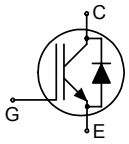
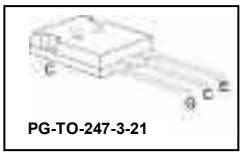
# Reverse Conducting IGBT with monolithic body diode

**Features:**

- Powerful monolithic Body Diode with very low forward voltage
- Body diode clamps negative voltages
- Trench and Fieldstop technology for 1200 V applications offers :
  - very tight parameter distribution
  - high ruggedness, temperature stable behavior
- NPT technology offers easy parallel switching capability due to positive temperature coefficient in $V_{CE(sat)}$
- Low EMI
- Qualified according to JEDEC[1] for target applications
- Pb-free lead plating; RoHS compliant
- Complete product spectrum and PSpice Models : http://www.infineon.com/igbt/




**Applications:**

- Inductive Cooking
- Soft Switching Applications

| Type | $V_{CE}$ | $I_C$ | $V_{CE(sat),Tj=25°C}$ | $T_{j,max}$ | Marking | Package |
|---|---|---|---|---|---|---|
| IHW30N120R2 | 1200V | 30A | 1.65V | 175°C | H30R1202 | PG-TO-247-3-21 |

**Maximum Ratings**

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Collector-emitter voltage | $V_{CE}$ | 1200 | V |
| DC collector current<br>$T_C$ = 25°C<br>$T_C$ = 100°C | $I_C$ | <br>60<br>30 | A |
| Pulsed collector current, $t_p$ limited by $T_{jmax}$ | $I_{Cpuls}$ | 90 | |
| Turn off safe operating area ($V_{CE} \le$ 1200V, $T_j \le$ 175°C) | - | 90 | |
| Diode forward current<br>$T_C$ = 25°C<br>$T_C$ = 100°C | $I_F$ | <br>60<br>30 | |
| Diode pulsed current, $t_p$ limited by $T_{jmax}$ | $I_{Fpuls}$ | 90 | |
| Diode surge non repetitive current, $t_p$ limited by $T_{jmax}$<br>$T_C$ = 25°C, $t_p$ = 10ms, sine halfwave<br>$T_C$ = 25°C, $t_p \le$ 2.5µs, sine halfwave<br>$T_C$ = 100°C, $t_p \le$ 2.5µs, sine halfwave | $I_{FSM}$ | <br>50<br>130<br>120 | |
| Gate-emitter voltage<br>Transient Gate-emitter voltage ($t_p$ < 5 ms) | $V_{GE}$ | ±20<br>±25 | V |
| Power dissipation $T_C$ = 25°C | $P_{tot}$ | 390 | W |
| Operating junction temperature | $T_j$ | -40...+175 | °C |
| Storage temperature | $T_{stg}$ | -55...+175 | |
| Soldering temperature, 1.6mm (0.063 in.) from case for 10s | - | 260 | |

[1] J-STD-020 and JESD-022

**Thermal Resistance**

| Parameter | Symbol | Conditions | Max. Value | Unit |
|---|---|---|---|---|
| **Characteristic** | | | | |
| IGBT thermal resistance, junction – case | $R_{thJC}$ | | 0.38 | K/W |
| Diode thermal resistance, junction – case | $R_{thJCD}$ | | 0.37 | |
| Thermal resistance, junction – ambient | $R_{thJA}$ | | 40 | |

**Electrical Characteristic,** at $T_j$ = 25 °C, unless otherwise specified

| Parameter | Symbol | Conditions | Value | | | Unit |
|---|---|---|---|---|---|---|
| | | | min. | Typ. | max. | |
| **Static Characteristic** | | | | | | |
| Collector-emitter breakdown voltage | $V_{(BR)CES}$ | $V_{GE}$=0V, $I_C$=1mA | 1200 | - | - | V |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $V_{GE}$ = 15V, $I_C$=30A | | | | |
| | | $T_j$=25°C | - | 1.65 | 1.8 | |
| | | $T_j$=125°C | - | 1.85 | - | |
| | | $T_j$=175°C | - | 2.0 | - | |
| Diode forward voltage | $V_F$ | $V_{GE}$=0V, $I_F$=30A | | | | |
| | | $T_j$=25°C | - | 1.55 | 1.8 | |
| | | $T_j$=125°C | - | 1.7 | - | |
| | | $T_j$=175°C | - | 1.75 | - | |
| Gate-emitter threshold voltage | $V_{GE(th)}$ | $I_C$=0.7mA, $V_{CE}$=$V_{GE}$ | 5.1 | 5.8 | 6.4 | |
| Zero gate voltage collector current | $I_{CES}$ | $V_{CE}$=1200V, $V_{GE}$=0V | | | | µA |
| | | $T_j$=25°C | - | - | 5 | |
| | | $T_j$=175°C | - | - | 2500 | |
| Gate-emitter leakage current | $I_{GES}$ | $V_{CE}$=0V, $V_{GE}$=20V | - | - | 100 | nA |
| Transconductance | $g_{fs}$ | $V_{CE}$=20V, $I_C$=30A | - | 19.7 | - | S |
| Integrated gate resistor | $R_{Gint}$ | | | none | | Ω |