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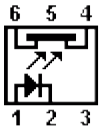
H11F1, H11F2, H11F3
PHOTON COUPLED BILATERAL ANALOG FET

Circuit



Features

As a Remote Variable Resistor

Resistance <=100 ohm to >=300 Mohm.
Linearity >=99.9%.
Shunt Capacitance <=15 pF.
I/O Isolation Resistance >=100 Gohm.

As An Analog Signal Switch

Externally Low Offset Voltage.
60 Vpk-pk Signal Capability.
No Charge Injection or Latchup.
t on, t off <=15 µsec.

Description

The H11F series consist of a Gallium Arsenide Infrared Emitting Diode coupled to a symmetrical bilateral silicon photo detector. The detector is electrically isolated from the input and performs like an isolated FET designed for distortion free control of low level ac and dc analog signals. The H11F series devices are mounted in a dual in line package. Surface Mount Option Available.

All electrical parameters are 100% tested by manufacturing. Specifications are guaranteed to a cumulative 0.65% AQL.

Absolute Maximum Ratings

Infrared Emitter

Power Dissipation:	150mW
Derate Linearly:	2.0mW/°C above 25°C
Forward Current (continuous):	60mA
Forward Current (peak):	500mA (Pulse Width 100µs 100pps)
Forward Current (peak):	3A (Pulse Width 1µs 300pps)
Reverse Voltage:	6V

Photo Detector

Power Dissipation:	300mW
Derate Linearly:	4.0mW/°C above 25°C
Breakdown Voltage:	±30V (H11F3: ±15V)
Detector Current (continuous):	±100mA

Total Device (MAX)

Storage Temperature:	-55 to +150°C
Operating Temperature:	-55°C to +100°C
Lead Soldering Time (at 260°C):	10s
Surge Isolation Voltage (Input to Output):	H11F1-F2: 3535Vpeak; 2500Vrms
Steady State Isolation Voltage (Input to Output):	H11F1-F2: 3180Vpeak; 2250Vrms

Individual Electrical Characteristics

INFRARED EMITTER	**CONDITIONS**	**MIN**	**TYP**	**MAX**	**UNIT**
Forward Voltage	I_F=16mA		1.1	1.75	V
Reverse Current	V_R=6V			10	µA
Capacitance	V=0, f=1MHz		50		pF
PHOTO DETECTOR					
Breakdown Voltage-$V_{(BR)46}$					
H11F1, F2	I46=10µA; I_F=0	30			V
H11F3		15			V
Off-State Dark Current - I46	V46=15V, I_F=0, T_A=25°C			50	nA
	V46=15V, I_F=0, T_A=100°C			50	µA
Off-State Resistance - r46	V46=15V, I_F=0	300			Mohms
Capacitance - C46	V46=0, I_F=0, f=1MHz			15	pF
COUPLED ELECTRICAL CHARACTERISTICS (Ta=25°C)		**MIN**	**TYP**	**MAX**	**UNIT**
On-State Resistance - r46					

H11F1	I_F=16mA, I46=100µA			200	ohms
H11F2				330	ohms
H11F3				470	ohms
On-State Resistance - r64					
H11F1	I_F=16mA, I64=100µA			200	ohms
H11F2				330	ohms
H11F3				470	ohms
Isolation Resistance (Input to Output)	V_{IO}=500V	100			Gohms
Input to Output Capacitance	V_{IO}=0, f=1MHz			2	pF
Turn-On Time - t_{ON}	I_F=16mA, R_L=50ohm, V46=5V			15	µs
Turn-Off Time - t_{OFF}				15	µs
Resistance, Non-Linearity and Asymmetry	I_F=16mA, I46=25µA RMS, f=1KHz			0.1	%

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