IS4N46
IS4N45

LOW INPUT CURRENT DARLINGTON OUTPUT OPTICALLY COUPLED ISOLATOR

ROHS COMPLIANT

APPROVALS

- UL recognised, File No. E91231 "JJ "

'X' SPECIFICATION APPROVALS

- VDE 0884 in 3 available lead form : -
  - STD
  - G form
  - SMD approved to CECC 00802

DESCRIPTION

The IS4N45, IS4N46 are optically coupled isolators consisting of an infrared light emitting diode and a NPN silicon photo darlington which has an integral base-emitter resistor to optimise switching speed and elevated temperature characteristics in a standard 6pin dual in line plastic package. These devices are designed to equal the 4N45, 4N46 characteristics while providing greater voltage and current capability.

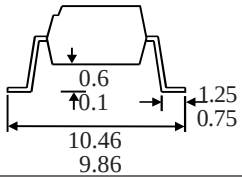
FEATURES

- 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 Isolation Voltage ($5.3kV_{RMS}$,$7.5kV_{PK}$)
- High Current Transfer Ratio (1500% typ.)
- High BV_{CEO} (55V min.)
- Internal base-emitter resistor minimizes output leakage
- Low input current 0.5mA I_F

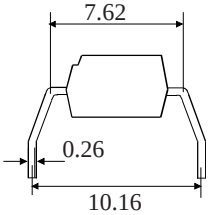
APPLICATIONS

- Telephone ring detector
- Digital logic ground isolation
- Low input current line receiver
- Logic to reed relay interface
- Level shifting
- Interface between logic families
- Line voltage status indicator - low input power dissipation

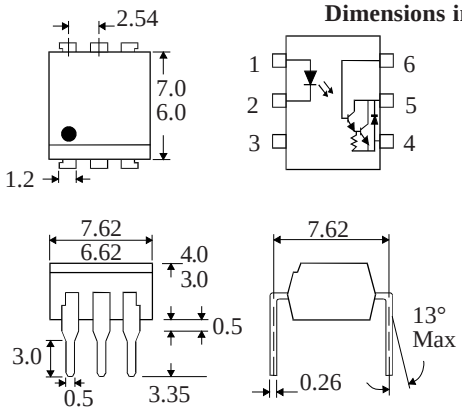
OPTION SM
SURFACE MOUNT



OPTION G



Dimensions in mm



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 V_{CEO}	55V
Emitter-base Voltage V_{EBO}	6V
Collector Current	150mA
Power Dissipation	300mW

POWER DISSIPATION

Total Power Dissipation	350mW

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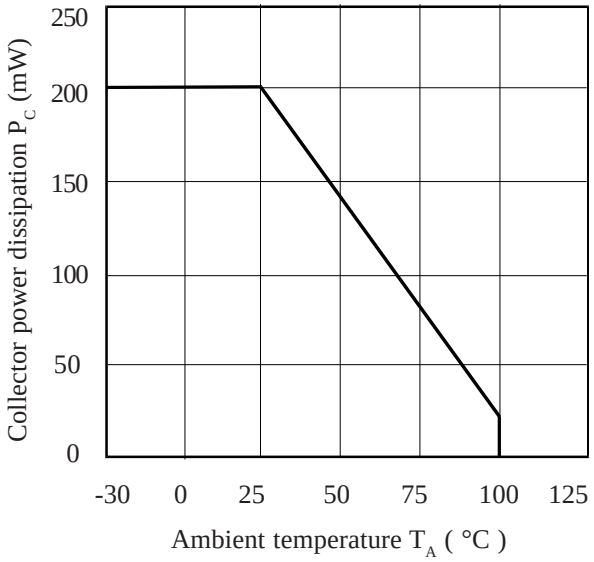
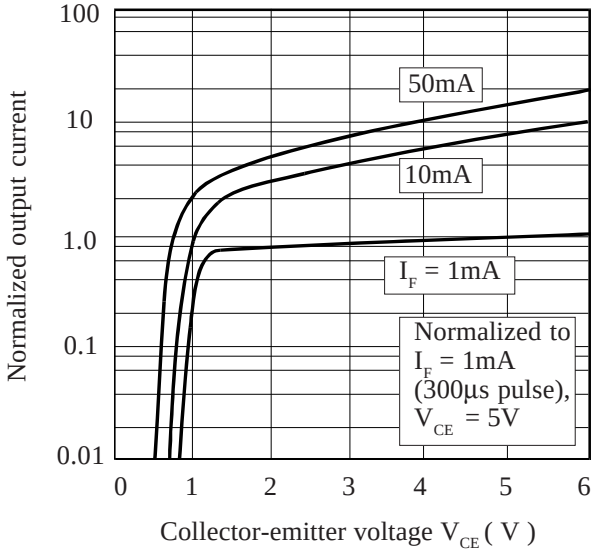
ELECTRICAL CHARACTERISTICS (T_A= 25°C Unless otherwise noted)

