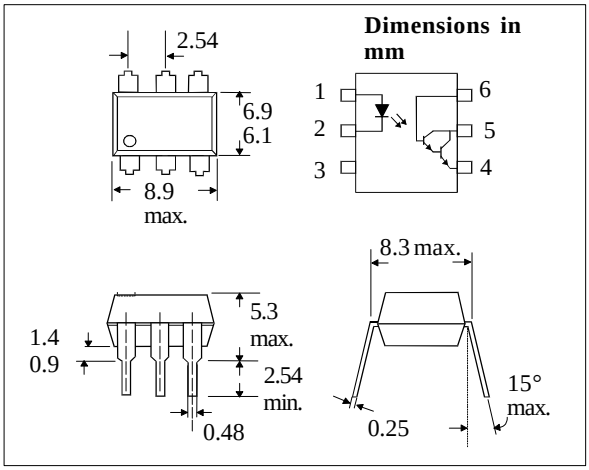
4N29, 4N30, 4N31, 4N32, 4N33

OPTICALLY COUPLED ISOLATOR PHOTODARLINGTON OUTPUT



APPROVALS

- UL recognised, File No. E91231

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

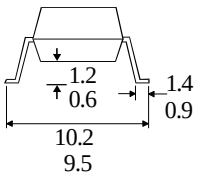
OUTPUT TRANSISTOR

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

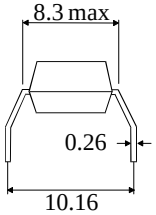
POWER DISSIPATION

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

OPTION SM
SURFACE MOUNT



OPTION G



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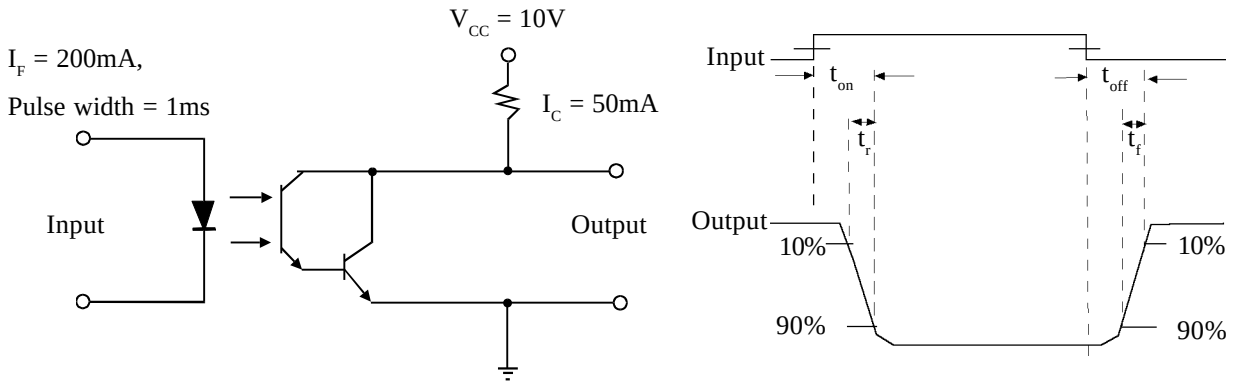
ELECTRICAL CHARACTERISTICS (T_A = 25°C Unless otherwise noted)

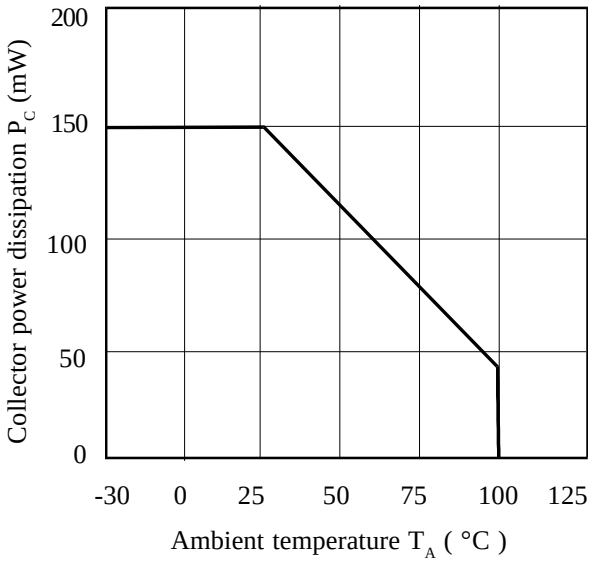
PARAMETER		MIN	TYP	MAX	UNITS	TEST CONDITION
Input	Forward Voltage (V_F)		1.2	1.5	V	I_F = 50mA
	Reverse Current (I_R)			10	µA	V_R=6V
Output	Collector-emitter Breakdown (BV_{CEO})	30			V	I_C = 1mA (note 2)
	Collector-base Breakdown (BV_{CBO})	50			V	I_C = 100µA
	Emitter-collector Breakdown (BV_{ECO})	5			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, I_F = 200mA ,
	Output Turn off Time					
	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.

