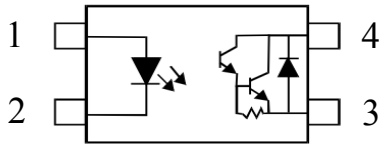
ISOCOM COMPONENTS

IS7000

DESCRIPTION

The IS7000 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 4 pin dual in line plastic package.



FEATURES

- AC Isolation Voltage 5000V_{RMS}
- High Current Transfer Ratio 1000% minimum
- Wide Operating Temperature Range –30°C to +100°C
- Lead Free and RoHS Compliant
- UL File No. E91231 Package Code “SS”
- VDE Approval Certificate No. 40028086

APPLICATIONS

- Modems
- Fax and Copying Machines
- Numerical Control Machines
- Signal Transmission between Systems of Different Potentials and Impedance

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

ABSOLUTE MAXIMUM RATINGS

Input Diode

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

Output Transistor

Collector to Emitter Voltage BV_{CEO}	300V
Collector to Emitter Voltage BV_{ECO}	0.1V
Collector Current	150mA
Power Dissipation	150mW

Total Package

Operating Temperature	-30 to +100 °C
Storage Temperature	-55 to +125 °C
Total Power Dissipation	200mW
Lead Soldering Temperature (for 10s)	260°C

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e-mail sales@isocom.com.hk

ELECTRICAL CHARACTERISTICS (Ambient Temperature = 25°C unless otherwise specified)

INPUT

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Forward Voltage	V_F	I_F = 10mA		1.2	1.4	V
Reverse Leakage Current	I_R	V_R = 4V			10	µA
Terminal Capacitance	C_t	V = 0V, f = 1KHz		30	250	pF

OUTPUT

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Collector-Emitter Breakdown Voltage	BV_{CEO}	I_C = 0.1mA, I_F = 0mA	300			V
Emitter-Collector Breakdown Voltage	BV_{ECO}	I_E = 0.01mA, I_F = 0mA	0.1			V
Collector-Emitter Dark Current	I_{CEO}	V_{CE} = 200V, I_F = 0mA			200	nA

COUPLED

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Current transfer ratio	CTR	I_F = 1mA, V_{CE} = 2V	1000	4000		%
Collector—Emitter Saturation Voltage (1)	$V_{CE(sat)}$	I_F = 20mA, I_C = 100mA			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}= 500V See Note 1	$5x10^{10}$			Ω
Floating Capacitance	C_f	V = 0V, f = 1MHz		0.6	1	pF
Output Rise Time	t_r	V_{CE} = 2V, Ic = 20mA, R_L = 100Ω		100		µs
Output Fall Time	t_f			20		µs

Note 1 : Measure with input leads shorted together and output leads shorted together.

