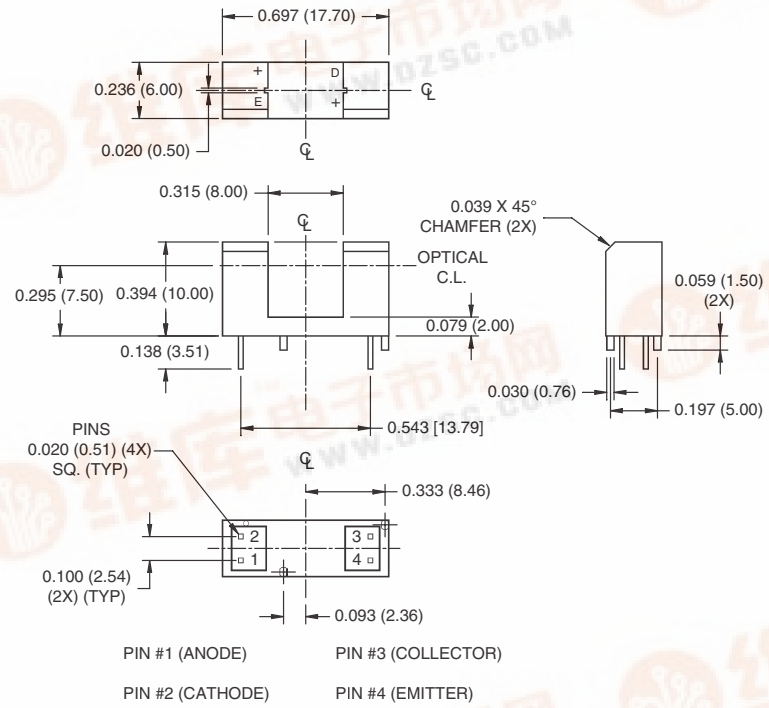
FAIRCHILD
SEMICONDUCTOR®

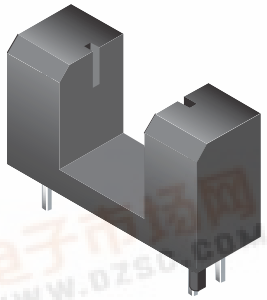
PHOTOTRANSISTOR OPTICAL INTERRUPTER SWITCH

QVE00034

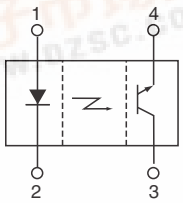
PACKAGE DIMENSIONS



NOTES:
1. Dimensions for all drawings are in inches (millimeters).
2. Tolerance of ± .010 (.25) on all non-nominal dimensions unless otherwise specified.



SCHEMATIC



DESCRIPTION

The QVE00034 is a slotted optical switch designed for multipurpose non-contact sensing. It consists of a GaAs LED and a silicon photo-transistor packaged into an injection molded housing and facing each other across a 0.315" (8.0 mm) gap. The housing is featuring locating knobs for accurate mounting.

FEATURES

- No contact switching
- 8mm wide slot
- 0.5 mm aperture width
- Opaque black plastic housing
- Locating knobs on housing base for accurate mounting
- Transistor Output

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ABSOLUTE MAXIMUM RATINGS (T_A = 25°C unless otherwise specified)

Parameter	Symbol	Rating	Units
Operating Temperature	T_{OPR}	-55 to +100	°C
Storage Temperature	T_{STG}	-55 to +100	°C
Soldering Temperature (Iron)(2,3,4)	T_{SOL-I}	240 for 5 sec	°C
Soldering Temperature (Flow)(2,3)	T_{SOL-F}	260 for 10 sec	°C
EMITTER			
Continuous Forward Current	I_F	50	mA
Reverse Voltage	V_R	6	V
Power Dissipation(1)	P_D	100	mW
SENSOR			
Collector-Emitter Voltage	V_{CEO}	30	V
Emitter-Collector Voltage	V_{ECO}	4.5	V
Collector Current	I_C	20	mA
Power Dissipation(1)	P_D	150	mW

NOTES

1. Derate power dissipation linearly 1.67 mW/°C above 25°C.
2. RMA flux is recommended.
3. Methanol or isopropyl alcohols are recommended as cleaning agents.
4. Soldering iron tip 1/16" (1.6mm) from housing.

