

4N29X, 4N30X, 4N31X, 4N32X, 4N33X
4N29, 4N30, 4N31, 4N32, 4N33



**OPTICALLY COUPLED ISOLATOR
PHOTODARLINGTON OUTPUT**

'X' SPECIFICATION APPROVALS

- VDE 0884 in 3 available lead form :-
- STD
- G form
- SMD approved to CECC 0080

DESCRIPTION

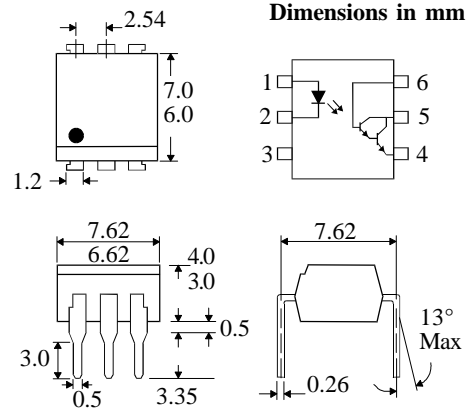
The 4N29, 4N30, 4N31, 4N32, 4N33 series of optically coupled isolators consist of an infrared light emitting diode and NPN silicon photodarlington in a space efficient dual in line plastic package.

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

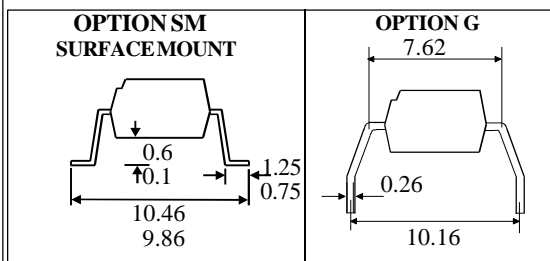
Forward Current	80mA
Reverse Voltage	5V
Power Dissipation	105mW

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



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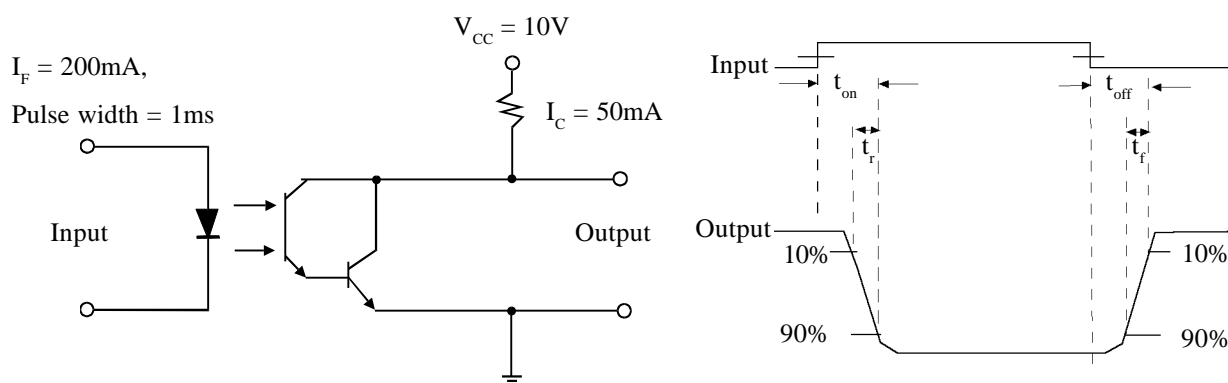
ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ Unless otherwise noted)