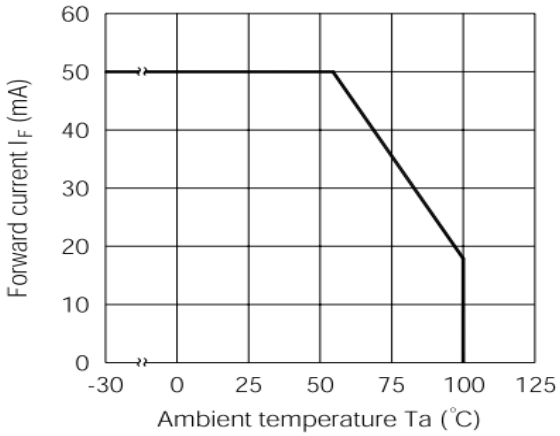


Fig 1 Forward Current vs T_A

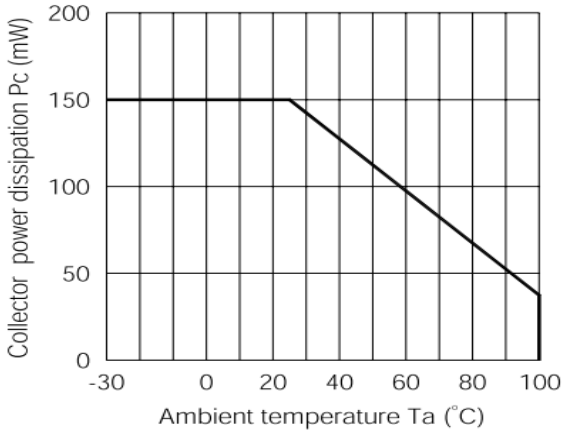


Fig 2 Collector Power Dissipation vs T_A

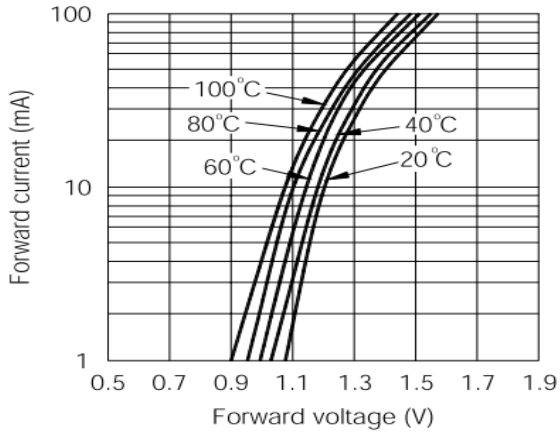


Fig 3 Forward Current vs Forward Voltage

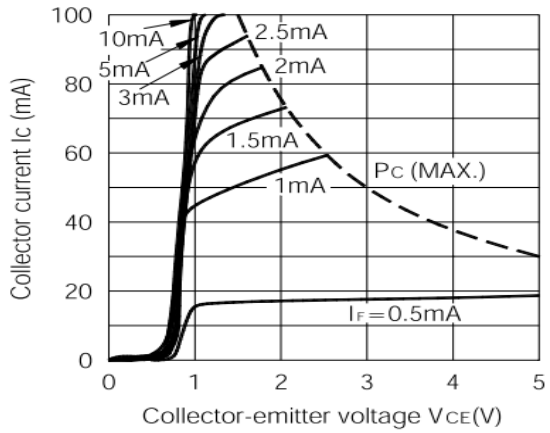


Fig 4 Collector Current vs Collector-Emitter Voltage

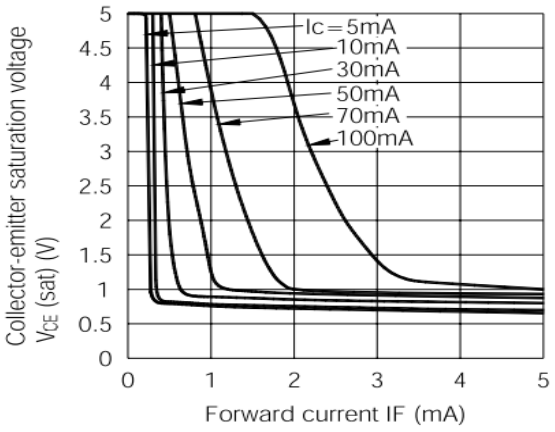


Fig 5 Collector-emitter Saturation Voltage vs Forward Current

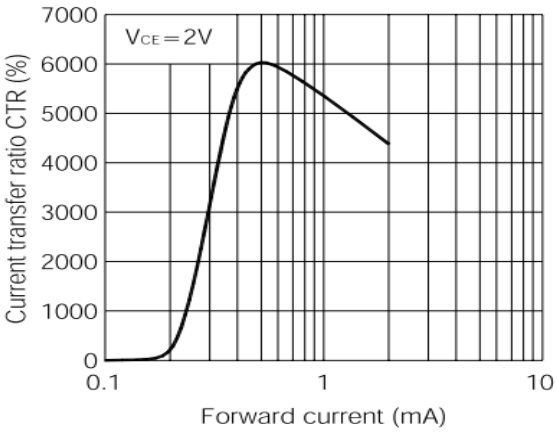


Fig 6 Current Transfer Ratio vs Forward Current

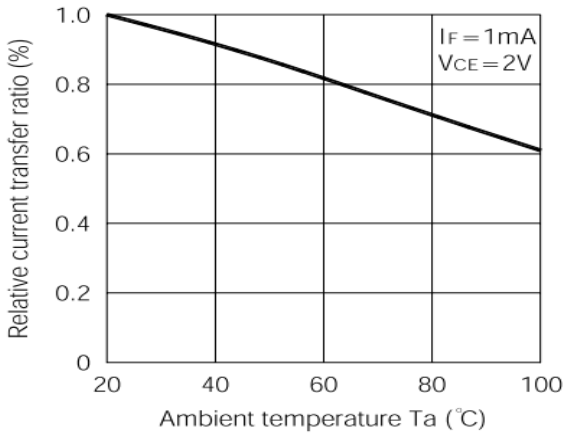


Fig 7 Relative CTR vs T_A

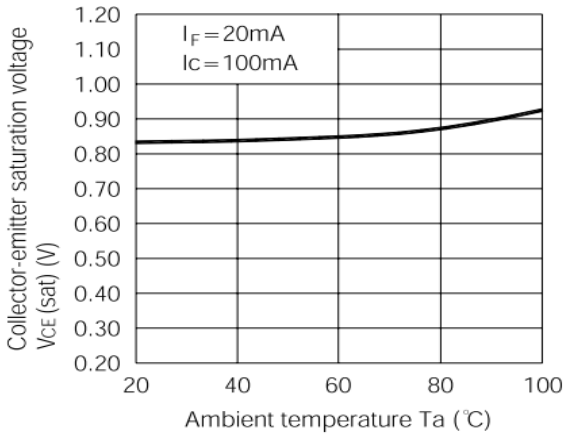


