IS610X, IS611X
IS610, IS611

PHOTON COUPLED BILATERAL ANALOG FET

APPROVALS

- UL recognised, File No. E91231

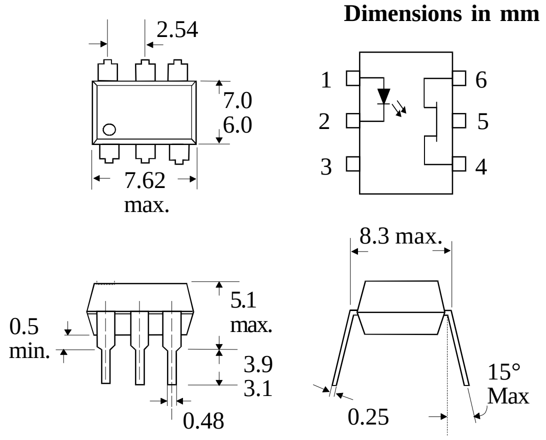
'X' SPECIFICATION APPROVALS

- VDE 0884 in 2 available lead forms : -
  - STD
  - G form

DESCRIPTION

The IS610, IS611 are optically coupled isolators consisting of infrared light emitting diode and a symmetrical bilateral silicon photodetector. The detector is electrically isolated from the input and performs like an ideal isolated FET designed for distortion-free control of low level ac and dc analog signals.The IS610, IS611 are mounted in a standard 6pin dual in line plastic package.

Dimensions in mm



FEATURES

- **Options :-**
  10mm lead spread - add G after part no.
  Surface mount - add SM after part no.
  Tape&reel - add SMT&R after part no.

As a remote variable resistor

- ≤100Ω to ≥300MΩ
- ≥ 99.9% Linearity
- ≤15 pF Shunt Capacitance
- ≥100GΩ I/O Isolation Resistance

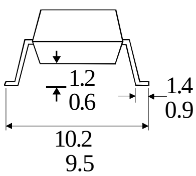
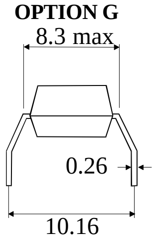
As an Analog Signal Switch

- Extremely low Offset Voltage
- 60V pk-pk Signal Capability
- No Charge Injection or Latchup
- ton, toff ≤15µs

APPLICATIONS

As a remote variable resistor

- Isolated variable attenuator
- Automatic gain control
- Active filter fine tuning / band switching

OPTION SM SURFACE MOUNT	OPTION G
	

APPLICATIONS (cont.)

As an Analog Signal Switch

- Isolated sample and hold circuit
- Multiplexed, optically isolated A/D conversion

ABSOLUTE MAXIMUM RATINGS
(25°C unless otherwise specified)

Storage Temperature	-55°C to + 150°C
Operating Temperature	-55°C to + 100°C
Lead Soldering Temperature (1/16 inch (1.6mm) from case for 10 secs)	260°C

INPUT DIODE

Forward Current	60mA
Reverse Voltage	6V
Power Dissipation	100mW

OUTPUT TRANSISTOR

Breakdown Voltage	±30V
Detector Current (continuous)	±100mA
Power Dissipation	300mW

POWER DISSIPATION

Total Power Dissipation	350mW

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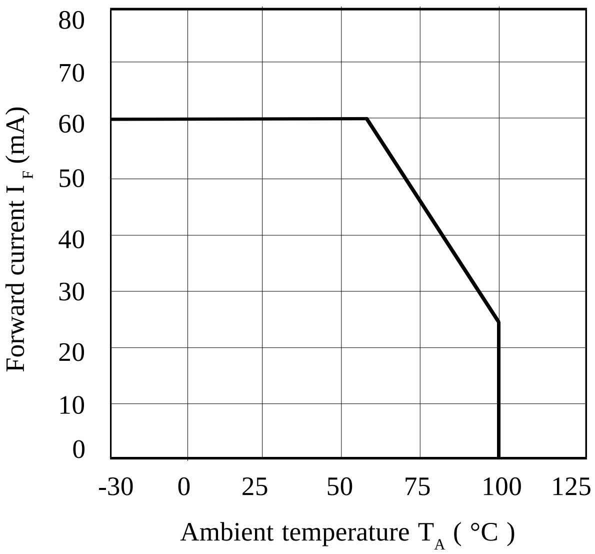
ELECTRICAL CHARACTERISTICS (T_A= 25°C Unless otherwise noted)

