

IS220, IS221, IS222, IS223



## OPTICALLY COUPLED BILATERAL SWITCH LIGHT ACTIVATED ZERO VOLTAGE CROSSING TRIAC

### APPROVALS

- UL recognised, File No. E91231

### DESCRIPTION

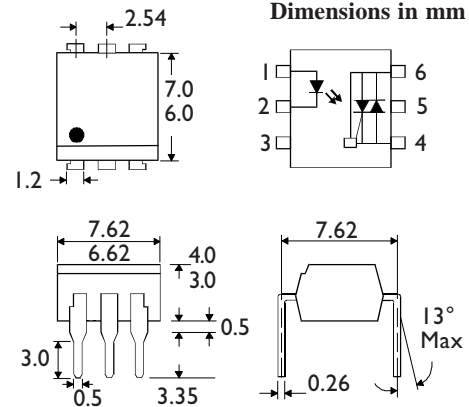
The IS22\_ Series are optically coupled isolators consisting of a Gallium Arsenide infrared emitting diode coupled with a monolithic silicon detector performing the functions of a zero crossing bilateral triac mounted in a standard 6 pin dual-in-line package.

### 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.
- High Isolation Voltage ( $5.3kV_{RMS}$ ,  $7.5kV_{PK}$ )
- Zero Voltage Crossing
- 200V Peak Blocking Voltage
- All electrical parameters 100% tested
- Custom electrical selections available

### APPLICATIONS

- CRTs
- Power Triac Driver
- Motors
- Consumer appliances
- Printers



### ABSOLUTE MAXIMUM RATINGS (25 °C unless otherwise noted)

Storage Temperature \_\_\_\_\_  $-40^{\circ}\text{C}$  -  $+150^{\circ}\text{C}$   
 Operating Temperature \_\_\_\_\_  $-40^{\circ}\text{C}$  -  $+100^{\circ}\text{C}$   
 Lead Soldering Temperature \_\_\_\_\_  $260^{\circ}\text{C}$   
 (1.6mm from case for 10 seconds)  
 Input-to-output Isolation Voltage (Pk)  $7500\text{ Vac}$   
 (60 Hz , 1sec. duration)

### INPUT DIODE

Forward Current \_\_\_\_\_ 50mA  
 Reverse Voltage \_\_\_\_\_ 6V  
 Power Dissipation \_\_\_\_\_ 120mW  
 (derate linearly  $1.41\text{mW}/^{\circ}\text{C}$  above  $25^{\circ}\text{C}$ )

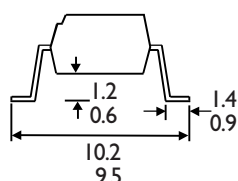
### OUTPUT PHOTO TRIAC

Off-State Output Terminal Voltage \_\_\_\_\_ 200V  
 RMS Forward Current \_\_\_\_\_ 100mA  
 Forward Current (Peak) \_\_\_\_\_ 1.2A  
 Power Dissipation \_\_\_\_\_ 150mW  
 (derate linearly  $1.76\text{mW}/^{\circ}\text{C}$  above  $25^{\circ}\text{C}$ )

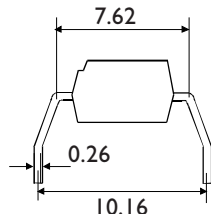
### POWER DISSIPATION

Total Power Dissipation \_\_\_\_\_ 250mW  
 (derate linearly  $2.94\text{mW}/^{\circ}\text{C}$  above  $25^{\circ}\text{C}$ )

OPTION SM  
SURFACE MOUNT



OPTION G



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**ELECTRICAL CHARACTERISTICS (  $T_A = 25^\circ\text{C}$  Unless otherwise noted )**

