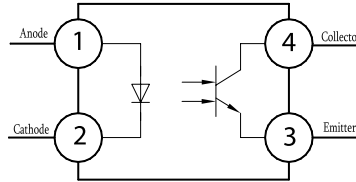


Phototransistor Optocoupler **multicomp**PRO

**RoHS
Compliant**



Features:

- Current transfer ratio
- (CTR: 80~600% at $I_F = 5\text{mA}$, $V_{CE} = 5\text{V}$)
- High isolation voltage between input and output (Viso =3750V rms)
- Collector - emitter breakdown voltage $BV_{CEO} \geq 80\text{V}$
- Operating Temperature: $-55^\circ\text{C} \sim 110^\circ\text{C}$
- VDE : 40060715
- UL : E340048
- CQC : CQC24001452346

Applications:

- Programmable controllers
- System appliances, measuring instruments
- Telecommunication equipments
- Home appliances, such as Fan Heaters, etc
- Signal transmission between circuits of different potentials and impedances

Mechanical Data

- Case: SOP4
- Molding Compound: UL Flammability Classification Rating 94V-0
- Terminals: Matte tin-plated leads; solderability-per MIL-STD-202, Method 208

Maximum Ratings: @ T_A 25°C unless otherwise specified.

	Parameter	Symbol	Value	Unit
Input	Forward Current	I_F	50	mA
	Peak Forward Current *1	I_{FM}	1	A
	Reverse Voltage	V_R	6	V
	Power Dissipation	P_D	70	mW
Output	Collector Power Dissipation	P_C	150	mW
	Collector Current	I_O	50	mA
	Collector-Emitter Voltage	V_{CEO}	80	V
	Emitter-Collector Voltage	V_{ECO}	7	V

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Thermal Characteristics

Parameter	Symbol	Value	Unit
Total Power Dissipation	P _{TOT}	200	mW
Isolation Voltage ^{*2}	V _{ISO}	3750	Vrms
Rated Impulse Isolation Voltage	V _{IOTM}	5000	V
Rated Repetitive Peak Isolation Voltage	V _{IORM}	600	V
Thermal Resistance Junction-to-Air	R _{θJA}	430	°C/W
Thermal Resistance Junction-to-Case	R _{θJC}	350	°C/W
Thermal Resistance Junction-to-Lead	R _{θJL}	368	°C/W
Operating Temperature	T _{OPR}	-55 ~ +110	°C
Storage Temperature Range	T _{STG}	-55 ~ +125	°C
Soldering Temperature ^{*3}	T _{SOL}	260	°C

Notes

1. Pulse width ≤ 1μs, Duty ratio: 0.001
2. 40 to 60% RH, AC for 1 minute
3. For 10 seconds

Electrical Characteristics @ TA = 25°C unless otherwise specified

Parameter		Symbol	Test conditions	Min.	Typ.	Max.	Unit
Input	Forward Voltage	V _F	I _F = 20mA	-	1.2	1.4	V
	Peak Forward Voltage	V _{FM}	I _{FM} = 0.5A	-	-	3.0	V
	Reverse Current	I _R	V _R = 4V	-	-	10	μA
	Input Capacitance	C _{in}	V _R = 0V, f = 1kHz	-	30	250	pF
Output	Collector-Emitter Dark Current	I _{CEO}	V _{CE} = 20V, I _F = 0	-	-	100	nA
	Collector-Emitter Breakdown Voltage	B _{VCEO}	I _C = 0.1mA, I _F = 0	80	-	-	V
	Emitter-Collector Breakdown Voltage	B _{VECO}	I _E = 10μA, I _F = 0	7	-	-	V
Transfer Characteristics	Collector Current	I _C	I _F = 5mA, V _{CE} = 5V	2.5	-	30	mA
	Current Transfer Ratio	C _{TR}	I _F = 5 mA, V _{CE} = 5V	80	-	600	%
	Collector-Emitter Saturation Voltage	V _{CE(sat)}	I _F = 20mA, I _C = 1mA	-	0.1	0.2	V
	Isolation Resistance	R _{ISO}	V _{IO} = 500V DC 40~60% R.H.	1×10 ¹²	-	-	Ω
	Isolation current	R _{isc}	6000V DC, 40~60%R.H	-	-	2	μA
	Floating Capacitance	C _{IO}	V _{IO} = 0, f = 1MHz	-	0.6	1.0	pF

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Parameter		Symbol	Test conditions	Min.	Typ.	Max.	Unit	
Transfer Characteristics	Cut-off frequency	f _c	V _{CE} = 5V, I _c = 2mA R _L =100Ω, -3dB	-	80	-	kHz	
	Turn On Time	T _{on}	V _{CE} =2V, R _L = 100Ω I _c =2mA		4	18		μs
	Turn Off Time	T _{off}			3	18		

Rank Table of Current Transfer Ratio CTR

Rank Mark	Min. (%)	Max. (%)	Condition
A	80	160	$I_F = 5mA, V_{CE} = 5V$
B	130	260	
C	200	400	
D	300	600	
E	100	200	
F	150	300	
No mark	80	600	

Ratings and Characteristics Curves: (@ $T_A = 25^\circ C$ unless otherwise specified)

