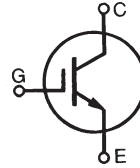


IGBT

IXGA 8N100
IXGP 8N100

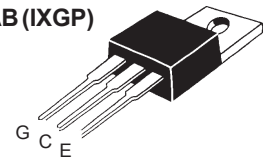
$V_{CES} = 1000 \text{ V}$
 $I_{C25} = 16 \text{ A}$
 $V_{CE(sat)} = 2.7 \text{ V}$

Preliminary data sheet

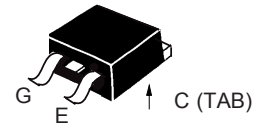


| Symbol | Test Conditions | Maximum Ratings | |
|---|---|--------------------------------------|------------------|
| V_{CES} | $T_J = 25^\circ\text{C to } 150^\circ\text{C}$ | 1000 | V |
| V_{CGR} | $T_J = 25^\circ\text{C to } 150^\circ\text{C}; R_{GE} = 1 \text{ M}\Omega$ | 1000 | V |
| V_{GES} | Continuous | ± 20 | V |
| V_{GEM} | Transient | ± 30 | V |
| I_{C25} | $T_C = 25^\circ\text{C}$ | 16 | A |
| I_{C90} | $T_C = 90^\circ\text{C}$ | 8 | A |
| I_{CM} | $T_C = 25^\circ\text{C}, 1 \text{ ms}$ | 32 | A |
| SSOA (RBSOA) | $V_{GE} = 15 \text{ V}, T_{VJ} = 125^\circ\text{C}, R_G = 120 \Omega$ Clamped inductive load | $I_{CM} = 16$ @ $0.8 V_{CES}$ | A |
| P_C | $T_C = 25^\circ\text{C}$ | 54 | 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 1.6 mm (0.062 in.) from case for 10 s | | 300 | $^\circ\text{C}$ |
| M_d | Mounting torque with screw M3 Mounting torque with screw M3.5 | 0.45/4 Nm/lb.in. 0.55/5 Nm/lb.in. | |
| Weight | TO-220 | 4 | g |
| | TO-263 | 2 | g |

TO-220AB (IXGP)



TO-263 AA (IXGA)



Features

- International standard packages
JEDEC TO-220AB and TO-263AA
- Low $V_{CE(sat)}$
- for minimum on-state conduction losses
- MOS Gate turn-on
- drive simplicity

Applications

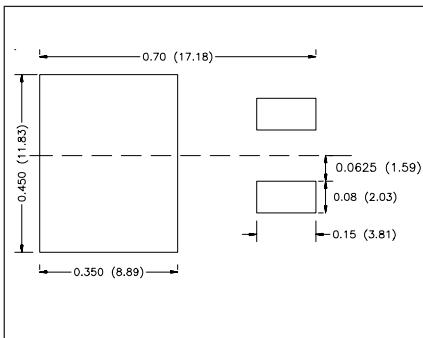
- AC motor speed control
- DC servo and robot drives
- DC choppers
- Uninterruptible power supplies (UPS)
- Switch-mode and resonant-mode power supplies
- Capacitor discharge

