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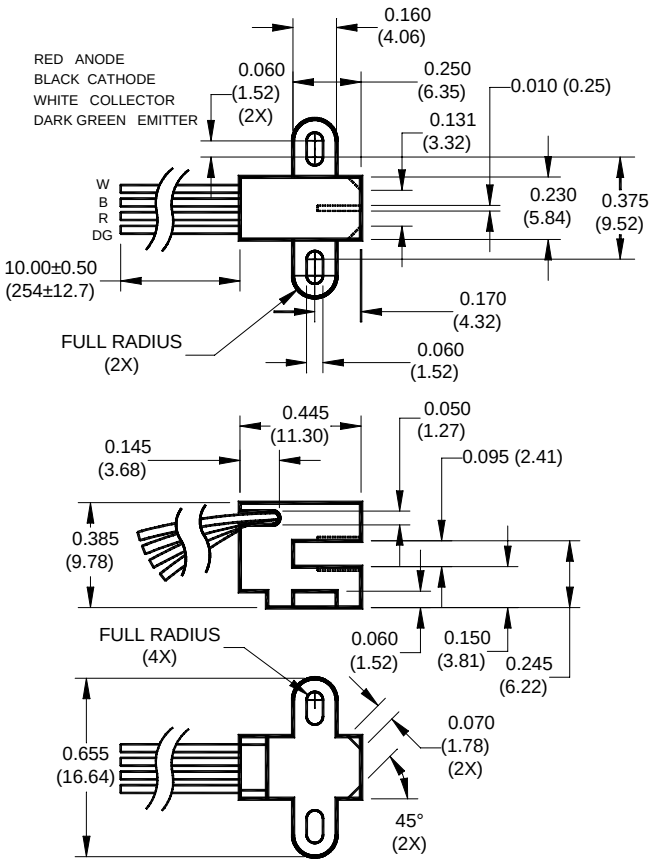
Please note: As part of the Fairchild Semiconductor integration, some of the Fairchild orderable part numbers will need to change in order to meet ON Semiconductor's system requirements. Since the ON Semiconductor product management systems do not have the ability to manage part nomenclature that utilizes an underscore (_), the underscore (_) in the Fairchild part numbers will be changed to a dash (-). This document may contain device numbers with an underscore (_). Please check the ON Semiconductor website to verify the updated device numbers. The most current and up-to-date ordering information can be found at www.onsemi.com. Please email any questions regarding the system integration to Fairchild_questions@onsemi.com.

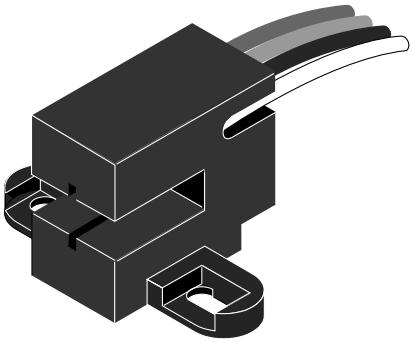
FAIRCHILD
SEMICONDUCTOR™

QVE00039
PHOTOTRANSISTOR OPTICAL INTERRUPTER SWITCH

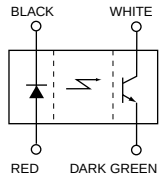
PACKAGE DIMENSIONS



NOTES:
1. Dimensions are in inches (mm)
2. Tolerance of ± .010 (.25) on all non nominal dimensions unless otherwise specified.
3. Wire gauge: 28 AWG



SCHEMATIC



FEATURES

- No contact switching
- 2.41 mm wide slot
- Slot horizontal to mounting surface
- Mounting tabs
- Transistor Output
- Wire leads for remote connection 10” (254mm)
- Opaque black plastic housing
- 0.010 (0.25) aperture width

NOTES (Applies to Max Ratings and Characteristics Tables.)

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 1/16” (1.6mm) minimum from housing.

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

Parameter	Symbol	Rating	Units
Operating Temperature	T_{OPR}	-40 to +85	°C
Storage Temperature	T_{STG}	-40 to +85	°C
Lead Soldering Temperature (Iron)(2,3,4)	T_{SOL-I}	240 for 5 sec	°C
EMITTER			
Continuous Forward Current	I_F	50	mA
Reverse Voltage	V_R	5	V
Power Dissipation(1)	P_D	100	mW
SENSOR			
Collector-Emitter Voltage	V_{CEO}	30	V
Emitter-Collector Voltage	V_{ECO}	4.5	V
Power Dissipation(1)	P_D	100	mW

ELECTRICAL / OPTICAL CHARACTERISTICS (T_A = 25°C)

