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Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China

4N29, 4N30, 4N31, 4N32, 4N33

OPTICALLY COUPLED ISOLATOR PHOTODARLINGTON OUTPUT

DESCRIPTION

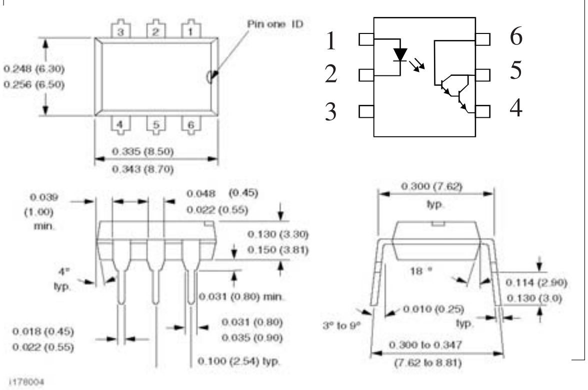
The 4N29, 4N30, 4N31, 4N32, 4N33 series of optically coupled isolators consist of an infrared light emitting diode and NPN silicon photodarlington in a space efficient dual in line plastic package.

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 Current Transfer Ratio
- High Isolation Voltage (5.3kV$_{RMS}$,7.5kV$_{PK}$)
- All electrical parameters 100% tested
- Custom electrical selections available

APPLICATIONS

- Computer terminals
- Industrial systems controllers
- Measuring instruments
- Signal transmission between systems of different potentials and impedances



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	80mA
Reverse Voltage	5V
Power Dissipation	100mW

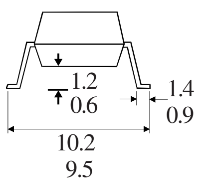
OUTPUT TRANSISTOR

Collector-emitter Voltage BV$_{CEO}$	30V
Collector-base Voltage BV$_{CBO}$	50V
Emitter-collector Voltage BV$_{ECO}$	5V
Power Dissipation	150mW

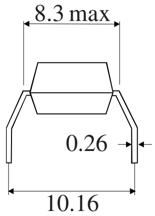
POWER DISSIPATION

Total Power Dissipation (derate linearly 3.3mW/°C above 25°C)	250mW

OPTION SM
SURFACE MOUNT



OPTION G



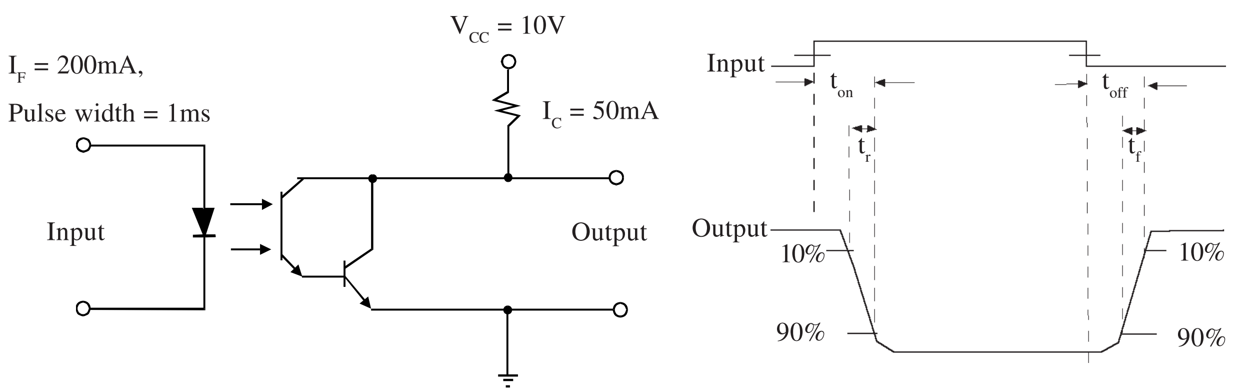
ISOCOM COMPONENTS 2004 LTD
Unit 25B, Park View Road West,
Park View Industrial Estate, Brenda Road
Hartlepool, TS25 1UD England
Tel: (01429)863609 Fax : (01429) 863581 e-mail
sales@isocom.co.uk http://www.isocom.com