Fig 8 Collector-Emitter Saturation Voltage vs T_A

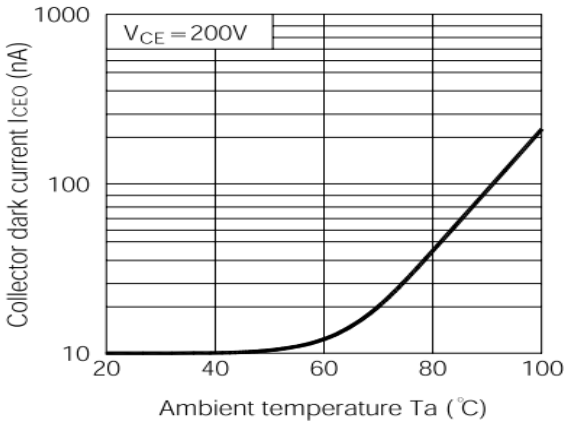


Fig 9 Collector Dark Current vs T_A

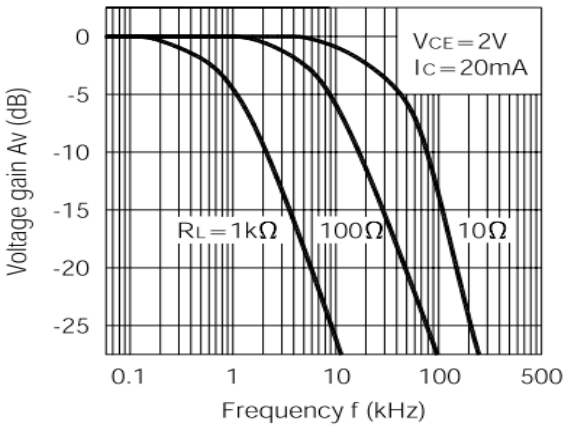


Fig 10 Frequency Response

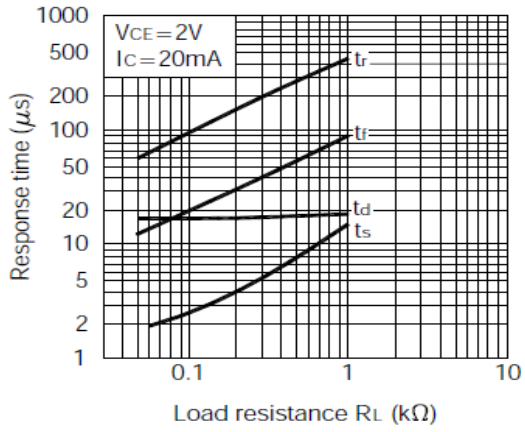
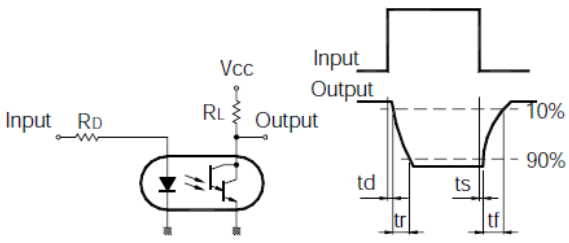


Fig 11 Response Time vs Load Resistance



Response Time Test Circuit

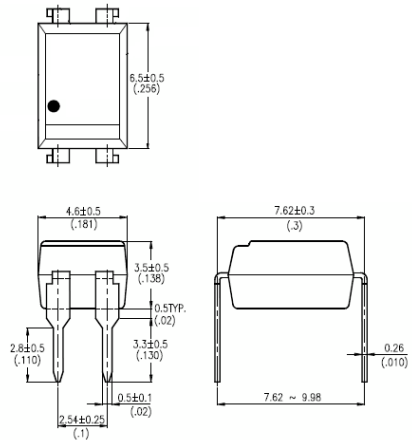
ORDER INFORMATION

IS7000 (UL Approval)			
After PN	**PN**	**Description**	**Packing quantity**
None	IS7000	Standard DIP 4	100 pcs per reel
G	IS7000G	10mm Lead Spacing	100 pcs per tube
SM	IS7000SM	Surface Mount	100 pcs per tube
SMT&R	IS7000SMT&R	Surface Mount Tape & Reel	1000 pcs per reel

