

IS204X,ISD204X,ISQ204X3,2,1  
IS204,ISD204,ISQ204-3,-2,-1



**LOW INPUT CURRENT  
PHOTOTRANSISTOR OPTICALLY  
COUPLED ISOLATORS**

**APPROVALS**

- UL recognised, File No. E91231
- 'X' SPECIFICATION APPROVALS**
- VDE 0884 in 3 available lead forms :-  
- STD  
- G form  
- SMD approved to CECC 00802
- IS204X is certified to EN60950 by the following Test Bodies :-  
Nemko - Certificate No. P01102464  
Fimko - Certificate No. FI18166  
Semko - Reference No. 0202037/01-22  
Demko - Certificate No. 311158-01
- BSI approved - Certificate No. 8001

**DESCRIPTION**

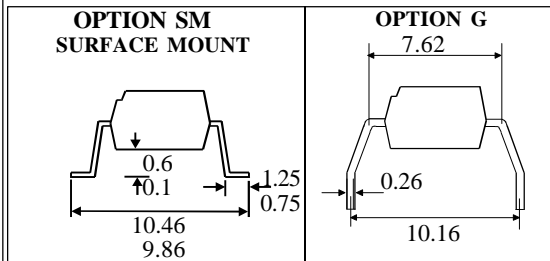
The IS204-3,-2,-1, ISD204-3,-2,-1, ISQ204-3,-2,-1 series of optically coupled isolators consist of infrared light emitting diodes and NPN silicon photo transistors in space efficient dual in line plastic packages.

**FEATURES**

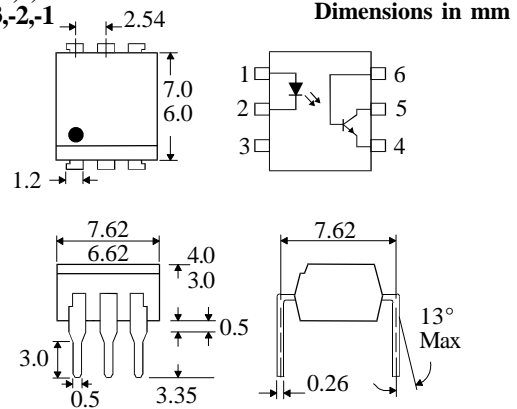
- Options :-  
10mm lead spread - add G after part no.  
Surface mount - add SM after part no.  
Tape&reel - add SMT&R after part no.
- Low input current 0.5mA  $I_F$
- High Current Transfer Ratio (50% min)
- High Isolation Voltage (5.3kV<sub>RMS</sub>, 7.5kV<sub>PK</sub>)
- High BV<sub>CEO</sub> (70V min)

**APPLICATIONS**

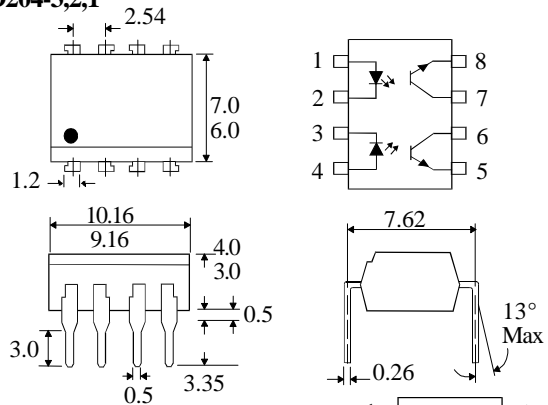
- Computer terminals
- Industrial systems controllers
- Signal transmission between systems of different potentials and impedances



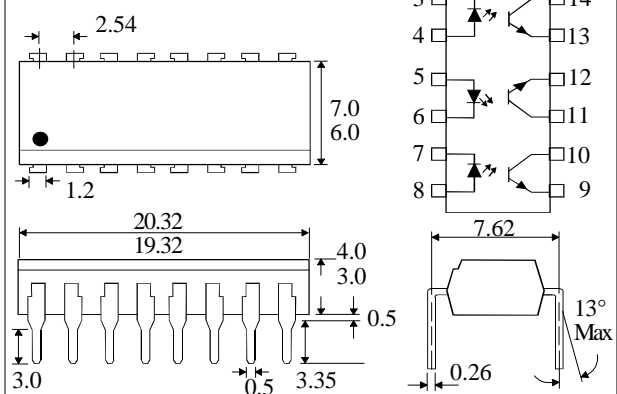
**IS204X3,2,1  
IS204-3,-2,-1**



**ISD204X3,2,1  
ISD204-3,2,1**



**ISQ204X3,2,1  
ISQ204-3,2,1**



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Hartlepool, Cleveland, TS25 1YD  
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**ABSOLUTE MAXIMUM RATINGS**  
(25°C unless otherwise specified)