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

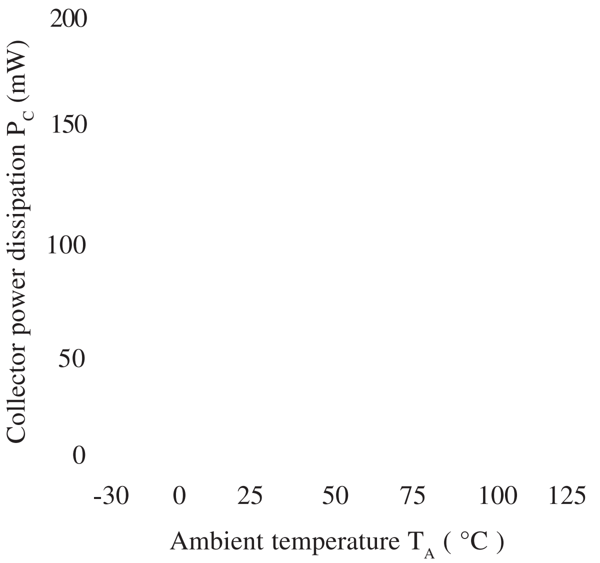
PARAMETER		MIN	TYP	MAX	UNITS	TEST CONDITION
Input	Forward Voltage (V_F)		1.2	1.5	V	I_F = 50mA
	Reverse Current (I_R)			10	µA	V_R=6V
Output	Collector-emitter Breakdown (BV_{CEO})	30			V	I_C = 1mA (note 2)
	Collector-base Breakdown (BV_{CBO})	50			V	I_C = 100µA
	Emitter-collector Breakdown (BV_{ECO})	5			V	I_E = 100µA
	Collector-emitter Dark Current (I_{CEO})			100	nA	V_{CE} = 10V
Coupled	Collector Output Current (I_C) (Note 2)					
	4N32, 4N33	50			mA	10mA I_F, 10V V_{CE}
	4N29, 4N30	10			mA	10mA I_F, 10V V_{CE}
	4N31	5			mA	10mA I_F, 10V V_{CE}
	Collector-emitter Saturation Voltage $V_{CE(SAT)}$					
	4N29,4N30,4N32,4N33			1.0	V	8mA I_F, 2mA I_C
	4N31			1.2	V	8mA I_F, 2mA I_C
	Input to Output Isolation Voltage V_{ISO}	5300			V_{RMS}	(note 1)
		7500			V_{PK}	(note 1)
	Input-output Isolation Resistance R_{ISO}	$5x10^{10}$			Ω	V_{IO} = 500V (note 1)
	Output Turn on Time ton			5	µs	V_{CC} = 10V, I_C= 50mA,
	Output Turn off Time					I_F = 200mA ,
	4N32, 4N33 toff			100	µs	Pulse Width = 1ms
	4N29, 4N30, 4N31			40	µs	fig.1

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.

