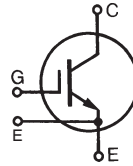


IGBT

Optimized for Switching
up to 5 kHz

IXGN 200N60A2

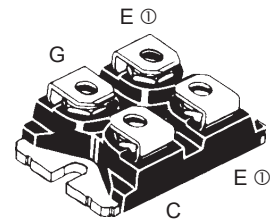
$V_{CES} = 600 \text{ V}$
 $I_{C25} = 200 \text{ A}$
 $V_{CE(sat)} = 1.35 \text{ V}$



Preliminary Data Sheet

| 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 | ± 20 | V |
| V_{GEM} | Transient | ± 30 | V |
| I_{C25} | $T_C = 25^\circ\text{C}$ | 200 | A |
| I_{C110} | $T_C = 110^\circ\text{C}$ | 100 | A |
| I_{CM} | $T_C = 25^\circ\text{C}, 1 \text{ ms}$ | 400 | A |
| SSOA (RBSOA) | $V_{GE} = 15 \text{ V}, T_{VJ} = 125^\circ\text{C}, R_G = 2.0 \Omega$ Clamped inductive load | $I_{CM} = 200$ @ $0.8 V_{CES}$ | A |
| P_C | $T_C = 25^\circ\text{C}$ | 700 | W |
| T_J | | -55 ... +150 | $^\circ\text{C}$ |
| T_{JM} | | 150 | $^\circ\text{C}$ |
| T_{stg} | | -55 ... +150 | $^\circ\text{C}$ |
| V_{ISOL} | 50/60 Hz | $t = 1 \text{ min}$ | 2500 V~ |
| | $I_{ISOL} \leq 1 \text{ mA}$ | $t = 1 \text{ s}$ | 3000 V~ |
| M_d | Mounting torque | 1.5/13 Nm/lb.in. | |
| | Terminal connection torque (M4) | 1.5/13 Nm/lb.in. | |
| Weight | | 30 | g |

SOT-227B, miniBLOC



G = Gate, C = Collector, E = Emitter
 ① either emitter terminal can be used as Main or Kelvin Emitter

Features

- International standard package miniBLOC
- Aluminium nitride isolation - high power dissipation
- Isolation voltage 3000 V~
- Very high current IGBT
- Low $V_{CE(sat)}$ for minimum on-state conduction losses
- MOS Gate turn-on - drive simplicity
- Low collector-to-case capacitance (< 50 pF)
- Low package inductance (< 5 nH) - easy to drive and to protect

Applications

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

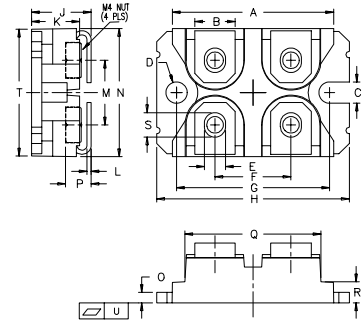
Advantages

- Easy to mount with 2 screws
- Space savings
- High power density

| Symbol | Test Conditions | Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified) | | |
|---------------|---|---|---|--------------------------|
| | | min. | typ. | max. |
| $V_{GE(th)}$ | $I_C = 1 \text{ mA}, V_{CE} = V_{GE}$ | 2.5 | | 5.5 V |
| I_{CES} | $V_{CE} = V_{CES}$ $V_{GE} = 0 \text{ V}$ | | $T_J = 25^\circ\text{C}$ $T_J = 125^\circ\text{C}$ | 50 μA 2 mA |
| I_{GES} | $V_{CE} = 0 \text{ V}, V_{GE} = \pm 20 \text{ V}$ | | | $\pm 400 \text{ nA}$ |
| $V_{CE(sat)}$ | $I_C = I_{C110}, V_{GE} = 15 \text{ V}$ | 1.2 | 1.35 | V |

