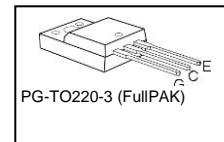
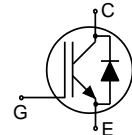


Low Loss DuoPack : IGBT in TRENCHSTOP™ and Fieldstop technology with soft, fast recovery anti-parallel Emitter Controlled HE diode



Features

- Very low $V_{CE(sat)}$ 1.5V (typ.)
- Maximum Junction Temperature 175°C
- Short circuit withstand time 5 μ s
- TRENCHSTOP™ and Fieldstop technology for 600V applications offers :
 - very tight parameter distribution
 - high ruggedness, temperature stable behavior
 - very high switching speed
- Low EMI
- Very soft, fast recovery anti-parallel Emitter Controlled HE diode
- Qualified according to JEDEC¹ for target applications
- Pb-free lead plating; RoHS compliant
- Complete product spectrum and PSpice Models : <http://www.infineon.com/igbt/>



Applications

- Washing Machine
- Inverter and Variable Speed Drive

| Type | V_{CE} | I_C | $V_{CE(sat), T_j=25^\circ C}$ | $T_{j,max}$ | Marking Code | Package |
|-----------|----------|-------|-------------------------------|-------------|--------------|----------------------|
| IKA06N60T | 600V | 6A | 1.5V | 175°C | K06T60 | PG-TO220-3 (FullPAK) |

Maximum Ratings

| Parameter | Symbol | Value | Unit | |
|--|--------------|------------|-----------|---------|
| Collector-emitter voltage, $T_j \geq 25^\circ C$ | V_{CE} | 600 | V | |
| DC collector current, limited by $T_{j,max}$ | I_C | 10 | A | |
| $T_C = 25^\circ C$ | | | | |
| $T_C = 100^\circ C$ | | | | |
| Pulsed collector current, t_p limited by $T_{j,max}$ | $I_{C,puls}$ | 18 | A | |
| Turn off safe operating area, $V_{CE} = 600V, T_j = 175^\circ C, t_p = 1\mu s$ | - | 18 | | |
| Diode forward current, limited by $T_{j,max}$ | I_F | 10.2 | | |
| $T_C = 25^\circ C$ | | | | |
| $T_C = 100^\circ C$ | | | | |
| Diode pulsed current, t_p limited by $T_{j,max}$ | $I_{F,puls}$ | 18 | A | |
| Gate-emitter voltage | V_{GE} | ± 20 | | V |
| Short circuit withstand time ²⁾ | t_{SC} | 5 | | μs |
| Power dissipation | P_{tot} | 28 | W | |
| $T_C = 25^\circ C$ | | | | |
| Operating junction temperature | T_j | -40...+175 | °C | |
| Storage temperature | T_{stg} | -55...+150 | | |
| Isolation voltage | V_{isol} | 2500 | V_{rms} | |

¹ J-STD-020 and JESD-022

²⁾ Allowed number of short circuits: <1000; time between short circuits: >1s.

Thermal Resistance

| Parameter | Symbol | Conditions | Max. Value | Unit |
|---|-------------|------------|------------|------|
| Characteristic | | | | |
| IGBT thermal resistance, junction – case | R_{thJC} | | 5.3 | K/W |
| Diode thermal resistance, junction – case | R_{thJCD} | | 6.5 | |
| Thermal resistance, junction – ambient | R_{thJA} | | 80 | |

Electrical Characteristic, at $T_j = 25^\circ\text{C}$, unless otherwise specified

| Parameter | Symbol | Conditions | Value | | | Unit |
|--------------------------------------|---------------|---|--------|------------|-----------|---------------|
| | | | min. | typ. | max. | |
| Static Characteristic | | | | | | |
| Collector-emitter breakdown voltage | $V_{(BR)CES}$ | $V_{GE}=0V, I_C=0.25mA$ | 600 | - | - | V |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $V_{GE} = 15V, I_C=6A$ $T_j=25^\circ\text{C}$ $T_j=175^\circ\text{C}$ | - - | 1.5 1.8 | 2.05 | |
| Diode forward voltage | V_F | $V_{GE}=0V, I_F=6A$ $T_j=25^\circ\text{C}$ $T_j=175^\circ\text{C}$ | - - | 1.6 1.6 | 2.05 - | |
| Gate-emitter threshold voltage | $V_{GE(th)}$ | $I_C=0.18mA, V_{CE}=V_{GE}$ | 4.1 | 4.6 | 5.7 | |
| Zero gate voltage collector current | I_{CES} | $V_{CE}=600V, V_{GE}=0V$ $T_j=25^\circ\text{C}$ $T_j=175^\circ\text{C}$ | - - | - - | 40 700 | μA |
| Gate-emitter leakage current | I_{GES} | $V_{CE}=0V, V_{GE}=20V$ | - | - | 100 | nA |
| Transconductance | g_{fs} | $V_{CE}=20V, I_C=6A$ | - | 3.6 | - | S |
| Integrated gate resistor | R_{Gint} | | none | | | Ω |

Dynamic Characteristic

| | | | | | | |
|--|-------------|--|---|-----|---|----|
| Input capacitance | C_{iss} | $V_{CE}=25V, V_{GE}=0V, f=1MHz$ | - | 368 | - | pF |
| Output capacitance | C_{oss} | | - | 28 | - | |
| Reverse transfer capacitance | C_{riss} | | - | 11 | - | |
| Gate charge | Q_{Gate} | $V_{CC}=480V, I_C=6A, V_{GE}=15V$ | - | 42 | - | nC |
| Internal emitter inductance measured 5mm (0.197 in.) from case | L_E | | - | 7 | - | nH |
| Short circuit collector current ¹⁾ | $I_{C(SC)}$ | $V_{GE}=15V, t_{SC}\leq 5\mu s, V_{CC}=400V, T_j=25^\circ\text{C}$ | - | 55 | - | A |

¹⁾ Allowed number of short circuits: <1000; time between short circuits: >1s.