



## IS725

### DESCRIPTION

The IS725 is an optically coupled isolator consisting of an infrared light emitting diode and a high voltage NPN silicon photo-darlington which has an integral base-emitter resistor to optimise switching speed and elevated temperature characteristics in a standard 6 pin dual in line package.

### FEATURES

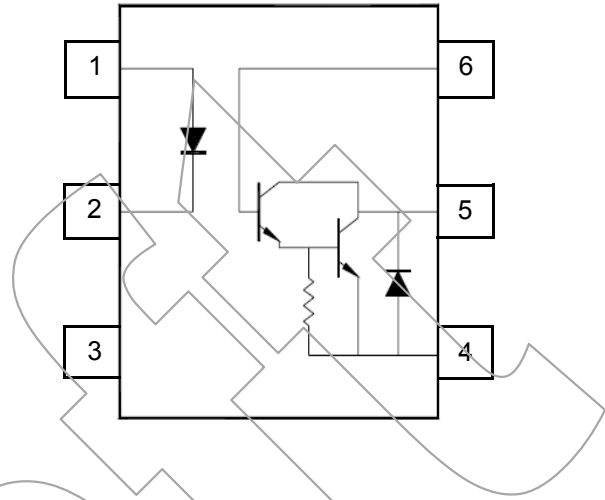
- AC Isolation Voltage 5000V<sub>RMS</sub>
- High BV<sub>CEO</sub> (300V min)
- High Current Transfer Ratio (1000% min)
- Low Collector Dark Current (1µA max at V<sub>CE</sub> 200V)
- Low Input Current (I<sub>F</sub> 1mA)
- Lead Free and RoHS Compliant
- UL File E91231 Package Code "JJ"

### APPLICATIONS

- Modems
- Copiers, Fax Machines
- Numerical Control Machines
- Signal Transmission between Systems of Different Potentials and Impedances

### ORDER INFORMATION

- Add X after PN for VDE Approval
- Add G after PN for 10mm lead spacing
- Add SM after PN for Surface Mount
- Add SMT&R after PN for Surface Mount Tape & Reel



### ABSOLUTE MAXIMUM RATINGS

#### Input Diode

Forward Current	50mA
Reverse Voltage	6V
Power dissipation	70mW

#### Output Transistor

Collector to Emitter Voltage BV <sub>CEO</sub>	300V
Collector to Base Voltage BV <sub>CBO</sub>	300V
Emitter to Collector Voltage BV <sub>ECO</sub>	0.1V
Collector Current	50mA
Power Dissipation	300mW

#### Total Package

Operating Temperature	-25 to +100 °C
Storage Temperature	-40 to +125 °C
Total Power Dissipation	350mW
Lead Soldering Temperature (1/16 inch or 1.6mm from case for 10s)	260°C

#### ISOCOM COMPONENTS 2004 LTD

Unit 25B, Park View Road West, Park View Industrial Estate  
Hartlepool, Cleveland, TS25 1UD, United Kingdom  
Tel: +44 (0)1429 863 609 Fax: +44 (0)1429 863 581  
e-mail: sales@isocom.co.uk  
<http://www.isocom.com>

#### ISOCOM COMPONENTS ASIA LTD

Hong Kong Office,  
Block A, 8/F, Wah Hing Industrial mansion,  
36 Tai Yau Street, San Po Kong, Kowloon, Hong Kong.  
Tel: +852 2995 9217 Fax: +852 8161 6292  
e-mail: sales@isocom.com.hk



## IS725

### ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ unless otherwise specified)

#### INPUT

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Forward Voltage	$V_F$	$I_F = 10\text{mA}$		1.2	1.4	V
Reverse Current	$I_R$	$V_R = 4\text{V}$			10	$\mu\text{A}$
Terminal Capacitance	$C_t$	$V = 0\text{V}, f = 1\text{kHz}$		30	250	pF

#### OUTPUT

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Collector-Emitter Breakdown Voltage	$BV_{CEO}$	$I_C = 0.1\text{mA}, I_F = 0\text{mA}$	300			V
Emitter-Collector Breakdown Voltage	$BV_{ECO}$	$I_{EC} = 10\mu\text{A}, I_F = 0\text{mA}$	0.1			V
Collector-Emitter Dark Current	$I_{CEO}$	$V_{CE} = 200\text{V}, I_F = 0\text{mA}$			1	$\mu\text{A}$

