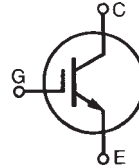


**HiPerFAST™ IGBT****IXGH34N60B2**

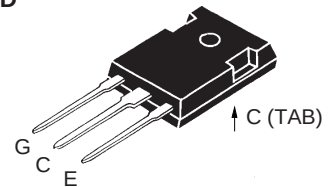
Optimized for 10-25 KHz hard  
switching and up to 150 KHz  
resonant switching

$$\begin{aligned} V_{CES} &= 600 \text{ V} \\ I_{C25} &= 70 \text{ A} \\ V_{CE(sat)} &< 1.55 \text{ V} \\ t_{fityp} &= 150 \text{ ns} \end{aligned}$$



| Symbol                                                                          | Test Conditions                                                                                                             | Maximum Ratings   |                  |
|---------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|-------------------|------------------|
| $V_{CES}$                                                                       | $T_J = 25^\circ\text{C}$ to $150^\circ\text{C}$                                                                             | 600               | V                |
| $V_{CGR}$                                                                       | $T_J = 25^\circ\text{C}$ to $150^\circ\text{C}$ ; $R_{GE} = 1 \text{ M}\Omega$                                              | 600               | V                |
| $V_{GES}$                                                                       | Continuous                                                                                                                  | $\pm 20$          | V                |
| $V_{GEM}$                                                                       | Transient                                                                                                                   | $\pm 30$          | V                |
| $I_{C25}$                                                                       | $T_C = 25^\circ\text{C}$ (limited by leads)                                                                                 | 70                | A                |
| $I_{C110}$                                                                      | $T_C = 110^\circ\text{C}$                                                                                                   | 34                | A                |
| $I_{CM}$                                                                        | $T_C = 25^\circ\text{C}$ , 1 ms                                                                                             | 150               | A                |
| <b>SSOA</b><br><b>(RBSOA)</b>                                                   | $V_{GE} = 15 \text{ V}$ , $T_{VJ} = 125^\circ\text{C}$ , $R_G = 10 \Omega$<br>Clamped inductive load @ $\leq 600 \text{ V}$ | $I_{CM} = 60$     | A                |
| $P_C$                                                                           | $T_C = 25^\circ\text{C}$                                                                                                    | 190               | W                |
| $T_J$                                                                           |                                                                                                                             | -55 ... +150      | $^\circ\text{C}$ |
| $T_{JM}$                                                                        |                                                                                                                             | 150               | $^\circ\text{C}$ |
| $T_{stg}$                                                                       |                                                                                                                             | -55 ... +150      | $^\circ\text{C}$ |
| Maximum lead temperature for soldering<br>1.6 mm (0.062 in.) from case for 10 s |                                                                                                                             | 300               | $^\circ\text{C}$ |
| $M_d$                                                                           | Mounting torque (M3)                                                                                                        | 1.13/10 Nm/lb.in. |                  |
| <b>Weight</b>                                                                   | TO-247 AD                                                                                                                   | 6                 | g                |
|                                                                                 | TO-268 SMD                                                                                                                  | 4                 | g                |

**TO-247 AD**  
**(IXGH)**



G = Gate,  
E = Emitter,

C = Collector,  
TAB = Collector

**Features**

- Medium frequency IGBT
- Square RBSOA
- High current handling capability
- MOS Gate turn-on  
- drive simplicity

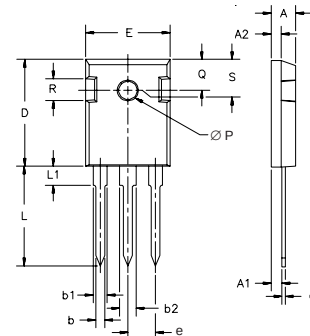
**Applications**

- PFC circuits
- Uninterruptible power supplies (UPS)
- Switched-mode and resonant-mode power supplies
- AC motor speed control
- DC servo and robot drives
- DC choppers

| Symbol        | Test Conditions                                      | Characteristic Values<br>( $T_J = 25^\circ\text{C}$ , unless otherwise specified) |      |                      |
|---------------|------------------------------------------------------|-----------------------------------------------------------------------------------|------|----------------------|
|               |                                                      | min.                                                                              | typ. | max.                 |
| $V_{GE(th)}$  | $I_C = 250 \mu\text{A}$ , $V_{CE} = V_{GE}$          | 2.5                                                                               |      | 5.0 V                |
| $I_{CES}$     | $V_{CE} = V_{CES}$<br>$V_{GE} = 0 \text{ V}$         | $T_J = 25^\circ\text{C}$<br>$T_J = 150^\circ\text{C}$                             |      | 50 $\mu\text{A}$     |
|               |                                                      |                                                                                   |      | 1 mA                 |
| $I_{GES}$     | $V_{CE} = 0 \text{ V}$ , $V_{GE} = \pm 20 \text{ V}$ |                                                                                   |      | $\pm 100 \text{ nA}$ |
| $V_{CE(sat)}$ | $I_C = 24 \text{ A}$ , $V_{GE} = 15 \text{ V}$       | $T_J = 25^\circ\text{C}$                                                          |      | 1.55 V               |

