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ISR/IST/ISX 100-500 A/S

High Voltage Photo EDMOS Relays

Features

Normally Closed, Normally Open, or Normally Closed and Open Circuits with Single Pole Single Throw
Control 350 or 400 Vac or Vdc
Switch 130 mA Loads
LED Control Current 2 mA
Low ON-Resistance
 $dv/dt > 500 \text{ V/ms}$
Isolation Test Voltage 1500 or 3750 Vrms(ac)
UL, CSA, FCC Compatible

Description

The coupler consists of an AlGaAs LED that is optically coupled to a dielectrically isolated photodiode array which drives two series connected high voltage MOS transistors. The typical ON-Resistances (see table) of 20 or 40 ohms at 25mA are linear up to 50 mA; the incremental resistance drops to less than 20 to 40 ohms beyond 50 mA while reducing internal power dissipation at high load currents.

Applications

Telecommunications - Telecom Switching; Tip/Ring Circuits; Modem Switching (Laptop, Notebook, Pocket Size); Hookswitch; Dial Pulsing; Ground Start; Ringer Injection
Instrumentation - Multiplexers; Data Acquisition; Electronic Switching; I/O Subsystems; Meters (Watt-Hour, Water, Gas); Medical Equipment
Miscellaneous - High Voltage Test Equipment; Triac Driver; Motor Control; Security; Aerospace; Industrial Controls

Absolute Maximum Ratings: (Ta=25°C)

Isolation Test Voltage:	1500 or 3750 Vrms (see Table below)
Isolation Resistance:	$\geq 10 \text{ Gohm}$ ($V_{io}=500V, T_a=25^\circ\text{C}$)
Total Power Dissipation:	550mW (derate $2.5\text{mW}/^\circ\text{C}$ linearly from 25°C)
Storage Temperature:	-40°C to $+150^\circ\text{C}$
Operating Temperature:	-40°C to $+85^\circ\text{C}$
Junction Temperature:	100°C
Lead Soldering:	260°C for 10s, 2mm from case

Input Emitter

Reverse Voltage:	5.0V
Operation Input Current:	5mA
Continuous Forward Current:	5mA-50mA
Peak Forward Current (1s):	1A
Recovery Input Current:	0.2mA (ISX200S, ISX250S: 0.4mA)
Forward Voltage:	2.0V (ISX200S, ISX250S: 1.8V)
Power Dissipation:	100mW
Derate Linearly above 25°C :	$1.3\text{mW}/^\circ\text{C}$ (ISR100S: $3\text{mW}/^\circ\text{C}$)

Output Detector

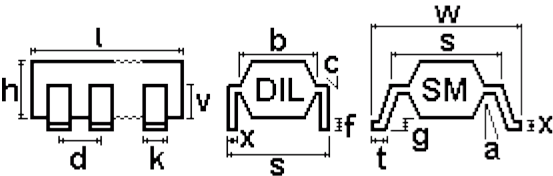
Output Breakdown Voltage:	$\pm 350V$ or $\pm 400V$ (see Table below)
Continuous Load Current:	$\pm 130\text{mA}$
Load Type:	AC/DC
Surge Load Current:	300mA
Off-State Leakage Current, Max:	$1\mu\text{A}$
Power Dissipation:	500mW

Particular Characteristics

Part Name: Parts ending 'S' are SOP (Small Package); other parts add 'A' for Surface Mount
Abbreviations: NO - Normally Open; NC - Normally Closed

Circuit Diagram	Form	Part Name	NO NC	Isolation (Vrms)	Load/ Output Break-down (Vac & Vdc)	ON Resistance at 25mA (ohms)		Incremental Resistance above 50mA (ohms)	Turn-off Time (ms)		Turn-on Time (ms)		Output Term. Capac. (pF)
						TYP	MAX		TYP	MAX	TYP	MAX	
	1 Form A	ISR100S	NO	1500	400	20	30	<20	0.7	1.5	0.5	1	6
	1 Form B	ISR150S	NC	1500	400	40	50	<40	0.7	1	0.8	1.5	6
	1 Form A	ISX100	NO	3750	350	20	25	<20	0.8	1.5	0.3	1	4
		ISX150		3750	350	20	25	<20	0.7	1.5	0.5	1	4
		ISX200		3750	350	20	30	<30	0.8	1.5	0.4	1	6
		ISX250		3750	400	20	30	<20	0.7	1.5	0.5	1	6
		ISX300		3750	400	20	25	<20	0.6	1.5	0.5	1	4
	1 Form A	ISX200S	NO	1500	350	20	30	<20	0.8	1.5	0.5	1	6
		ISX250S		1500	400	20	30	<20	0.7	1.5	0.6	1	6
	1 Form B	ISX350	NC	3750	400	40	50	<40	0.7	1	0.8	1.5	4
		ISX400		3750	400	40	50	<40	0.6	1	0.6	1.5	6
	1 Form B	ISX350S	NC	1500	400	40	50	<40	0.7	1	0.8	1.5	4
	Dual 1 Form A	IST100	NO	3750	350	20	25	<20	0.8	1.5	0.3	1	4
		IST150		3750	350	20	25	<20	0.7	1.5	0.5	1	4
		IST150S		1500	350	20	30	<20	0.8	1.5	0.5	1	6
		IST200		3750	400	20	30	<20	0.8	1.5	0.5	1	6
		IST250		3750	400	20	30	<20	0.7	1.5	0.6	1	6
		IST250S		1500	400	20	30	<30	0.7	1.5	0.6	1	6
	Dual 1 Form B	IST300	NC	3750	400	40	50	<40	0.7	1	0.8	1.5	4
		IST300S		1500	400	40	50	<40	0.7	1	0.8	1.5	6
		IST350		3750	400	40	50	<40	0.6	1	0.6	1.5	6
	1 Form A/B	IST400	NO	3750	400	20	30		0.8	1.5	0.7	1	6
			NC			40	50		0.7	1	0.8	1.5	
		IST400S	NO	1500	400	20	30		0.8	1.5	0.7	1	6
			NC			40	50		0.7	1	0.8	1.5	
		IST500	NO	3750	400	22	30		0.7	1.5	0.5	1	4
			NC			45	50		0.5	1	0.7	1.5	

Dimensions



Units: mm; Tolerance: ±0.1 mm

Package	SOP			DIL & Surface Mount	
Pins	4	6	8	6	8
b	4.4			6.5	
c				13 degrees	
d	2.54			2.54	
f				3.4	
g	0.10			0.4	
h	2.15			3.5	
k	0.4			0.5 (DIL), 1.2 (SM)	
l	4.7	6.7	9.8	7.3	9.68
s	5.49			7.62	
t	0.5			1.0	
v	1.2				
w	6.8±0.4			10.0±0.4	
x	0.15±0.03			0.254±0.05	

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