PARAMETER	TEST CONDITIONS	SYMBOL	MIN	TYP	MAX	UNITS
EMITTER						
Forward Voltage	I_F = 20 mA	V_F	—	—	1.7	V
Reverse Current	V_R = 5 V	I_R	—	—	100	μA
Peak Emission Wavelength	I_F = 20 mA	λ_{PE}	—	940	—	nm
SENSOR						
Collector-Emitter Breakdown	I_C = 1 mA	BV_{CEO}	30	—	—	V
Emitter-Collector Breakdown	I_E = 0.1 mA	BV_{ECO}	5	—	—	V
Dark Current	V_{CE} = 10 V, I_F = 0 mA	I_D	—	—	100	nA
COUPLED						
Collector Current	I_F = 20 mA, V_{CE} = 10 V	$I_{C(ON)}$	0.5	—	—	mA
Collector Emitter Saturation Voltage	I_F = 20 mA, I_C = 0.4 mA	$V_{CE\ (SAT)}$	—	—	0.4	V
Rise Time	V_{CE} = 5 V, R_L = 100 Ω	t_r	—	8	—	μs
Fall Time	$I_{C(ON)}$ = 5 mA	t_f	—	50	—	μs

TYPICAL PERFORMANCE CURVES

Fig. 1 Forward Voltage vs. Ambient Temperature

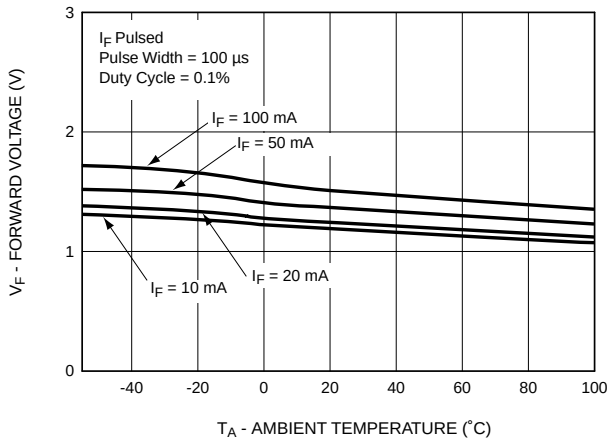


Fig. 2 Forward Current Vs. Forward Voltage