| Symbol       | Test Conditions                                                                                                                                | Characteristic Values<br>( $T_J = 25^\circ\text{C}$ , unless otherwise specified) |      |         |
|--------------|------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|---------|
|              |                                                                                                                                                | min.                                                                              | typ. | max.    |
| $g_{fs}$     | $I_C = 24\text{ A}$ ; $V_{CE} = 10\text{ V}$ ,<br>Pulse test, $t \leq 300\text{ }\mu\text{s}$ , duty cycle $\leq 2\%$                          | 18                                                                                | 26   | S       |
| $C_{ies}$    | $V_{CE} = 25\text{ V}$ , $V_{GE} = 0\text{ V}$ , $f = 1\text{ MHz}$                                                                            |                                                                                   | 1500 | pF      |
| $C_{oes}$    |                                                                                                                                                |                                                                                   | 115  | pF      |
| $C_{res}$    |                                                                                                                                                |                                                                                   | 40   | pF      |
| $Q_g$        | $I_C = 24\text{ A}$ , $V_{GE} = 15\text{ V}$ , $V_{CE} = 300\text{ V}$                                                                         |                                                                                   | 66   | nC      |
| $Q_{ge}$     |                                                                                                                                                |                                                                                   | 9    | nC      |
| $Q_{gc}$     |                                                                                                                                                |                                                                                   | 22   | nC      |
| $t_{d(on)}$  | Inductive load, $T_J = 25^\circ\text{C}$<br>$I_C = 24\text{ A}$ , $V_{GE} = 15\text{ V}$<br>$V_{CE} = 400\text{ V}$ , $R_G = 5\text{ }\Omega$  |                                                                                   | 13   | ns      |
| $t_{ri}$     |                                                                                                                                                |                                                                                   | 15   | ns      |
| $t_{d(off)}$ |                                                                                                                                                |                                                                                   | 150  | 300 ns  |
| $t_{fi}$     |                                                                                                                                                |                                                                                   | 150  | 250 ns  |
| $E_{off}$    |                                                                                                                                                |                                                                                   | 0.64 | 1.2 mJ  |
| $t_{d(on)}$  | Inductive load, $T_J = 125^\circ\text{C}$<br>$I_C = 24\text{ A}$ , $V_{GE} = 15\text{ V}$<br>$V_{CE} = 400\text{ V}$ , $R_G = 5\text{ }\Omega$ |                                                                                   | 13   | ns      |
| $t_{ri}$     |                                                                                                                                                |                                                                                   | 17   | ns      |
| $E_{on}$     |                                                                                                                                                |                                                                                   | 0.22 | mJ      |
| $t_{d(off)}$ |                                                                                                                                                |                                                                                   | 300  | ns      |
| $t_{fi}$     |                                                                                                                                                |                                                                                   | 250  | ns      |
| $E_{off}$    |                                                                                                                                                |                                                                                   | 1.2  | mJ      |
| $R_{thJC}$   |                                                                                                                                                |                                                                                   |      | 0.65 KW |
| $R_{thCK}$   | (TO-247)                                                                                                                                       |                                                                                   | 0.25 | KW      |

## TO-247 AD Outline



| Dim.           | Millimeter |       | Inches |       |
|----------------|------------|-------|--------|-------|
|                | Min.       | Max.  | Min.   | Max.  |
| A              | 4.7        | 5.3   | .185   | .209  |
| A <sub>1</sub> | 2.2        | 2.54  | .087   | .102  |
| A <sub>2</sub> | 2.2        | 2.6   | .059   | .098  |
| b              | 1.0        | 1.4   | .040   | .055  |
| b <sub>1</sub> | 1.65       | 2.13  | .065   | .084  |
| b <sub>2</sub> | 2.87       | 3.12  | .113   | .123  |
| C              | .4         | .8    | .016   | .031  |
| D              | 20.80      | 21.46 | .819   | .845  |
| E              | 15.75      | 16.26 | .610   | .640  |
| e              | 5.20       | 5.72  | 0.205  | 0.225 |
| L              | 19.81      | 20.32 | .780   | .800  |
| L1             |            | 4.50  |        | .177  |
| ØP             | 3.55       | 3.65  | .140   | .144  |
| Q              | 5.89       | 6.40  | 0.232  | 0.252 |
| R              | 4.32       | 5.49  | .170   | .216  |
| S              | 6.15       | BSC   | .242   | BSC   |

IXYS reserves the right to change limits, test conditions, and dimensions.

IXYS MOSFETs and IGBTs are covered by one or more of the following U.S. patents:

|           |           |           |           |              |              |              |              |
|-----------|-----------|-----------|-----------|--------------|--------------|--------------|--------------|
| 4,835,592 | 4,931,844 | 5,049,961 | 5,237,481 | 6,162,665    | 6,404,065 B1 | 6,683,344    | 6,727,585    |
| 4,850,072 | 5,017,508 | 5,063,307 | 5,381,025 | 6,259,123 B1 | 6,534,343    | 6,710,405 B2 | 6,759,692    |
| 4,881,106 | 5,034,796 | 5,187,117 | 5,486,715 | 6,306,728 B1 | 6,583,505    | 6,710,463    | 6,771,478 B2 |