

4N38X, 4N38AX  
4N38, 4N38A



**ISOCOM**  
COMPONENTS



**OPTICALLY COUPLED  
ISOLATOR  
PHOTOTRANSISTOR OUTPUT**

**APPROVALS**

- UL recognised, File No. E91231  
Package Code " GG "
- 'X' SPECIFICATION APPROVALS
  - VDE 0884 in 3 available lead form :-  
- STD  
- G form  
- SMD approved to CECC 00802
  - Certified to EN60950 by :-  
Nemko - Certificate No. P01102464

**DESCRIPTION**

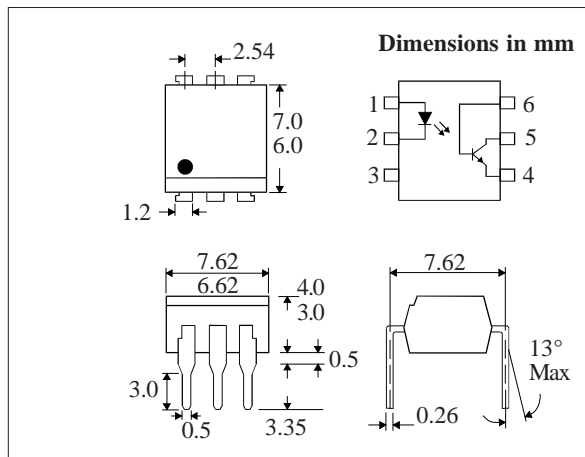
The 4N38, 4N38A series of optically coupled isolators consist of infrared light emitting diode and NPN silicon photo transistor in a standard 6 pin dual in line plastic package.

**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  $BV_{CEO}$  (80V min)
- High Isolation Voltage ( $5.3kV_{RMS}, 7.5kV_{PK}$ )
- All electrical parameters 100% tested
- Custom electrical selections available

**APPLICATIONS**

- DC motor controllers
- 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 \_\_\_\_\_ 60mA  
Reverse Voltage \_\_\_\_\_ 6V  
Power Dissipation \_\_\_\_\_ 105mW

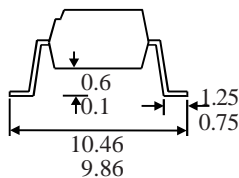
**OUTPUT TRANSISTOR**

Collector-emitter Voltage  $BV_{CEO}$  \_\_\_\_\_ 80V  
Collector-base Voltage  $BV_{CBO}$  \_\_\_\_\_ 80V  
Emitter-collector Voltage  $BV_{ECO}$  \_\_\_\_\_ 6V  
Collector Current \_\_\_\_\_ 50mA  
Power Dissipation \_\_\_\_\_ 160mW

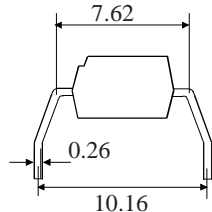
**POWER DISSIPATION**

Total Power Dissipation \_\_\_\_\_ 200mW  
(derate linearly 2.67mW/°C above 25°C)

**OPTION SM  
SURFACE MOUNT**



**OPTION G**



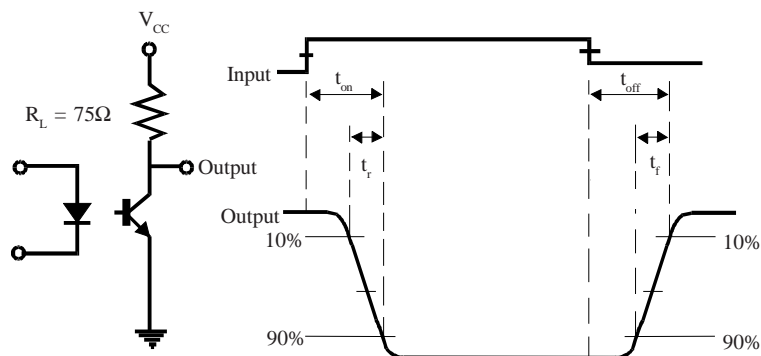
**ISOCOM COMPONENTS 2004 LTD**

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Hartlepool, Cleveland, TS25 1UD  
Tel: (01429) 863609 Fax: (01429) 863581

