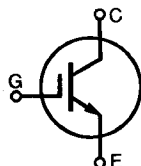
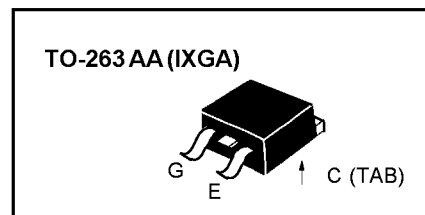
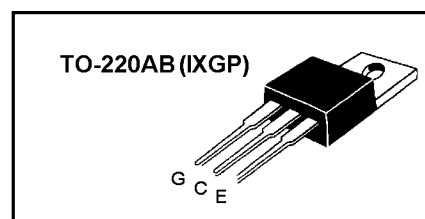


**HiPerFAST™ IGBT**
**IXGA 15N120B**  
**IXGP 15N120B**
 $V_{CES} = 1200 \text{ V}$   
 $I_{C25} = 30 \text{ A}$   
 $V_{CE(sat)} = 3.2 \text{ V}$   
 $t_{fi(typ)} = 160 \text{ ns}$ 


| Symbol  | Test Conditions  | Maximum Ratings                      |                  |
|---|--|--------------------------------------|------------------|
| $V_{CES}$   | $T_J = 25^\circ\text{C to } 150^\circ\text{C}$   | 1200                                 | V                |
| $V_{CGR}$   | $T_J = 25^\circ\text{C to } 150^\circ\text{C}; R_{GE} = 1 \text{ M}\Omega$                     | 1200                                 | V                |
| $V_{GES}$   | Continuous   | $\pm 20$                             | V                |
| $V_{GEM}$   | Transient  | $\pm 30$                             | V                |
| $I_{C25}$   | $T_C = 25^\circ\text{C}$   | 30                                   | A                |
| $I_{C90}$   | $T_C = 90^\circ\text{C}$   | 15                                   | A                |
| $I_{CM}$  | $T_C = 25^\circ\text{C}, 1 \text{ ms}$   | 60                                   | 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 | $I_{CM} = 40$<br>@ $0.8 V_{CES}$     | A                |
| $P_C$   | $T_C = 25^\circ\text{C}$   | 150                                  | 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 with screw M3<br>Mounting torque with screw M3.5                               | 0.45/4 Nm/lb.in.<br>0.55/5 Nm/lb.in. |                  |
| <b>Weight</b>   | TO-220   | 4                                    | g                |
|   | TO-263   | 2                                    | g                |


**Features**

- International standard packages JEDEC TO-220AB and TO-263AA
- Low switching losses, low  $V_{(sat)}$
- MOS Gate turn-on - drive simplicity

**Applications**

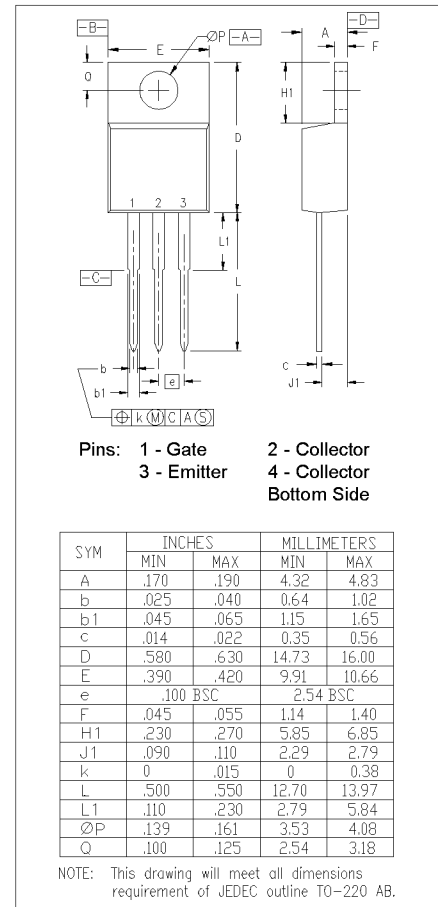
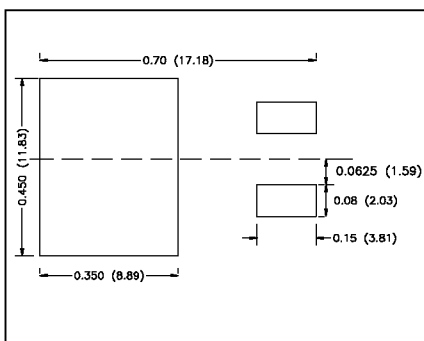
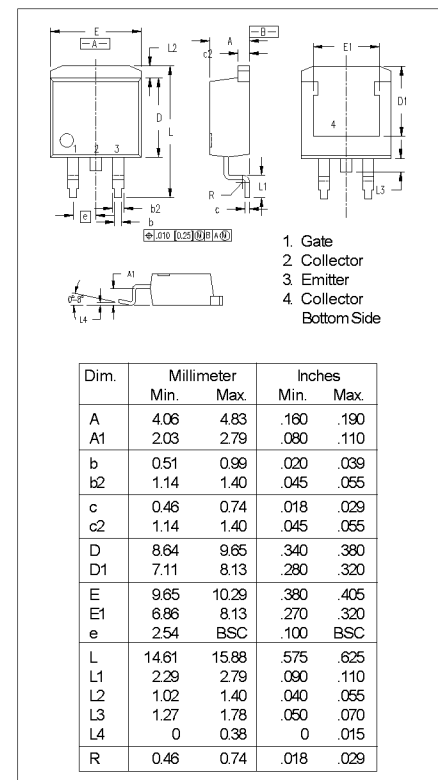
- AC motor speed control
- DC servo and robot drives
- DC choppers
- Uninterruptible power supplies (UPS)
- Switch-mode and resonant-mode power supplies

