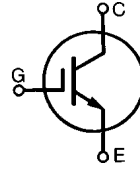


Ultra-Low $V_{CE(sat)}$ IGBT

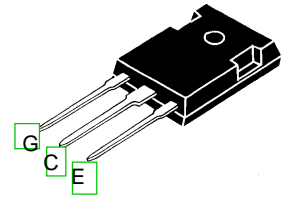
IXGH 41N60

$V_{CES} = 600 \text{ V}$
 $I_{C25} = 76 \text{ A}$
 $V_{CE(sat)} = 1.6 \text{ V}$



| Symbol | Test Conditions | Maximum Ratings | |
|---|---|----------------------------------|------------------|
| V_{CES} | $T_J = 25^\circ\text{C}$ to 150°C | 600 | V |
| V_{CGR} | $T_J = 25^\circ\text{C}$ to 150°C ; $R_{GE} = 1 \text{ M}\Omega$ | 600 | V |
| V_{GES} | Continuous | ± 20 | V |
| V_{GEM} | Transient | ± 30 | V |
| I_{C25} | $T_C = 25^\circ\text{C}$ | 76 | A |
| I_{C90} | $T_C = 90^\circ\text{C}$ | 41 | A |
| I_{CM} | $T_C = 25^\circ\text{C}$, 1 ms | 152 | A |
| SSOA (RBSOA) | $V_{GE} = 15 \text{ V}$, $T_{VJ} = 125^\circ\text{C}$, $R_G = 10 \Omega$ Clamped inductive load, $L = 100 \mu\text{H}$ | $I_{CM} = 76$ @ $0.8 V_{CES}$ | A |
| P_C | $T_C = 25^\circ\text{C}$ | 200 | W |
| T_J | | -55 ... +150 | $^\circ\text{C}$ |
| T_{JM} | | 150 | $^\circ\text{C}$ |
| T_{stg} | | -55 ... +150 | $^\circ\text{C}$ |
| M_d | Mounting torque (M3) | 1.13/10 | Nm/lb.in. |
| Weight | | 6 | g |
| Maximum lead temperature for soldering 1.6 mm (0.062 in.) from case for 10 s | | 300 | $^\circ\text{C}$ |

TO-247 AD



G = Gate, C = Collector,
E = Emitter, TAB = Collector

Features

- International standard package JEDEC TO-247 AD
- Newest generation HDMOS™ process
- Low $V_{CE(sat)}$
 - for minimum on-state conduction losses
- High current handling capability
- MOS Gate turn-on
 - drive simplicity

Applications

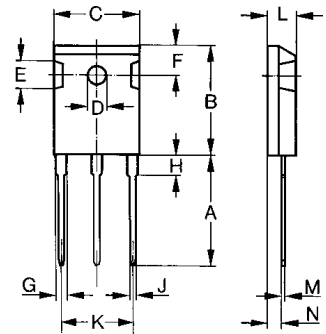
- AC motor speed control
- DC servo and robot drives
- DC choppers
- Solid state relays
- Lighting controls
- Temperature regulators

Advantages

- Easy to mount with 1 screw (isolated mounting screw hole)
- Low losses, high efficiency
- High power density

| Symbol | Test Conditions | Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified) | | |
|---------------|--|---|------|---------------------------|
| | | min. | typ. | max. |
| BV_{CES} | $I_C = 250 \mu\text{A}$, $V_{GE} = 0 \text{ V}$ | 600 | | V |
| $V_{GE(th)}$ | $I_C = 250 \mu\text{A}$, $V_{CE} = V_{GE}$ | 2.5 | | V |
| I_{CES} | $V_{CE} = 0.8 \cdot V_{CES}$ $V_{GE} = 0 \text{ V}$ | | | 200 μA 1 mA |
| I_{GES} | $V_{CE} = 0 \text{ V}$, $V_{GE} = \pm 20 \text{ V}$ | | | $\pm 100 \text{ nA}$ |
| $V_{CE(sat)}$ | $I_C = I_{C90}$, $V_{GE} = 15 \text{ V}$ | | | 1.6 V |

| Symbol | Test Conditions | Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified) | | |
|--------------|---|---|------|------|
| | | min. | typ. | max. |
| g_{fs} | $I_C = I_{C90}$; $V_{CE} = 10\text{ V}$, Pulse test, $t \leq 300\ \mu\text{s}$, duty cycle $\leq 2\%$ | 19 | 28 | S |
| C_{ies} | $V_{CE} = 25\text{ V}$, $V_{GE} = 0\text{ V}$, $f = 1\text{ MHz}$ | | 2750 | pF |
| C_{oes} | | | 206 | pF |
| C_{res} | | | 55 | pF |
| Q_g | $I_C = I_{C90}$, $V_{GE} = 15\text{ V}$, $V_{CE} = 0.5 V_{CES}$ | | 120 | nC |
| Q_{ge} | | | 25 | nC |
| Q_{gc} | | | 40 | nC |
| $t_{d(on)}$ | Inductive load, $T_J = 25^\circ\text{C}$ $I_C = I_{C90}$, $V_{GE} = 15\text{ V}$, $L = 100\ \mu\text{H}$, $V_{CE} = 0.8 V_{CES}$, $R_G = R_{off} = 10\ \Omega$ Remarks: Switching times may increase for $V_{CE}(\text{Clamp}) > 0.8 \cdot V_{CES}$, higher T_J or increased R_G | | 30 | ns |
| t_{ri} | | | 30 | ns |
| $t_{d(off)}$ | | | 600 | ns |
| t_{fi} | | | 450 | ns |
| E_{off} | | | 8 | mJ |
| $t_{d(on)}$ | Inductive load, $T_J = 125^\circ\text{C}$ $I_C = I_{C90}$, $V_{GE} = 15\text{ V}$, $L = 100\ \mu\text{H}$, $V_{CE} = 0.8 V_{CES}$, $R_G = R_{off} = 10\ \Omega$ Remarks: Switching times may increase for $V_{CE}(\text{Clamp}) > 0.8 \cdot V_{CES}$, higher T_J or increased R_G | | 40 | ns |
| t_{ri} | | | 40 | ns |
| E_{on} | | | 0.3 | mJ |
| $t_{d(off)}$ | | | 800 | ns |
| t_{fi} | | | 600 | ns |
| E_{off} | | 15 | mJ | |
| R_{thJC} | | | 0.62 | K/W |
| R_{thCK} | | 0.25 | | K/W |

TO-247 AD (IXGH) Outline


| Dim. | Millimeter | | Inches | |
|------|------------|-------|--------|-------|
| | Min. | Max. | Min. | Max. |
| A | 19.81 | 20.32 | 0.780 | 0.800 |
| B | 20.80 | 21.46 | 0.819 | 0.845 |
| C | 15.75 | 16.26 | 0.610 | 0.640 |
| D | 3.55 | 3.65 | 0.140 | 0.144 |
| E | 4.32 | 5.49 | 0.170 | 0.216 |
| F | 5.4 | 6.2 | 0.212 | 0.244 |
| G | 1.65 | 2.13 | 0.065 | 0.084 |
| H | - | 4.5 | - | 0.177 |
| J | 1.0 | 1.4 | 0.040 | 0.055 |
| K | 10.8 | 11.0 | 0.426 | 0.433 |
| L | 4.7 | 5.3 | 0.185 | 0.209 |
| M | 0.4 | 0.8 | 0.016 | 0.031 |
| N | 1.5 | 2.49 | 0.087 | 0.102 |