

4N32X3,-2,-1

4N32-3,-2,-1



**LOW INPUT CURRENT  
PHOTODARLINGTON OPTICALLY  
COUPLED ISOLATORS**

**APPROVALS**

- UL recognised, File No. E91231

**'X' SPECIFICATION APPROVALS**

- VDE 0884 in 2 available lead form : -  
- STD  
- G form
- VDE 0884 in SMD approval pending
- EN60950 approved by SETI,  
reg. no. 157786-18

**DESCRIPTION**

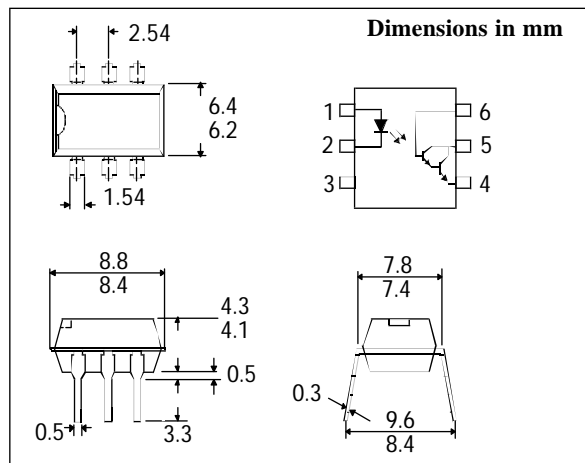
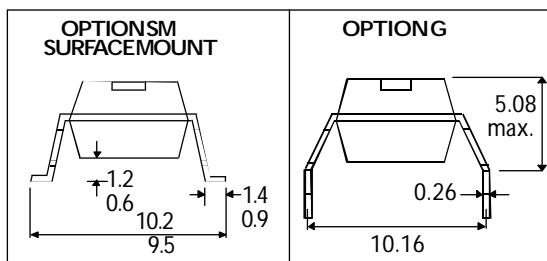
The 4N32-3,-2,-1 series of optically coupled isolators consist of an infrared light emitting diode and NPN silicon photodarlington in a space efficient dual in line plastic package.

**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.
- Low input current 0.25mA  $I_F$
- High Current Transfer Ratio (200% min)
- High Isolation Voltage (5.3kV<sub>RMS</sub>, 7.5kV<sub>PK</sub>)
- High BV<sub>CEO</sub> (55V min)
- 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 \_\_\_\_\_ 10V  
Power Dissipation \_\_\_\_\_ 105mW

**OUTPUT TRANSISTOR**

Collector-emitter Voltage BV<sub>CEO</sub> \_\_\_\_\_ 55V  
Emitter-collector Voltage BV<sub>ECO</sub> \_\_\_\_\_ 6V  
Power Dissipation \_\_\_\_\_ 150mW

**POWER DISSIPATION**

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

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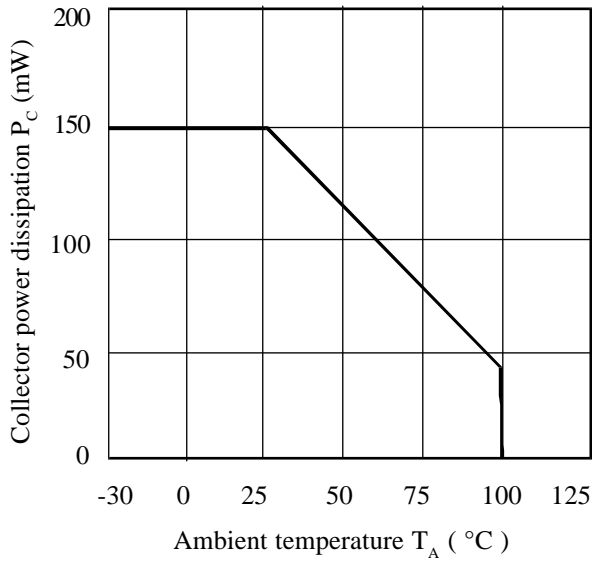
**ELECTRICAL CHARACTERISTICS (  $T_A = 25^\circ\text{C}$  Unless otherwise noted )**

PARAMETER		MIN	TYP	MAX	UNITS	TEST CONDITION	
Input	Forward Voltage ( $V_F$ )		1.2	1.4	V	$I_F = 20\text{mA}$	
	Reverse Voltage ( $V_R$ )	10			V	$I_R = 10\mu\text{A}$	
	Reverse Current ( $I_R$ )			10	$\mu\text{A}$	$V_R = 10\text{V}$	
Output	Collector-emitter Breakdown ( $BV_{CEO}$ )	55			V	$I_C = 1\text{mA}$ (note 2)	
	Collector-base Breakdown ( $BV_{CBO}$ )	55			V	$I_C = 100\mu\text{A}$	
	Emitter-collector Breakdown ( $BV_{ECO}$ )	6			V	$I_E = 100\mu\text{A}$	
	Collector-emitter Dark Current ( $I_{CEO}$ )			100	nA	$V_{CE} = 10\text{V}$	
Coupled	Current Transfer Ratio (CTR) (Note 2)	4N32-3	200			%	$0.25\text{mA } I_F, 1.0\text{V } V_{CE}$
			400			%	$0.5\text{mA } I_F, 1.0\text{V } V_{CE}$
			800			%	$1.0\text{mA } I_F, 1.0\text{V } V_{CE}$
	4N32-2	400			%	$0.5\text{mA } I_F, 1.0\text{V } V_{CE}$	
		800			%	$1.0\text{mA } I_F, 1.0\text{V } V_{CE}$	
	4N32-1	800			%	$1.0\text{mA } I_F, 1.0\text{V } V_{CE}$	
	Collector-emitter Saturation Voltage	-3		1.0	V	$0.25\text{mA } I_F, 0.5\text{mA } I_C$	
		-2		1.0	V	$0.5\text{mA } I_F, 2\text{mA } I_C$	
		-1		1.0	V	$1.0\text{mA } I_F, 8\text{mA } I_C$	
	Input to Output Isolation Voltage $V_{ISO}$	5300			$V_{RMS}$	(note 1)	
		7500			$V_{PK}$	(note 1)	
	Input-output Isolation Resistance $R_{ISO}$	$5 \times 10^{10}$			$\Omega$	$V_{IO} = 500\text{V}$ (note 1)	
	Output Rise Time tr		60	300	$\mu\text{s}$	$V_{CE} = 2\text{V}$ ,	
Output Fall Time tf		53	250	$\mu\text{s}$	$I_C = 10\text{mA}, R_L = 100\Omega$		

