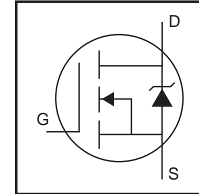
International
IOR Rectifier

PD - 95826B

# IRFC3810B

HEXFET® Power MOSFET Die in Wafer Form

- 100% Tested at Probe ①
- Available in Chip Pack, Unsawn wafer, Sawn on Film ②




100V
$R_{DS(on)}$ = 0.009Ω (max.)
6" Wafer

## Key Electrical Characteristics (TO-274 package)②

| Parameter | Description | Min | Typ. | Max | Test Conditions |
|---|---|---|---|---|---|
| $V_{(BR)DSS}$ | Drain-to-Source Breakdown Voltage | 100V | —— | —— | $V_{GS}$ = 0V, $I_D$ = 250μA |
| $R_{DS(on)}$ | Static Drain-to-Source On-Resistance | —— | —— | 0.009Ω | $V_{GS}$ = 10V, $I_D$ = 100A |
| $V_{GS(th)}$ | Gate Threshold Voltage | 3.0V | —— | 5.0V | $V_{DS}$ = $V_{GS}$, $I_D$ = 250μA |
| $I_{DSS}$ | Drain-to-Source Leakage Current | —— | —— | 25μA | $V_{DS}$ = 100V, $V_{GS}$ = 0V, $T_J$ = 25°C |
| $I_{GSS}$ | Gate-to-Source Leakage Current | | | ± 100nA | $V_{GS}$ = ±20V |
| $T_J$<br>$T_{STG}$ | Operating Junction and<br>Storage Temperature Range | -55°C to 175°C Max. | | | |

## Mechanical Data

| | |
|---|---|
| Nominal Back Metal Composition, Thickness: | Cr- NiV - Ag, (1kA°-2kA°-5kA°) |
| Nominal Front Metal Composition, Thickness: | Al, 1%Si (0.004mm) |
| Dimensions: | 0.370" x 0.305" |
| Wafer Diameter: | 150 mm, with 100 flat |
| Wafer Thickness: | 375 μm max |
| Relevant Die Mechanical Drawing Number | 01-5473 |
| Minimum Street Width | 107μm |
| Reject Ink Dot Size | 0.51 mm diameter minimum |
| Recommended Storage Environment: | Store in original container, in dessicated nitrogen, with no contamination |
| Recommended Die Attach Conditions: | For optimum electrical results, die attach temperature should not exceed 300 °C |
| Reference Packaged Part | IRFPS3810 |

## Die Outline

2.063 (.0812)
S
G
9.398 (.370)
0.5525 (.0217)
0.577 (.0227)
7.747 (.305)

NOTES:

1. ALL DIMENSIONS ARE SHOWN IN MILLIMETERS (INCHES).
2. CONTROLLING DIMENSION: (INCH).
3. LETTER DESIGNATION:
   S = SOURCE SK = SOURCE KELVIN E = EMITTER
   G = GATE IS = CURRENTSENSE
4. DIMENSIONAL TOLERANCES:
   BONDING PADS: WIDTH & LENGTH
   < 0.635 TOLERANCE = +/- 0.013
   < (.0250) TOLERANCE = +/- (.0005)
   > 0.635 TOLERANCE = +/- 0.025
   > (.0250) TOLERANCE = +/- (.0010)
   OVERALL DIE: WIDTH & LENGTH
   < 1.270 TOLERANCE = +/- 0.102
   < (.050) TOLERANCE = +/- (.004)
   > 1.270 TOLERANCE = +/- 0.203
   > (.050) TOLERANCE = +/- (.008)
5. UNLESS OTHERWISE NOTED ALL DIE ARE GEN III

Note:

① This IR product is100% tested at wafer level and is manufactured using established, mature and well characterized processes. Due to restrictions in die level processing, die may not be equivalent to standard package products and are therefore offered with a conditional performance guarantee. The above data sheet is based on IR sample testing under certain predetermined and assumed conditions, and are provided for illustration purposes only. Customers are encouraged to perform testing in actual proposed packaged and use conditions. IR die products are tested using IR-based quality assurance procedures and are manufactured using IR's established processes. Programs for customer-specified testing are available upon request. IR has experienced assembly yields of generally 95% or greater for individual die; however, customer's results will vary. Estimates such as those described and set forth in this data sheet for semiconductor die will vary depending on a number of packaging, handling, use and other factors. Sold die may not perform on an equivalent basis to standard package products and are therefore offered with a limited warranty as described in IR's applicable standard terms and conditions of sale. All IR die sales are subject to IR's applicable standard terms and conditions of sale, which are available upon request.
For customers requiring a particular parameter to be guaranteed, special testing can be carried out or product can be purchased as known good die.

② Part number shown is for die in wafer. Contact factory for these other options.

**Additional Testing and Screening**

For Customers requiring product supplied as Known Good Die (KGD) or requiring specific die level testing, please contact your local IR Sales.

**Shipping**

Three shipping options are offered as standard.

- Un-sawn wafer
- Die in waffle pack
- Die on film

Tape and Reel is also available for some products. Please consult your local IR sales office or email http://die.irf.com for additional information.
Please specify your required shipping option when requesting prices and ordering Die product. If not specified, Un-sawn wafer will be assumed.

**Handling**

- Product must be handled only at ESD safe workstations. Standard ESD precautions and safe work environments are as defined in MIL-HDBK-263.
- Product must be handled only in a class 10,000 or better-designated clean room environment.
- Singulated die are not to be handled with tweezers. A vacuum wand with a non-metallic ESD protected tip should be used.

**Wafer/Die Storage**

- Proper storage conditions are necessary to prevent product contamination and/or degradation after shipment.
- Un-sawn wafers and singulated die can be stored for up to 12 months when in the original sealed packaging at room temperature (45% +/- 15% RH controlled environment).
- Un-sawn wafers and singulated die that have been opened can be stored when returned to their containers and placed in a Nitrogen purged cabinet, at room temperature (45% +/- 15% RH controlled environment).
- Note: To reduce the risk of contamination or degradation, it is recommended that product not being used in the assembly process be returned to their original containers and resealed with a vacuum seal process.
- Sawn wafers on a film frame are intended for immediate use and have a limited shelf life.
- Die in Surf Tape type carrier tape are intended for immediate use and have a limited shelf life. This is primarily due to the nature of the adhesive tape used to hold the product in the carrier tape cavity. This product can be stored for up to 30 days. This applies whether or not the material has remained in its original sealed container.

**Further Information**

For further information please contact your local IR Sales office or email your enquiry to
http://die.irf.com

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