| Symbol | Test Conditions | Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified) | | |
|--|--|---|------|------|
| | | min. | typ. | max. |
| g_{fs} | $I_C = 60\text{ A}; V_{CE} = 10\text{ V}$, Pulse test, $t \leq 300\ \mu\text{s}$, duty cycle $\leq 2\%$ | 70 | 106 | S |
| C_{ies} C_{oes} C_{res} | $V_{CE} = 25\text{ V}, V_{GE} = 0\text{ V}, f = 1\text{ MHz}$ | | 9900 | pF |
| | | | 740 | pF |
| | | | 190 | pF |
| Q_g Q_{ge} Q_{gc} | $I_C = I_{C110}, V_{GE} = 15\text{ V}, V_{CE} = 0.5 V_{CES}$ | | 480 | nC |
| | | | 63 | nC |
| | | | 169 | nC |
| $t_{d(on)}$ t_{ri} $t_{d(off)}$ t_{fi} E_{off} | Inductive load, $T_J = 25^\circ\text{C}$ $I_C = I_{C110}, V_{GE} = 15\text{ V}$ $V_{CE} = 0.8 V_{CES}, R_G = R_{off} = 2.0\ \Omega$ | | 60 | ns |
| | | | 45 | ns |
| | | | 360 | ns |
| | | | 250 | ns |
| | | | 5 | mJ |
| $t_{d(on)}$ t_{ri} E_{on} $t_{d(off)}$ t_{fi} E_{off} | Inductive load, $T_J = 125^\circ\text{C}$ $I_C = I_{C110}, V_{GE} = 15\text{ V}$ $V_{CE} = 0.8 V_{CES}, R_G = R_{off} = 2.4\ \Omega$ | | 60 | ns |
| | | | 60 | ns |
| | | | 3.0 | mJ |
| | | | 290 | ns |
| | | | 660 | ns |
| | | | 12 | mJ |
| R_{thJC} R_{thCK} | | | 0.17 | K/W |
| | | 0.05 | | K/W |

SOT-227B miniBLOC



| SYM | INCHES | | MILLIMETERS | |
|-----|--------|-------|-------------|-------|
| | MIN | MAX | MIN | MAX |
| A | 1.240 | 1.255 | 31.50 | 31.88 |
| B | .307 | .323 | 7.80 | 8.20 |
| C | .161 | .169 | 4.09 | 4.29 |
| D | .161 | .169 | 4.09 | 4.29 |
| E | .161 | .169 | 4.09 | 4.29 |
| F | .587 | .595 | 14.91 | 15.11 |
| G | 1.186 | 1.193 | 30.12 | 30.30 |
| H | 1.496 | 1.505 | 38.00 | 38.23 |
| J | .460 | .481 | 11.68 | 12.22 |
| K | .351 | .378 | 8.92 | 9.60 |
| L | .030 | .033 | 0.76 | 0.84 |
| M | .496 | .506 | 12.60 | 12.85 |
| N | .990 | 1.001 | 25.15 | 25.42 |
| O | .078 | .084 | 1.98 | 2.13 |
| P | .195 | .235 | 4.95 | 5.97 |
| Q | 1.045 | 1.059 | 26.54 | 26.90 |
| R | .155 | .174 | 3.94 | 4.42 |
| S | .186 | .191 | 4.72 | 4.85 |
| T | .968 | .987 | 24.59 | 25.07 |
| U | -.002 | .004 | -0.05 | 0.1 |