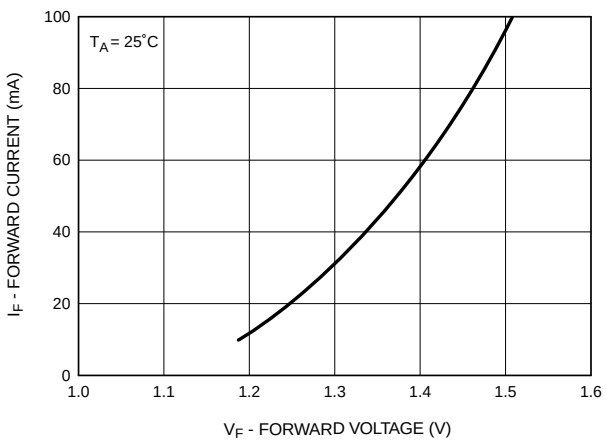


Fig. 3 Collector Emitter Dark Current (Normalized) vs. Ambient Temperature

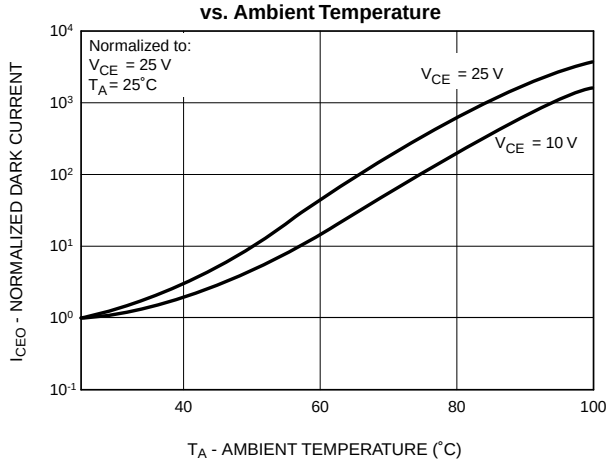


Fig. 4 Rise and Fall Time vs. Load Resistance

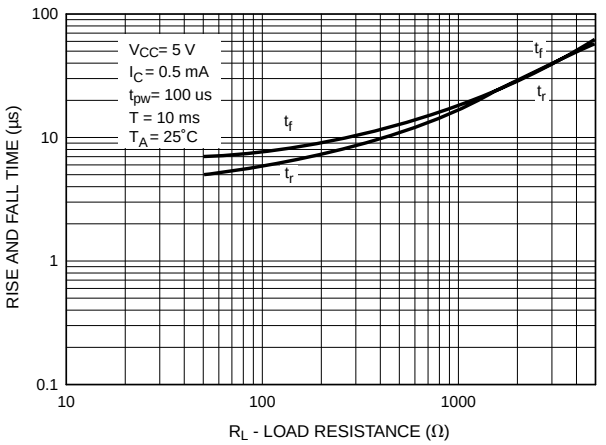


Fig. 5 Normalized Collector Current vs. Forward Current

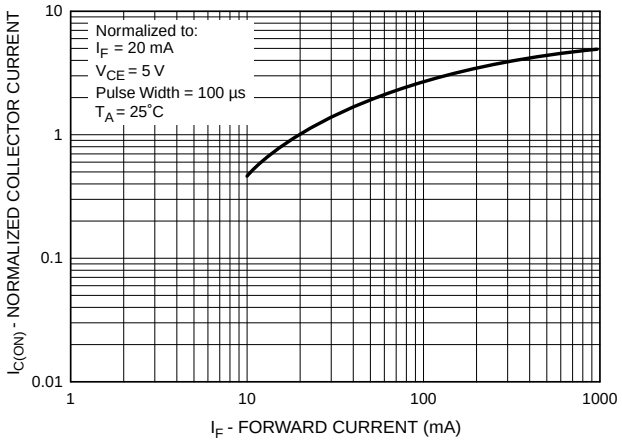


Fig. 6 Collector Current vs. Collector to Emitter Voltage

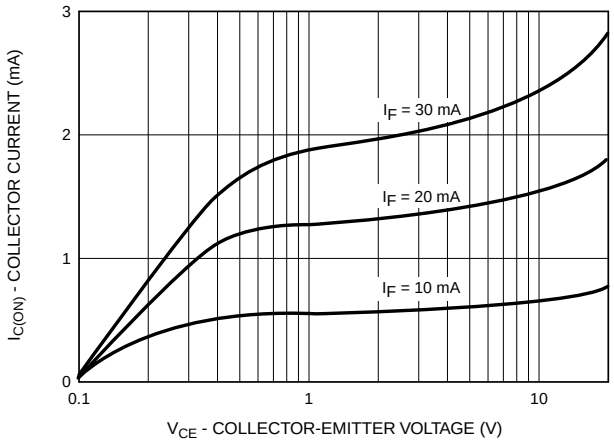


Fig. 7 Normalized Collector Current vs. Ambient Temperature

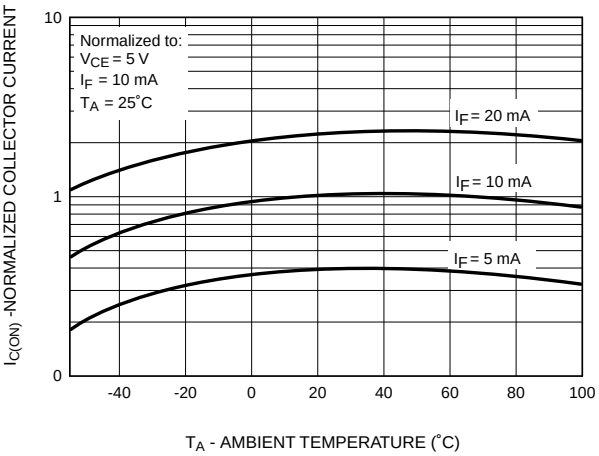


Fig. 8 Normalized Collector Current vs. Shield Distance

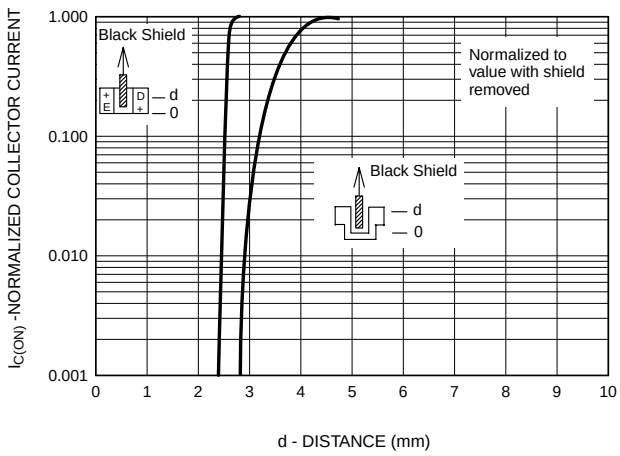
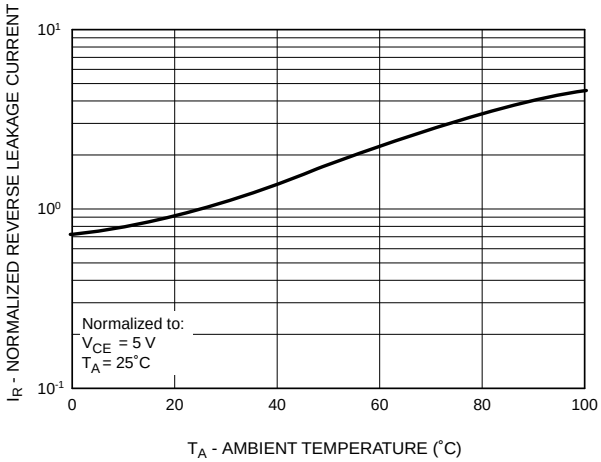


Fig. 9 Normalized Reverse Leakage Current vs. Ambient Temperature



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