PARAMETER		MIN	TYP	MAX	UNITS	TEST CONDITION
Input	Forward Voltage (V_F)		1.2	1.5	V	$I_F = 50\text{mA}$
	Reverse Voltage (V_R)	3			V	$I_R = 10\mu\text{A}$
	Reverse Current (I_R)			10	μA	$V_R = 3\text{V}$
Output	Collector-emitter Breakdown (BV_{CEO})	30			V	$I_C = 1\text{mA}$ (note 2)
	Collector-base Breakdown (BV_{CBO})	50			V	$I_C = 100\mu\text{A}$
	Emitter-collector Breakdown (BV_{ECO})	5			V	$I_E = 100\mu\text{A}$
	Collector-emitter Dark Current (I_{CEO})			100	nA	$V_{CE} = 10\text{V}$
Coupled	Collector Output Current (I_C) (Note 2)					
	4N32, 4N33	50			mA	$10\text{mA } I_F, 10\text{V } V_{CE}$
	4N29, 4N30	10			mA	$10\text{mA } I_F, 10\text{V } V_{CE}$
	4N31	5			mA	$10\text{mA } I_F, 10\text{V } V_{CE}$
	Collector-emitter Saturation Voltage $V_{CE(SAT)}$					
	4N29, 4N30, 4N32, 4N33			1.0	V	$8\text{mA } I_F, 2\text{mA } I_C$
	4N31			1.2	V	$8\text{mA } I_F, 2\text{mA } I_C$
	Input to Output Isolation Voltage V_{ISO}	5300			V_{RMS}	(note 1)
		7500			V_{PK}	(note 1)
	Input-output Isolation Resistance R_{ISO}	5×10^{10}			Ω	$V_{IO} = 500\text{V}$ (note 1)
Output Turn on Time	ton			5	μs	$V_{CC} = 10\text{V}, I_C = 50\text{mA},$ $I_F = 200\text{mA},$ Pulse Width = 1ms fig.1
Output Turn off Time	toff			100	μs	
	4N32, 4N33			40	μs	
	4N29, 4N30, 4N31					

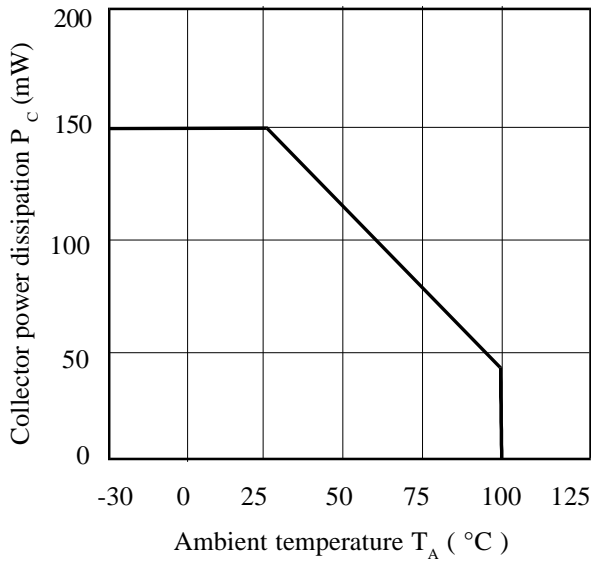
Note 1 Measured with input leads shorted together and output leads shorted together.