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

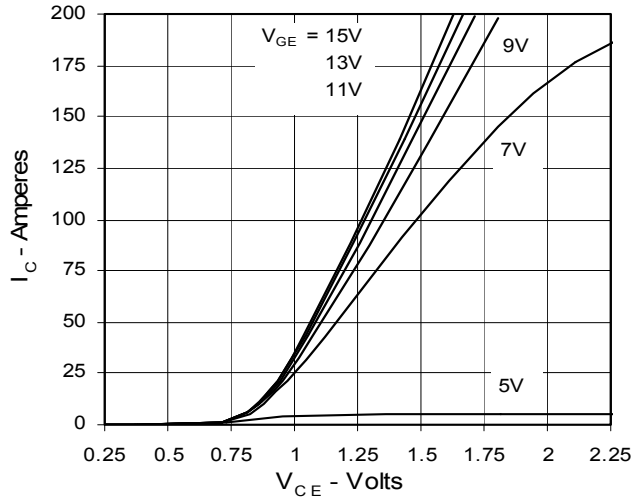
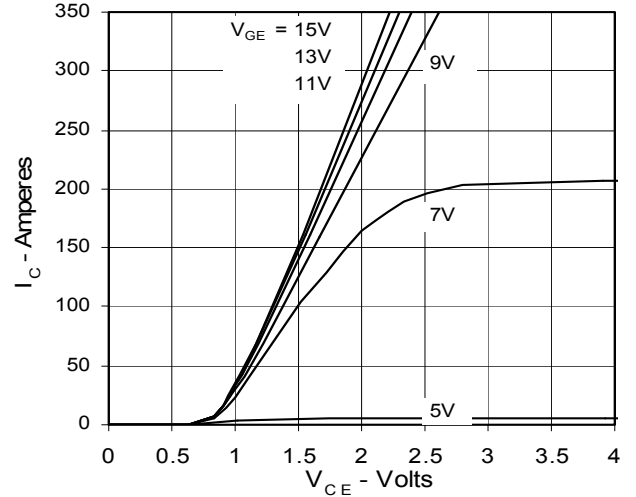
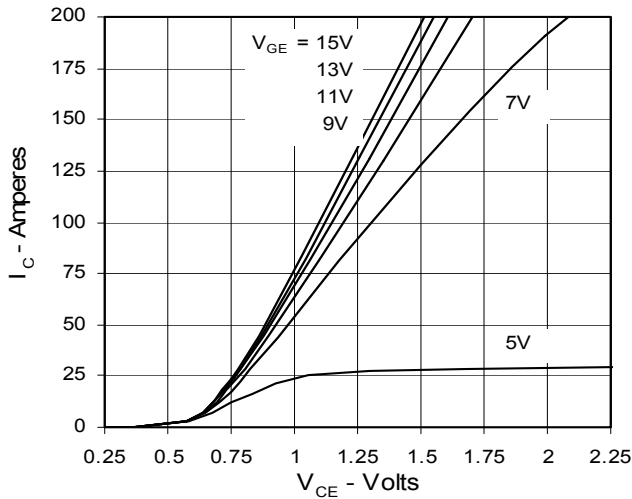
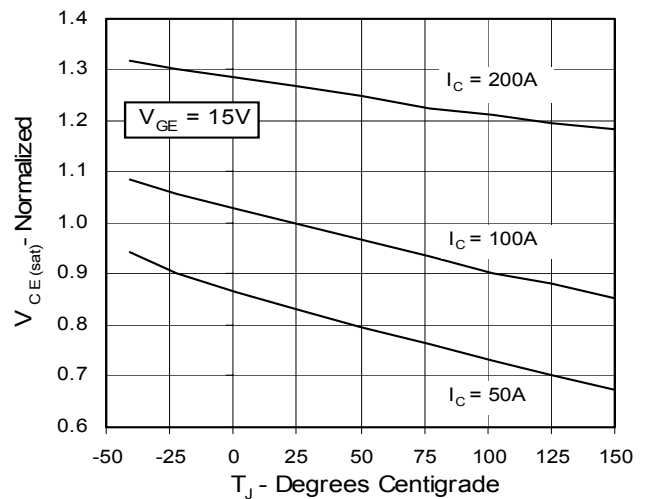
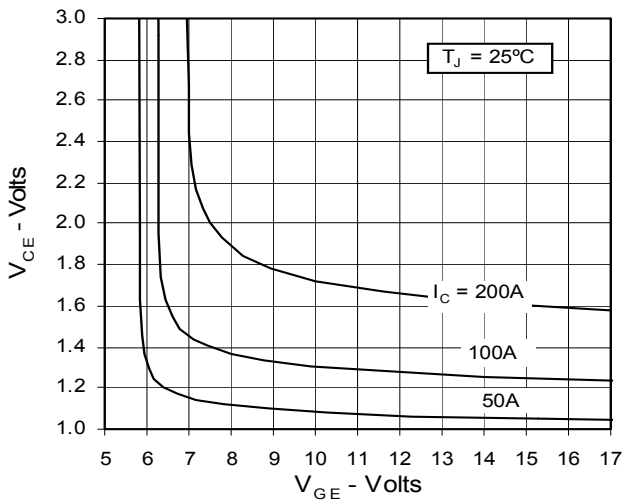
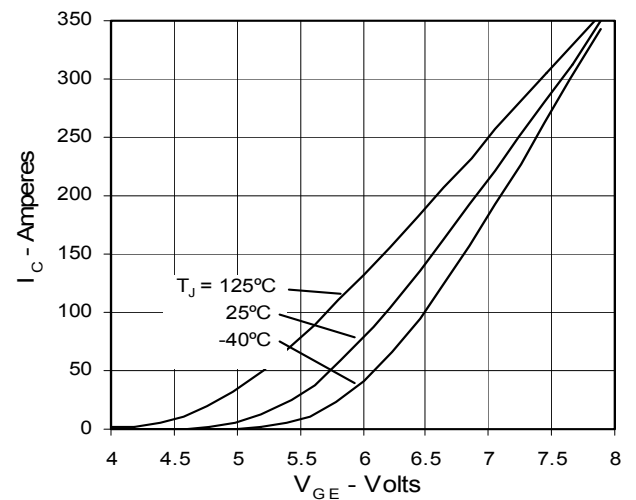
**Fig. 1. Output Characteristics
@ 25 Deg. C**

