

IS4N46  
IS4N45



**ISOCOM**  
COMPONENTS

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



**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**

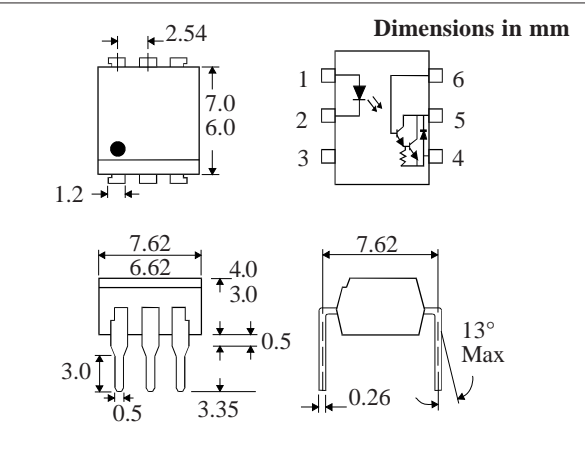
The IS4N45, IS4N46 are optically coupled isolators consisting of an infrared light emitting diode and a NPN silicon photo darlington which has an integral base-emitter resistor to optimise switching speed and elevated temperature characteristics in a standard 6pin dual in line plastic package. These 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<sub>RMS</sub>, 7.5kV<sub>PK</sub>)
- High Current Transfer Ratio (1500% typ.)
- High BV<sub>CEO</sub> (55V min.)
- Internal base-emitter resistor minimizes output leakage
- Low input current 0.5mA I<sub>F</sub>

**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**

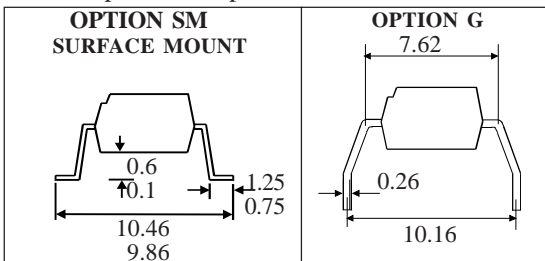
Forward Current	50mA
Reverse Voltage	6V
Power Dissipation	70mW

**OUTPUT TRANSISTOR**

Collector-emitter Voltage V <sub>CEO</sub>	55V
Emitter-base Voltage V <sub>EBO</sub>	6V
Collector Current	150mA
Power Dissipation	300mW

**POWER DISSIPATION**

Total Power Dissipation	350mW
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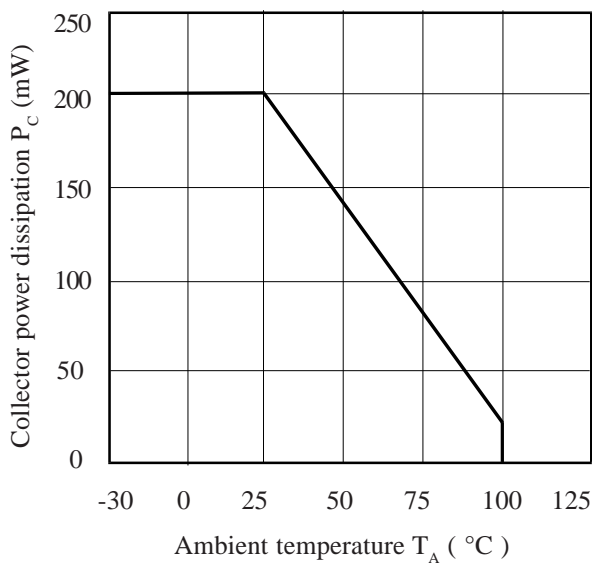


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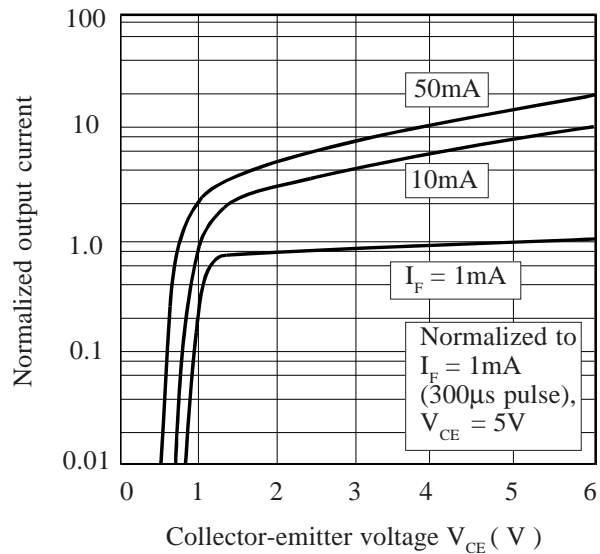
**ELECTRICAL CHARACTERISTICS (  $T_A = 25^\circ\text{C}$  Unless otherwise noted )**

