

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. P96102022
 - Fimko - Registration No. 192313-01..25
 - Semko - Reference No. 9639052 01
 - Demko - Reference No. 305969
 - ISD204X - EN60950 pending
 - ISQ204X - EN60950 pending

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.

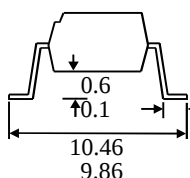
FEATURES

- 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_{RMS}, 7.5kV_{PK})
- High BV_{CEO} (70V min)

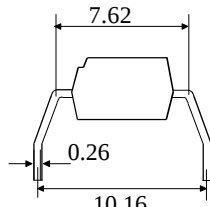
APPLICATIONS

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

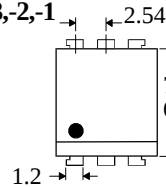
OPTION SM SURFACE MOUNT



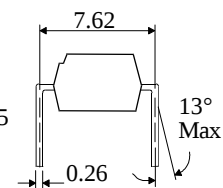
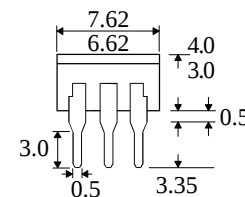
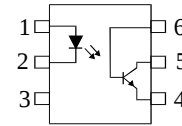
OPTION G



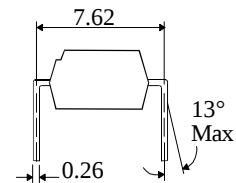
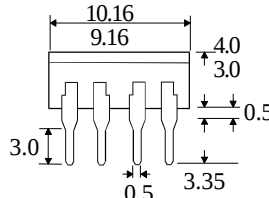
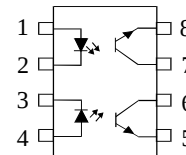
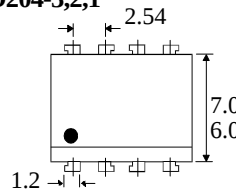
IS204X3,2,1 IS204-3,-2,-1



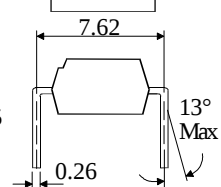
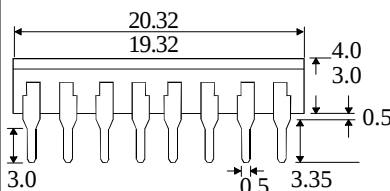
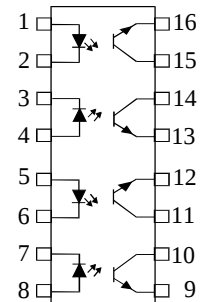
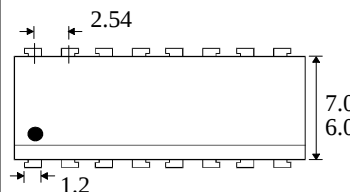
Dimensions in mm



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



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



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ABSOLUTE MAXIMUM RATINGS
(25°C unless otherwise specified)

Storage Temperature _____ -55°C to + 125°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 _____ 50mA
Reverse Voltage _____ 10V
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 _____ 200mW
(derate linearly 2.67mW/°C above 25°C)

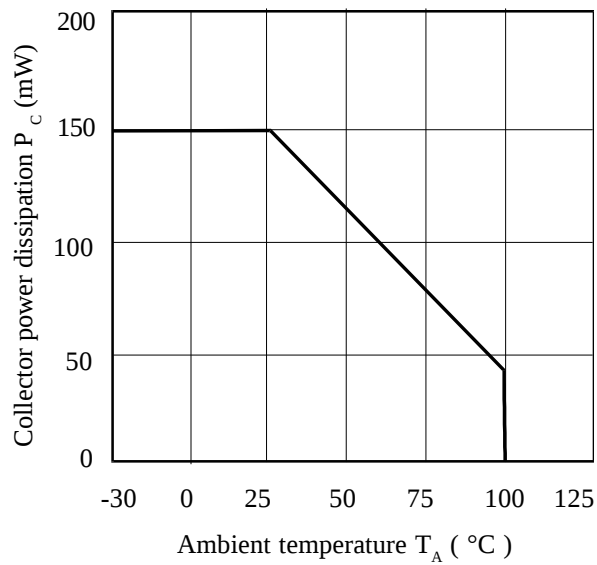
ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ Unless otherwise noted)

PARAMETER		MIN	TYP	MAX	UNITS	TEST CONDITION
Input	Forward Voltage (V_F)	10	1.2	1.4	V	$I_F = 20\text{mA}$
	Reverse Voltage (V_R)				V	$I_R = 10\mu\text{A}$
	Reverse Current (I_R)			10	μA	$V_R = 10\text{V}$
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}	5×10^{10}			Ω	$V_{IO} = 500\text{V}$ (note 1)
	Output Rise Time t_r		4	18	μs	$V_{CE} = 2\text{V},$
	Output Fall Time t_f		3	18	μs	$I_C = 0.2\text{mA}, R_L = 100\Omega$