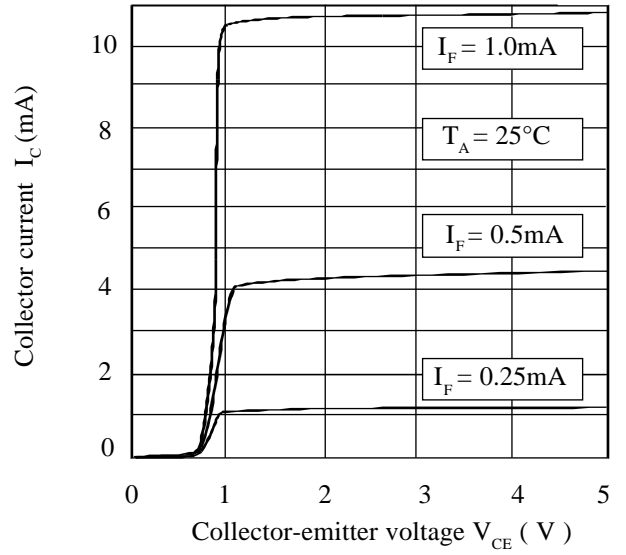
Note 1 Measured with input leads shorted together and output leads shorted together.

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

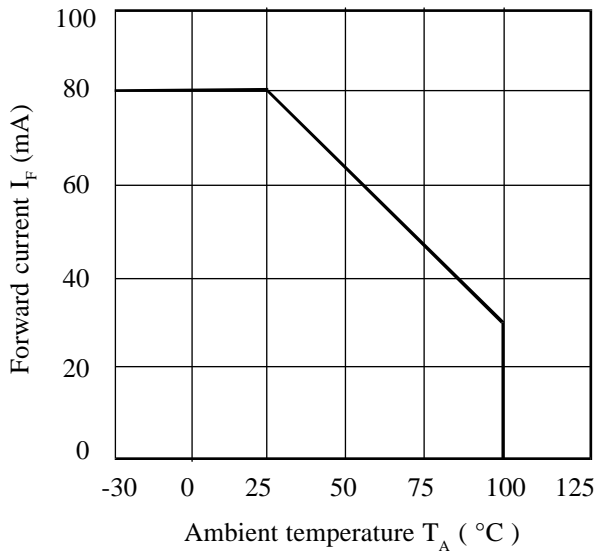
**Collector Power Dissipation vs. Ambient Temperature**



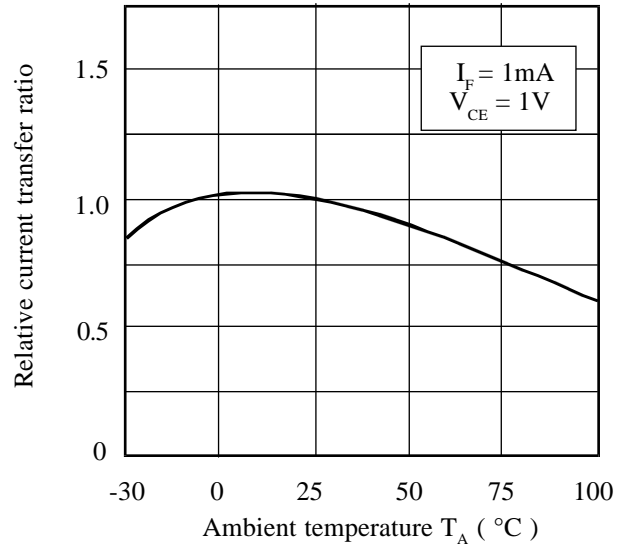
**Collector Current vs. Collector-emitter Voltage**



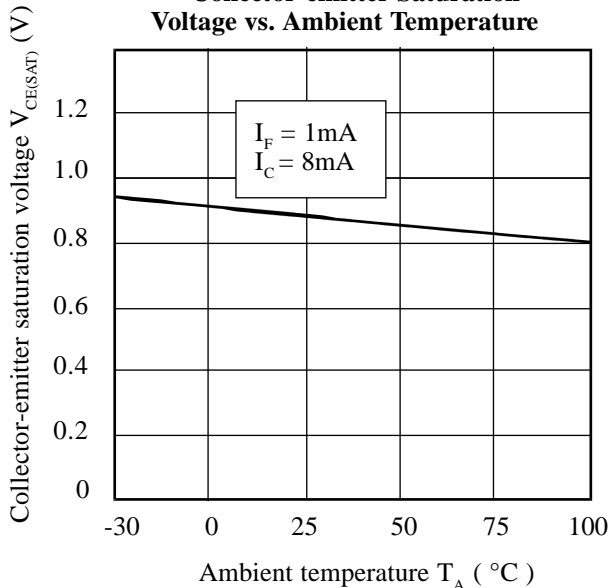
**Forward Current vs. Ambient Temperature**



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



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



**Current Transfer Ratio vs. Forward Current**