ELECTRICAL/OPTICAL CHARACTERISTICS (T_A = 25°C unless otherwise specified)

PARAMETER	TEST CONDITIONS	SYMBOL	MIN	TYP	MAX	UNITS
EMITTER						
Forward Voltage	I_F = 20 mA	V_F	—	1.2	1.5	V
Reverse Current	V_R = 4 V	I_R	—	—	10	µA
Peak Emission Wavelength	I_F = 20 mA	λ_{PE}	—	940	—	nm
SENSOR						
Dark Current	V_{CE} = 10 V, I_F = 0 mA	I_D	—	—	200	nA
	V_{CE} = 2.5 V, I_F = 0 mA, T_A = -40°C to +85°C		—	—	3	µA
COUPLED						
Collector Current	I_F = 20 mA, V_{CE} = 10 V	$I_{C(ON)}$	0.5	—	14	mA
Collector Emitter Saturation Voltage	I_F = 20 mA, I_C = 0.1 mA T_A = -40°C to +85°C	$V_{CE\ (SAT)}$	—	—	0.4	V
Rise Time	V_{CC} = 5 V, R_L = 100 Ω	t_r	—	4	—	µs
Fall Time	I_C = 5 µA	t_f	—	4	—	

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TYPICAL PERFORMANCE CURVES

Fig. 1 Collector Current vs. Shield Distance

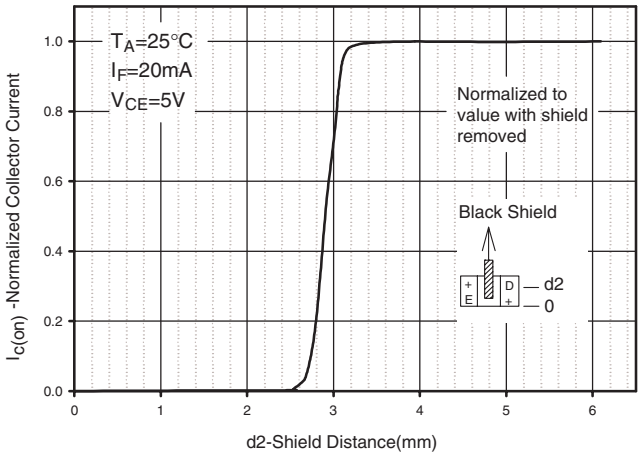

Fig. 2 Collector Current vs. Shield Distance

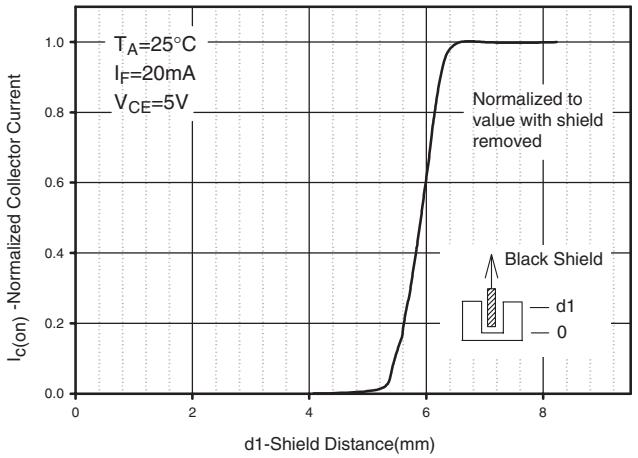

Fig. 3 Collector-Emitter Voltage vs. Collector Current

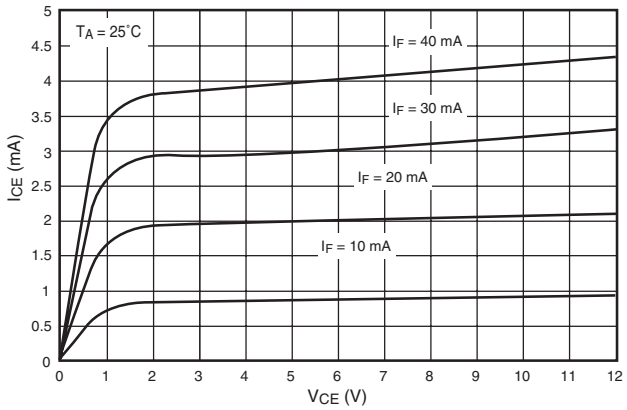

Fig. 4 Collector-Emitter Voltage vs. Temperature

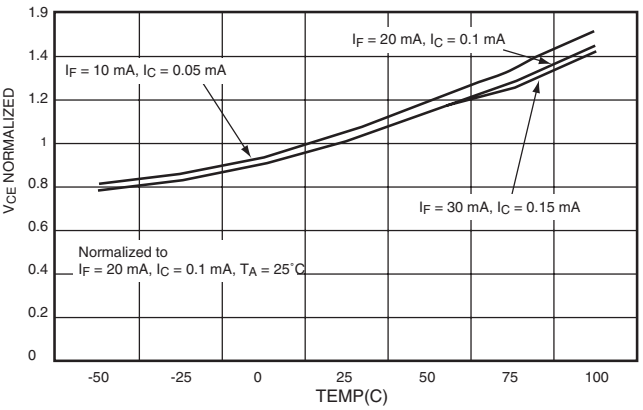

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Fig. 5 Collector Current vs. Temperature