Advantages

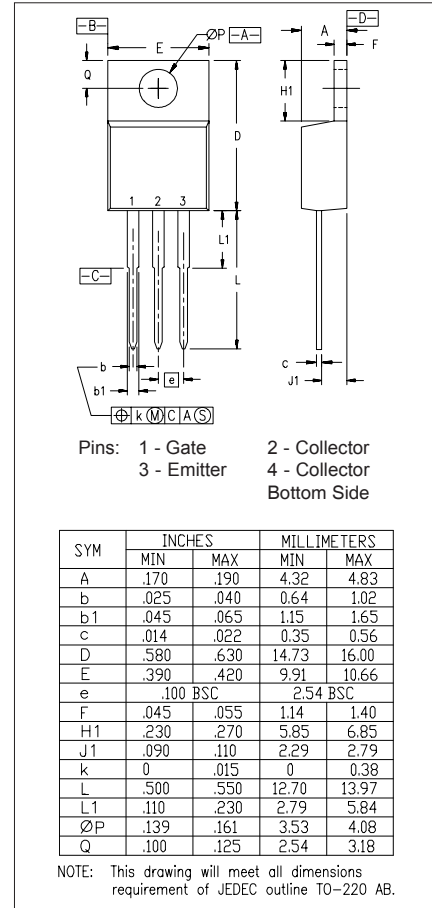
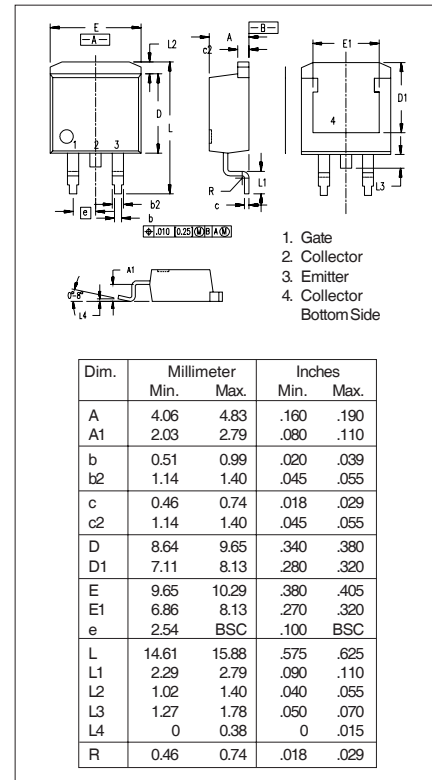
- Easy to mount with one screw
- Reduces assembly time and cost
- High power density

| Symbol | Test Conditions ($T_J = 25^\circ\text{C}$, unless otherwise specified) | Characteristic Values | | |
|---------------|---|---------------------------|------|----------------------|
| | | Min. | Typ. | Max. |
| BV_{CES} | $I_C = 1 \text{ mA}, V_{GE} = 0 \text{ V}$ | 1000 | | V |
| $V_{GE(th)}$ | $I_C = 250 \mu\text{A}, V_{CE} = V_{GE}$ | 2.5 | | V |
| I_{CES} | $V_{CE} = 0.8 V_{CES}$ $V_{GE} = 0 \text{ V}$ | $T_J = 25^\circ\text{C}$ | | 25 μA |
| | | $T_J = 125^\circ\text{C}$ | | 250 μA |
| I_{GES} | $V_{CE} = 0 \text{ V}, V_{GE} = \pm 20 \text{ V}$ | | | $\pm 100 \text{ nA}$ |
| $V_{CE(sat)}$ | $I_C = I_{CE90}, V_{GE} = 15 \text{ V}$ | | 2.2 | 2.7 V |

| Symbol | Test Conditions | Characteristic Values | | | |
|--------------|---|-----------------------|------|------|----|
| | | Min. | Typ. | Max. | |
| g_{fs} | $I_C = I_{C90}, V_{CE} = 10 V$ Pulse test, $t \leq 300 \mu s$, duty cycle $\leq 2 \%$ | 4 | 7.6 | S | |
| $I_{C(on)}$ | $V_{GE} = 10 V, V_{CE} = 10 V$ | | 40 | A | |
| C_{ies} | $V_{CE} = 25 V, V_{GE} = 0 V, f = 1 MHz$ | | 595 | pF | |
| C_{oes} | | | 34 | pF | |
| C_{res} | | | 10 | pF | |
| Q_g | $I_C = I_{C90}, V_{GE} = 15 V, V_{CE} = 0.5 V_{CES}$ | | 26.5 | nC | |
| Q_{ge} | | | 4.8 | nC | |
| Q_{gc} | | | 8.5 | nC | |
| $t_{d(on)}$ | Inductive load, $T_J = 25^\circ C$ $I_C = I_{C90}, V_{GE} = 15 V$ $V_{CE} = 800 V, R_G = R_{off} = 120 \Omega$ Remarks: Switching times may increase for $V_{CE} (Clamp) > 0.8 V_{CES}$, higher T_J or increased R_G | | 15 | ns | |
| t_{ri} | | | 30 | ns | |
| $t_{d(off)}$ | | | 600 | 1000 | ns |
| t_{fi} | | | 390 | 900 | ns |
| E_{off} | | | 2.3 | 5.0 | mJ |
| $t_{d(on)}$ | Inductive load, $T_J = 125^\circ C$ $I_C = I_{C90}, V_{GE} = 15 V$ $V_{CE} = 800 V, R_G = R_{off} = 120 \Omega$ Remarks: Switching times may increase for $V_{CE} (Clamp) > 0.8 V_{CES}$, higher T_J or increased R_G | | 15 | ns | |
| t_{ri} | | | 30 | ns | |
| E_{on} | | | 0.5 | mJ | |
| $t_{d(off)}$ | | | 800 | ns | |
| t_{fi} | | | 630 | ns | |
| E_{off} | | 3.7 | mJ | | |
| R_{thJC} | | | 2.3 | KW | |
| R_{thCK} | TO-220 | | 0.5 | KW | |