Fig.1 Allowable Forward Current vs. Ambient Temperature

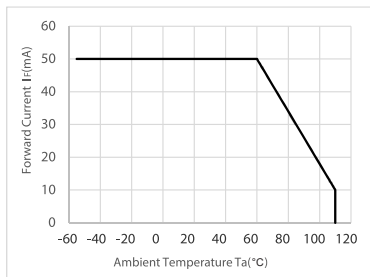


Fig.2 Allowable collector power dissipation vs. Ambient Temperature

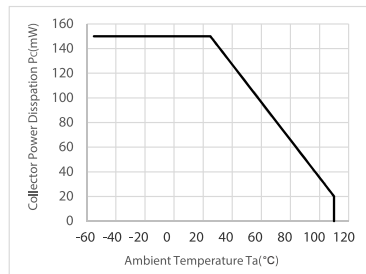


Fig.3 Relative Current Transfer Ratio vs. Forward Current

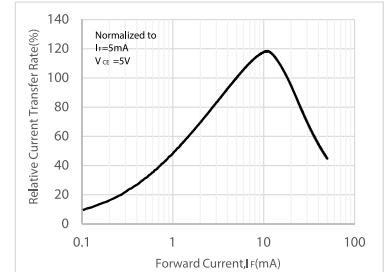


Fig.4 Forward Current vs. Forward Voltage

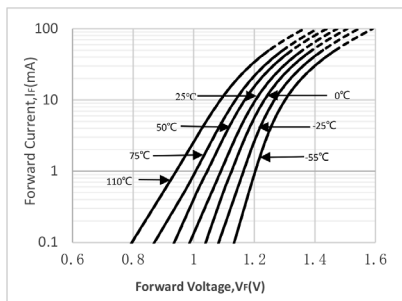


Fig.5 Collector Current vs. Collector-emitter Voltage

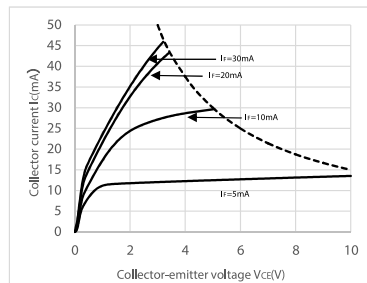
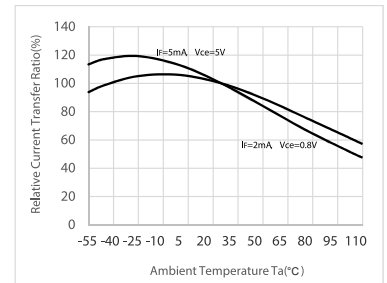


Fig.6 Relative Current Transfer Ratio vs. Ambient Temperature



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

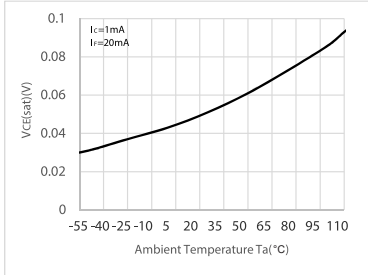


Fig.8 Collector Dark Current vs. Ambient Temperature

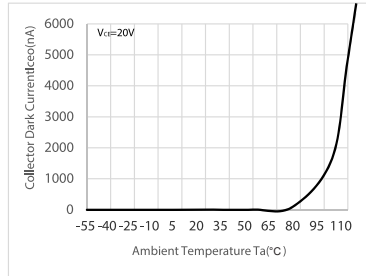


Fig.9 Response Time vs. Load Resistance

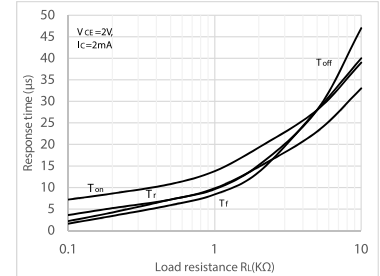


Fig.10 Frequency Response

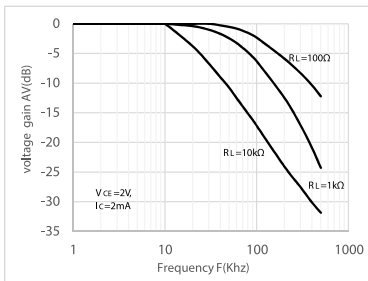


Fig.11 Collector-emitter Saturation Voltage vs. Forward Current

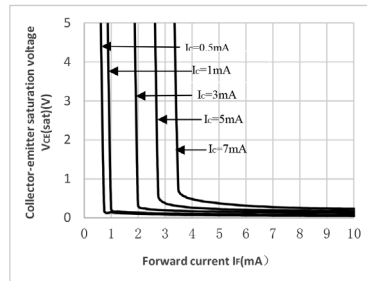
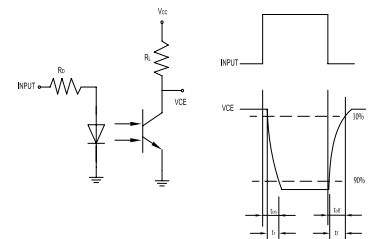
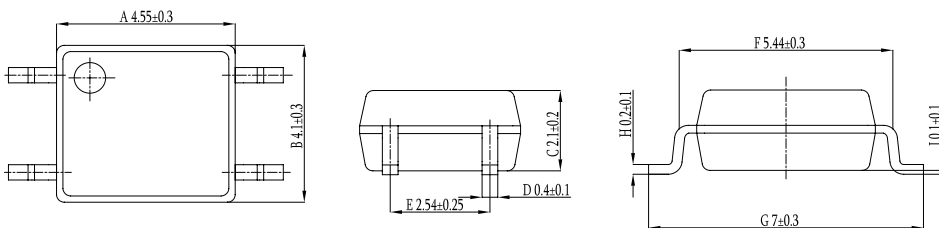


Fig.12 Switching Time Test Circuit & Waveforms



Outline Dimensions



Part Number Table

Description	Part Number
Optocoupler, Phototransistor, 50mA, 1V, 3750Vrms	BL357D

Dimensions : Millimetres

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