Storage Temperature \_\_\_\_\_ -40°C to +125°C  
 Operating Temperature \_\_\_\_\_ -25°C to +100°C  
 Lead Soldering Temperature  
 (1/16 inch (1.6mm) from case for 10 secs) 260°C

**INPUT DIODE**

Forward Current \_\_\_\_\_ 50mA  
 Reverse Voltage \_\_\_\_\_ 6V  
 Power Dissipation \_\_\_\_\_ 70mW

**OUTPUT TRANSISTOR**

Collector-emitter Voltage  $BV_{CEO}$  \_\_\_\_\_ 70V  
 Emitter-collector Voltage  $BV_{ECO}$  \_\_\_\_\_ 6V  
 Power Dissipation \_\_\_\_\_ 150mW

**POWER DISSIPATION**

Total Power Dissipation \_\_\_\_\_ 170mW  
 (derate linearly 2.67mW/°C above 25°C)

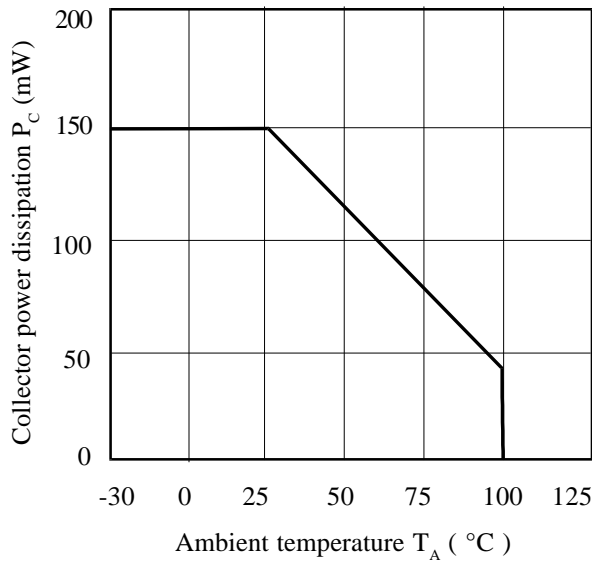
**ELECTRICAL CHARACTERISTICS (  $T_A = 25^\circ\text{C}$  Unless otherwise noted )**

PARAMETER		MIN	TYP	MAX	UNITS	TEST CONDITION
Input	Forward Voltage ( $V_F$ )		1.2	1.4	V	$I_F = 20\text{mA}$
	Reverse Current ( $I_R$ )			10	$\mu\text{A}$	$V_R = 4\text{V}$
Output	Collector-emitter Breakdown ( $BV_{CEO}$ ) (Note 2)	70			V	$I_C = 1\text{mA}$
	Emitter-collector Breakdown ( $BV_{ECO}$ )	6			V	$I_E = 100\mu\text{A}$
	Collector-emitter Dark Current ( $I_{CEO}$ )			100	nA	$V_{CE} = 20\text{V}$
Coupled	Current Transfer Ratio (CTR) (Note 2) IS204-3, ISD204-3, ISQ204-3	70			%	$0.5\text{mA } I_F, 0.4\text{V } V_{CE}$
		100			%	$1.0\text{mA } I_F, 0.4\text{V } V_{CE}$
	IS204-2, ISD204-2, ISQ204-2	50			%	$0.5\text{mA } I_F, 0.4\text{V } V_{CE}$
	IS204-1, ISD204-1, ISQ204-1	50			%	$1.0\text{mA } I_F, 0.4\text{V } V_{CE}$
	Collector-emitter Saturation Voltage -3			0.4	V	$0.5\text{mA } I_F, 0.35\text{mA } I_C$
	-2			0.4	V	$0.5\text{mA } I_F, 0.25\text{mA } I_C$
	-1			0.4	V	$1.0\text{mA } I_F, 0.5\text{mA } I_C$
	Input to Output Isolation Voltage $V_{ISO}$	5300			$V_{RMS}$	See note 1
		7500			$V_{PK}$	See note 1
	Input-output Isolation Resistance $R_{ISO}$	$5 \times 10^{10}$			$\Omega$	$V_{IO} = 500\text{V}$ (note 1)
Output Rise Time tr		4	18	$\mu\text{s}$	$V_{CE} = 2\text{V}$ ,	
Output Fall Time tf		3	18	$\mu\text{s}$	$I_C = 0.2\text{mA}, R_L = 100\Omega$	

