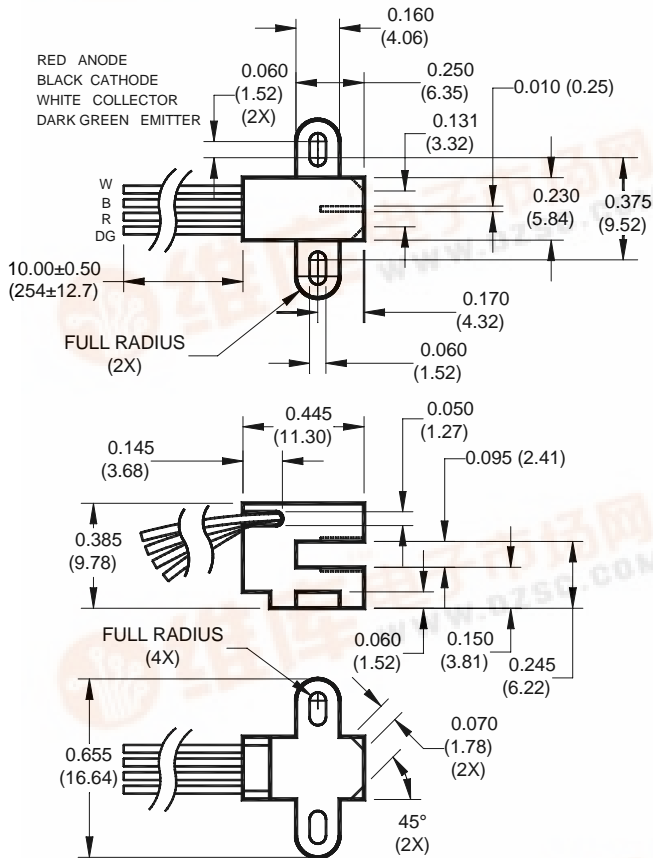


# QVE00039

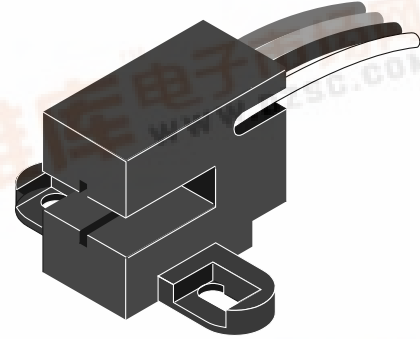
## PHOTOTRANSISTOR OPTICAL INTERRUPTER SWITCH

### PACKAGE DIMENSIONS

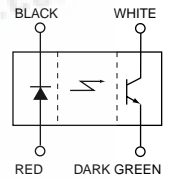


**NOTES:**

1. Dimensions are in inches (mm)
2. Tolerance of  $\pm .010 (.25)$  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<sub>A</sub> = 25°C unless otherwise specified)

Parameter	Symbol	Rating	Units
Operating Temperature	T <sub>OPR</sub>	-40 to +85	°C
Storage Temperature	T <sub>STG</sub>	-40 to +85	°C
Lead Soldering Temperature (Iron) <sup>(2,3,4)</sup>	T <sub>SOL-I</sub>	240 for 5 sec	°C
<b>EMITTER</b>			
Continuous Forward Current	I <sub>F</sub>	50	mA
Reverse Voltage	V <sub>R</sub>	5	V
Power Dissipation <sup>(1)</sup>	P <sub>D</sub>	100	mW
<b>SENSOR</b>			
Collector-Emitter Voltage	V <sub>CEO</sub>	30	V
Emitter-Collector Voltage	V <sub>ECO</sub>	4.5	V
Power Dissipation <sup>(1)</sup>	P <sub>D</sub>	100	mW



ELECTRICAL / OPTICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ )						
PARAMETER	TEST CONDITIONS	SYMBOL	MIN	TYP	MAX	UNITS
<b>EMITTER</b>						
Forward Voltage	$I_F = 20\text{ mA}$	$V_F$	—	—	1.7	V
Reverse Current	$V_R = 5\text{ V}$	$I_R$	—	—	100	$\mu\text{A}$
Peak Emission Wavelength	$I_F = 20\text{ mA}$	$\lambda_{PE}$	—	940	—	nm
<b>SENSOR</b>						
Collector-Emitter Breakdown	$I_C = 1\text{ mA}$	$BV_{CEO}$	30	—	—	V
Emitter-Collector Breakdown	$I_E = 0.1\text{ mA}$	$BV_{ECO}$	5	—	—	V
Dark Current	$V_{CE} = 10\text{ V}, I_F = 0\text{ mA}$	$I_D$	—	—	100	nA
<b>COUPLED</b>						
Collector Current	$I_F = 20\text{ mA}, V_{CE} = 10\text{ V}$	$I_{C(ON)}$	0.5	—	—	mA
Collector Emitter Saturation Voltage	$I_F = 20\text{ mA}, I_C = 0.4\text{ mA}$	$V_{CE(SAT)}$	—	—	0.4	V
Rise Time	$V_{CE} = 5\text{ V}, R_L = 100\ \Omega$	$t_r$	—	8	—	$\mu\text{s}$
Fall Time	$I_{C(ON)} = 5\text{ mA}$	$t_f$	—	50	—	$\mu\text{s}$

