

SINGLE CHANNEL SLOTTED INTERRUPTER SWITCH (TRANSISTOR SENSOR)			WITHOUT MOUNTING TAB					WITH MOUNTING TAB			
			ISTS100	H22A1	H22A2	H22A3	ISTS804	ISTS200	H21A1	H21A2	H21A3
PARAMETER	UNITS	TEST CONDITIONS									
V_F	Max.	V	I_F (mA) =								
			30	60	60	60	20	30	60	60	60
			1.6	1.7	1.7	1.7	1.7	1.6	1.7	1.7	1.7
I_R	Max.	μA	$V_R = 5V$								
			100	100	100	100	100	100	100	100	100
B_{VCBO}	Min.	V	$I_C = 1mA$								
			30	30	30	30	30	30	30	30	30
B_{VBCO}	Min.	V	$I_R = 100\mu A$								
			6.0	6.0	6.0	6.0	5.0	6.0	6.0	6.0	6.0
I_{CBO}	Max.	nA	$V_{CE} = 25V$ $I_H = 0$								
			100	100	100	100	100	100	100	100	100
$V_{CE}(SAT)$	Max.	V	I_C (mA) =								
			1.8	1.8	1.8	1.8	0.25	1.8	1.8	1.8	1.8
	Max.	V	$I_F = 20mA$								
			-	-	0.4	0.4	0.4	-	-	0.4	0.4
	Max.	V	$I_F = 30mA$								
			0.4	0.4	-	-	-	0.4	0.4	-	-
$I_{C ON}$	Min.	mA	$V_{CE} (V) =$								
			5.0	5.0	5.0	5.0	10	5.0	5.0	5.0	5.0
	Min.	mA	$I_F = 5mA$								
			-	0.15	0.3	0.6	-	-	0.15	0.3	0.6
	Min.	mA	$I_F = 20mA$								
			-	1.0	2.0	4.0	0.5	-	1.0	2.0	4.0
	Min.	mA	$I_F = 30mA$								
			1.9	1.9	3.0	5.5	-	1.9	1.9	3.0	5.5
			$V_{CC} = 5V, R_L (K)\Omega =$								
			0.1	2.5	2.5	2.5	0.1	0.1	2.5	2.5	2.5
$(T_R)^*$	Typ.	μS	$I_F = 1mA$								
			3.0*	-	-	-	3.0*	3.0*	-	-	-
T_{ON}			$I_F = 30mA$								
			-	8.0	8.0	8.0	-	-	8.0	8.0	8.0
$(T_F)^*$	Typ.	μS	$I_F = 1mA$								
			3.0*	-	-	-	3.0*	3.0*	-	-	-
T_{OFF}			$I_F = 30mA$								
			-	50	50	50	-	-	50	50	50
Aperture	mm	Emitter Sensor	1.0 1.0	1.0 1.0	1.0 1.0	1.0 1.0	1.0 1.0	1.0 1.0	1.0 1.0	1.0 1.0	1.0 1.0
Package Schematic			2 1	2 1	2 1	2 1	3 1	1 1	1 1	1 1	1 1

DUAL CHANNEL SLOTTED INTERRUPTER SWITCH (TRANSISTOR SENSOR)			WITHOUT MOUNTING TAB			WITH MOUNTING TAB		
			ISTS150	ISTS832S	ISTS832SD	ISTS250	ISTS822S	ISTS822SD
PARAMETER	UNITS	TEST CONDITIONS						
V_F	Max.	V	$I_F = 20mA$					
			1.6	1.7	1.7	1.6	1.7	1.7
I_R	Max.	μA	$V_R = 3V$					
			100	100	100	100	100	100
B_{VCBO}	Min.	V	$I_C = 1mA$					
			30	30	30	30	30	30
B_{VBCO}	Min.	V	$I_R = 100\mu A$					
			5.0	5.0	5.0	5.0	5.0	5.0
I_{CBO}	Max.	nA	$V_{CE} = 10V$ $I_H = 0$					
			100	100	100	100	100	100
$V_{CE}(SAT)$	Max.	V	$I_F = 20mA$ $I_C = 50\mu A$					
			-	-	0.4	-	-	0.4
	Max.	V	$I_C = 125\mu A$					
			0.4	0.4	-	0.4	0.4	-
$I_{C ON}$	Min.	μA	$V_{CE} = 10V$ $I_F = 20mA$					
			250	250	100	250	250	100
T_R	Typ.	μS	$V_{CC} = 5V, R_L = 100\Omega$ $I_F = 1mA$					
			3.0	-	-	3.0	-	-
T_F	Typ.	μS						
			3.0	-	-	3.0	-	-
Aperture	mm	Emitter Sensor	- -	- 0.25	0.25 0.25	- -	- 0.25	0.25 0.25
Package Schematic			5 5	5 5	5 5	6 5	6 5	6 5