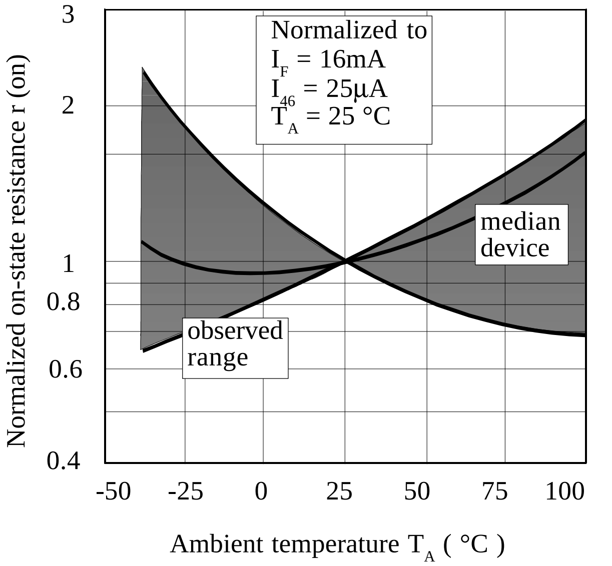
PARAMETER		MIN	TYP	MAX	UNITS	TEST CONDITION
Input	Forward Voltage (V_F)		1.1	1.75	V	I_F = 16mA
	Reverse Voltage (V_R)	5			V	I_R = 10µA
	Reverse Current (I_R)			10	µA	V_R = 5V
Output (either polarity)	Breakdown Voltage - $V_{(BR)46}$ (Note 2)	30			V	I_{46} = 10µA, I_F = 0
	Off-state Dark Current - I_{46}			50	nA	V_{46} = 15V, I_F = 0, T_A = 25°C
				50	µA	V_{46} = 15V, I_F = 0, T_A = 100°C
	Off-state Resistance - r_{46}	300			MΩ	V_{46} = 15V, I_F = 0
	Capacitance - C_{46}			15	pF	V_{46} = 0, I_F = 0, f = 1 MHz
Coupled	On-state Resistance - r_{46} (Note 2)					
	IS611			170	Ω	I_F = 16mA, I_{46} = 100µA
	IS610			200	Ω	I_F = 16mA, I_{46} = 100µA
	On-state Resistance - r_{64} (Note 2)					
	IS611			170	Ω	I_F = 16mA, I_{64} = 100µA
	IS610			200	Ω	I_F = 16mA, I_{64} = 100µA
	Input to Output Isolation Voltage V_{ISO}	5300			V_{RMS}	See note 1
		7500			V_{PK}	See note 1
	Input-output Isolation Resistance R_{ISO}	10^{11}			Ω	V_{IO} = 500V (note 1)
	Input-output Capacitance Cf			2	pF	V_{IO} = 0, f = 1MHz
	Turn-on Time ton			25	µs	I_F = 16mA, V_{46} = 5V,
	Turn-off Time toff			25	µs	R_L = 50Ω
	Resistance, non-linearity and asymmetry			0.1	%	I_F = 16mA, f = 1kHz I_{46} = 25µA RMS

Note 1 Measured with input leads shorted together and output leads shorted together.
Note 2 Special Selections are available on request. Please consult the factory.

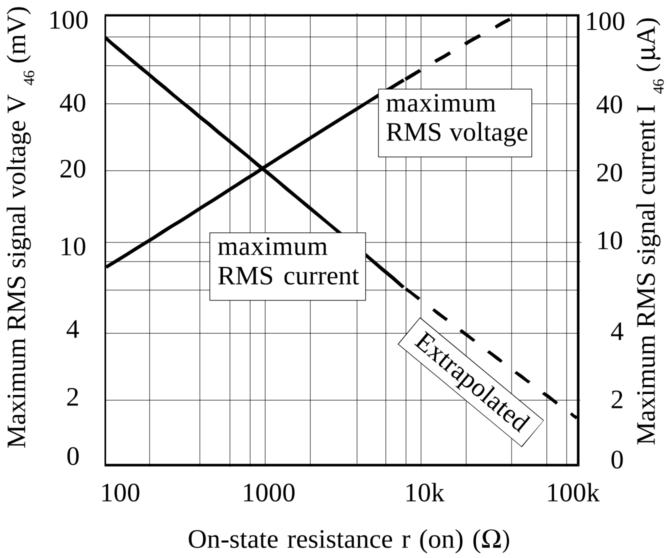
Forward Current vs. Ambient Temperature



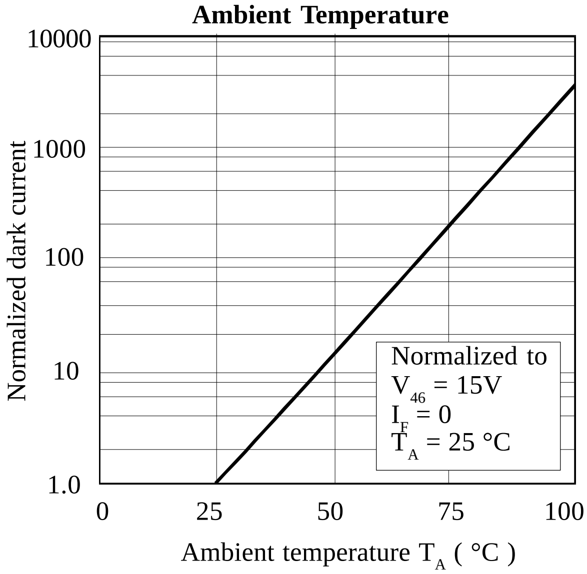
On-state Resistance vs. Ambient Temperature



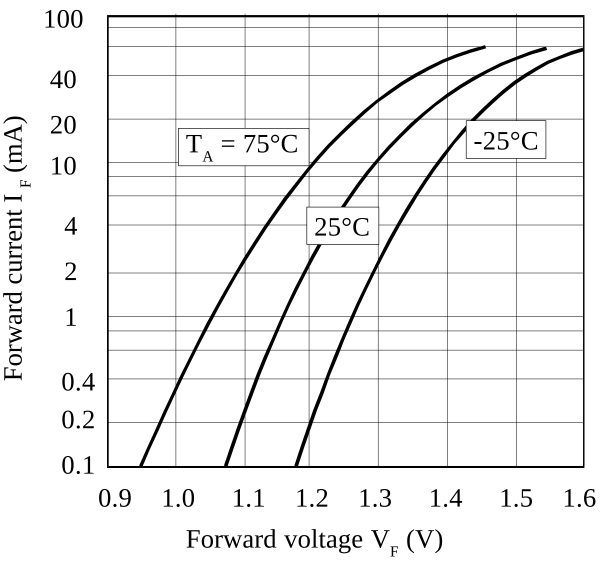
Region of Linear Resistance



Normalized Off-state current vs. Ambient Temperature



Input Current vs. Input Voltage



Resistive non-linearity vs. D.C. Bias