



## HIGH VOLTAGE DARLINGTON OUTPUT OPTICALLY COUPLED ISOLATOR

### DESCRIPTION

The IS7000 is an optically coupled isolator consisting of 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 space efficient, end-stackable 4 pin dual in line plastic package.

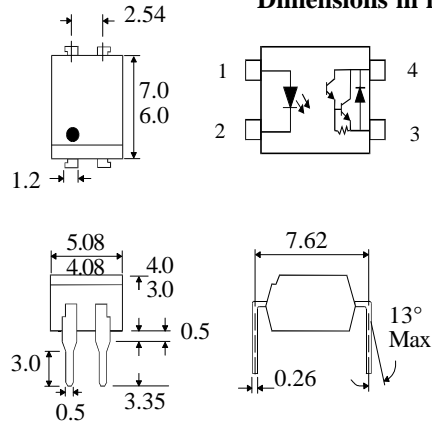
### FEATURES

- 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 ( $5.3kV_{RMS}, 7.5kV_{PK}$ )
- High Current Transfer Ratio ( 1000% min )
- High  $BV_{CEO}$  ( 300V min. )

### APPLICATIONS

- Modems
- Copiers, facsimiles
- Numerical control machines
- Signal transmission between systems of different potentials and impedances

### Dimensions in mm



### 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 \_\_\_\_\_ 50mA  
 Reverse Voltage \_\_\_\_\_ 6V  
 Power Dissipation \_\_\_\_\_ 70mW

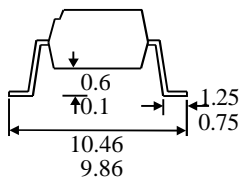
### OUTPUT TRANSISTOR

Collector-emitter Voltage  $BV_{CEO}$  \_\_\_\_\_ 300V  
 Emitter-collector Voltage  $BV_{ECO}$  \_\_\_\_\_ 0.1V  
 Collector Current  $I_C$  \_\_\_\_\_ 150mA  
 Power Dissipation \_\_\_\_\_ 150mW

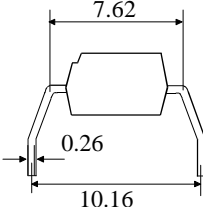
### POWER DISSIPATION

Total Power Dissipation \_\_\_\_\_ 200mW

#### OPTION SM SURFACE MOUNT



#### OPTION G



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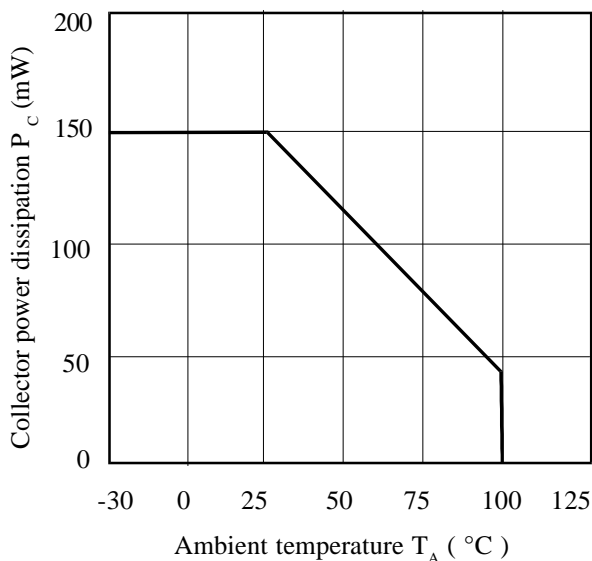
**ELECTRICAL CHARACTERISTICS (  $T_A = 25^\circ\text{C}$  Unless otherwise noted )**

PARAMETER		MIN	TYP	MAX	UNITS	TEST CONDITION
Input	Forward Voltage ( $V_F$ )		1.2	1.4	V	$I_F = 10\text{mA}$
	Reverse Voltage ( $V_R$ )	4			V	$I_R = 10\mu\text{A}$
	Reverse Current ( $I_R$ )			10	$\mu\text{A}$	$V_R = 4\text{V}$
Output	Collector-emitter Breakdown ( $BV_{CEO}$ )	300			V	$I_C = 0.1\text{mA}$ ( note 2 )
	Emitter-collector Breakdown ( $BV_{ECO}$ )	0.1			V	$I_E = 0.1\text{mA}$
	Collector-emitter Dark Current ( $I_{CEO}$ )			200	nA	$V_{CE} = 200\text{V}$
Coupled	Current Transfer Ratio (CTR)	1000	4000		%	$1\text{mA } I_F, 2\text{V } V_{CE}$
	Collector-emitter Saturation Voltage $V_{CE(SAT)}$			1.2	V	$20\text{mA } I_F, 100\text{mA } I_C$
	Input to Output Isolation Voltage $V_{ISO}$	5300 7500			$V_{RMS}$ $V_{PK}$	See note 1 See note 1
	Input-output Isolation Resistance $R_{ISO}$	$5 \times 10^{10}$			$\Omega$	$V_{IO} = 500\text{V}$ (note 1)
	Output Rise Time tr		40		$\mu\text{s}$	$V_{CC} = 10\text{V}, I_C = 10\text{mA},$ $R_L = 100\Omega$
	Output Fall Time tf		15		$\mu\text{s}$	
	Turn-on Time ton		50		$\mu\text{s}$	
Turn-off Time toff		15		$\mu\text{s}$		