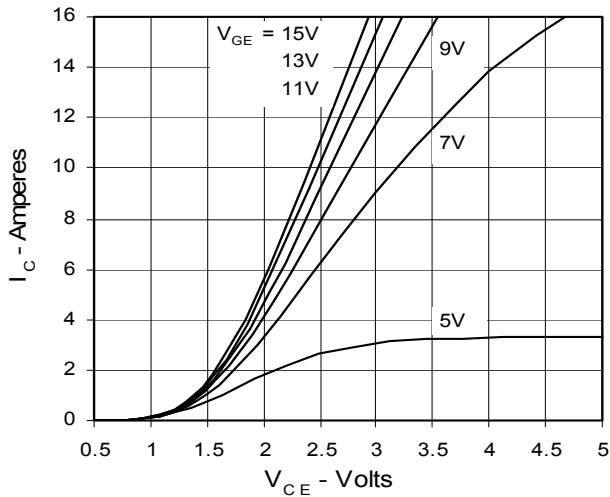


Min. Recommended Footprint
(Dimensions in inches and mm)

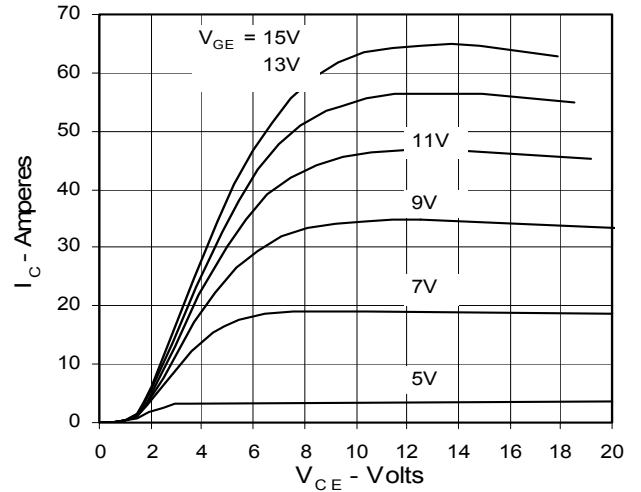
TO-220 AB Dimensions

TO-263 AA Outline


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

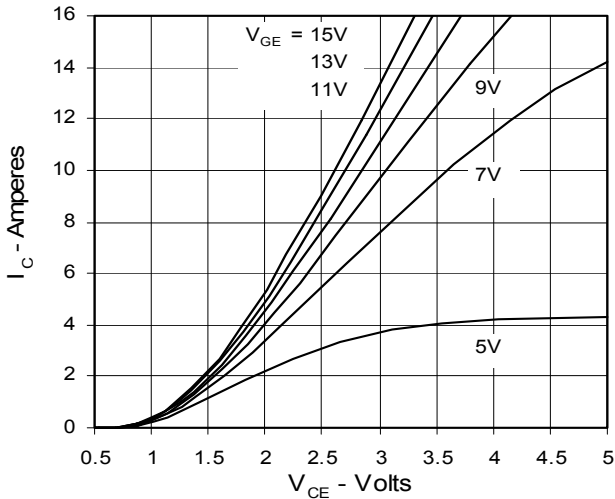
**Fig. 1. Output Characteristics
@ 25 Deg. C**