**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

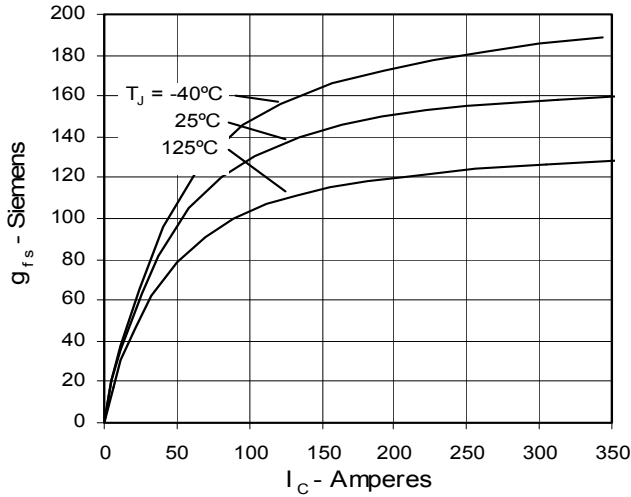


Fig. 8. Dependence of E_{off} on R_G

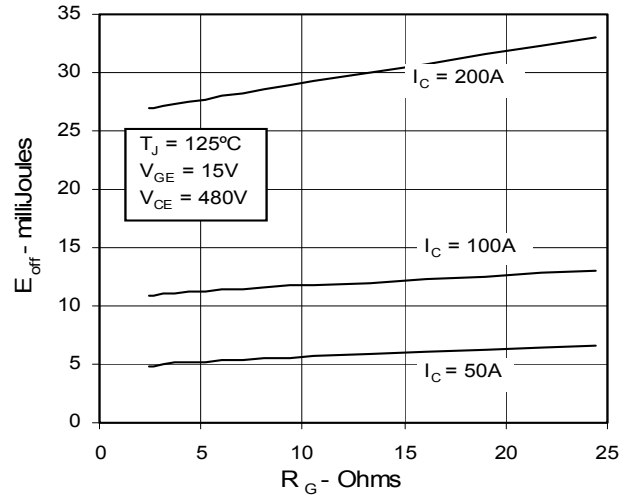


Fig. 9. Dependence of E_{off} on I_C

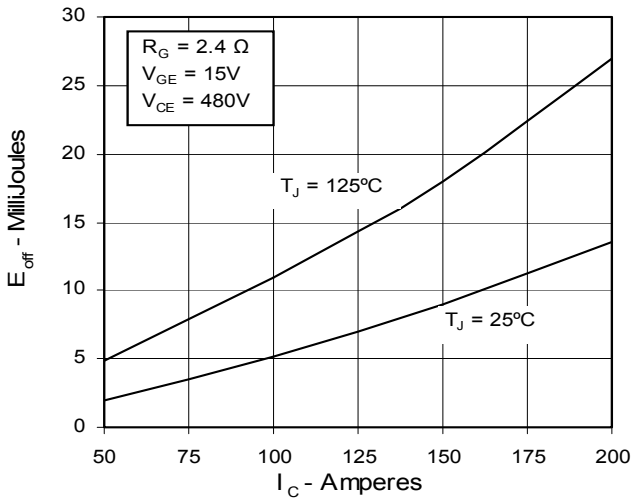


Fig. 10. Dependence of E_{off} on Temperature

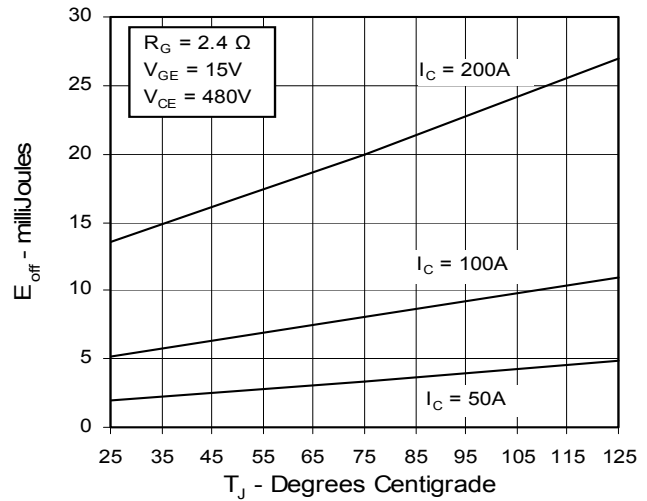


