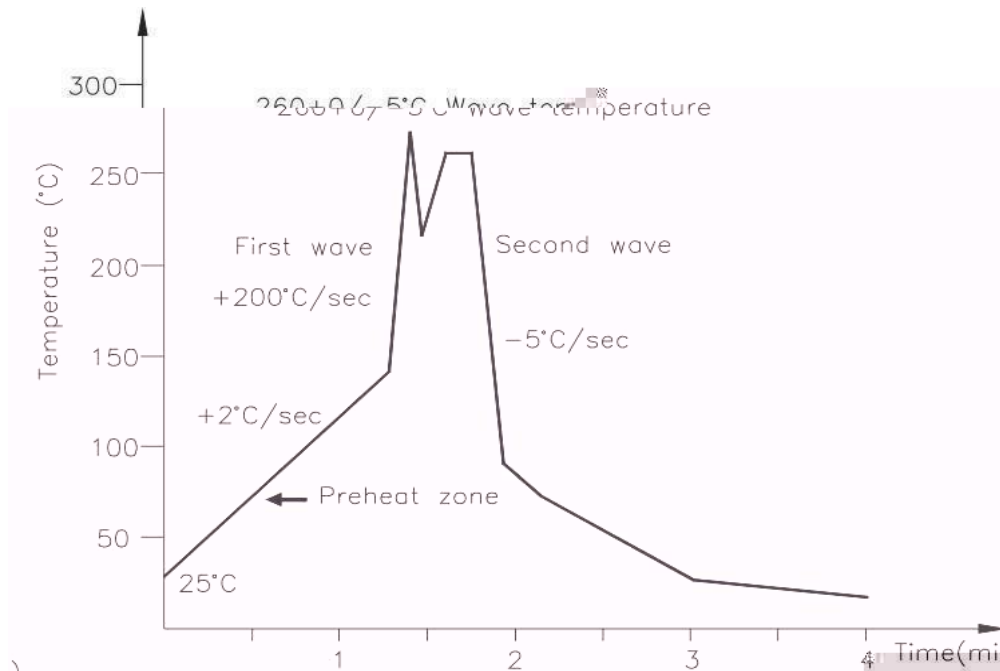
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One time soldering is recommended within the condition of temperature.

Temperature	260+0/-5°C
Time	10 sec
Preheat temperature	25 to 140°C
Preheat time	30 to 80 sec



Allow single lead soldering in every single process. One time soldering is recommended.

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Figure 7. Collector-Emitter Saturation Voltage vs. Forward Current