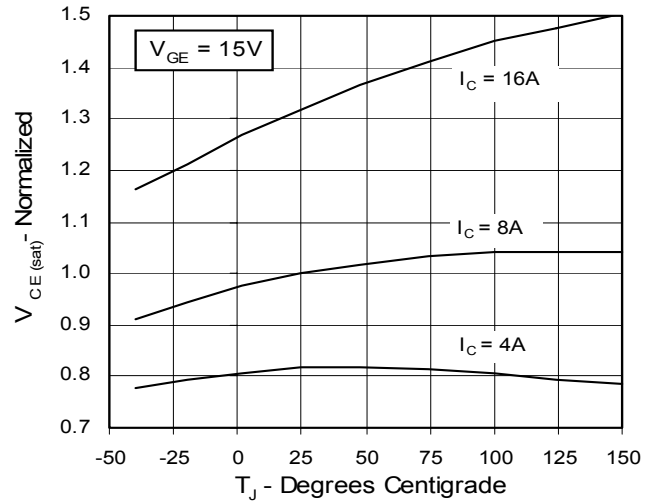
**Fig. 2. Extended Output Characteristics
@ 25 deg. C**



**Fig. 3. Output Characteristics
@ 125 Deg. C**



**Fig. 4. Dependence of $V_{CE(sat)}$ on
Temperature**



**Fig. 5. Collector-to-Emitter Voltage
vs. Gate-to-Emitter voltage**

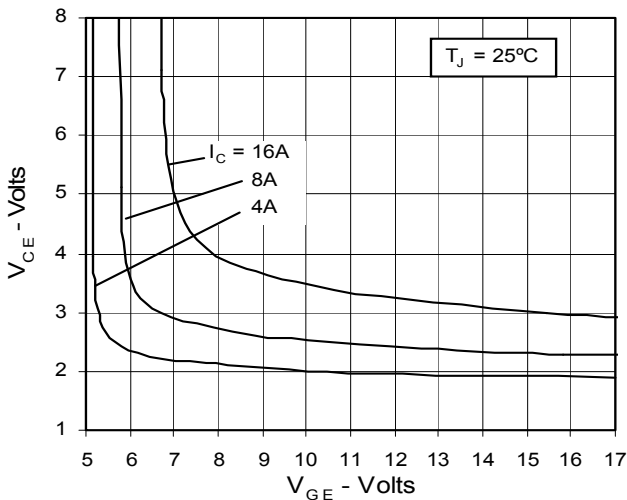


Fig. 6. Input Admittance

