

IS4N46
IS4N45



ISOCOM
COMPONENTS

**LOW INPUT CURRENT
DARLINGTON OUTPUT OPTICALLY
COUPLED ISOLATOR**



APPROVALS

- UL recognised, File No. E91231 "JJ "
- VDE 0884 in 3 available lead form : -
- STD
- G form
- SMD approved to CECC 00802

DESCRIPTION

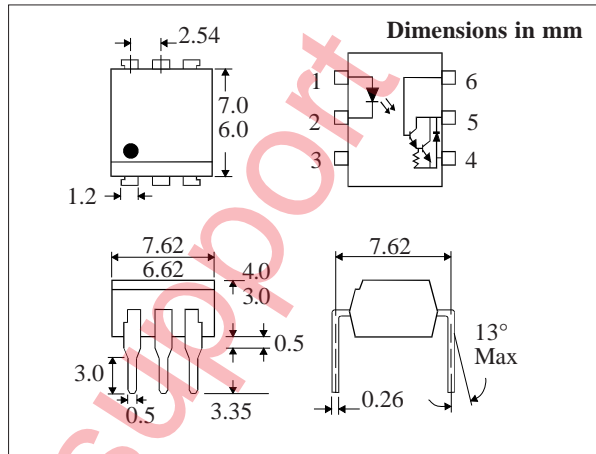
The IS4N45, IS4N46 are optically coupled isolators consisting of an infrared light emitting diode and a NPN silicon photo darlington which has an integral base-emitter resistor to optimise switching speed and elevated temperature characteristics in a standard 6pin dual in line plastic package. These 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



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

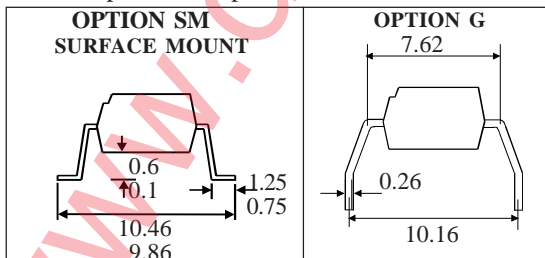
Forward Current	50mA
Reverse Voltage	6V
Power Dissipation	70mW

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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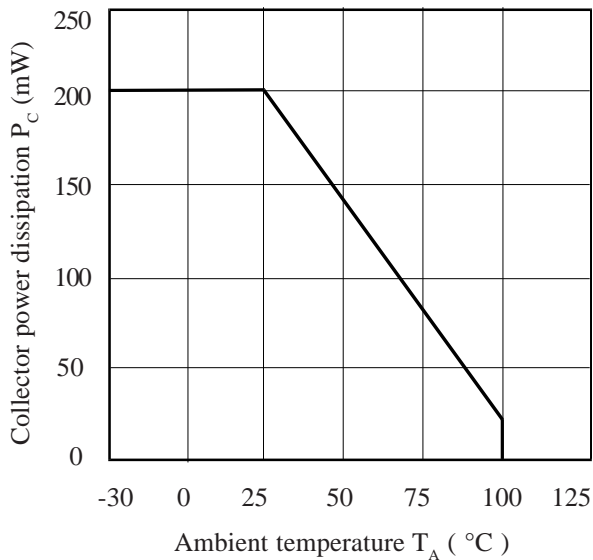


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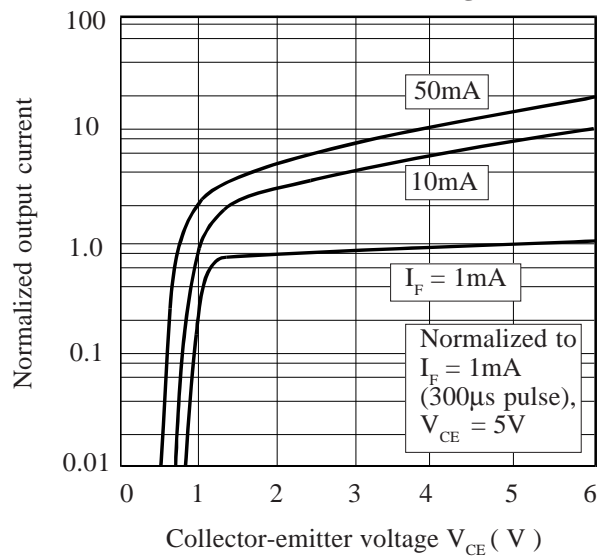
ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ Unless otherwise noted)

