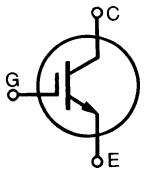
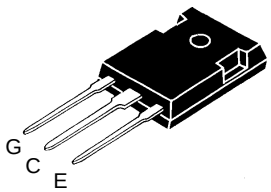
IXYS

| | | $V_{CES}$ | $I_{C25}$ | $V_{CE(sat)}$ |
|---|---|---|---|---|
| **Low $V_{CE(sat)}$** | **IXGH 25 N120** | **1200 V** | **50 A** | **3 V** |
| **High speed IGBT** | **IXGH 25 N120A** | **1200 V** | **50 A** | **4 V** |




| Symbol | Test Conditions | Maximum Ratings | |
|---|---|---|---|
| $V_{CES}$ | $T_J$ = 25°C to 150°C | 1200 | V |
| $V_{CGR}$ | $T_J$ = 25°C to 150°C; $R_{GE}$ = 1 MΩ | 1200 | V |
| $V_{GES}$ | Continuous | ±20 | V |
| $V_{GEM}$ | Transient | ±30 | V |
| $I_{C25}$ | $T_C$ = 25°C | 50 | A |
| $I_{C90}$ | $T_C$ = 90°C | 25 | A |
| $I_{CM}$ | $T_C$ = 25°C, 1 ms | 100 | A |
| **SSOA (RBSOA)** | $V_{GE}$ = 15 V, $T_{VJ}$ = 125°C, $R_G$ = 33 Ω<br>Clamped inductive load, L = 100 µH | $I_{CM}$ = 50<br>@ 0.8 $V_{CES}$ | A |
| $P_C$ | $T_C$ = 25°C | 200 | W |
| $T_J$ | | -55 ... +150 | °C |
| $T_{JM}$ | | 150 | °C |
| $T_{stg}$ | | -55 ... +150 | °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 | °C |

**TO-247 AD**




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

| Symbol | Test Conditions | | Characteristic Values ($T_J$ = 25°C, unless otherwise specified) min. | typ. | max. | |
|---|---|---|---|---|---|---|
| $BV_{CES}$ | $I_C$ = 3 mA, $V_{GE}$ = 0 V | | 1200 | | | V |
| $V_{GE(th)}$ | $I_C$ = 250 µA, $V_{CE}$ = $V_{GE}$ | | 2.5 | | 6 | V |
| $I_{CES}$ | $V_{CE}$ = 0.8 • $V_{CES}$<br>$V_{GE}$ = 0 V | $T_J$ = 25°C<br>$T_J$ = 125°C | | | 250<br>1 | µA<br>mA |
| $I_{GES}$ | $V_{CE}$ = 0 V, $V_{GE}$ = ±20 V | | | | ±100 | nA |
| $V_{CE(sat)}$ | $I_C$ = $I_{C90}$, $V_{GE}$ = 15 V | 25N120<br>25N120A | | | 3<br>4 | V<br>V |

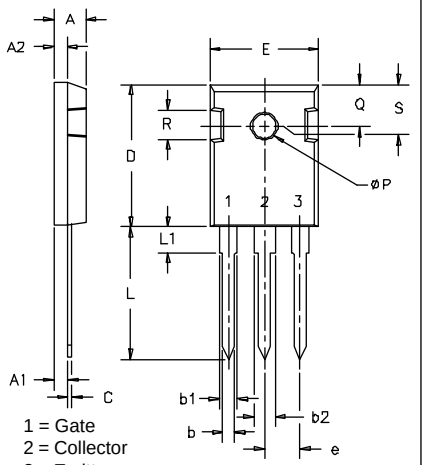
**Features**
- International standard package JEDEC TO-247 AD
- 2nd generation HDMOS™ process
- Low $V_{CE(sat)}$
  - for low on-state conduction losses
- MOS Gate turn-on
  - drive simplicity

**Applications**
- AC motor speed control
- DC servo and robot drives
- DC choppers
- Uninterruptible power supplies (UPS)
- Switch-mode and resonant-mode power supplies
- Capacitor discharge systems
- Solid state relays