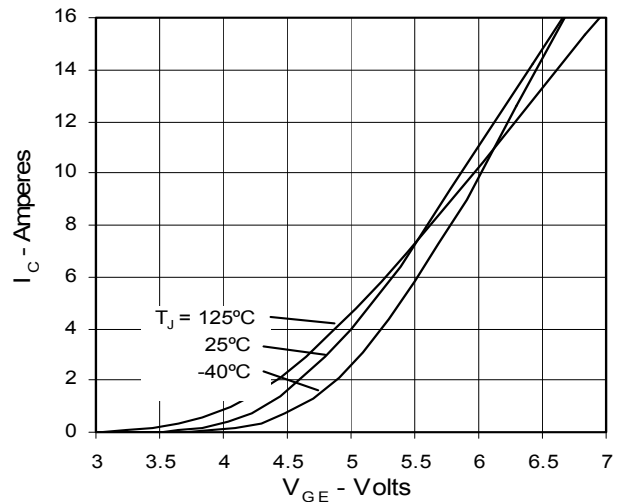


Fig. 7. Transconductance

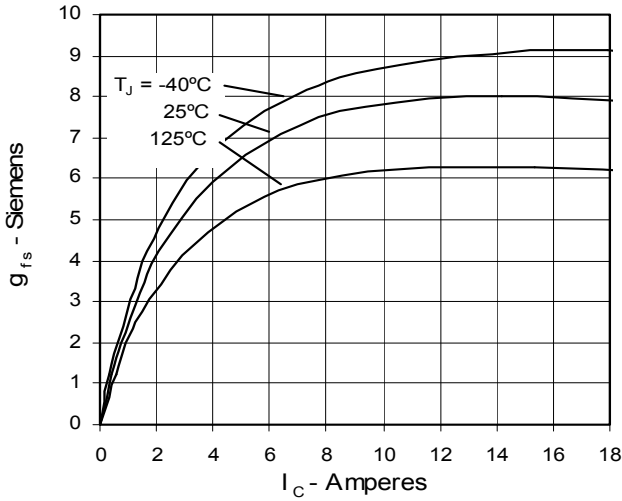


Fig. 8. Gate Charge

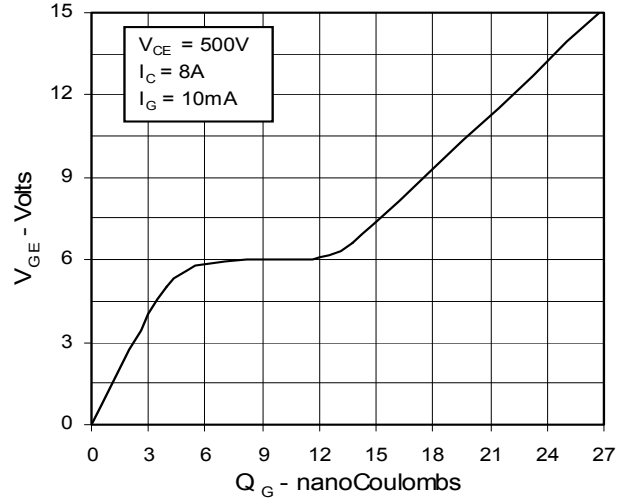


Fig. 9. Capacitance

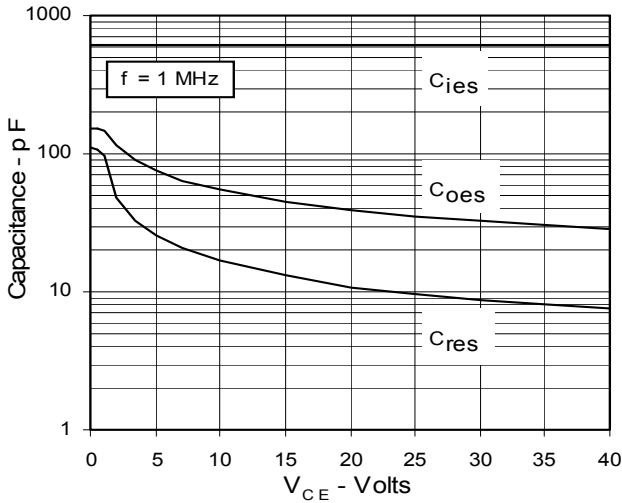
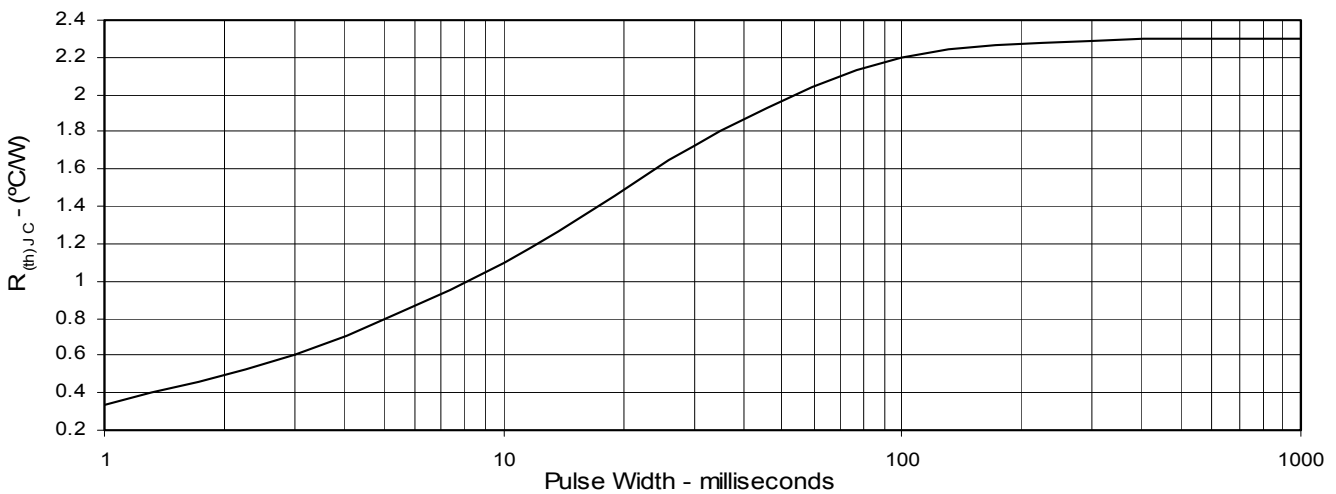


Fig. 10. Maximum Transient Thermal Resistance



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