

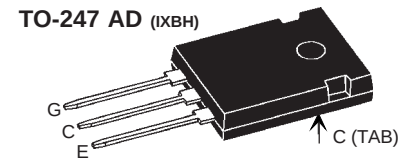
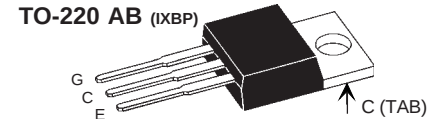
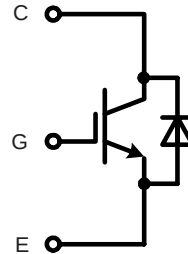
# High Voltage BIMOSFET™

Monolithic Bipolar MOS Transistor

IXBP 5N160 G  
IXBH 5N160 G

$I_{C25} = 5.7 \text{ A}$   
 $V_{CES} = 1600 \text{ V}$   
 $V_{CE(sat)} = 4.9 \text{ V}$   
 $t_f = 70 \text{ ns}$

Preliminary data sheet



A = Anode, C = Cathode, TAB = Cathode

| IGBT                  |                                                                                                                                |                   |   |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------|-------------------|---|
| Symbol                | Conditions                                                                                                                     | Maximum Ratings   |   |
| $V_{CES}$             | $T_{VJ} = 25^\circ\text{C to } 150^\circ\text{C}$                                                                              | 1600              | V |
| $V_{GES}$             |                                                                                                                                | $\pm 20$          | V |
| $I_{C25}$             | $T_C = 25^\circ\text{C}$                                                                                                       | 5.7               | A |
| $I_{C90}$             | $T_C = 90^\circ\text{C}$                                                                                                       | 3.5               | A |
| $I_{CM}$<br>$V_{CEK}$ | $V_{GE} = 10/0 \text{ V}; R_G = 47 \Omega; T_{VJ} = 125^\circ\text{C}$<br>RBSOA, Clamped inductive load; $L = 100 \mu\text{H}$ | 6<br>$0.8V_{CES}$ | A |
| $P_{tot}$             | $T_C = 25^\circ\text{C}$                                                                                                       | 68                | W |

## Features

- High Voltage BIMOSFET™
  - substitute for high voltage MOSFETs with significantly lower voltage drop
  - MOSFET compatible control 10 V turn on gate voltage
  - fast switching for high frequency operation
  - reverse conduction capability
- industry standard package
  - TO-220AB
  - TO-247AD
- epoxy meets UL94V-0

## Applications

- switched mode power supplies
- DC-DC converters
- resonant converters
- lamp ballasts
- laser generators, x ray generators

| Symbol                                        | Conditions                                                                                                                                | Characteristic Values<br>( $T_{VJ} = 25^\circ\text{C}$ , unless otherwise specified) |                         |                                    |
|-----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|-------------------------|------------------------------------|
|                                               |                                                                                                                                           | min.                                                                                 | typ.                    | max.                               |
| $V_{CE(sat)}$                                 | $I_C = 3 \text{ A}; V_{GE} = 15 \text{ V}; T_{VJ} = 25^\circ\text{C}$<br>$T_{VJ} = 125^\circ\text{C}$                                     |                                                                                      | 4.9<br>5.6              | 7.2<br>V                           |
| $V_{GE(th)}$                                  | $I_C = 0.3 \text{ mA}; V_{GE} = V_{CE}$                                                                                                   | 3.5                                                                                  |                         | 5.5 V                              |
| $I_{CES}$                                     | $V_{GE} = 0 \text{ V}; V_{CE} = V_{CES}; T_{VJ} = 25^\circ\text{C}$<br>$V_{CE} = 0.8V_{CES}; T_{VJ} = 125^\circ\text{C}$                  |                                                                                      | 50                      | 150 $\mu\text{A}$<br>$\mu\text{A}$ |
| $I_{GES}$                                     | $V_{CE} = 0 \text{ V}; V_{GE} = \pm 20 \text{ V}$                                                                                         |                                                                                      |                         | 100 nA                             |
| $t_{d(on)}$<br>$t_r$<br>$t_{d(off)}$<br>$t_f$ | Inductive load, $T_{VJ} = 125^\circ\text{C}$<br>$V_{CE} = 960 \text{ V}; I_C = 3 \text{ A}$<br>$V_{GE} = 10/0 \text{ V}; R_G = 47 \Omega$ |                                                                                      | 140<br>200<br>120<br>70 | ns<br>ns<br>ns<br>ns               |
| $C_{ies}$<br>$Q_{Gon}$                        | $V_{CE} = 25 \text{ V}; V_{GE} = 0 \text{ V}; f = 1 \text{ MHz}$<br>$V_{CE} = 600 \text{ V}; V_{GE} = 10 \text{ V}; I_C = 3 \text{ A}$    |                                                                                      | 325<br>26               | pF<br>nC                           |
| $V_F$                                         | (reverse conduction); $I_F = 3 \text{ A}$                                                                                                 |                                                                                      | 6                       | V                                  |
| $R_{thJC}$                                    |                                                                                                                                           |                                                                                      |                         | 1.85 K/W                           |