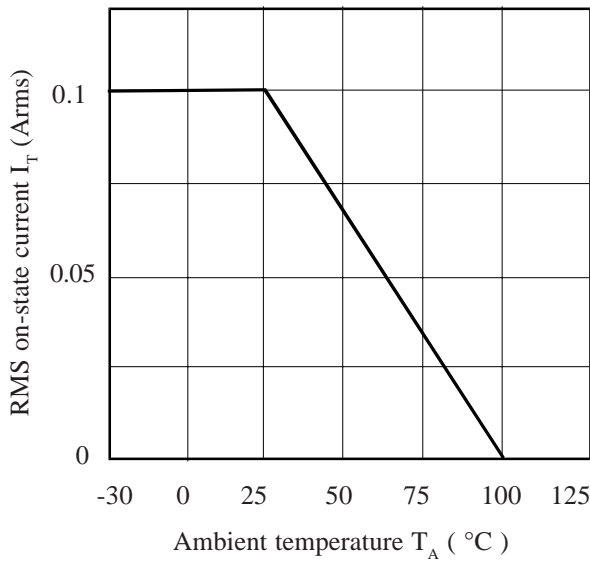
PARAMETER		MIN	TYP	MAX	UNITS	TEST CONDITION
Input	Forward Voltage ( $V_F$ ) Reverse Current ( $I_R$ )		1.2	1.5 100	V $\mu\text{A}$	$I_F = 30\text{mA}$ $V_R = 6\text{V}$
Output	Peak Off-state Current ( $I_{\text{DRM}}$ ) Peak Blocking Voltage ( $V_{\text{DRM}}$ ) On-state Voltage ( $V_{\text{TM}}$ )  Critical rate of rise of off-state Voltage ( $dv/dt$ )	200		300 1.8 3.0	nA V V  $\text{V}/\mu\text{s}$	$V_{\text{DRM}} = 200\text{V}$ (note 1) $I_{\text{DRM}} = 300\text{nA}$ $I_{\text{TM}} = 100\text{mA}$ ( peak )
Coupled	Input Current to Trigger ( $I_{\text{FT}}$ )(note 2) IS220 IS221 IS222 IS223  Holding Current , either direction ( $I_H$ ) Input to Output Isolation Voltage $V_{\text{ISO}}$					$V_{\text{TM}} = 3\text{V}$ ( note 2 )      See note 3 See note 3
Zero Crossing Charact- -eristic	Inhibit Voltage ( $V_{\text{IH}}$ )  Leakage in Inhibited State ( $I_S$ )		35	V		$I_F = \text{Rated } I_{\text{FT}}$ MT1-MT2 Voltage above which device will not trigger $I_F = \text{Rated } I_{\text{FT}}$ $V_{\text{DRM}} = 200\text{V}$ off-state

Note 1. Test voltage must be applied within  $dv/dt$  rating.

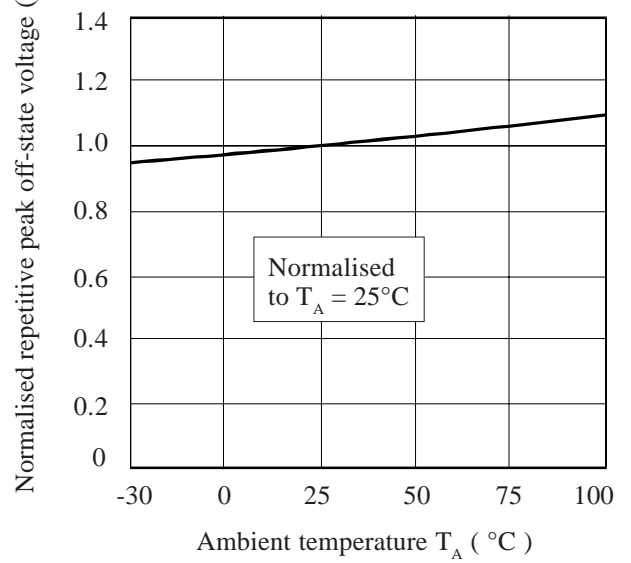
Note 2. Guaranteed to trigger at an  $I_F$  value less than or equal to max.  $I_{\text{FT}}$ , recommended  $I_F$  lies between Rated  $I_{\text{FT}}$  and absolute max.  $I_{\text{FT}}$ .

