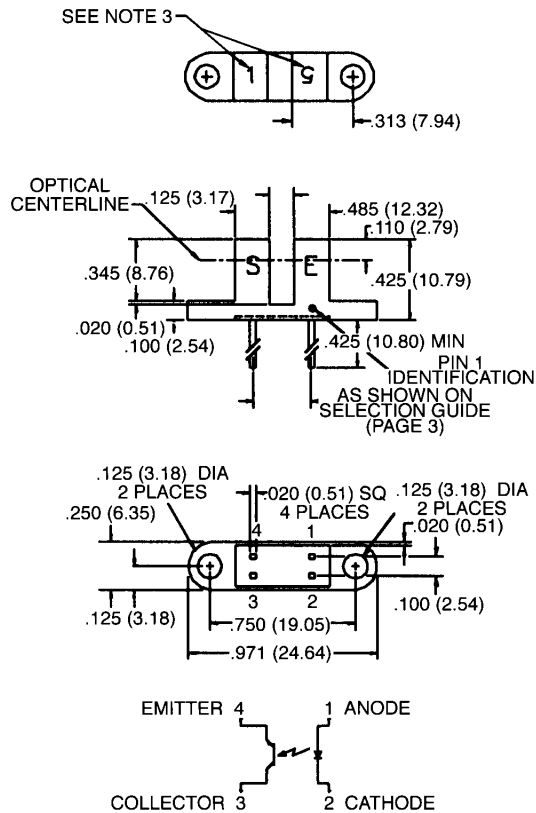




SLOTTED OPTICAL SWITCH

QVB SERIES

PACKAGE DIMENSIONS



ST2175

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.

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")



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	$I_E = 100\text{ }\mu\text{A}$, $E_e = 0$
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 $1/16"$ (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	—