

QCK3 Photodarlington Optical Interrupter Switch

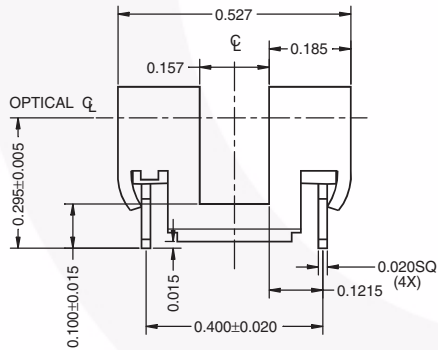
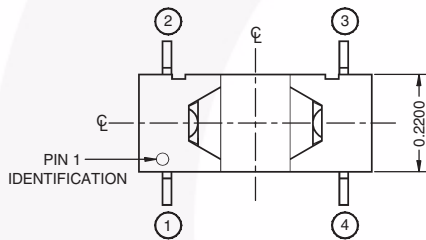
Features

- Unique single piece housing designed to reduce cost.
- High temperature housing material to withstand extreme temperature.
- Shipped in plastic tubes for protection of leads and to feed automatic placement equipment.
- Sensor package is infrared transparent and tinted to attenuate visible light.

Description

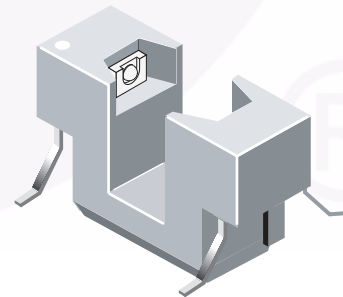
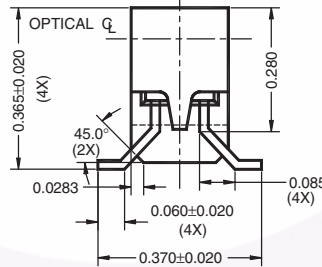
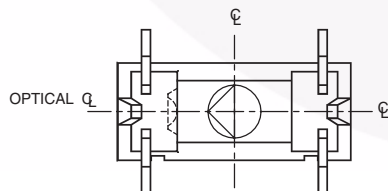
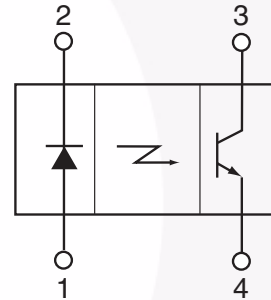
The QCK3 is a slotted optical switch designed for surface mount applications where extreme temperatures are experienced during solder reflow. The switch consists of a GaAs LED and a silicon photodarlington facing each other across a .157" (4.0 mm) gap. The leads are formed to sit flush on a PCB during solder reflow.

Package Dimensions



PIN 1 ANODE
PIN 2 CATHODE
PIN 3 COLLECTOR
PIN 4 EMITTER

Schematic



Notes:

1. Dimensions for all drawings are in inches.
2. Tolerance of ± .010 on all non-nominal dimensions unless otherwise specified.
3. All leads are coplanar within .006".
4. Housing material is electrically conductive.

Absolute Maximum Ratings ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Stresses exceeding the absolute maximum ratings may damage the device. The device may not function or be operable above the recommended operating conditions and stressing the parts to these levels is not recommended. In addition, extended exposure to stresses above the recommended operating conditions may affect device reliability. The absolute maximum ratings are stress ratings only.

Symbol	Parameter	Rating	Units
T_{OPR}	Operating Temperature	-40 to +100	$^\circ\text{C}$
T_{STG}	Storage Temperature	-40 to +100	$^\circ\text{C}$
T_{SOL-F}	Soldering Temperature (Flow)		
	Preheating Stage for 60 sec .	183	$^\circ\text{C}$
	Reflow Stage for 5 sec .	230	$^\circ\text{C}$
	Rate of Temperature Rise	3 to 10	$^\circ\text{C/S}$
EMITTER			
I_F	Continuous Forward Current	50	mA
V_R	Reverse Voltage	6	V
P_D	Power Dissipation ⁽¹⁾	100	mW
SENSOR			
V_{CEO}	Collector-Emitter Voltage	30	V
V_{ECO}	Emitter-Collector Voltage	6	V
I_C	Collector Current	40	mA
P_D	Power Dissipation ⁽¹⁾	150	mW

Note:

1. Derate power dissipation linearly 1.33mW/ $^\circ\text{C}$ above 25 $^\circ\text{C}$.






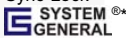
Electrical Characteristics

Symbol	Parameter	Test Conditions	Min.	Typ.	Max	Units
EMITTER						
V_F	Forward Voltage	$I_F = 20\text{mA}$			1.4	V
I_R	Reverse Current	$V_R = 2\text{V}$			100	μA
SENSOR						
BV_{CEO}	Collector-Emitter Breakdown	$I_C = 1\text{mA}, E_e = 0$	30			V
I_{CEO}	Collector-Emitter Leakage	$V_{CE} = 5.25\text{V}, E_e = 0$			30	μA
COUPLED						
$I_{C(ON)}$	On-State Collector Current	$I_F = 5.0\text{mA}, V_{CE} = 5\text{V}$	1.0			mA
$V_{CE(SAT)}$	Saturation Voltage	$I_F = 5\text{mA}, I_C = 5.0\text{mA}$			1.0	V



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