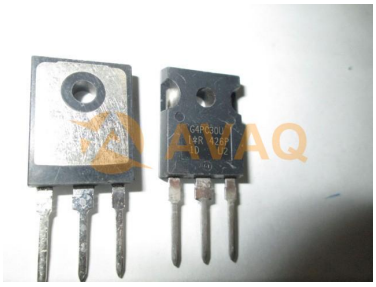
# IRG4PC30U

**Trans IGBT Chip N-CH 600V 23A 100mW 3-Pin(3+Tab) TO-247AC Tube**



Images are for reference only

Inquiry

| | |
|---|---|
| **Manufacturer:** | Infineon Technologies Corporation |
| **Package/Case:** | TO-247 |
| **Product Type:** | Thyristors |
| **Lifecycle:** | Obsolete |

## General Description

The reliability report is a summary of the test data collated since the implementation of the reliability programme. This report will be periodically updated typically on a quarterly basis. Future publications of this report will also include as appropriate additional information to assist the user in the interpretation of the data provided. The programme covers only IGBT / CoPack manufactured products at IRGB, Holland Road, Oxted. The reliability data provided in this report are for the package types TO247 and TO220.

Fit Rate / Equivalent Device Hours

Traditionally, reliability results have been presented in terms of Mean-Time-To-Failure or Median-Time-To-Failure. While these results have their value, they do not necessarily tell the designer what he most needs to know. For example, the Median Time-To-Failure tells the engineer how long it will take for half a particular lot of devices to fail. Clearly no designer wishes to have a 50% failure rate within a reasonable equipment lifetime. Of greater interest, therefore, is the time to failure of a much smaller percentage of devices say 1% or 0.1%. For example, in a given application one failure per hundred units over five years is an acceptable failure rate for the equipment, the designer knows that time to accumulate 1% failure of that components per unit, then no more than 0.1% of the components may fail in five years. Therefore, the IGBT / CoPack reliability or operating-life data is presented in terms of the time it will take to produce a prescribed number of failures under given operating conditions.

Using IGBT Reliability Information

Reliability is the probability that a semiconductor device will perform its specified function in a given environment for a specified period of time. Reliability is quality over time & environmental conditions.

Reliability can be defined as a probability of failure-free performance of a required function, under a specified environment, for a given period of time. The reliability of semiconductors has been extensively studied and the data generated from these works is widely used in industry to estimate the probabilities of system lifetimes. The reliability of a specific semiconductor device is unique to the technology process used in fabrication and to the external stress applied to the device.

In order to understand the reliability of specific product like the IGBT it is useful to determine the failure rate associated with each environmental stress that IGBTs encounter.

The values reported in this report are at a 60% upper confidence limit and the equivalent device hours at state of working temperature of 90°C. It has been shown that the failure rate of semiconductors in general. when followed for a long period of time, exhibits what has been called a "Bathtub Curve" when plotted against time for a given set of environmental conditions.

The IGBT Structure

The silicon cross-section of an Insulated Gate Bipolar Transistor (IGBT), the terminal called Collector is, actually, the Emitter of the PNP. In spite of its similarity to the cross-section of a power MOSFET, operating of the two transistors is fundamentally different, the IGBT being a minority carrier device. Except for the P + substrate is virtually identical to that of a power MOSFET, both devices share a similar polysilicon gate structure and P wells with N + source contacts. In both devices the N-type material under the P wells is sized in thickness and reistivity to sustain the full voltage rating of the device. However, in spite of the many similarities, he physical operation of the IGBT is closer to that of a bipolar transistor than to that of a power MOSFET. This is due to the P + substrate which is responsible for the minority carrier injection into the N regtion and the resulting conductivity modulation, a significant share of the conduction losses occur in the N region, typically 70% in a 500v device.