PARAMETER		MIN	TYP	MAX	UNITS	TEST CONDITION	
Input	Forward Voltage (V_F)		1.2	1.5	V	$I_F = 10\text{mA}$	
	Reverse Current (I_R)			10	μA	$V_R = 4\text{V}$	
Output	Collector-emitter Breakdown (BV_{ce0})	55			V	$I_C = 1\text{mA}$	
	Emitter-collector Breakdown (BV_{eco})	0.1			V	$I_E = 10\mu\text{A}$	
	Emitter-base Breakdown (BV_{ebo})	6			V	$I_E = 10\mu\text{A}$	
Coupled	DC Current Transfer Ratio (CTR)						
	IS4N46	350			%	$0.5\text{mA } I_F, 1\text{V } V_{CE}$	
	IS4N46	500			%	$1\text{mA } I_F, 1\text{V } V_{CE}$	
	IS4N45	250			%	$1\text{mA } I_F, 1\text{V } V_{CE}$	
	IS4N46, IS4N45	200			%	$10\text{mA } I_F, 1.2\text{V } V_{CE}$	
	Logic Low Output Voltage (V_{OL})						
	IS4N46			1.0	V	$0.5\text{mA } I_F, 1.75\text{mA } I_{OL}$	
	IS4N46			1.0	V	$1\text{mA } I_F, 5\text{mA } I_{OL}$	
	IS4N45			1.0	V	$1\text{mA } I_F, 2.5\text{mA } I_{OL}$	
	IS4N46, IS4N45			1.2	V	$10\text{mA } I_F, 20\text{mA } I_{OL}$	
	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}	5×10^{10}				Ω	$V_{IO} = 500\text{V}$ (note 1)
Input-output Capacitance C_f		0.6			pF	$V = 0, f = 1\text{MHz}$	
Output rise time, tr			100	300	μs	$V_{CE} = 2\text{V}, I_C = 20\text{mA}$	
Output fall time, tf			20	100	μs	$R_L = 100\Omega$	

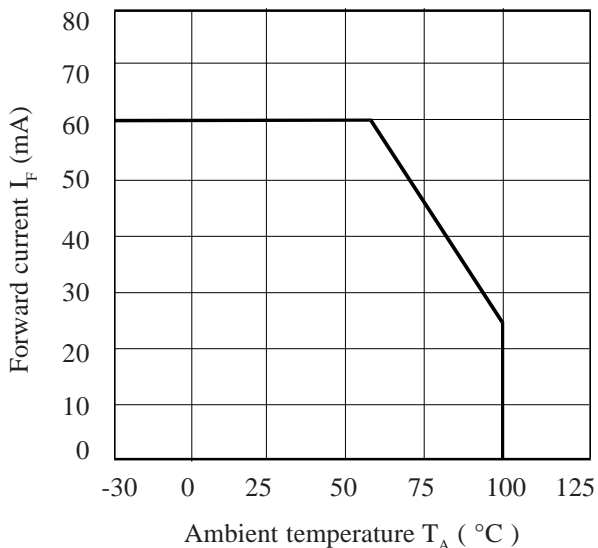
Collector Power Dissipation vs. Ambient Temperature



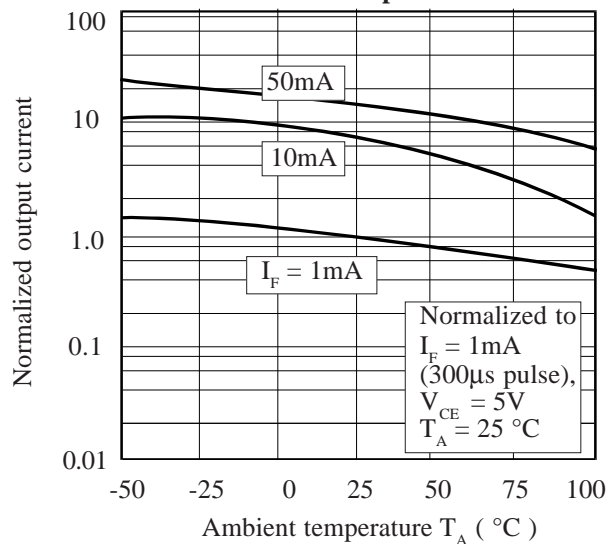
Normalized Output Current vs. Collector-emitter Voltage



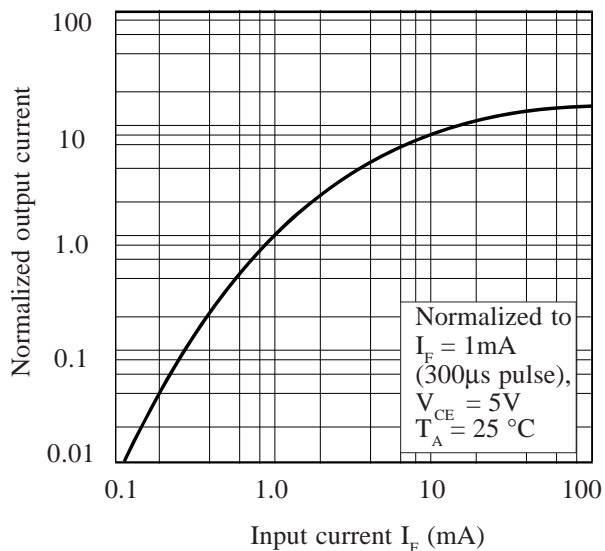
Forward Current vs. Ambient Temperature



Normalized Output Current vs. Ambient Temperature



Normalized Output Current vs. Input Current



Collector Dark Current vs. Ambient Temperature