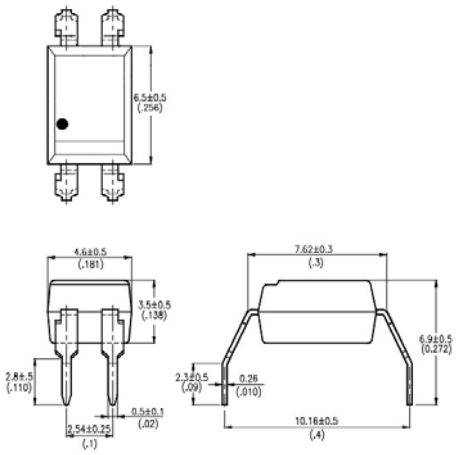
IS7000X (UL and VDE Approval)			
After PN	**PN**	**Description**	**Packing quantity**
None	IS7000X	Standard DIP 4	100 pcs per reel
G	IS7000XG	10mm Lead Spacing	100 pcs per tube
SM	IS7000XSM	Surface Mount	100 pcs per tube
SMT&R	IS7000XSMT&R	Surface Mount Tape & Reel	1000 pcs per reel

PACKAGE DIMENSIONS (mm)

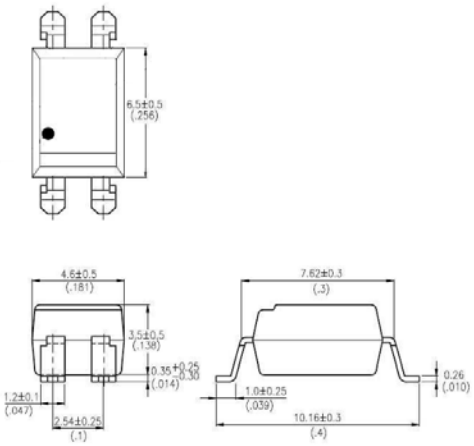
DIP



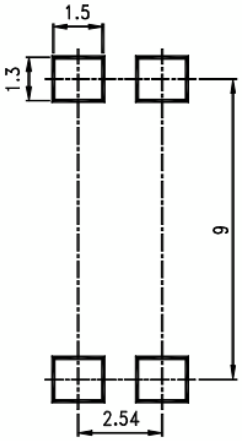
G Form



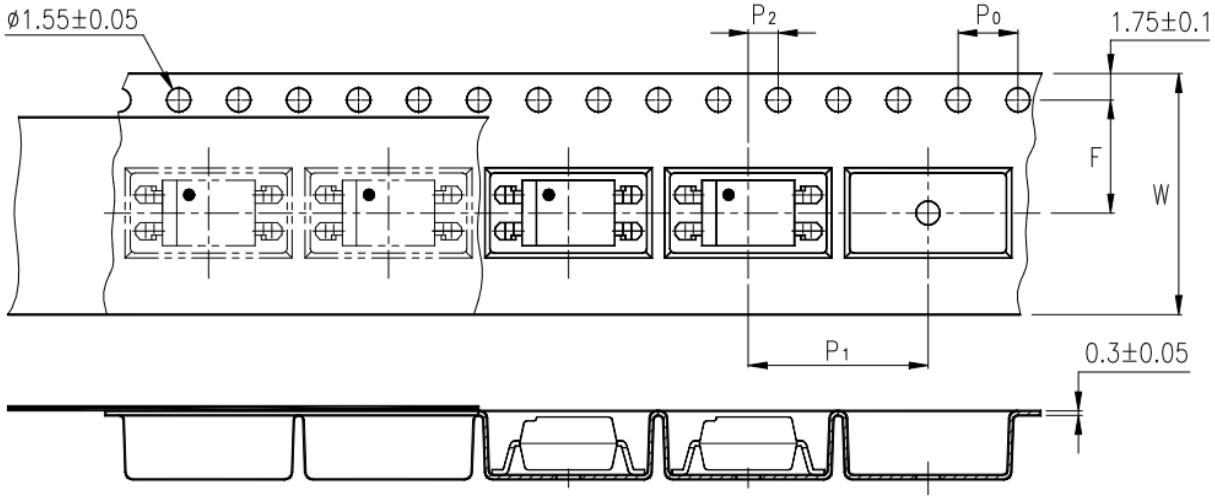
SMD



RECOMMENDED SOLDER PAD LAYOUT FOR SMD (mm)