SINGLE CHANNEL SLOTTED INTERRUPTER SWITCH (DARLINGTON SENSOR)			WITHOUT MOUNTING TAB				WITH MOUNTING TAB			
			H22B1	H22B2	H22B3	ISTS300	H21B1	H21B2	H21B3	ISTS400
PARAMETER	UNITS	TEST CONDITIONS								
V_F	Max.	V	$I_F = 60\text{mA}$	1.7	1.7	1.7	1.7	1.7	1.7	1.7
I_R	Max.	μA	$V_R = 5\text{V}$	100	100	100	100	100	100	100
$B_{V_{CE0}}$	Min.	V	$I_C = 1\text{mA}$	30	30	30	30	30	30	30
$B_{V_{ECO}}$	Min.	V	$I_E = 100\mu\text{A}$	6.0	6.0	6.0	6.0	6.0	6.0	6.0
I_{CE0}	Max.	nA	$V_{CE} = 25\text{V}$ $I_H = 0$	100	100	100	100	100	100	100
$V_{CE}(\text{SAT})$	Max.	V	$I_F = 10\text{mA}, I_C = 1.8\text{mA}$	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	Max.	V	$I_F = 60\text{mA}, I_C = 50\text{mA}$	-	1.5	1.5	-	1.5	1.5	-
$I_{C\text{ON}}$	Min.	mA	$V_{CE} = 1.5\text{V}$ $I_F = 2\text{mA}$	0.5	1.0	2.0	-	0.5	1.0	-
	Min.	mA	$I_F = 5\text{mA}$	2.5	5.0	10.0	-	2.5	5.0	-
	Min.	mA	$I_F = 10\text{mA}$	7.5	14.0	25.0	7.5	7.5	14.0	25.0
T_{ON}	Typ.	μS	$V_{CC} = 5\text{V}, R_L = 750\Omega$ $I_F = 10\text{mA}$	45	45	45	45	45	45	45
T_{OFF}	Typ.	μS		250	250	250	250	250	250	250
Aperture	mm	Emitter Sensor		- 1.0	- 1.0	- 1.0		- 1.0	- 1.0	- 1.0
Package				2	2	2	2	1	1	1
Schematic				2	2	2	2	2	2	2

SPECIAL PURPOSE OPTO - SWITCHES (TRANSISTOR SENSOR)			REFLECTIVE SWITCH			FLYING LEAD SWITCH	
			ISTS149	ISTS703A	ISTS708	ISTS823A	ISTS824A
PARAMETER	UNITS	TEST CONDITIONS					
V_f Max.	V	I_f (mA) =	40	40	40	20	20
			1.6	1.7	1.7	1.7	1.7
I_R Max.	μ A	$V_R = 3V$	100	100	100	100	100
$B_{V_{CEO}}$ Min.	V	$I_C = 1mA$	30	30	30	30	30
$B_{V_{ECO}}$ Min.	V	$I_E = 100\mu A$	6.0	5.0	5.0	5.0	5.0
I_{CBO} Max.	nA	$V_{CE} = 15V$ $I_H = 0$	100	100	100	100	100
$V_{CE}(SAT)$ Max.	V	$I_f = 40mA, D$ (mm) = $I_C = 3\mu A$ $I_C = 100\mu A$	3.8	5.0	3.8	I_C (μA) = 100	
			0.4	-	0.4	$I_f = 20mA$	0.4 0.4
			-	0.4	-		
$I_{C\ ON}$ Min.	μ A	$V_{CE} = 5V, D$ (mm) = $I_f = 40mA$	3.8	5.0	3.8	$V_{CE} = 10V$	
			25	200	10	$I_f = 20mA$	200 500
Package Schematic			11	9	10		4 4
			4	4	4		3 3

