



Features

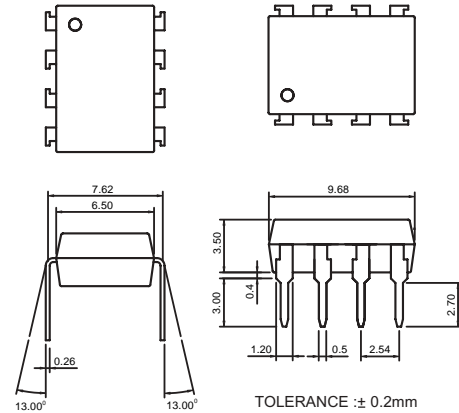
- Current transfer ratio.
(CTR: MIN. 50% at $I_F = 5\text{mA}$ $V_{CE} = 5\text{V}$)
- High isolation voltage between input and output.
(Viso: 5000V_{RMS})
- Compact dual-in-line package.
- Available package types: DIP(shown)/ SMD/ H (Page 148).

Part Numbering System: Page 2. **Part Marking System:** Page 3.

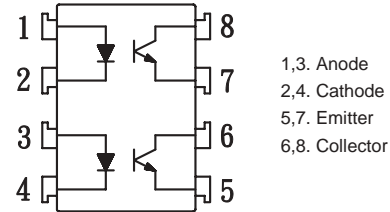
Applications

- Registers, copiers, automatic vending machines.
- System appliances, measuring instruments.
- Computer terminals, programmable controllers.
- Communications, telephone, etc.
- Electric home appliances, such as oil fan heaters, microwave oven, washer, refrigerator, air conditioner, etc.
- Medical instruments, physical and chemical equipment.
- Signal transmission between circuits of different potentials and impedances.
- Facsimile equipment, audio, video.
- Switching power supply, laser beam printer.

Outside Dimension: Unit (mm)



Schematic: Top View



Absolute Maximum Ratings

($T_a = 25^\circ\text{C}$)

Parameter		Symbol	Rating	Unit
Input	Forward current	I_F	50	mA
	Peak forward current	I_{FM}	1	A
	Reverse voltage	V_R	6	V
	Power dissipation	P_D	70	mW
Output	Collector-emitter voltage	V_{CEO}	60	V
	Emitter-collector voltage	V_{ECO}	6	V
	Collector current	I_C	50	mA
	Collector power dissipation	P_C	150	mW
Total power dissipation		P_{tot}	200	mW
Isolation voltage 1 minute		Viso	5000	V _{rms}
Operating temperature		T_{opr}	-30 to +100	$^\circ\text{C}$
Storage temperature		T_{stg}	-55 to +125	$^\circ\text{C}$
Soldering temperature 10 second		T_{sol}	260	$^\circ\text{C}$

Electro-optical Characteristics

($T_a = 25^\circ\text{C}$)

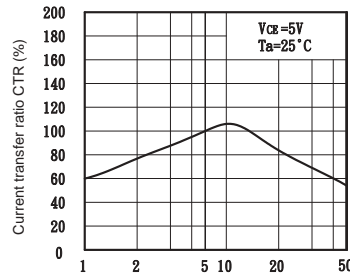
Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Input	Forward voltage	V_F	$I_F = 20\text{mA}$	—	1.2	1.4	V
	Peak forward voltage	V_{FM}	$I_{FM} = 0.5\text{A}$	—	—	3.0	V
	Reverse current	I_R	$V_R = 4\text{V}$	—	—	10	μA
	Terminal capacitance	C_t	$V = 0, f = 1\text{kHz}$	—	30	—	pF
Output	Collector dark current	I_{CEO}	$V_{CE} = 20\text{V}$	—	—	0.1	μA
Transfer characteristics	Current transfer ratio	CTR	$I_F = 5\text{mA}, V_{CE} = 5\text{V}$	50	—	600	%
	Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_F = 20\text{mA}, I_C = 1\text{mA}$	—	0.1	0.2	V
	Isolation resistance	Riso	DC500V	5×10^{10}	10^{11}	—	ohm
	Floating capacitance	C_f	$V = 0, f = 1\text{MHz}$	—	0.6	1.0	pF
	Cut-off frequency	f_c	$V_{CC} = 5\text{V}, I_C = 2\text{mA}, R_L = 100\text{ohm}$	—	80	—	kHz
	Response time (Rise)	t_r	$V_{CE} = 2\text{V}, I_C = 2\text{mA}, R_L = 100\text{ohm}$	—	4	18	μs
Response time (Fall)	t_f	—		3	18	μs	



Classification table of current transfer ratio is shown below.