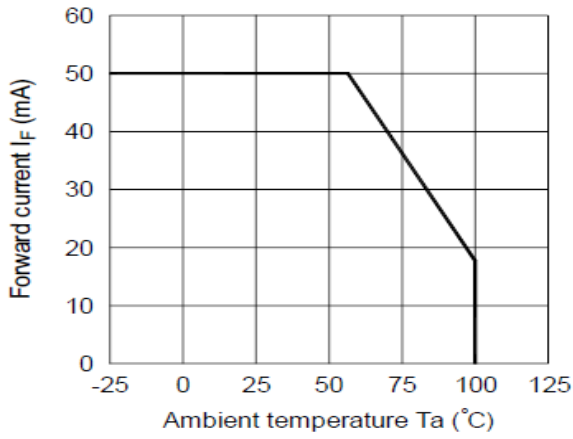
#### Coupled

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Current Transfer Ratio	CTR	$I_F = 1\text{mA}, V_{CE} = 2\text{V}$	1000	4000		%
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_F = 20\text{mA}, I_C = 100\text{mA}$			1.2	V
Input to Output Isolation Voltage	$V_{ISO}$	See note 1	5000			$V_{RMS}$
Input to Output Isolation Resistance	$R_{ISO}$	$V_{IO} = 500\text{V}$ See note 1	$5 \times 10^{10}$			$\Omega$
Floating Capacitance	$C_f$	$V = 0\text{V}, f = 1\text{MHz}$			1	pF
Cut-off Frequency	$f_c$	$V_{CE} = 2\text{V}, I_C = 20\text{mA},$ $R_L = 100\Omega, -3\text{dB}$	1			kHz
Output Rise Time	$t_r$	$V_{CE} = 2\text{V}, I_C = 20\text{mA},$ $R_L = 100\Omega$		100	300	$\mu\text{s}$
Output Fall Time	$t_f$	$V_{CE} = 2\text{V}, I_C = 20\text{mA},$ $R_L = 100\Omega$		20	100	$\mu\text{s}$

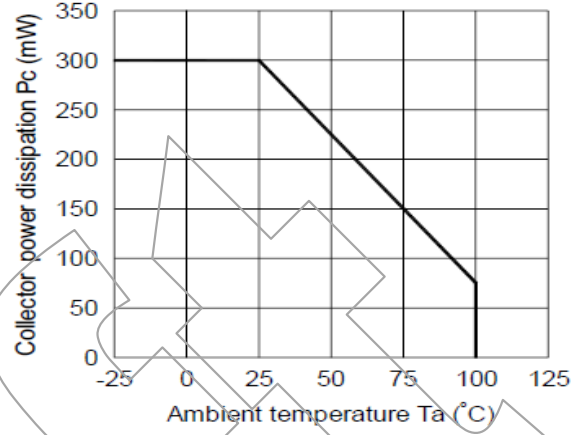
Note 1 : Measured with input leads shorted together and output leads shorted together, R.H 40% to 60%