ISO-LOGIC SLOTTED INTERRUPTER SWITCH (SCHMITT TRIGGER SENSOR)			WITH MOUNTING TAB						WITHOUT MOUNTING TAB	
PARAMETER	UNITS	TEST CONDITIONS	ISTS2001	ISTS2002	ISTS2003	TEST CONDITIONS	ISTS970T	ISTS971T	ISTS970N	ISTS971N
V_F Max.	V	$I_F = 20\text{mA}$	1.5	1.5	1.5		1.7	1.7	1.7	1.7
I_R Max.	μA	$V_R = 3\text{V}$	10	10	10	$V_R = 2\text{V}$	100	100	100	100
V_R Min.	V	$I_R = 10\mu\text{A}$	6.0	6.0	6.0		-	-	-	-
V_{CC} Min.	V		4.5	4.5	4.5		4.75	4.75	4.75	4.75
Max.	V		16	16	16		5.25	5.25	5.25	5.25
V_{OH} Typ.	V	Note 1	V_{CC}	V_{CC}	V_{CC}	$V_{CC}=4.75\text{V}$ $I_{OH}=800\mu\text{A}$	V_{CC}		V_{CC}	
V_{OL} Min.	V	$I_O = 16\text{mA}$	0.1	0.1	0.1	$V_{CC}=4.75\text{V}$ $I_O=12.8\text{mA}$	-	-	-	-
Max.	V		0.4	0.4	0.4	$I_F=15\text{mA}$	0.4	0.4	0.4	0.4
I_{OH} Max.	μA	$V_{CC}=4.75\text{V}$ $V_{OH}=30\text{V}$	-	-	-		-	-	-	-
I_{CCL} Min.	mA	$V_{CC}=5\text{V}$	2.0	2.0	2.0	$V_{CC}=5.25\text{V}$ $I_F=0$	-	-	-	-
Max.	mA	$I_F=0\text{mA}$	12	12	12		15	15	15	15
Min.	mA	$V_{CC}=16\text{V}$	2.0	2.0	2.0		-	-	-	-
Max.	mA	$I_F=0\text{mA}$	15	15	15		-	-	-	-
I_{CCH} Min.	mA	$V_{CC}=5\text{V}$	0.5	0.5	0.5	$V_{CC}=5.25\text{V}$ $I_F=15\text{mA}$	-	-	-	-
Max.	mA	$I_F=I_{FT}$	10	10	10		15	15	15	15
Min.	mA	$V_{CC}=16\text{V}$	0.5	0.5	0.5		-	-	-	-
Max.	mA	$I_F=I_{FT}$	12	12	12		-	-	-	-
T_{PLH} Max.	μS	$I_F=I_{FT}$ $R_L=280\text{R}$ $C_L=50\text{pF}$	9.0	9.0	9.0		9.0	9.0	9.0	9.0
T_{PHL} Max.	μS		15	15	15		15	15	15	15
T_R Max.	μS	$V_{CC}=5\text{V}$ $R_L=280\text{R}$ $C_L=50\text{pF}$	0.5	0.5	0.5	Note 2 Typical	0.1	0.1	0.1	0.1
T_F Max.	μS		0.5	0.5	0.5	Typical	0.05	0.05	0.05	0.05
I_{FT} Max.	mA	$V_{CC}=5\text{V}$, $R_L=390\text{R}$	10	20	20		15	15	15	15
F_M Max.	kHz	$C_L=50\text{pF}$	100	100	100		-	-	-	-
Aperture		Emitter	-	-	-		-	-	-	-
		Sensor	-	0.25	0.25		1.0	1.0	1.0	1.0
Package			8	8	8		8	8	7	7
Schematic			6	6	6		6	7	6	7

Note 1 - The output is tied to V_{CC} through an internal 10K resistor, with the exception of ISTS971.

Note 2 - Output load equivalent to 8 TTL loads.