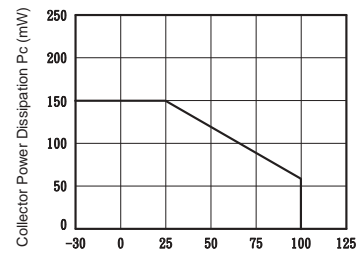
Model NO.	CTR (%)
E	50 TO 600
F	160 TO 600

Fig.1 Current Transfer Ratio vs. Forward Current



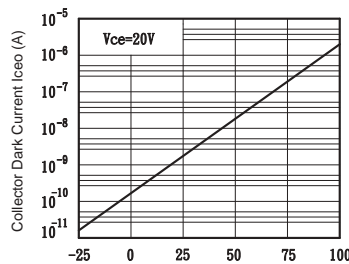
Forward Current I_F (mA)

Fig.2 Collector Power Dissipation vs. Ambient Temperature



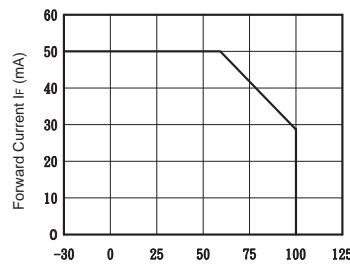
Ambient Temperature T_a (°C)

Fig.3 Collector Dark Current vs. Ambient Temperature



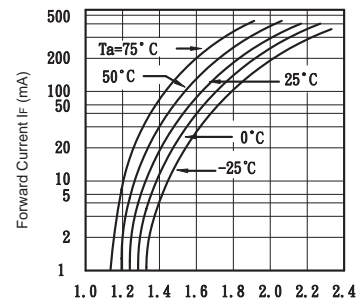
Ambient Temperature T_a (°C)

Fig.4 Forward Current vs. Ambient Temperature



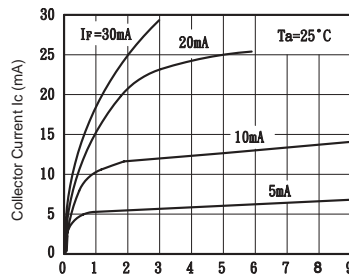
Ambient Temperature T_a (°C)

Fig.5 Forward Current vs. Forward Voltage



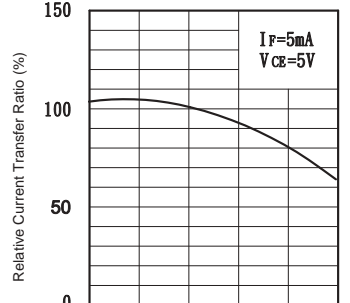
Forward Voltage V_f (V)

Fig.6 Collector Current vs. Collector-emitter Voltage



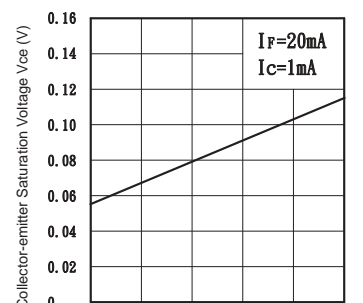
Collector-emitter Voltage V_{CE} (V)

Fig.7 Relative Current Transfer Ratio vs. Ambient Temperature



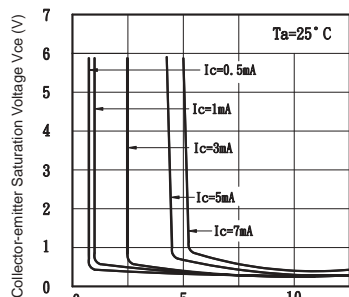
Ambient Temperature T_a (°C)

Fig.8 Collector-emitter Saturation Voltage vs. Ambient Temperature



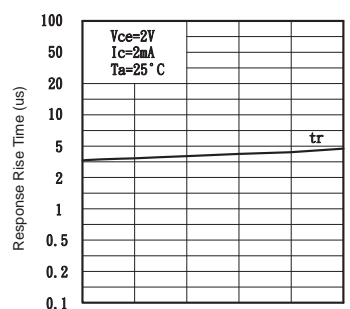
Ambient Temperature T_a (°C)

Fig.9 Collector-emitter Saturation Voltage vs. Forward Current



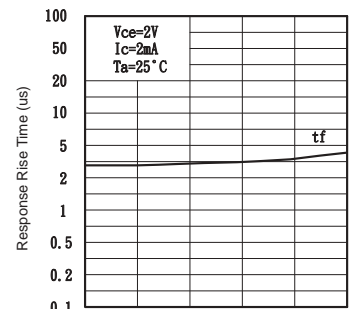
Forward Current I_F (mA)

Fig.10 Response Time vs. Load Resistance



Load Resistance R_L (K ohm)

Fig.11 Response Time vs. Load Resistance



Load Resistance R_L (K ohm)