**Advantages**
- Easy to mount with 1 screw (TO-247) (isolated mounting screw hole)
- High power density

| Symbol | Test Conditions ($T_J$ = 25°C, unless otherwise specified) | | Characteristic Values min. | typ. | max. | |
|---|---|---|---|---|---|---|
| $g_{fs}$ | $I_C = I_{C90}$; $V_{CE}$ = 10 V, Pulse test, t ≤ 300 µs, duty cycle ≤ 2 % | | 8 | 15 | | S |
| $C_{ies}$ | $V_{CE}$ = 25 V, $V_{GE}$ = 0 V, f = 1 MHz | | | 2750 | | pF |
| $C_{oes}$ | | | | 200 | | pF |
| $C_{res}$ | | | | 50 | | pF |
| $Q_g$ | $I_C = I_{C90}$, $V_{GE}$ = 15 V, $V_{CE}$ = 0.5 $V_{CES}$ | | | 130 | 180 | nC |
| $Q_{ge}$ | | | | 25 | 50 | nC |
| $Q_{gc}$ | | | | 55 | 90 | nC |
| $t_{d(on)}$ | **Inductive load, $T_J$ = 25°C** | | | 100 | | ns |
| $t_{ri}$ | $I_C = I_{C90}$, $V_{GE}$ = 15 V, L = 100 µH, | | | 250 | | ns |
| $t_{d(off)}$ | $V_{CE}$ = 0.8 $V_{CES}$, $R_G = R_{off}$ = 33 Ω | | | 650 | 1000 | ns |
| $t_{fi}$ | Remarks: Switching times may increase | 25N120 | | 700 | | ns |
| | for $V_{CE}$ (Clamp) > 0.8 • $V_{CES}$, | 25N120A | | 600 | 800 | ns |
| $E_{off}$ | higher $T_J$ or increased $R_G$ | 25N120A | | 11 | | mJ |
| $t_{d(on)}$ | **Inductive load, $T_J$ = 125°C** | | | 100 | | ns |
| $t_{ri}$ | $I_C = I_{C90}$, $V_{GE}$ = 15 V, L = 100 µH | | | 250 | | ns |
| $E_{on}$ | $V_{CE}$ = 0.8 $V_{CES}$, $R_G = R_{off}$ = 33 Ω | | | 4.2 | | mJ |
| $t_{d(off)}$ | | | | 720 | 1000 | ns |
| $t_{fi}$ | Remarks: Switching times may increase | 25N120 | | 1200 | | ns |
| | for $V_{CE}$ (Clamp) > 0.8 • $V_{CES}$, | 25N120A | | 800 | 1200 | ns |
| $E_{off}$ | higher $T_J$ or increased $R_G$ | 25N120A | | 15 | | mJ |
| $R_{thJC}$ | | | | | 0.62 | K/W |
| $R_{thCK}$ | | | | 0.25 | | K/W |

**TO-247 AD Outline**




1 = Gate
2 = Collector
3 = Emitter
Tab = Collector

| SYM | INCHES MIN | INCHES MAX | MILLIMETERS MIN | MILLIMETERS MAX |
|---|---|---|---|---|
| A | .185 | .209 | 4.7 | 5.3 |
| $A_1$ | .087 | .102 | 2.2 | 2.54 |
| $A_2$ | .059 | .098 | 2.2 | 2.6 |
| b | .040 | .055 | 1.0 | 1.4 |
| $b_1$ | .065 | .084 | 1.65 | 2.13 |
| $b_2$ | .113 | .123 | 2.87 | 3.12 |
| C | .016 | .031 | .4 | .8 |
| D | .819 | .845 | 20.80 | 21.46 |
| E | .610 | .640 | 15.75 | 16.26 |
| e | .215 BSC | | 5.45 BSC | |
| L | .780 | .800 | 19.81 | 20.32 |
| L1 | | .177 | | 4.50 |
| øP | .140 | .144 | 3.55 | 3.65 |
| Q | .212 | .244 | 5.4 | 6.2 |
| R | .170 | .216 | 4.32 | 5.49 |
| S | .242 BSC | | 6.15 BSC | |