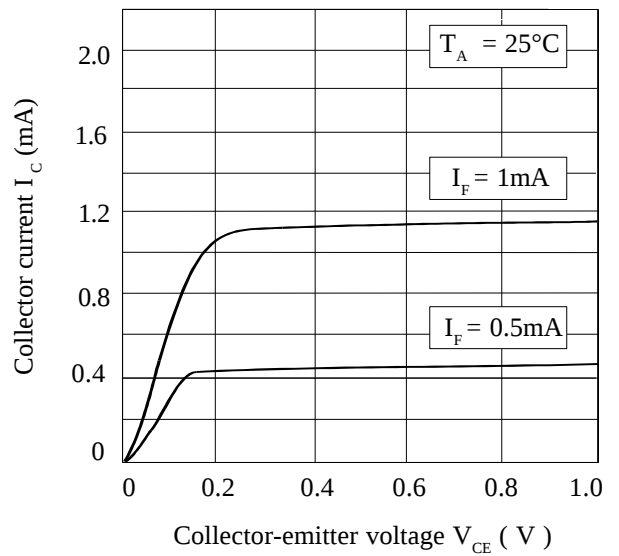
Note 1 Measured with input leads shorted together and output leads shorted together.

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

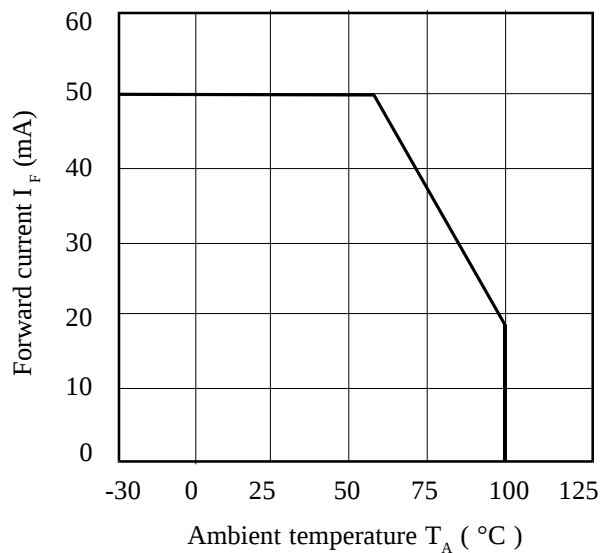
Collector Power Dissipation vs. Ambient Temperature



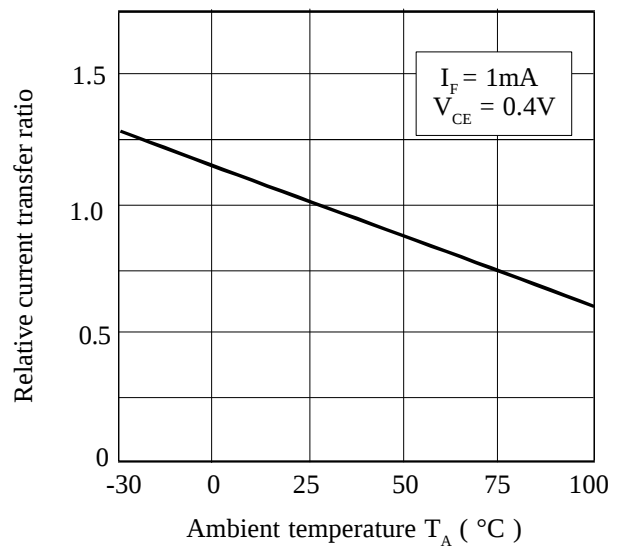
Collector Current vs. Low Collector-emitter Voltage



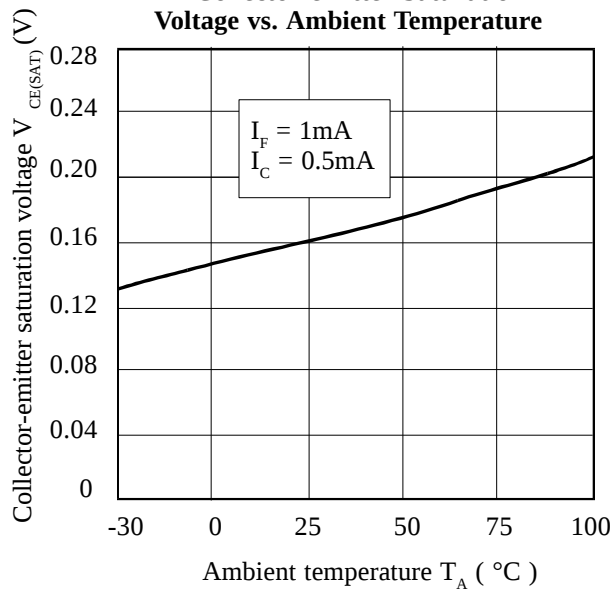
Forward Current vs. Ambient Temperature



Relative Current Transfer Ratio vs. Ambient Temperature



Collector-emitter Saturation Voltage vs. Ambient Temperature



Current Transfer Ratio vs. Forward Current

