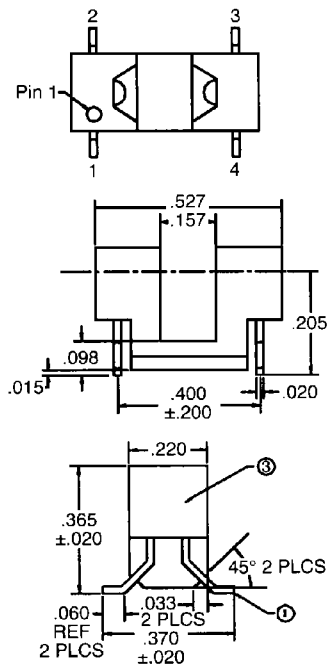




SLOTTED OPTICAL SWITCH

QCK3/QCK4 SURFACE MOUNTABLE OPTO INTERRUPTER

PACKAGE DIMENSIONS



ST2168

PIN OUT:
 1 - ANODE
 2 - CATHODE
 3 - COLLECTOR
 4 - EMITTER

NOTES:
 1. ALL LEADS ARE CO-PLANAR WITHIN .006".
 2. UNLESS SPECIFIED, GENERAL TOLERANCE IS ± .010".
 3. HOUSING MATERIAL IS ELECTRICALLY CONDUCTIVE.

DESCRIPTION

The QCK3/QCK4 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.

FEATURES

- Unique single piece housing designed to reduce cost.
- High temperature housing material to withstand extreme temperature.
- High current transfer ratios (CTR) for low drive current at 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.



SLOTTED OPTICAL SWITCH

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ Unless Otherwise Specified)	
Storage Temperature	-40°C to $+100^\circ\text{C}$
Operating Temperature	-40°C to $+100^\circ\text{C}$
Surface mount soldering temperature: (IR reflow solder chamber)	
Pre-heating stage 60 seconds max.	183°C
Reflow stage 5 seconds max.	230°C
NOTE: The rate of temperature rise shall be between 3°C and 10°C per second.	
INPUT DIODE	
Continuous Forward Current	50 mA
Reverse Voltage	5.0 Volts
Power Dissipation	$100\text{ mW}^{(1)}$
OUTPUT TRANSISTOR	
Collector-Emitter Voltage	30 Volts
Emitter-Collector Voltage	5.0 Volts
Collector Current	40 mA
Power Dissipation	$100\text{ mW}^{(1)}$

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$)						
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNITS	TEST CONDITIONS
INPUT DIODE						
Forward Voltage	V_f	—		1.40	V	$I_f = 2.0\text{ mA}$
Reverse Leakage Current	I_R	—		100	μA	$V_R = 2.0\text{ V}$
OUTPUT TRANSISTOR						
Collector-Emitter Breakdown	BV_{CE0}	30		—	V	$I_C = 1.0\text{ mA}$, $E_e = 0$
Collector-Emitter Leakage	I_{CE0}	—		30	μA	$V_{CE} = 5.25\text{ V}$, $E_e = 0$
COUPLED						
On-State Collector Current						
QCK3	$I_{C(ON)}$	1.0		—	mA	$I_f = 5.0\text{ mA}$, $V_{CC} = 5.0\text{ V}$
QCK4	$I_{C(ON)}$	3.0		15.0	mA	$I_f = 5.0\text{ mA}$, $V_{CC} = 5.0\text{ V}$
Saturation Voltage	$V_{CE(SAT)}$	—		1.0	V	$I_f = 5.0\text{ mA}$, $I_C = 5.0\text{ mA}$

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