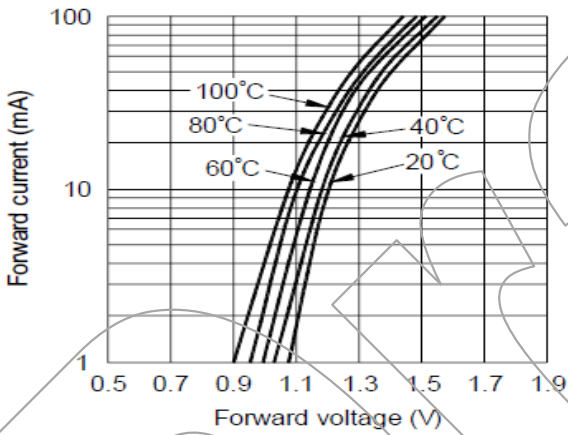
**IS725**



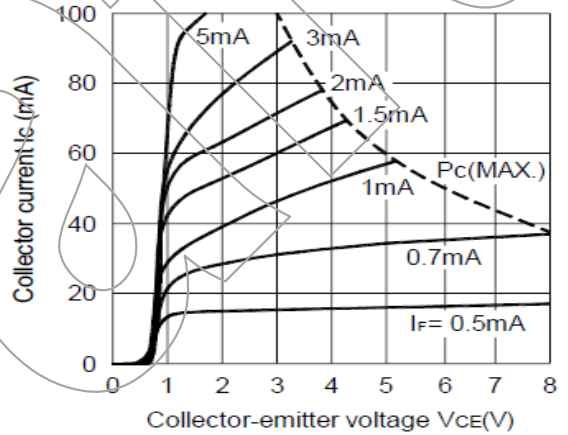
**Fig 1 Forward Current vs  $T_A$**



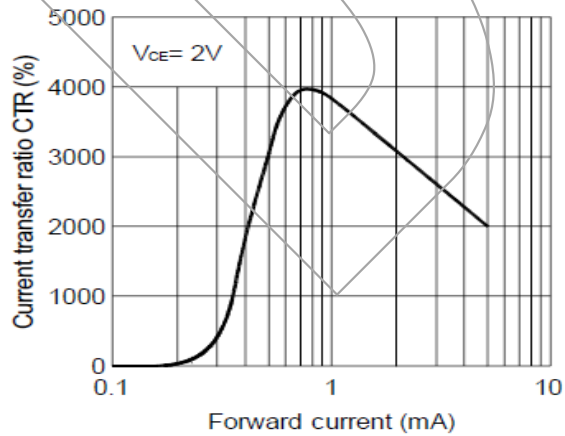
**Fig 2 Collector Power Dissipation vs  $T_A$**



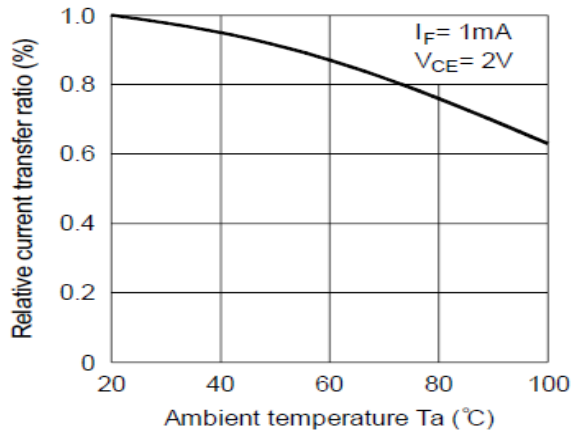
**Fig 3 Forward Current vs Forward Voltage**