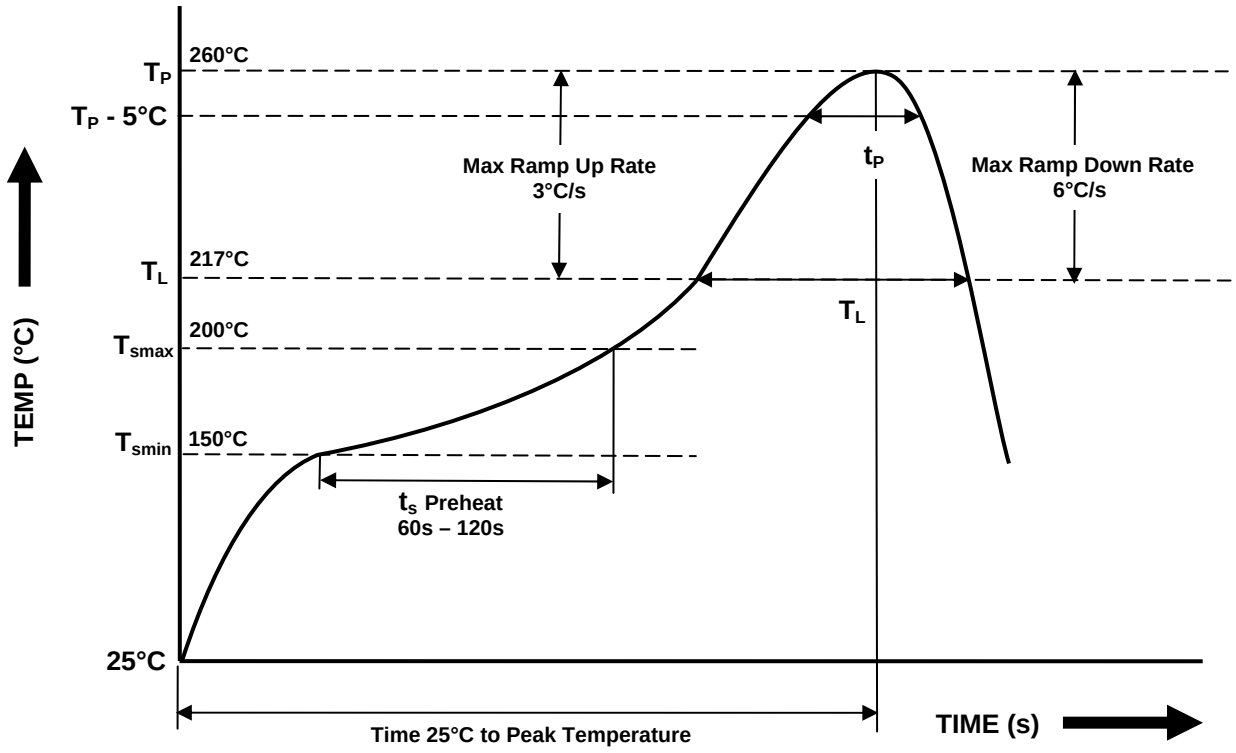


TAPE AND REEL PACKAGING (mm)



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

IR REFLOW SOLDERING TEMPERATURE PROFILE
(One Time Reflow Soldering is Recommended)



Profile Details	Conditions
Preheat - Min Temperature (T_{SMIN}) - Max Temperature (T_{SMAX}) - Time T_{SMIN} to T_{SMAX} (t_s)	 150°C 200°C 60s - 120s
Soldering Zone - Peak Temperature (T_P) - Liquidous Temperature (T_L) - Time within 5°C of Actual Peak Temperature (T_P – 5°C) - Time maintained above T_L (t_L) - Ramp Up Rate (T_L to T_P) - Ramp Down Rate (T_P to T_L)	 260°C 217°C 30s 60s 3°C/s max 6°C/s max
Average Ramp Up Rate (T_{smax} to T_P)	3°C/s max
Time 25°C to Peak Temperature	8 minutes max

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- 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.

ISOCOM
COMPONENTS

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