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

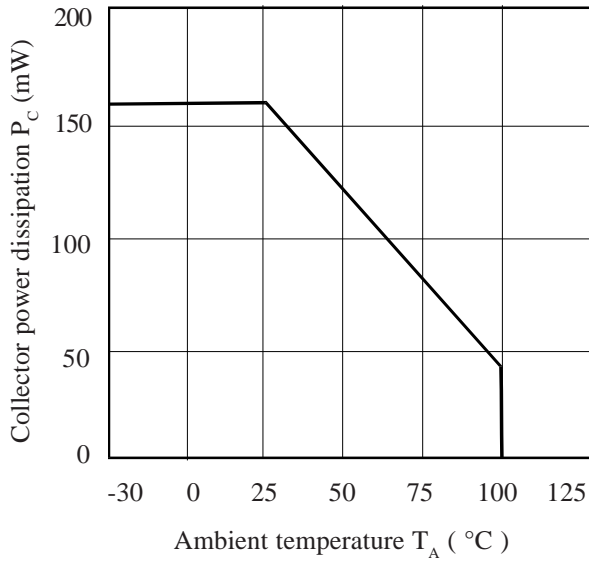
PARAMETER		MIN	TYP	MAX	UNITS	TEST CONDITION
Input	Forward Voltage ( $V_F$ )		1.2	1.5	V	$I_F = 10\text{mA}$
	Reverse Current ( $I_R$ )			10	$\mu\text{A}$	$V_R = 6\text{V}$
Output	Collector-emitter Breakdown ( $BV_{CEO}$ ) ( note 2 )	80			V	$I_C = 1\text{mA}$
	Collector-base Breakdown ( $BV_{CBO}$ )	80			V	$I_C = 100\mu\text{A}$
	Emitter-collector Breakdown ( $BV_{ECO}$ )	6			V	$I_E = 100\mu\text{A}$
	Collector-emitter Dark Current ( $I_{CEO}$ )			50	nA	$V_{CE} = 60\text{V}$
	Collector-base Dark Current ( $I_{CBO}$ )			20	nA	$V_{CE} = 60\text{V}$
Coupled	Current Transfer Ratio (CTR)	20			%	$10\text{mA } I_F, 10\text{V } V_{CE}$
	Collector-emitter Saturation Voltage $V_{CE(SAT)}$			1.0	V	$20\text{mA } I_F, 4\text{mA } I_C$
	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)
	Response Time (rise) Response Time (fall)		2 2		$\mu\text{s}$ $\mu\text{s}$	$V_{CC} = 5\text{V}$ , $I_F = 10\text{mA}, R_L = 75\Omega$ (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.

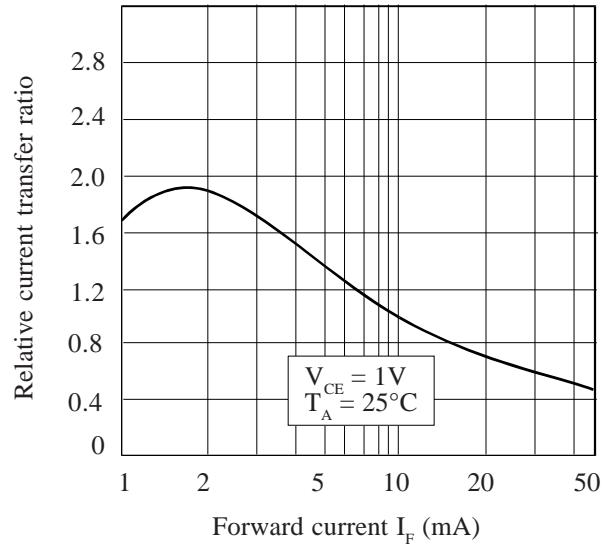


**FIG 1**

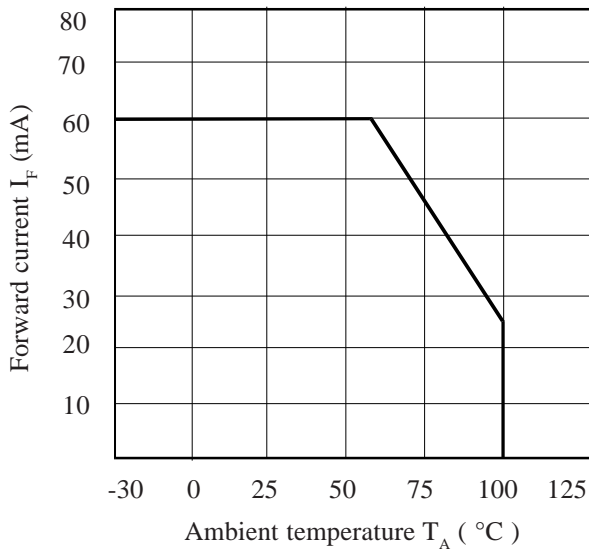
**Collector Power Dissipation vs. Ambient Temperature**