### TYPICAL PERFORMANCE CURVES

Fig. 1 Forward Voltage vs. Ambient Temperature

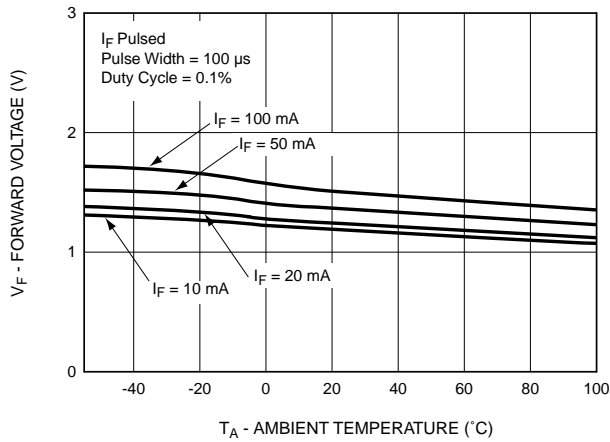


Fig. 2 Forward Current Vs. Forward Voltage

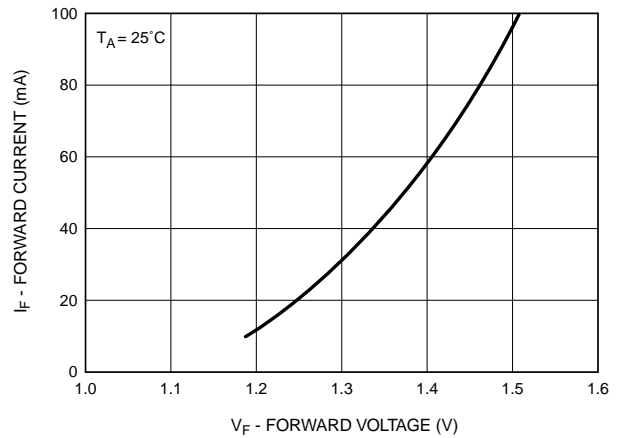


Fig. 3 Collector Emitter Dark Current (Normalized) vs. Ambient Temperature

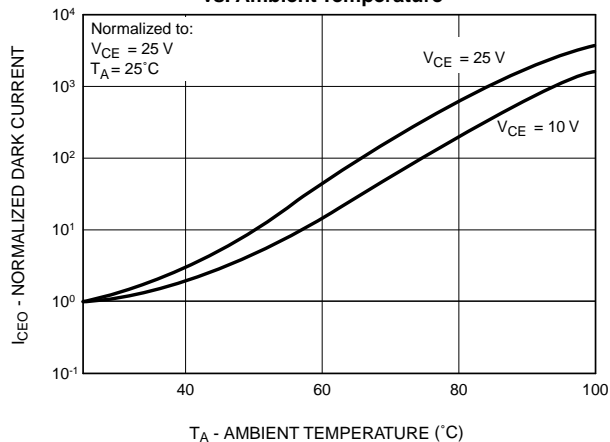
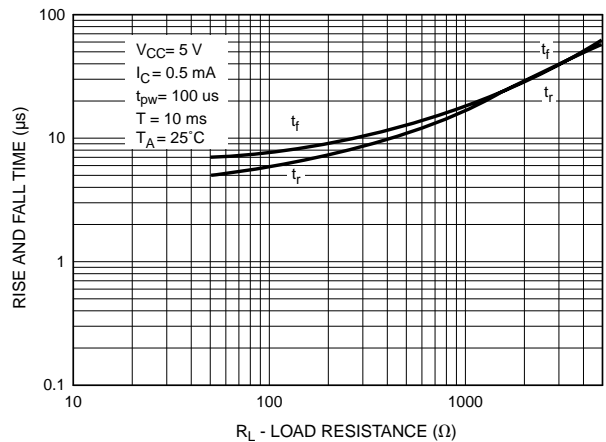
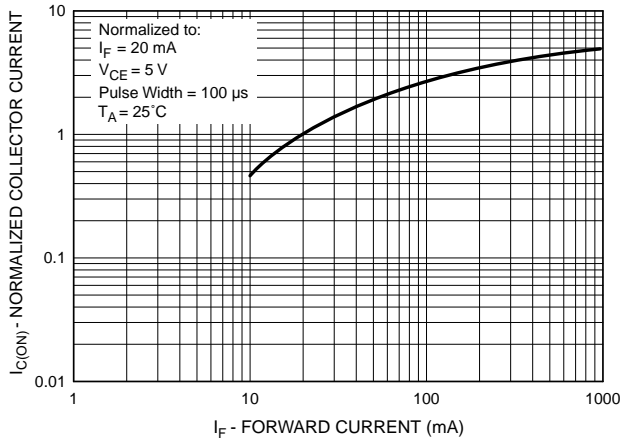