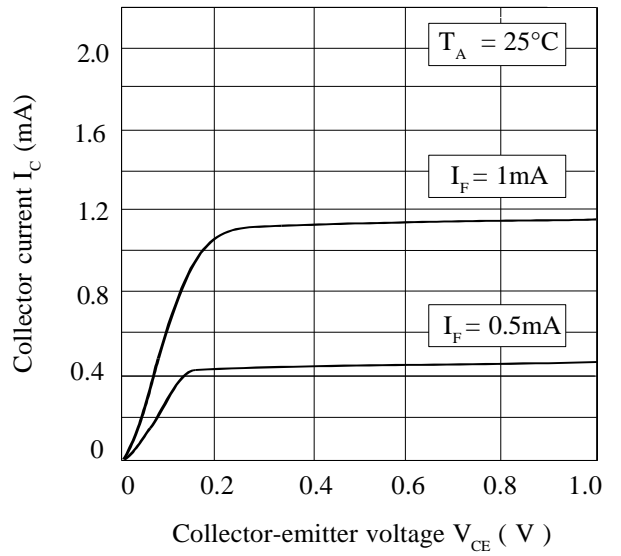
Note 1 Measured with input leads shorted together and output leads shorted together.

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

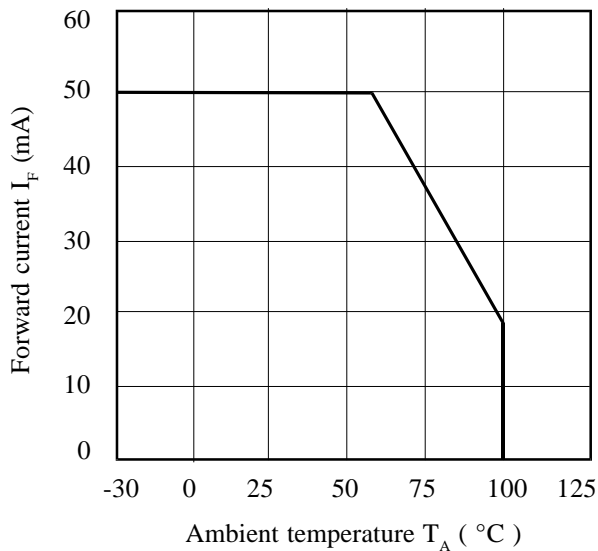
**Collector Power Dissipation vs. Ambient Temperature**



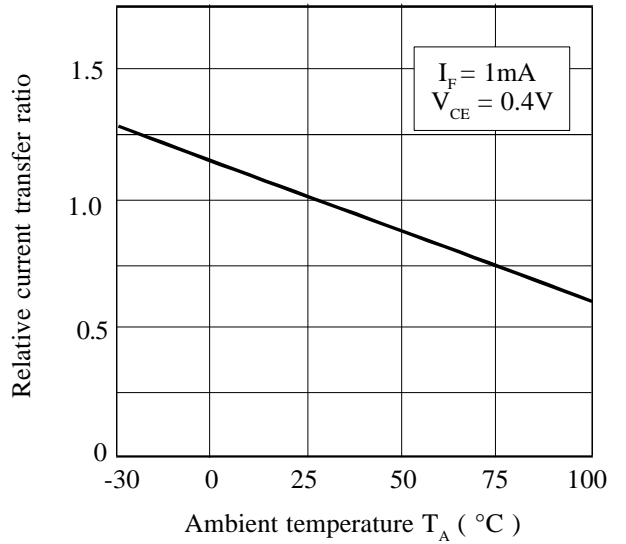
**Collector Current vs. Low Collector-emitter Voltage**



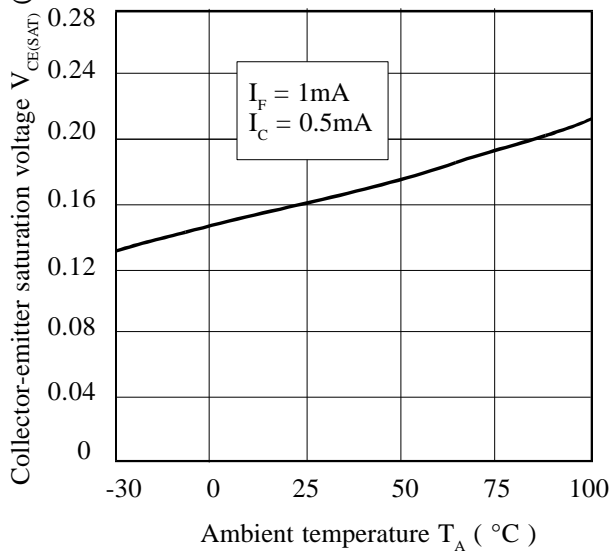
**Forward Current vs. Ambient Temperature**



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



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



**Current Transfer Ratio vs. Forward Current**