**Fig 4 Collector Current vs Collector-Emitter Voltage**



**Fig 5 Current Transfer Ratio vs Forward Current**



**Fig 6 Relative Current Transfer Ratio vs  $T_A$**



## IS725

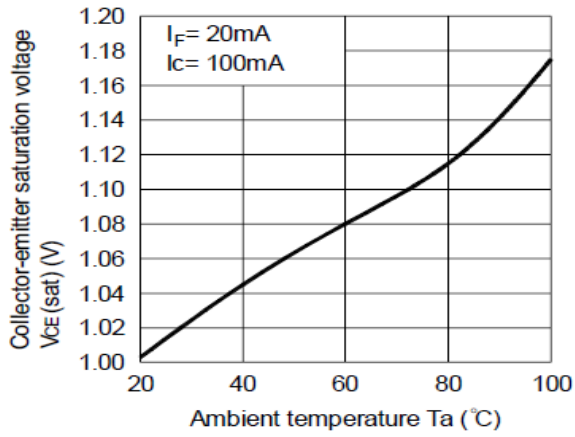


Fig 7 Collector-Emitter Saturation Voltage vs  $T_A$

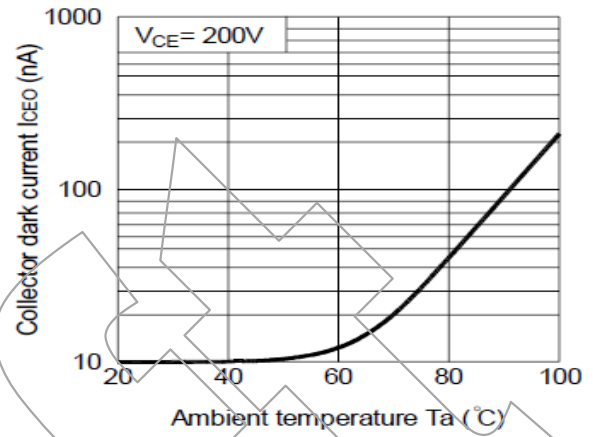


Fig 8 Collector Dark Current vs  $T_A$

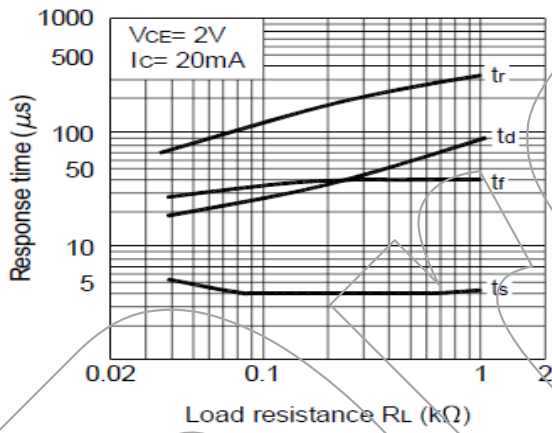


Fig 9 Response Time vs Load Resistance

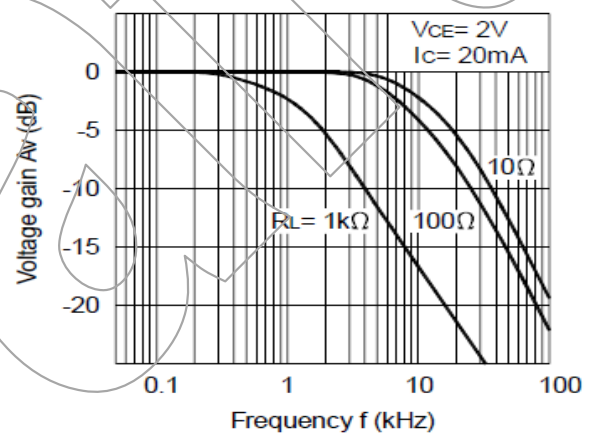
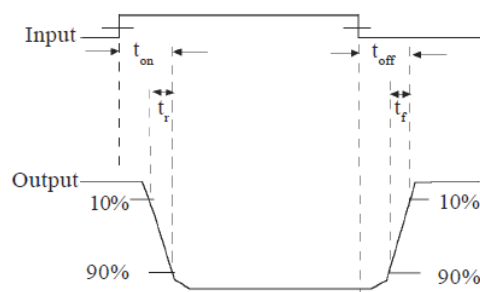
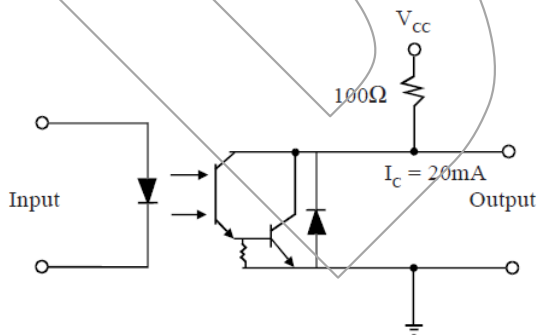


Fig 10 Frequency response





## IS725

### ORDER INFORMATION

IS725 (UL Approval)			
After PN	PN	Description	Packing quantity
None	IS725	Standard DIP 6	65 pcs per Tube
G	IS712G	10mm Lead Spacing	65 pcs per Tube
SM	IS725SM	Surface Mount	65 pcs per Tube
SMT&R	IS725SMT&R	Surface Mount Tape and Reel	1000 pcs per Reel

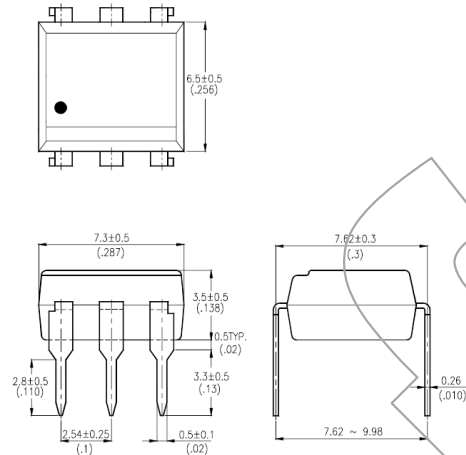
IS725X (UL and VDE Approval)			
After PN	PN	Description	Packing quantity
None	IS725X	Standard DIP 6	65 pcs per tube
G	IS725XG	10mm Lead Spacing	65 pcs per tube
SM	IS725XSM	Surface Mount	65 pcs per Tube
SMT&R	IS725XSMT&R	Surface Mount Tape and Reel	1000 pcs per Reel