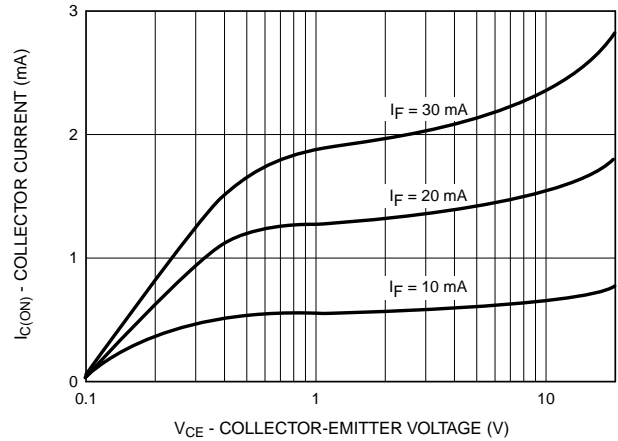
Fig. 4 Rise and Fall Time vs. Load Resistance



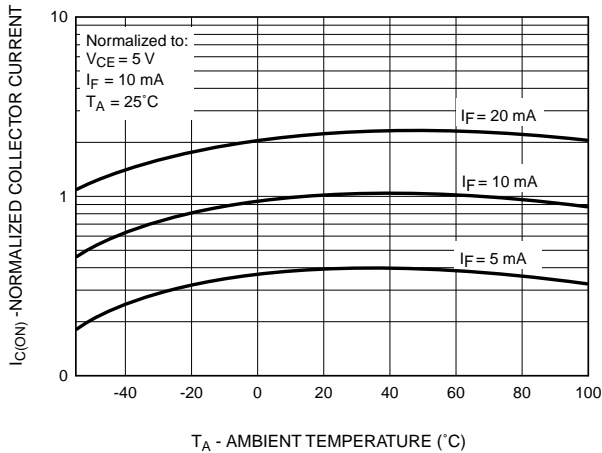
**Fig. 5 Normalized Collector Current vs. Forward Current**



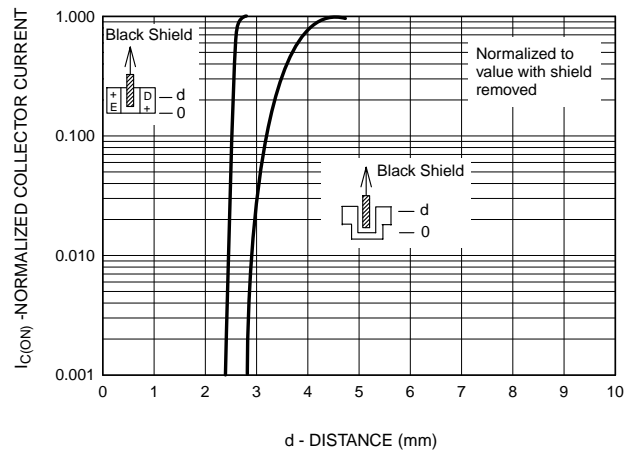
**Fig. 6 Collector Current vs. Collector to Emitter Voltage**



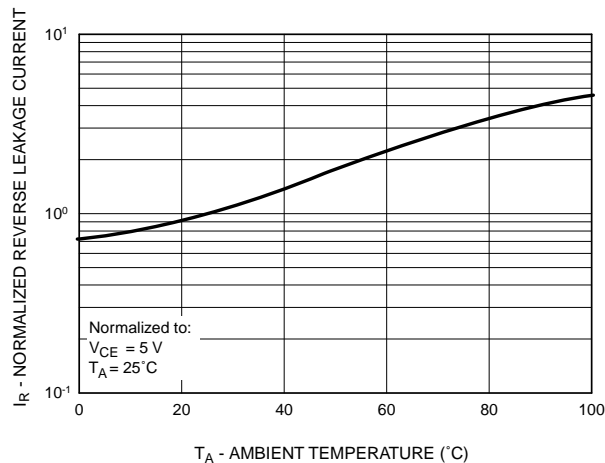
**Fig. 7 Normalized Collector Current vs. Ambient Temperature**



**Fig. 8 Normalized Collector Current vs. Shield Distance**



**Fig. 9 Normalized Reverse Leakage Current vs. Ambient Temperature**



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