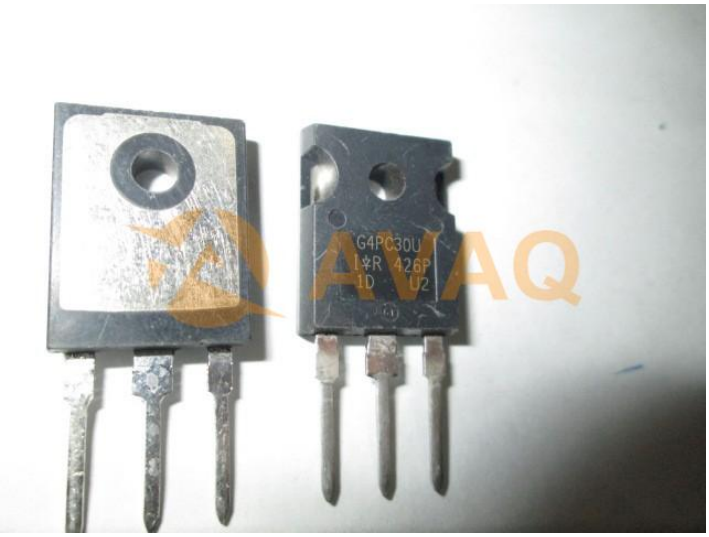
## Application

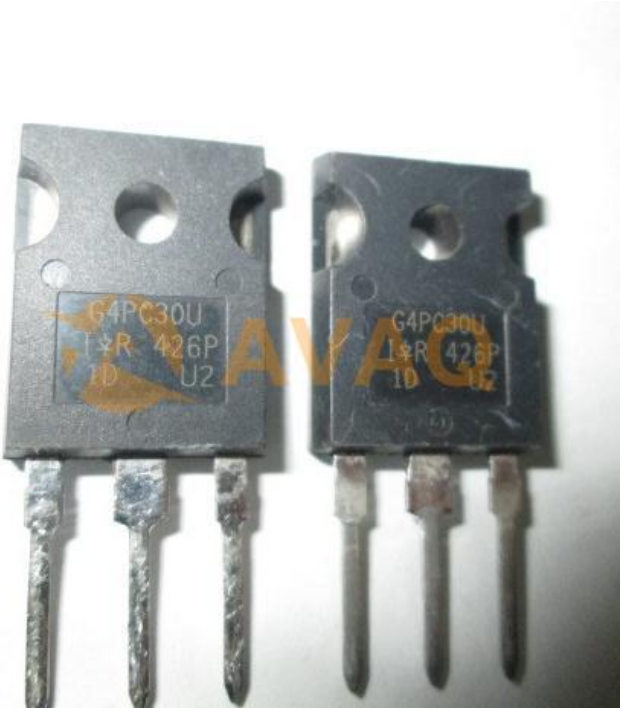
Fan

PFC

Pump

Refridgeration




## Recommended For You

**IRG4PH50U**

Infineon Technologies Corporation

TO-247

**IRGPC50F**

Infineon Technologies Corporation

TO-247

**IRG4BC30W**

Infineon Technologies Corporation

TO-220

**IRG4PC40U**

Infineon Technologies Corporation

TO-247

**IRGBC30F**

Infineon Technologies Corporation

TO-220

**IRG4PSC71K**

Infineon Technologies Corporation

TO-274AA

**IRG4PC30KD**

Infineon Technologies Corporation

TO-247

**IRG4PH30KD**

Infineon Technologies Corporation

TO-247

**IRG4PC30S**

Infineon Technologies Corporation

TO-247

**IRG4IBC30W**

Infineon Technologies Corporation

TO-220F

**IRGS14C40L**

Infineon Technologies Corporation

TO-263

**IRG4PC50UD**

Infineon Technologies Corporation

TO-247

**IRG4BC20UD**

Infineon Technologies Corporation

TO-220

**IRG4PC50U**

Infineon Technologies Corporation

TO-247

**IRG4BC20KD**

Infineon Technologies Corporation

TO-220