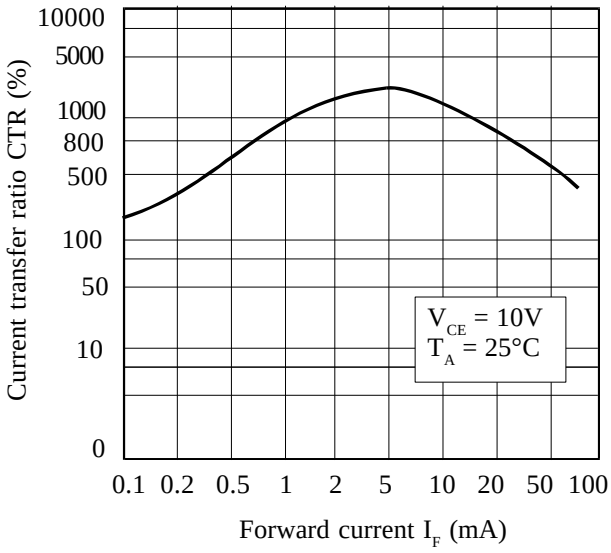
FIGURE 1



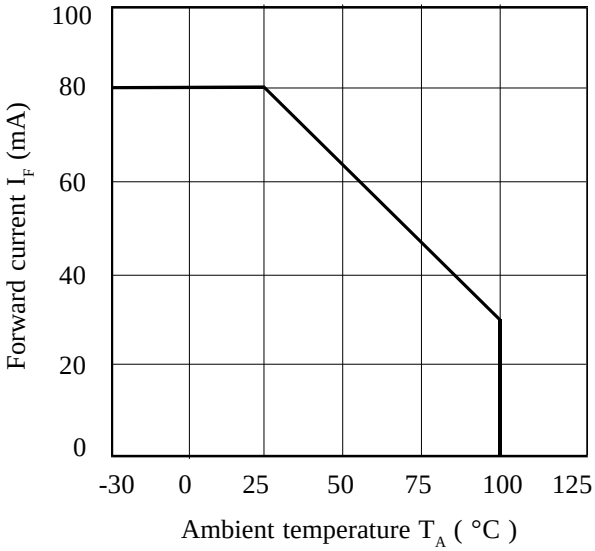
Collector Power Dissipation vs. Ambient Temperature



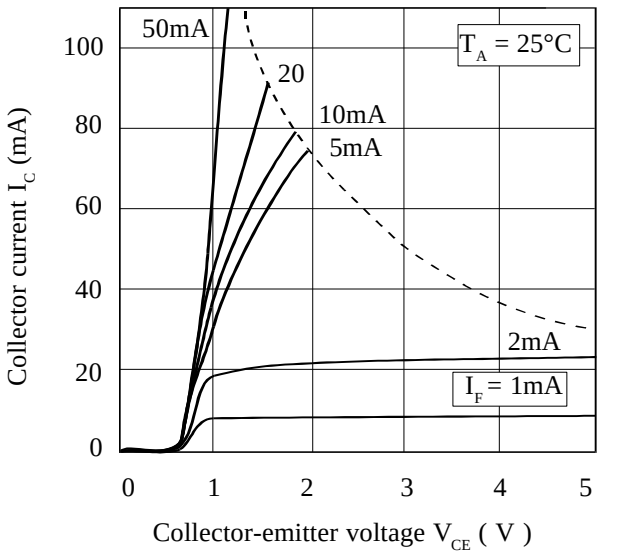
Current Transfer Ratio vs. Forward Current



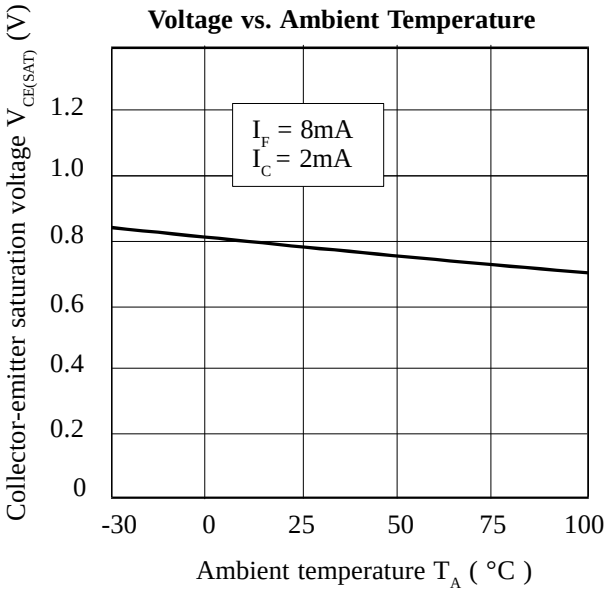
Forward Current vs. Ambient Temperature



Collector Current vs. Collector-emitter Voltage



Collector-emitter Saturation Voltage vs. Ambient Temperature



Relative Current Transfer Ratio vs. Ambient Temperature