**Advantages**

- Easy to mount with one screw
- Reduces assembly time and cost
- High power density

| Symbol        | Test Conditions<br>( $T_J = 25^\circ\text{C}$ , unless otherwise specified) | Characteristic Values |      |                             |
|---------------|---|-----------------------|------|-----------------------------|
|               |   | Min.                  | Typ. | Max.                        |
| $BV_{CES}$    | $I_C = 250 \mu\text{A}, V_{GE} = 0 \text{ V}$                               | 1200                  |      | V                           |
| $V_{GE(th)}$  | $I_C = 250 \mu\text{A}, V_{CE} = V_{GE}$                                    | 2.5                   |      | V                           |
| $I_{CES}$     | $V_{CE} = V_{CES}$<br>$V_{GE} = 0 \text{ V}$                                |                       |      | 100 $\mu\text{A}$<br>3.5 mA |
|               | $T_J = 25^\circ\text{C}$<br>$T_J = 125^\circ\text{C}$                       |                       |      |                             |
| $I_{GES}$     | $V_{CE} = 0 \text{ V}, V_{GE} = \pm 20 \text{ V}$                           |                       |      | $\pm 100 \text{ nA}$        |
| $V_{CE(sat)}$ | $I_C = I_{CE90}, V_{GE} = 15$<br>$T_J = 125^\circ\text{C}$                  |                       |      | 3.2 V                       |
|               |   |                       | 2.5  | V                           |

| Symbol       | Test Conditions<br>( $T_J = 25^\circ\text{C}$ , unless otherwise specified)   | Characteristic Values |      |      |    |
|--------------|---|-----------------------|------|------|----|
|              |   | Min.                  | Typ. | Max. |    |
| $g_{fs}$     | $I_C = I_{C90}$ ; $V_{CE} = 10\text{ V}$ ,<br>Pulse test, $t \leq 300\ \mu\text{s}$ , duty cycle $\leq 2\%$   | 12                    | 15   | S    |    |
| $C_{ies}$    | $V_{CE} = 25\text{ V}$ , $V_{GE} = 0\text{ V}$ , $f = 1\text{ MHz}$   |                       | 1720 | pF   |    |
| $C_{oes}$    |   |                       | 95   | pF   |    |
| $C_{res}$    |   |                       | 35   | pF   |    |
| $Q_g$        | $I_C = I_{C90}$ , $V_{GE} = 15\text{ V}$ , $V_{CE} = 0.5 V_{CES}$   |                       | 69   | nC   |    |
| $Q_{ge}$     |   |                       | 13   | nC   |    |
| $Q_{gc}$     |   |                       | 26   | nC   |    |
| $t_{d(on)}$  | <b>Inductive load, <math>T_J = 25^\circ\text{C}</math></b><br>$I_C = I_{C90}$ , $V_{GE} = 15\text{ V}$<br>$V_{CE} = 960\text{ V}$ , $R_G = R_{off} = 10\ \Omega$<br>Remarks: Switching times may increase for $V_{CE}$ (Clamp) $> 0.8 V_{CES}$ , higher $T_J$ or increased $R_G$  |                       | 25   | ns   |    |
| $t_{ri}$     |   |                       | 15   | ns   |    |
| $t_{d(off)}$ |   |                       | 180  | 280  | ns |
| $t_{fi}$     |   |                       | 160  | 320  | ns |
| $E_{off}$    |   |                       | 1.75 | 3.0  | mJ |
| $t_{d(on)}$  | <b>Inductive load, <math>T_J = 125^\circ\text{C}</math></b><br>$I_C = I_{C90}$ , $V_{GE} = 15\text{ V}$<br>$V_{CE} = 960\text{ V}$ , $R_G = R_{off} = 10\ \Omega$<br>Remarks: Switching times may increase for $V_{CE}$ (Clamp) $> 0.8 V_{CES}$ , higher $T_J$ or increased $R_G$ |                       | 25   | ns   |    |
| $t_{ri}$     |   |                       | 18   | ns   |    |
| $E_{on}$     |   |                       | 0.60 | mJ   |    |
| $t_{d(off)}$ |   |                       | 300  | ns   |    |
| $E_{off}$    |   |                       | 360  | ns   |    |
| $R_{thJC}$   | TO-220  |                       | 0.83 | KW   |    |
| $R_{thCK}$   |   |                       | 0.5  | KW   |    |

**TO-220 AB Dimensions**

**TO-263AA Outline**

**Min. Recommended Footprint**  
 (Dimensions in inches and mm)

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 4,881,106 5,017,508 5,049,961 5,187,117 5,486,715  
 4,850,072 4,931,844 5,034,796 5,063,307 5,237,481 5,381,025