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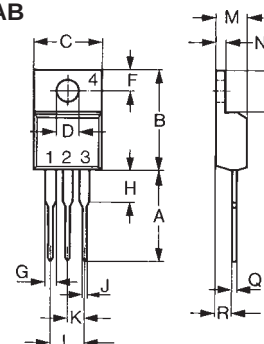
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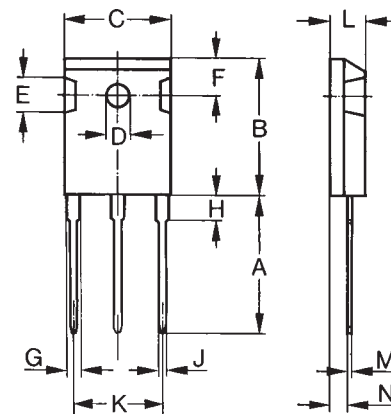
**Component**

| Symbol    | Conditions      | Maximum Ratings |     |    |
|-----------|-----------------|-----------------|-----|----|
| $T_{VJ}$  |                 | -55...+150      | °C  |    |
| $T_{stg}$ |                 | -55...+125      | °C  |    |
| $M_D$     | mounting torque | (TO-220)        | 0.6 | Nm |
|           |                 | (TO-247)        | 1.2 | Nm |

| Symbol        | Conditions             | Characteristic Values |      |      |
|---------------|------------------------|-----------------------|------|------|
|               |                        | min.                  | typ. | max. |
| $R_{thCH}$    | with heatsink compound |                       | 0.25 | K/W  |
| <b>Weight</b> | (TO-220)               |                       | 2    | g    |
|               | (TO-247)               |                       | 6    | g    |

**Dimensions**
**TO-220 AB**


| Dim. | Millimeter |       | Inches |       |
|------|------------|-------|--------|-------|
|      | Min.       | Max.  | Min.   | Max.  |
| A    | 12.70      | 13.97 | 0.500  | 0.550 |
| B    | 14.73      | 16.00 | 0.580  | 0.630 |
| C    | 9.91       | 10.66 | 0.390  | 0.420 |
| D    | 3.54       | 4.08  | 0.139  | 0.161 |
| E    | 5.85       | 6.85  | 0.230  | 0.270 |
| F    | 2.54       | 3.18  | 0.100  | 0.125 |
| G    | 1.15       | 1.65  | 0.045  | 0.065 |
| H    | 2.79       | 5.84  | 0.110  | 0.230 |
| J    | 0.64       | 1.01  | 0.025  | 0.040 |
| K    | 2.54       | BSC   | 0.100  | BSC   |
| M    | 4.32       | 4.82  | 0.170  | 0.190 |
| N    | 1.14       | 1.39  | 0.045  | 0.055 |
| Q    | 0.35       | 0.56  | 0.014  | 0.022 |
| R    | 2.29       | 2.79  | 0.090  | 0.110 |

**TO-247 AD**


| 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 |



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