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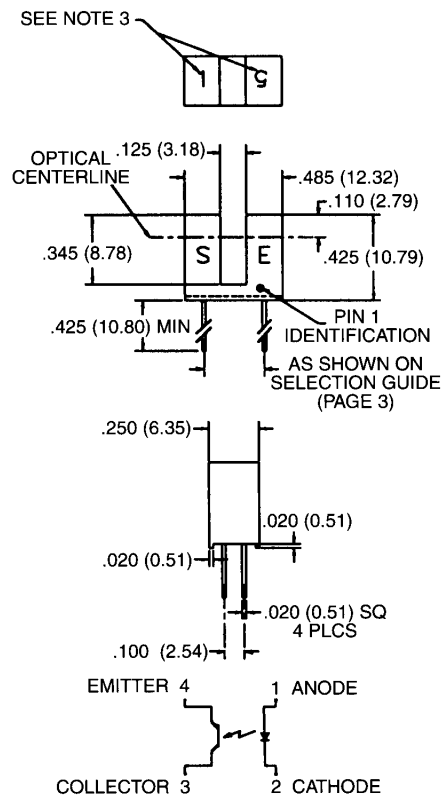
**ON Semiconductor®**

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**PACKAGE DIMENSIONS**



ST2174

**DESCRIPTION**

The QVA series of switches is designed to allow the user maximum flexibility in applications. Each switch consists of an infrared emitting diode facing an NPN phototransistor 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".
- .010" and .050" apertures.

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")

<b>ABSOLUTE MAXIMUM RATINGS</b> ( $T_A = 25^\circ\text{C}$ Unless Otherwise Specified)	
Storage Temperature .....	$-40^\circ\text{C}$ to $+85^\circ\text{C}$
Operating Temperature .....	$-40^\circ\text{C}$ to $+85^\circ\text{C}$
Soldering:	
Lead Temperature (Iron) .....	$240^\circ\text{C}$ for 5 sec. <sup>(2,3,4)</sup>
Lead Temperature (Flow) .....	$260^\circ\text{C}$ for 10 sec. <sup>(2,3)</sup>
<b>INPUT DIODE</b>	
Continuous Forward Current .....	50 mA
Reverse Voltage .....	5.0 Volts
Power Dissipation .....	100 mW <sup>(1)</sup>
<b>OUTPUT TRANSISTOR</b>	
Collector-Emitter Voltage .....	30.0 Volts
Emitter-Collector Voltage .....	5.0 Volts
Power Dissipation .....	100 mW <sup>(1)</sup>

<b>ELECTRICAL CHARACTERISTICS</b> ( $T_A = 25^\circ\text{C}$ Unless Otherwise Specified)						
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNITS	TEST CONDITIONS
<b>INPUT DIODE</b>						
Forward Voltage	$V_F$	—		1.70	V	$I_F = 20\text{ mA}$
Reverse Leakage Current	$I_R$	—		100	$\mu\text{A}$	$V_R = 2.0\text{ V}$
<b>OUTPUT TRANSISTOR</b>						
Emitter-Collector Breakdown	$BV_{ECC}$	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	$V_{CE} = 10.0\text{ V}$ , $E_e = 0$
<b>COUPLED</b>						
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	$I_F = 20\text{ mA}$ , $I_C = 0.25\text{ mA}$

<b>NOTES</b>	
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 tip 1/16" (1.6 mm) from housing.	



**SLOTTED OPTICAL SWITCH**

<b>QVAXXXX OPTICAL SWITCH SELECTION GUIDE</b>						
PART NUMBER	LEAD SPACING	APERTURES		$I_{CLOW}$		
		LED	SENSOR	MIN	MAX	
QVA11123	.220"	0.050"	0.010"	0.20	—	
QVA11124	.220"	0.050"	0.010"	0.50	—	
QVA11223	.300"	0.050"	0.010"	0.20	—	
QVA11224	.300"	0.050"	0.010"	0.50	—	
QVA11323	.320"	0.050"	0.010"	0.20	—	
QVA11324	.320"	0.050"	0.010"	0.50	—	
QVA11133	.220"	0.050"	0.050"	0.50	—	
QVA11134	.220"	0.050"	0.050"	1.00	—	
QVA11233	.300"	0.050"	0.050"	0.50	—	
QVA11234	.300"	0.050"	0.050"	1.00	—	
QVA11333	.320"	0.050"	0.050"	0.50	—	
QVA11334	.320"	0.050"	0.050"	1.00	—	
QVA21113	.220"	0.010"	0.010"	0.10	—	
QVA21114	.220"	0.010"	0.010"	0.20	—	
QVA21213	.300"	0.010"	0.010"	0.10	—	
QVA21214	.300"	0.010"	0.010"	0.20	—	
QVA21313	.320"	0.010"	0.010"	0.10	—	
QVA21314	.320"	0.010"	0.010"	0.20	—	



## SLOTTED OPTICAL SWITCH

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