ABSOLUTE MAXIMUM RATINGS

Operating Temperature -25 to +85°C
 Storage Temperature -40 to +85°C
 Soldering Temperature 260°C
 (3 seconds, 1.6mm below the seating plate)

INPUT DIODE

Forward D.C. Current 60mA
 Peak Forward Current 1A see note 1
 Reverse Voltage 6V
 Power Dissipation : slotted 75mW
 interrupter switch
 Reflective opto-switch 90mW

Note1: Pulse Width $\leq 100\mu\text{s}$, Duty Ratio 0.01

OUTPUT PHOTOTRANSISTOR

Collector - Emitter Voltage 35V
 Emitter - Collector Voltage 6V
 Collector D.C. Current : Transistor Sensor 20mA
 Darlington Sensor 50mA

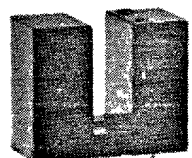
OUTPUT WITH BUILT IN SCHMITT TRIGGER

Collector - Emitter Voltage - ISTS 971_ 40V
 ISTS 200_ 17V
 ISTS 970_ 17V
 Maximum Allowable V_{CC} - ISTS 971_ 35V
 ISTS 200_ 17V
 ISTS 970_ 17V
 Output Current 50mA
 Power Dissipation 250mW

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INTRODUCTION

Isocom's Opto-electronic slotted interrupter switches form the heart of motion, or position, sensors operating on the principle that objects opaque to infra-red will interrupt the transmission of light between an infra-red emitting diode and a photo-sensor. Similarly Photo-reflective switches operate by detecting light transmitted from an infra-red emitting diode with a photo-sensor positioned to sense a reflective object positioned at a point of optimum response. Optical switches provide non-contact sensing of linear or rotary motion, having many applications in industry such as in printers, photocopiers, weighing, measuring, automotive and entertainment equipment.

A comprehensive range of slotted interrupter switches are available covering single and dual channel devices with photo-transistor, and Darlington detectors, with optional mounting tabs. A smaller range of photo-reflective switches are also available. For applications where speed of switching is important, a range of Schmitt-Trigger devices are available.

CUSTOM SWITCHES

Isocom Components has the ability to provide switches to customer's own unique designs, this includes our 'module concept' which may necessitate the addition of cabling, and connectors, to provide the customer with a 'plug in' solution to their Opto-Switch problem. A range of variations in both Mechanical and Electrical specifications can also be catered for. If you have a unique 'Custom Switch' or 'Module' requirement, then please contact the factory, we will be pleased to discuss details with you.