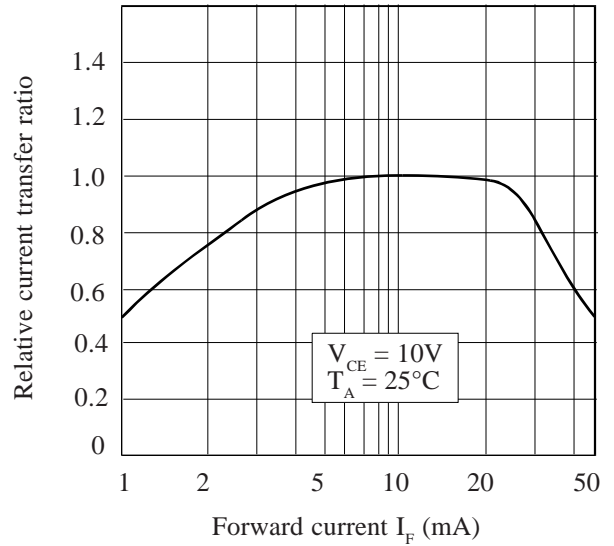
**Relative Current Transfer Ratio vs. Forward Current**



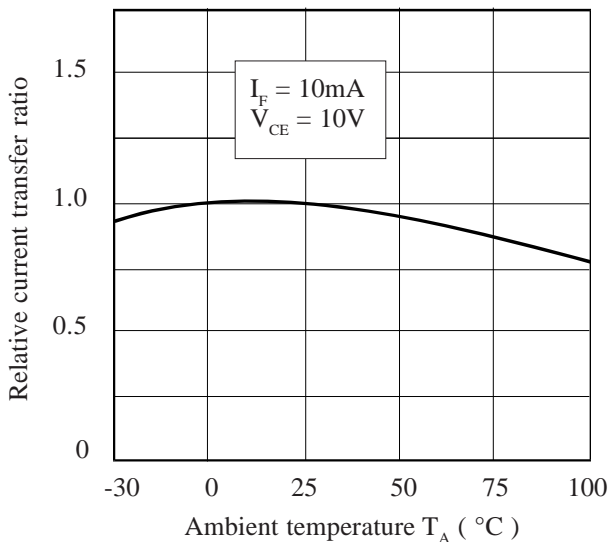
**Forward Current vs. Ambient Temperature**



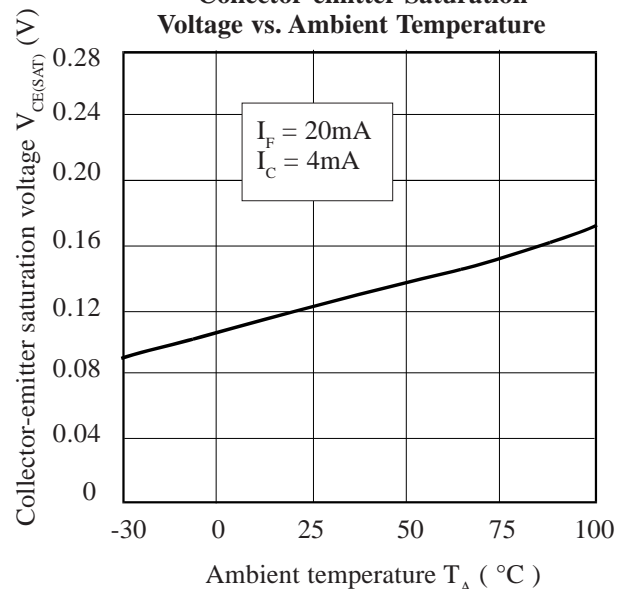
**Relative Current Transfer Ratio vs. Forward Current**



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



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



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