Fig. 11. Gate Charge

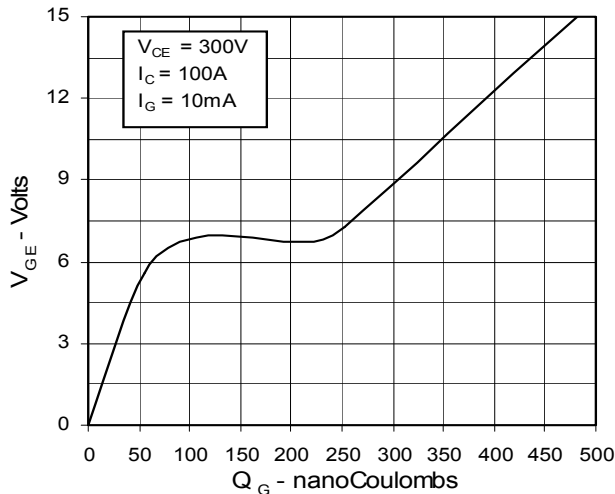
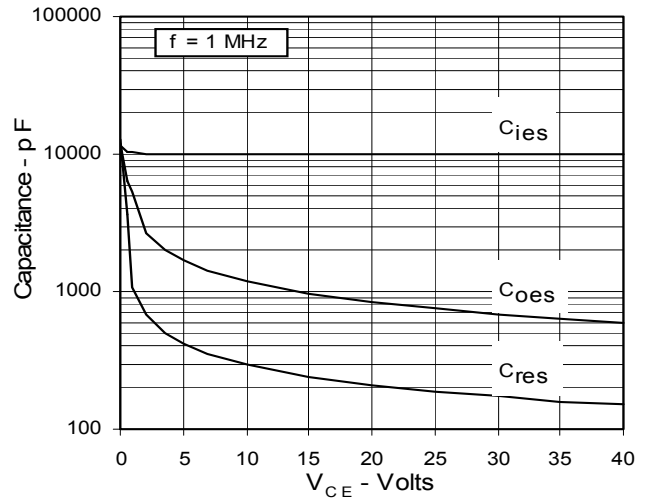
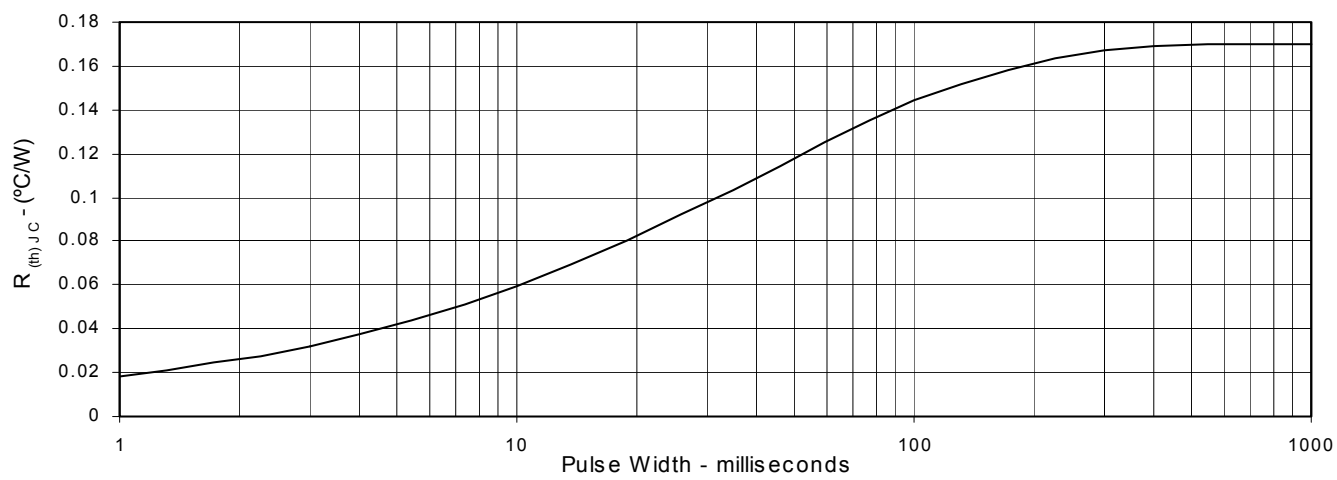


Fig. 12. Capacitance



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Fig. 13. Maximum Transient Thermal Resistance





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