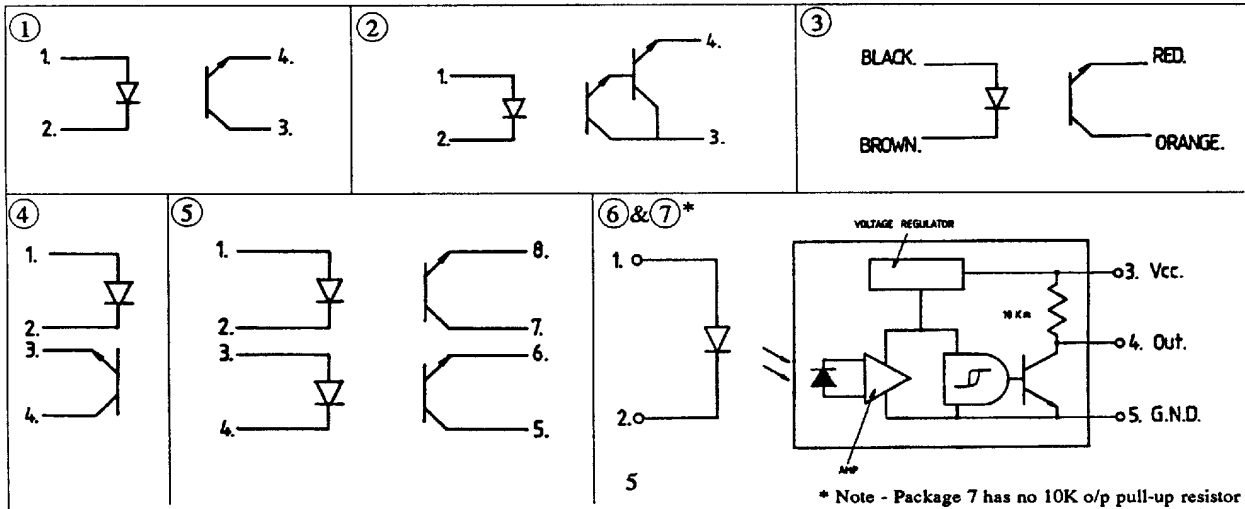
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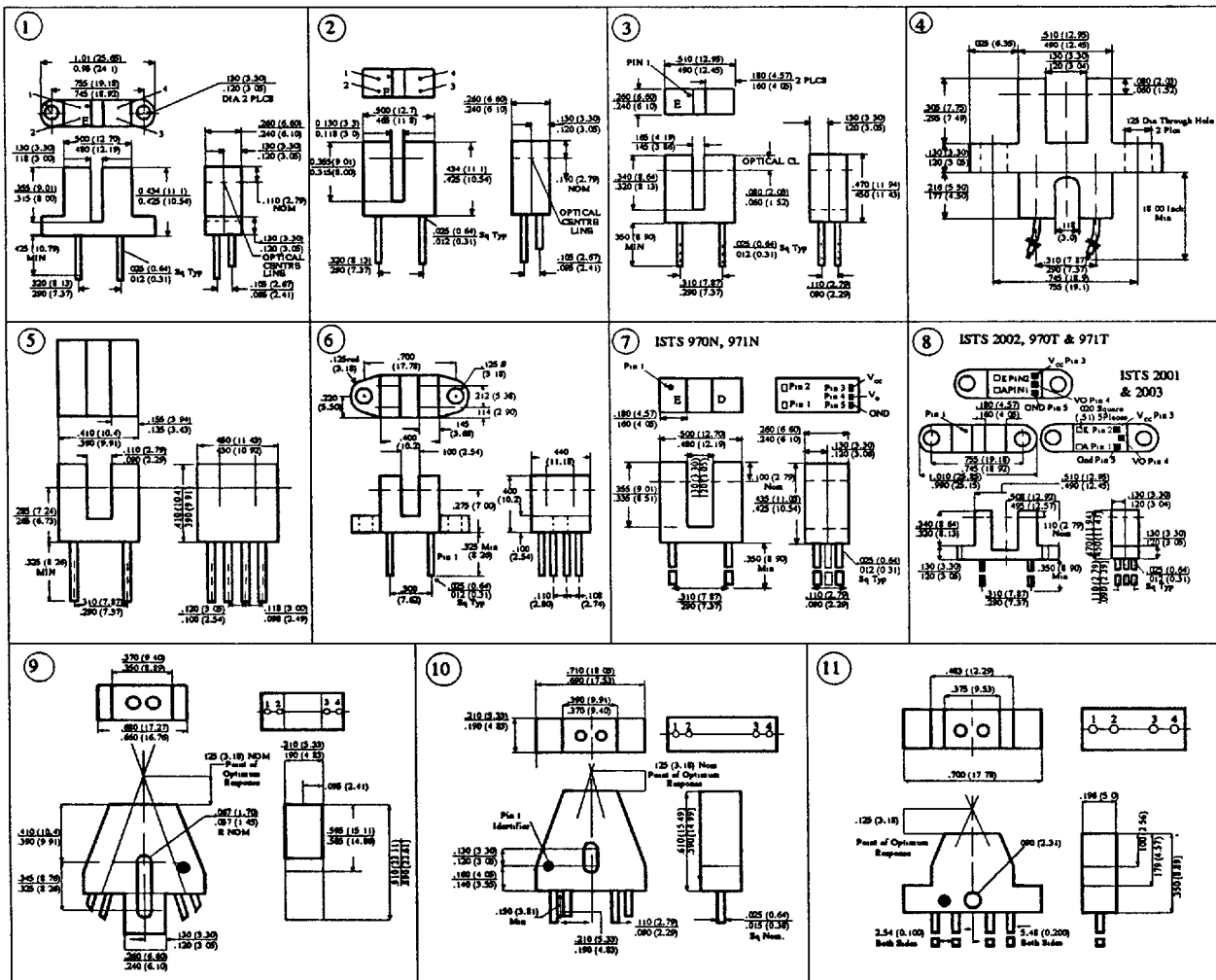
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SCHEMATIC DIAGRAMS



PACKAGE DRAWINGS



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