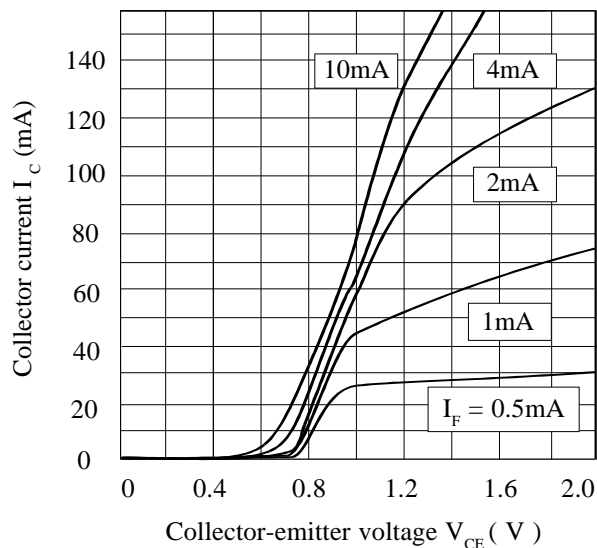
Note 1 Measured with input leads shorted together and output leads shorted together.

Note 2 Special Selections are available on request. Please consult the factory.

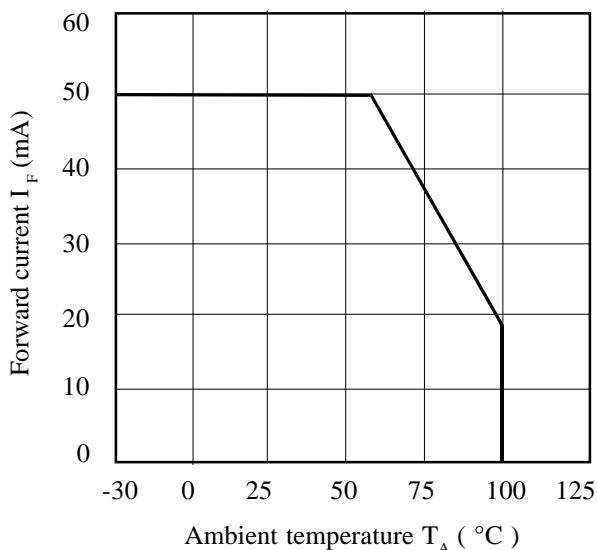
**Collector Power Dissipation vs. Ambient Temperature**



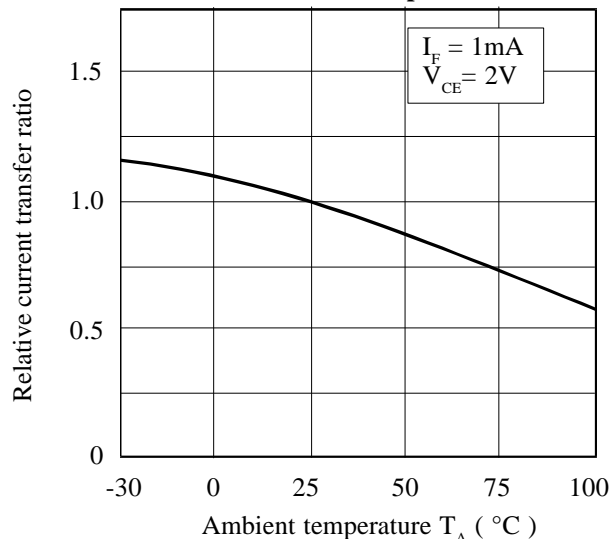
**Collector Current vs. Collector-emitter Voltage**



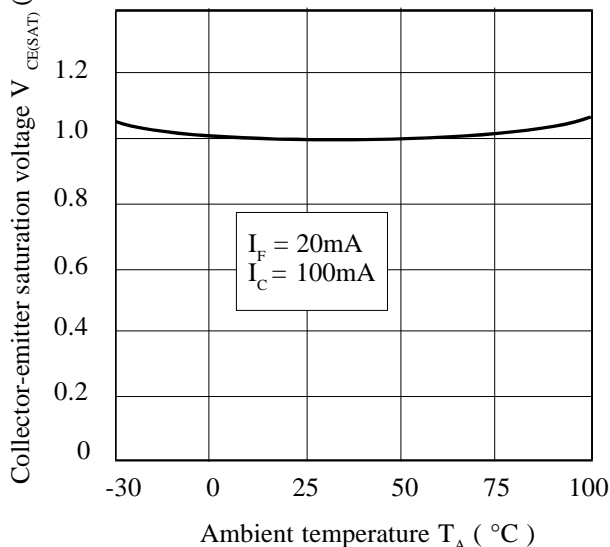
**Forward Current vs. Ambient Temperature**



**Relative Current Transfer Ratio vs. Ambient Temperature**



**Collector-emitter Saturation Voltage vs. Ambient Temperature**



**Collector Dark Current vs. Ambient Temperature**