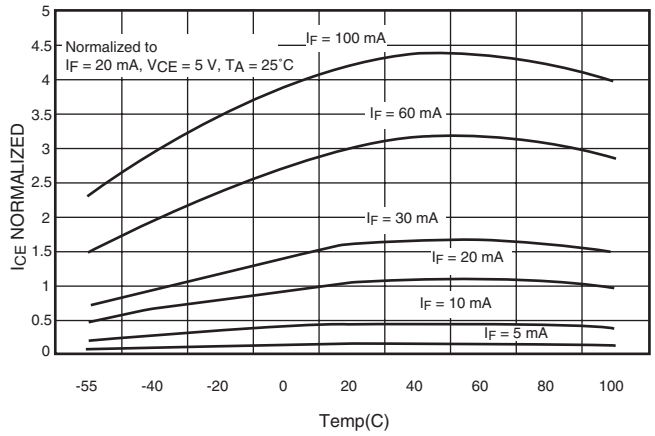


Fig. 6 Collector Current vs. Forward Current

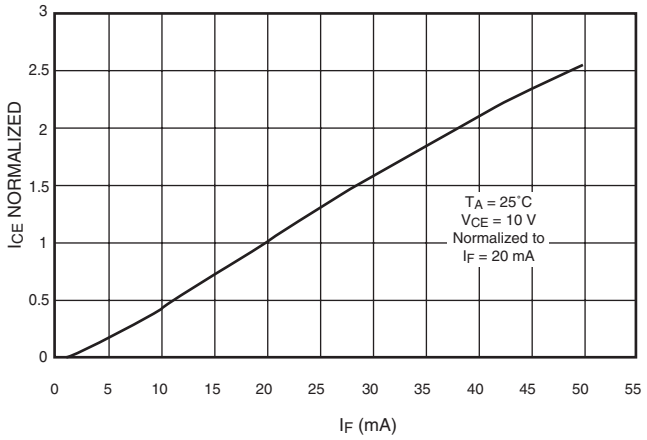


Fig. 7 Rise Time vs. Load Resistance

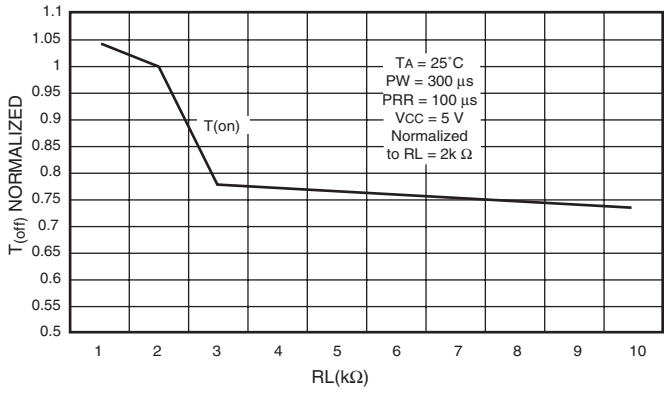


Fig. 8 Fall Time vs. Load Resistance

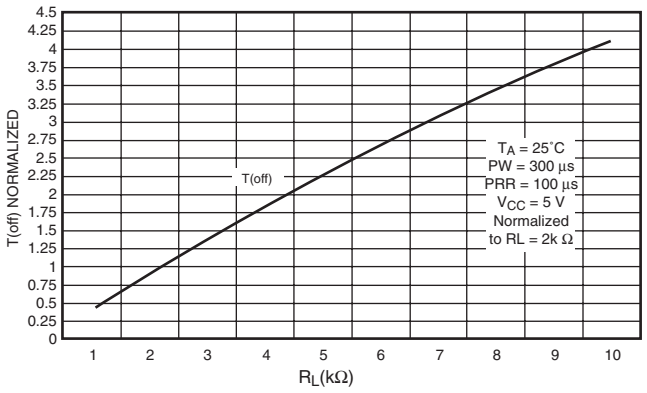
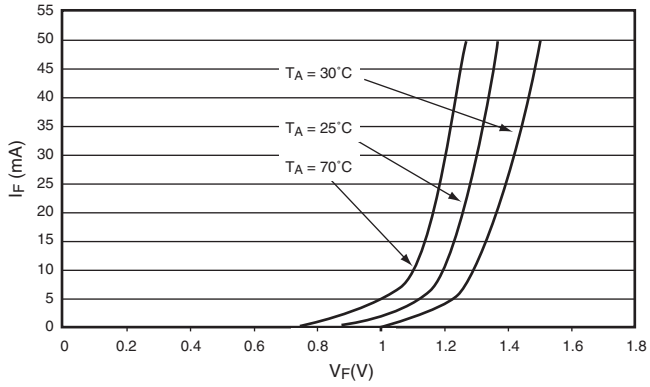


Fig. 9 Forward Voltage vs. Forward Current



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