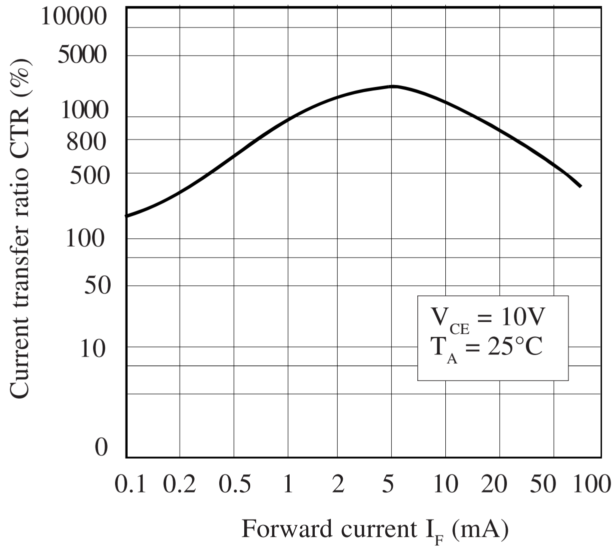
FIGURE 1



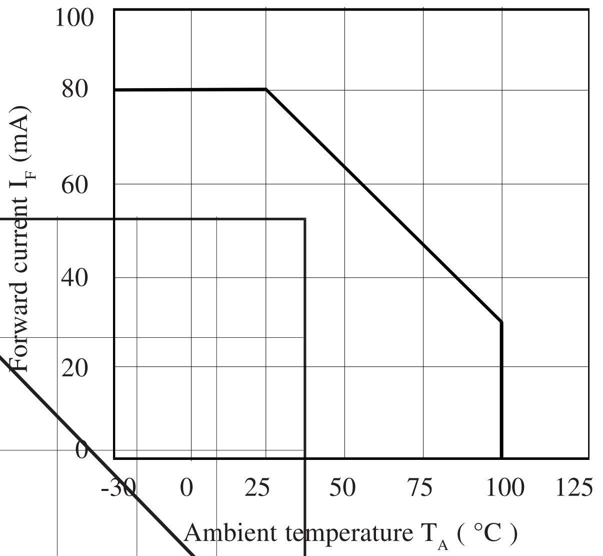
Collector Power Dissipation vs. Ambient Temperature



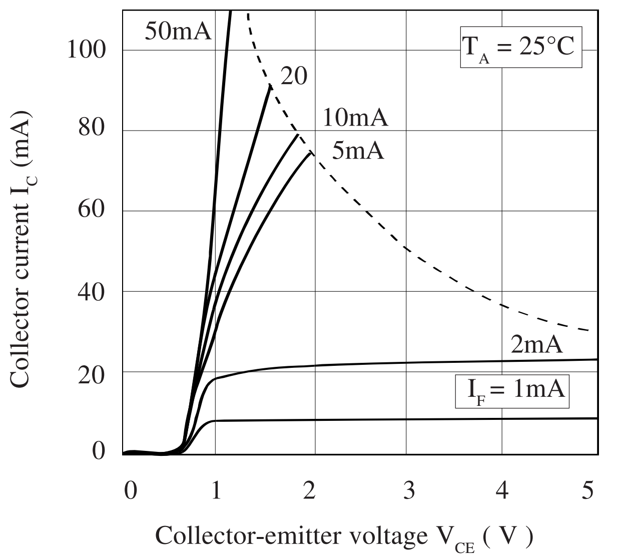
Current Transfer Ratio vs. Forward Current



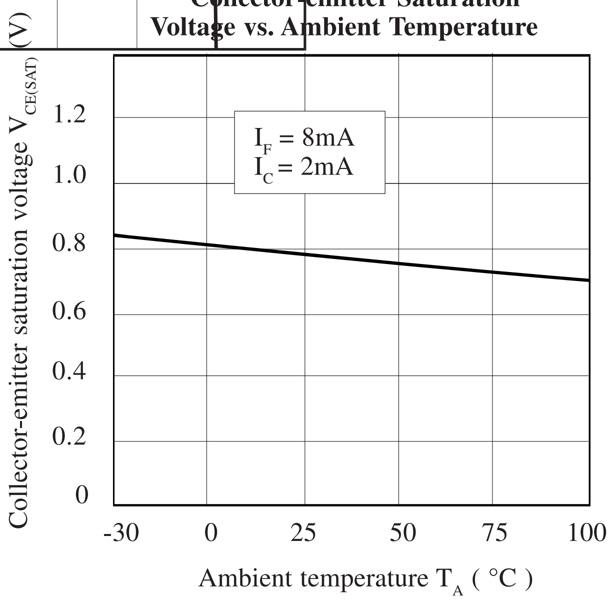
Forward Current vs. Ambient Temperature



Collector Current vs. Collector-emitter Voltage



Collector-emitter Saturation Voltage vs. Ambient Temperature



Relative Current Transfer Ratio vs. Ambient Temperature