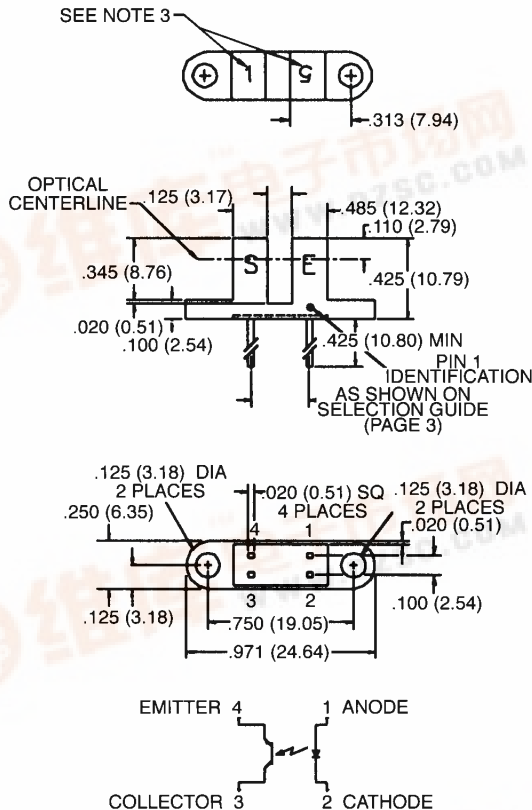




SLOTTED OPTICAL SWITCH

QVB SERIES

PACKAGE DIMENSIONS



ST2175

NOTES:

1. DIMENSIONS ARE IN INCHES (mm).
2. TOLERANCE IS $\pm .010$ (.25) UNLESS OTHERWISE SPECIFIED.
3. NUMBER INDICATES APERTURE SIZE. (5 = .050", 1 = .010")

DESCRIPTION

The QVB series of switches is designed to allow the user maximum flexibility in applications. Each switch consists of an infrared emitting diode facing an NPN photo-transistor across a .125" (3.18 mm) gap. A unique housing design provides a smooth external surface to prevent dust and dirt buildup while molded internal apertures give precise positioning and also provide protection from ambient light interference.

FEATURES

- Ambient light and dust protection.
- Lead spacing available at .220", .300", or .320".
- .050" and .010" apertures available.



SLOTTED OPTICAL SWITCH

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ Unless Otherwise Specified)

Storage Temperature	-40°C to $+85^\circ\text{C}$
Operating Temperature	-40°C to $+85^\circ\text{C}$
Soldering:	
Lead Temperature (Iron)	240°C for 5 sec. ^(2,3,4)
Lead Temperature (Flow)	260°C for 10 sec. ^(2,3)

INPUT DIODE

Continuous Forward Current	50 mA
Reverse Voltage	5.0 Volts
Power Dissipation	100 mW ⁽¹⁾

OUTPUT TRANSISTOR

Collector-Emitter Voltage	30 Volts
Emitter-Collector Voltage	5.0 Volts
Collector Current	40 mA
Power Dissipation	100 mW ⁽¹⁾

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ Unless Otherwise Specified)

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNITS	TEST CONDITIONS
INPUT DIODE						
Forward voltage	V_F	—		1.70	V	$I_F = 20\text{ mA}$
Reverse Leakage Current	I_R	—		100	μA	$V_R = 2.0\text{ V}$
OUTPUT TRANSISTOR						
Emitter-Collector Breakdown	BV_{ECO}	5		—	V	$I_E = 100\ \mu\text{A}$, $E_e = 0$
Collector-Emitter Breakdown	BV_{CEO}	30		—	V	$I_C = 1.0\text{ mA}$, $E_e = 0$
Collector-Emitter Leakage	I_{CEO}	—		100	nA	$V_{CE} = 10.0\text{ V}$, $E_e = 0$
COUPLED						
On-State Collector Current	$I_{C(ON)}$	See selection guide page 3.			mA	$I_F = 20\text{ mA}$, $V_{CE} = 5\text{ V}$
Saturation Voltage	$V_{CE(SAT)}$	—		0.40	V	$I_F = 20\text{ mA}$, $I_C = 0.1\text{ mA}$

NOTES

1. Derate power dissipation linearly 1.67 mW/ $^\circ\text{C}$ above 25°C .
2. RMA flux is recommended.
3. Methanol or Isopropanol alcohols are recommended as cleaning agents.
4. Soldering iron tip $\frac{1}{16}$ " (1.6 mm) from housing.



SLOTTED OPTICAL SWITCH

QVBXXXX OPTICAL SWITCH SELECTION GUIDE						
PART NUMBER	LEAD SPACING	APERTURES		I _{C(ON)}		
		LED	SENSOR	MIN	MAX	
QVB11123	.220"	0.050"	0.010"	0.20	—	
QVB11124	.220"	0.050"	0.010"	0.50	—	
QVB11223	.300"	0.050"	0.010"	0.20	—	
QVB11224	.300"	0.050"	0.010"	0.50	—	
QVB11323	.320"	0.050"	0.010"	0.20	—	
QVB11324	.320"	0.050"	0.010"	0.50	—	
QVB11133	.220"	0.050"	0.050"	0.50	—	
QVB11134	.220"	0.050"	0.050"	1.00	—	
QVB11233	.300"	0.050"	0.050"	0.50	—	
QVB11234	.300"	0.050"	0.050"	1.00	—	
QVB11333	.320"	0.050"	0.050"	0.50	—	
QVB11334	.320"	0.050"	0.050"	1.00	—	
QVB21113	.220"	0.010"	0.010"	0.10	—	
QVB21114	.220"	0.010"	0.010"	0.20	—	
QVB21213	.300"	0.010"	0.010"	0.10	—	
QVB21214	.300"	0.010"	0.010"	0.20	—	
QVB21313	.320"	0.010"	0.010"	0.10	—	
QVB21314	.320"	0.010"	0.010"	0.20	—	