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

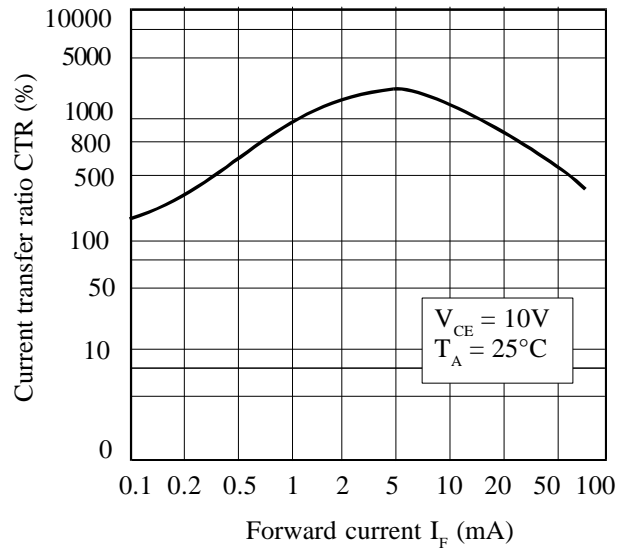
FIGURE 1



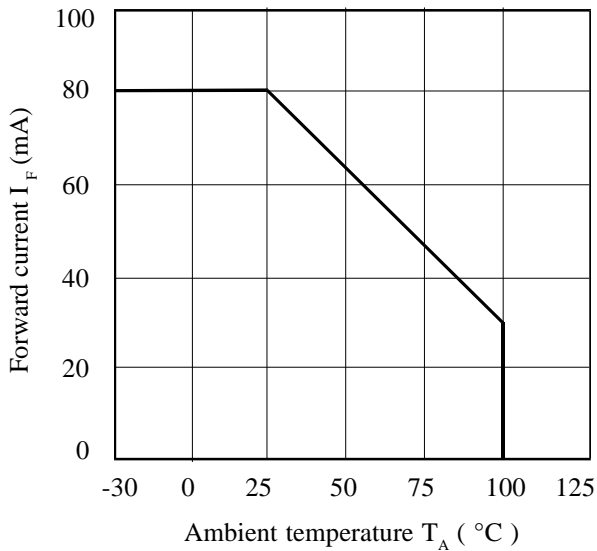
Collector Power Dissipation vs. Ambient Temperature



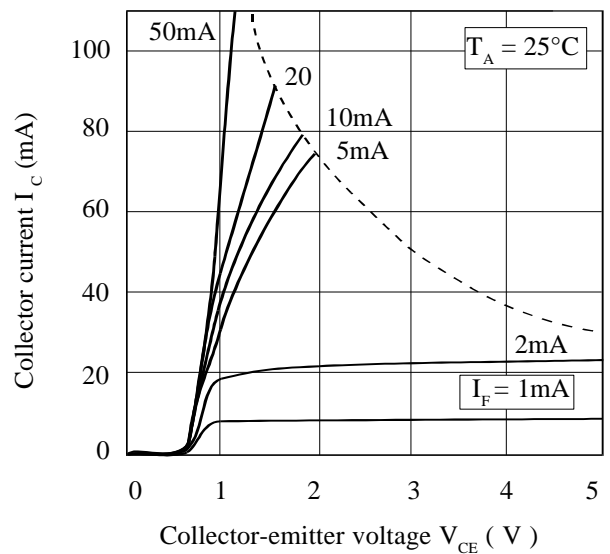
Current Transfer Ratio vs. Forward Current



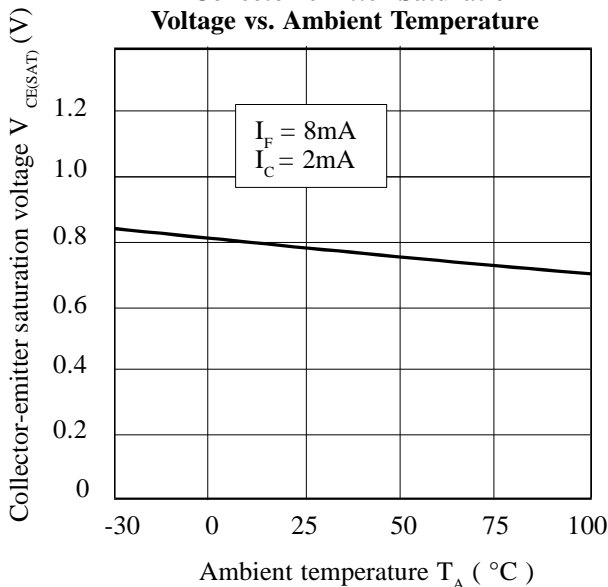
Forward Current vs. Ambient Temperature



Collector Current vs. Collector-emitter Voltage



Collector-emitter Saturation Voltage vs. Ambient Temperature



Relative Current Transfer Ratio vs. Ambient Temperature