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	$\mu\text{A}$	$V_R = 4\text{V}$	
Output	Collector-emitter Breakdown ( $BV_{ceo}$ )	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 $R_{ISO}$	$5 \times 10^{10}$				$\Omega$	$V_{IO} = 500\text{V}$ (note 1)
Input-output Capacitance $C_f$		0.6			pF	$V = 0, f = 1\text{MHz}$	
Output rise time, tr			100	300	$\mu\text{s}$	$V_{CE} = 2\text{V}, I_C = 20\text{mA}$	
Output fall time, tf			20	100	$\mu\text{s}$	$R_L = 100\Omega$	

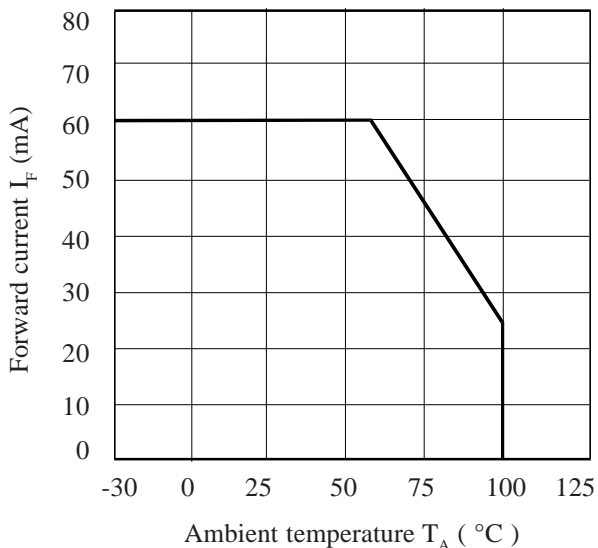
**Collector Power Dissipation vs. Ambient Temperature**



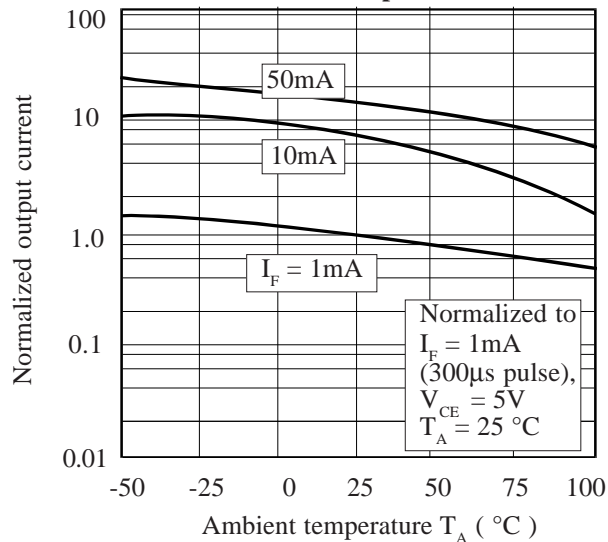
**Normalized Output Current vs. Collector-emitter Voltage**



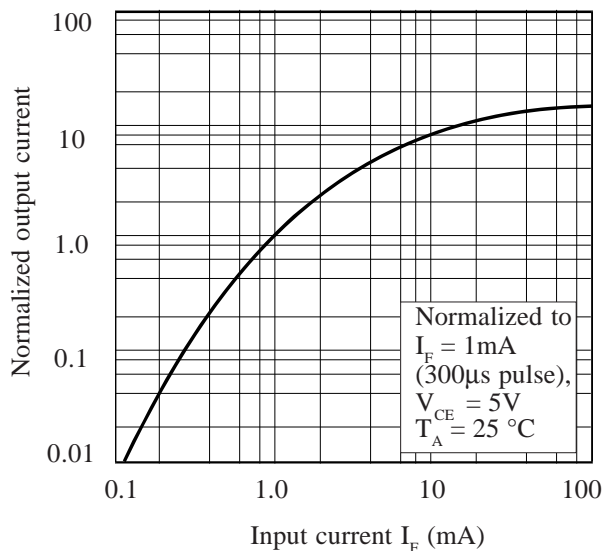
**Forward Current vs. Ambient Temperature**



**Normalized Output Current vs. Ambient Temperature**



**Normalized Output Current vs. Input Current**



**Collector Dark Current vs. Ambient Temperature**