Note 3. Measured with input leads shorted together and output leads shorted together.

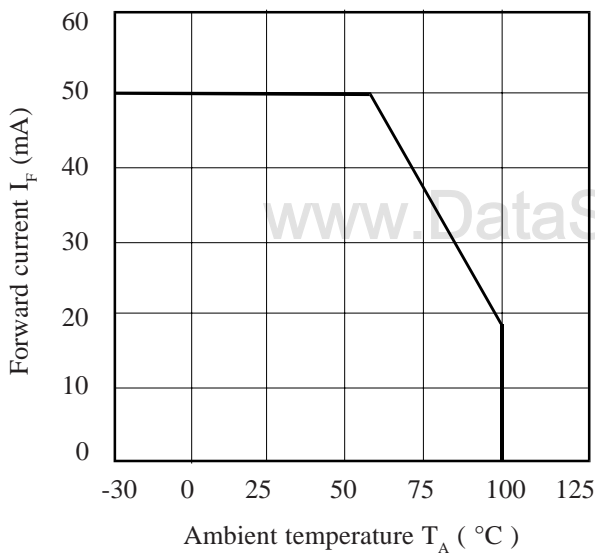
**RMS On-state Current vs. Ambient Temperature**



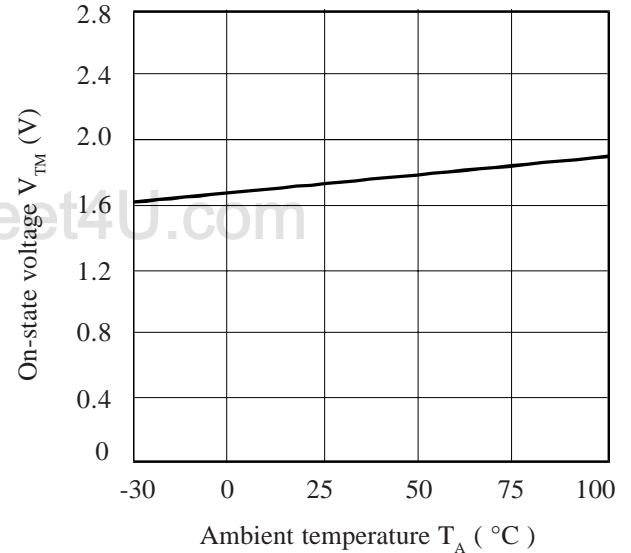
**Normalised Repetitive Peak Off-state Voltage vs. Ambient Temperature**



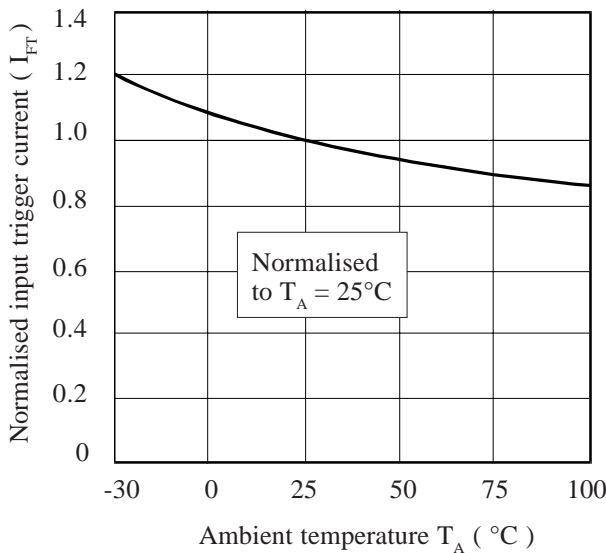
**Forward Current vs. Ambient Temperature**



**On-state Voltage vs. Ambient Temperature**



**Normalised Input Trigger Current vs. Ambient Temperature**



**On-state Current vs. On-state Voltage**