PARAMETER		MIN	TYP	MAX	UNITS	TEST CONDITION
Input	Forward Voltage (V_F)		1.2	1.5	V	I_F = 10mA
	Reverse Current (I_R)			10	µA	V_R = 4V
Output	Collector-emitter Breakdown (BVceo)	55			V	I_C = 1mA
	Emitter-collector Breakdown (BVeco)	0.1			V	I_E = 10µA
	Emitter-base Breakdown (BVebo)	6			V	I_E = 10µA
Coupled	DC Current Transfer Ratio (CTR)					
	IS4N46	350			%	0.5mA I_F, 1V V_{CE}
	IS4N46	500			%	1mA I_F, 1V V_{CE}
	IS4N45	250			%	1mA I_F, 1V V_{CE}
	IS4N46, IS4N45	200			%	10mA I_F, 1.2V V_{CE}
	Logic Low Output Voltage (V_{OL})					
	IS4N46			1.0	V	0.5mA I_F, 1.75mA I_{OL}
	IS4N46			1.0	V	1mA I_F, 5mA I_{OL}
	IS4N45			1.0	V	1mA I_F, 2.5mA I_{OL}
	IS4N46, IS4N45			1.2	V	10mA I_F, 20mA I_{OL}
	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}	$5x10^{10}$			Ω	V_{IO} = 500V (note 1)
	Input-output Capacitance Cf		0.6		pF	V = 0, f = 1MHz
	Output rise time, tr		100	300	µS	V_{CE} = 2V, I_C = 20mA
	Output fall time, tf		20	100	µS	R_L = 100Ω

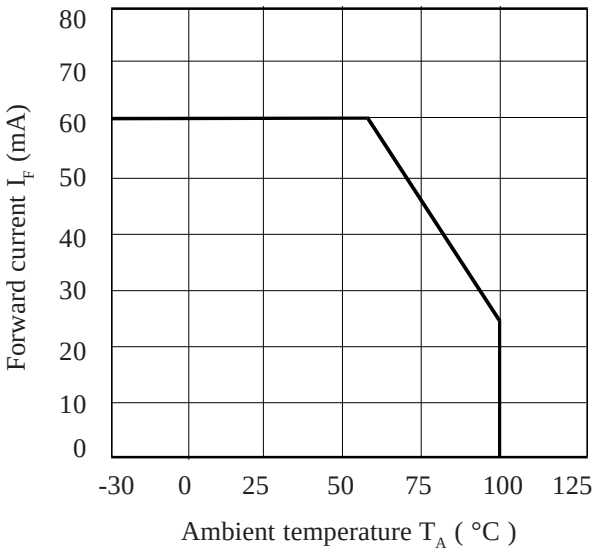
Collector Power Dissipation vs. Ambient Temperature



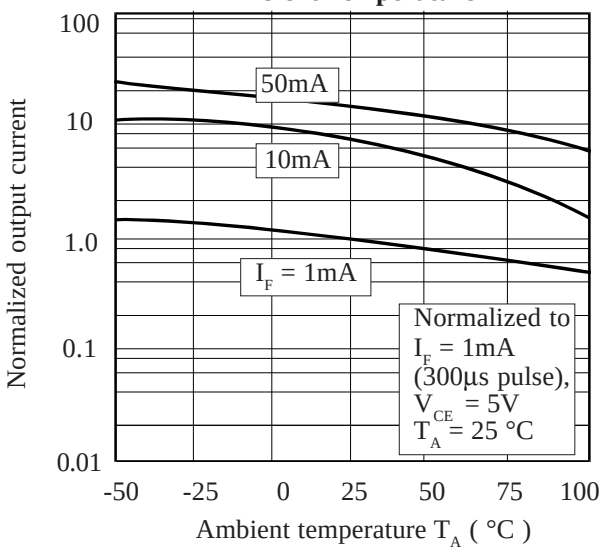
Normalized Output Current vs. Collector-emitter Voltage



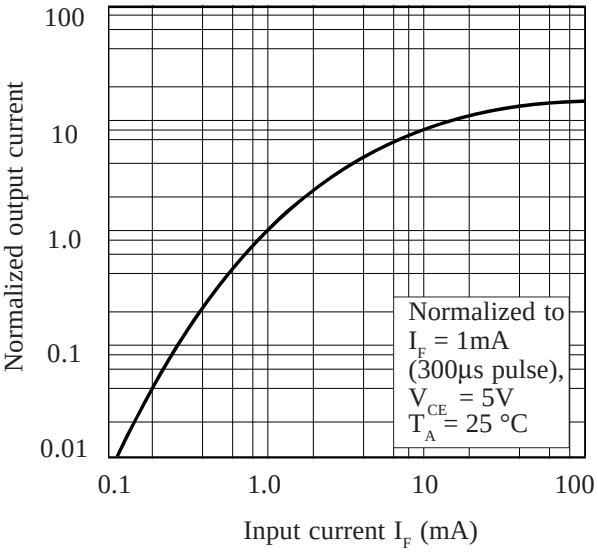
Forward Current vs. Ambient Temperature



Normalized Output Current vs. Ambient Temperature



Normalized Output Current vs. Input Current



Collector Dark Current vs. Ambient Temperature