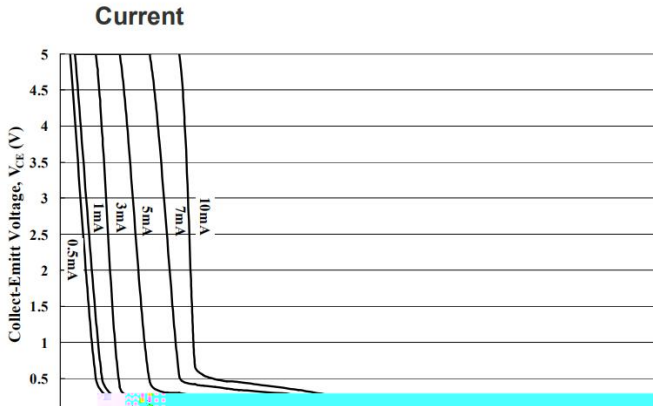


Figure 8. Collector Current vs. Collector-Emitter Voltage

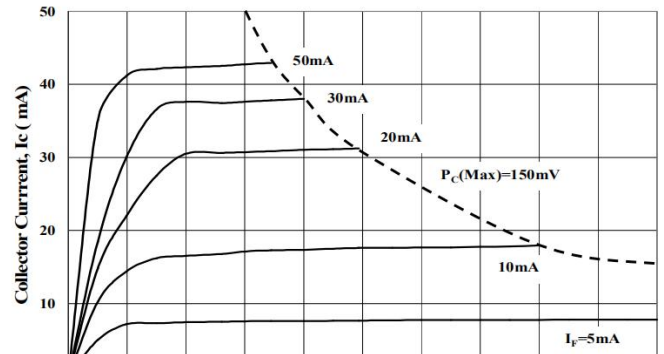


Figure 9. Collector Current vs. Small Collector Emitter Voltage

Figure 10. Normalized β vs. Forward Current



Figure 11. Collector Dark Current vs. Ambient Temperature

Figure 12. Current Transfer Ratio vs. Forward Current

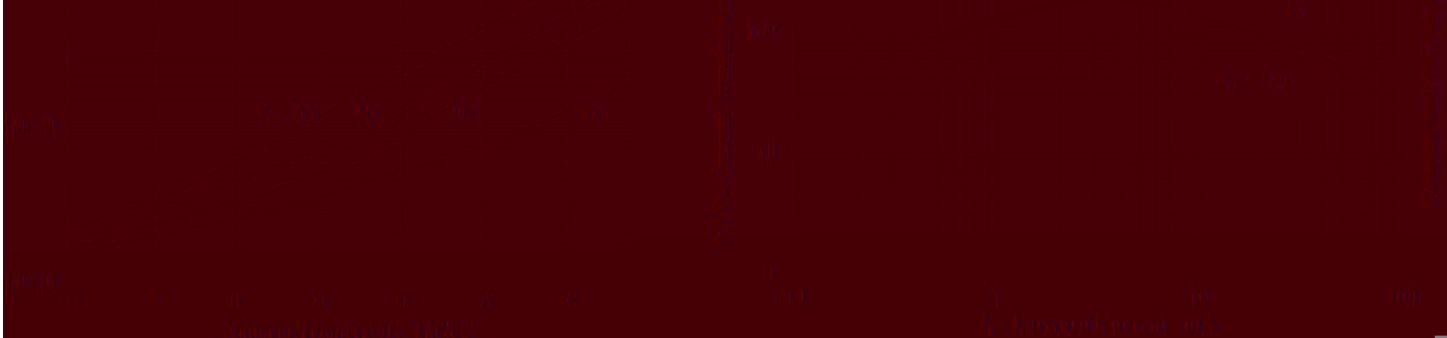
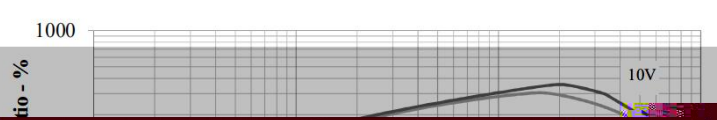
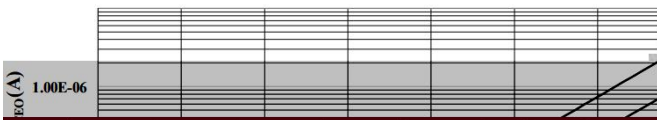


Figure 13. Normalized CTR vs. Ambient Temperature

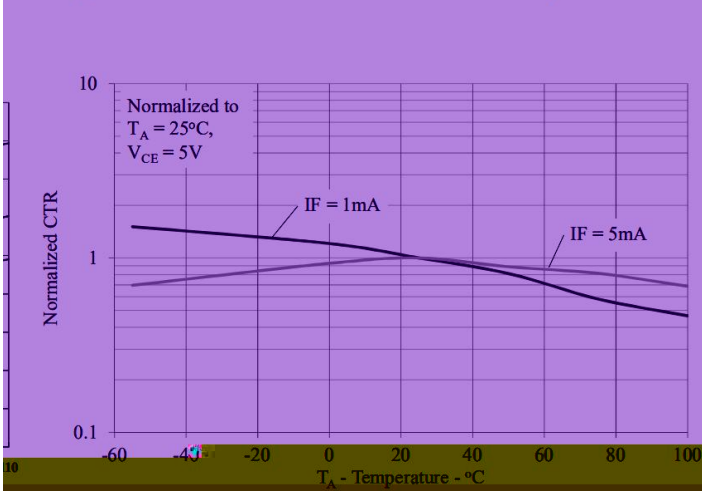


Figure 14. Collector-Emitter Saturation Voltage vs. Ambient Temperature

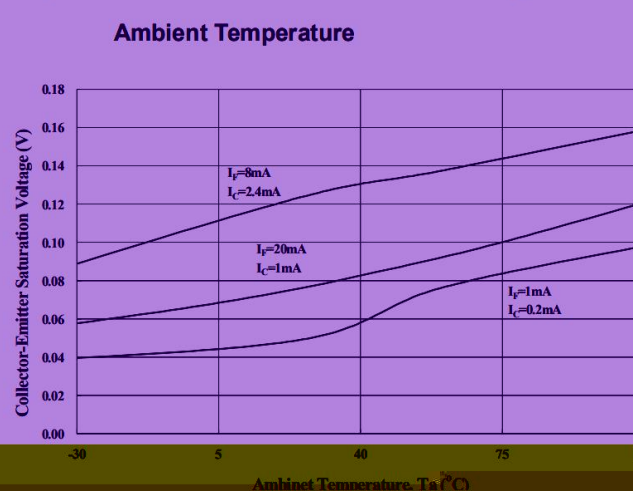


Figure 15. Collector Current vs. Ambient Temperature

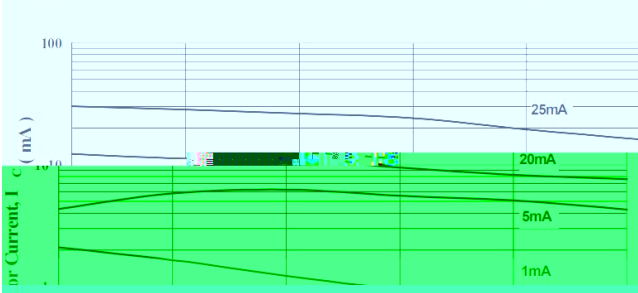


Figure 16. Switching Time vs. Load Resistance

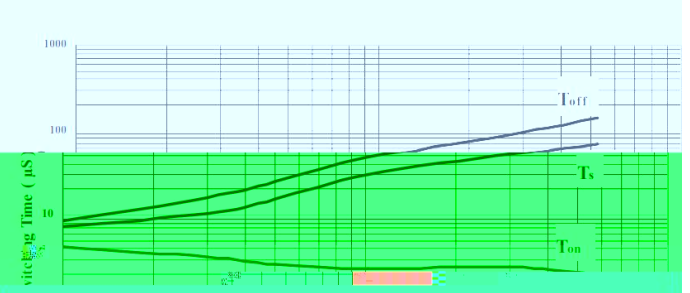


Figure 17. Switching Time vs. Ambient Temperature



Figure 18. Frequency Response