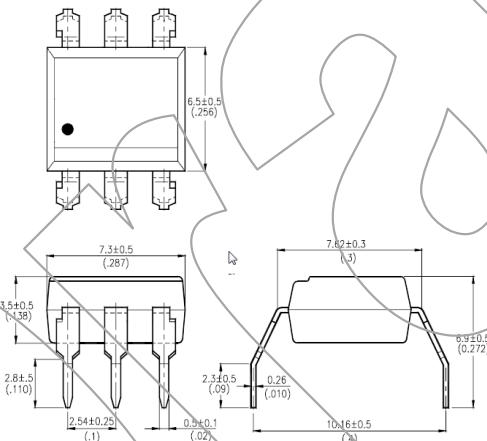
## IS725

### PACKAGE DIMENSIONS in mm (inch)

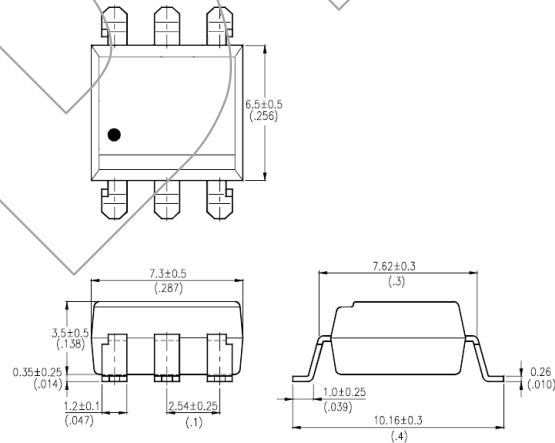
#### DIP



#### G Form



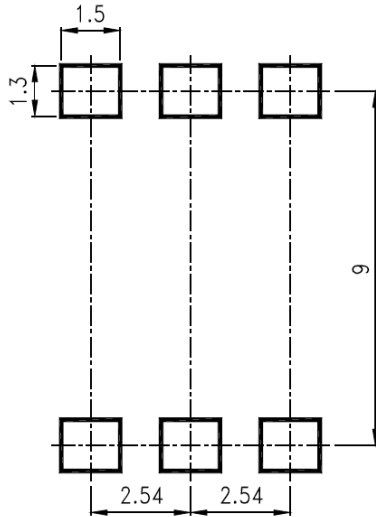
#### SMD



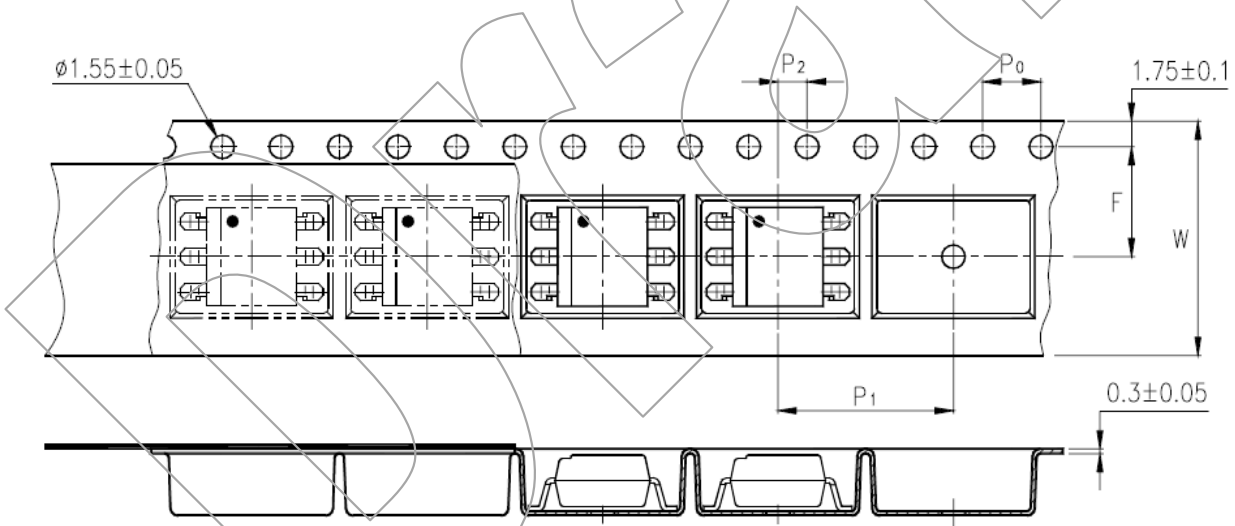


**IS725**

**Recommended Pad Layout for SMD (mm)**



**Tape and Reel Packaging**



Description	Symbol	Dimensions in mm ( inches )
Tape wide	W	$16 \pm 0.3$ ( .63 )
Pitch of sprocket holes	$P_0$	$4 \pm 0.1$ ( .15 )
Distance of compartment	F	$7.5 \pm 0.1$ ( .295 )
Distance of compartment to compartment	$P_1$	$12 \pm 0.1$ ( .472 )
	$P_2$	$2 \pm 0.1$ ( .079 )



**Notes:**

- Isocom is continually improving the quality, reliability, function or design and Isocom reserves the right to make changes without further notices.
- The products shown in this publication are designed for the general use in electronic applications such as office automation equipment, communications devices, audio/visual equipment, electrical application and instrumentation.
- For equipment/application where high reliability or safety is required, such as space applications, nuclear power control equipment, medical equipment, etc., please contact our sales representatives.
- When requiring a device for any "specific" application, please contact our sales for advice.
- The contents described herein are subject to change without prior notice.
- Do not immerse device body in solder paste.