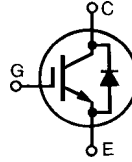
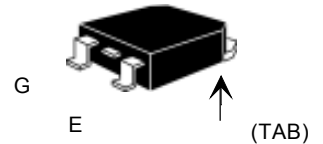
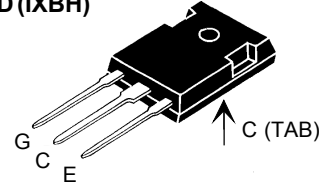


**BIMOSFET™ Monolithic
Bipolar MOS Transistor**
**IXBH 42N170A
IXBT 42N170A**

$$\begin{aligned} V_{CES} &= 1700 \text{ V} \\ I_{C25} &= 42 \text{ A} \\ V_{CE(sat)} &= 6.0 \text{ V} \\ t_{fi} &= 50 \text{ ns} \end{aligned}$$



| Symbol | Test Conditions | Maximum Ratings | |
|--|--|-----------------------------------|------------------|
| V_{CES} | $T_J = 25^\circ\text{C to } 150^\circ\text{C}$ | 1700 | V |
| V_{CGR} | $T_J = 25^\circ\text{C to } 150^\circ\text{C}; R_{GE} = 1 \text{ M}\Omega$ | 1700 | V |
| V_{GES} | Continuous | ± 20 | V |
| V_{GEM} | Transient | ± 30 | V |
| I_{C25} | $T_C = 25^\circ\text{C}$ | 42 | A |
| I_{C90} | $T_C = 90^\circ\text{C}$ | 21 | A |
| I_{CM} | $T_C = 25^\circ\text{C}, 1 \text{ ms}$ | 120 | A |
| SSOA (RBSOA) | $V_{GE} = 15 \text{ V}, T_{VJ} = 125^\circ\text{C}, R_G = 10 \Omega$ Clamped inductive load | $I_{CM} = 90$ $V_{CES} = 1350$ | A V |
| T_{SC} (SCSOA) | $V_{GE} = 15 \text{ V}, V_{CES} = 1200 \text{ V}, T_J = 125^\circ\text{C}$ $R_G = 10 \Omega$ non repetitive | 10 | μs |
| P_c | $T_C = 25^\circ\text{C}$ | 350 | 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 | 350 | $^\circ\text{C}$ |
| | Maximum Tab temperature for soldering SMD devices for 10 s | 260 | $^\circ\text{C}$ |
| M_d | Mounting torque (M3) | 1.13/10Nm/lb.in. | |
| Weight | TO-247 AD | 6 | g |
| | TO-268 | 4 | g |

TO-268 (IXBT)

TO-247 AD (IXBH)


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

Features

- High Blocking Voltage
- JEDEC TO-268 surface and JEDEC TO-247 AD
- Fast switching
- High current handling capability
- MOS Gate turn-on - drive simplicity
- Molding epoxies meet UL 94 V-0 flammability classification

Applications

- AC motor speed control
- Uninterruptible power supplies (UPS)
- Switched-mode and resonant-mode power supplies
- Substitutes for high voltage MOSFETs

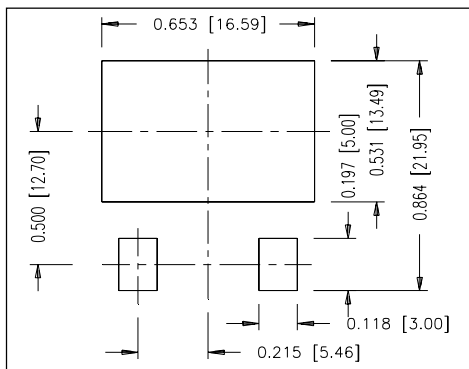
Advantages

- Lower conduction losses than MOSFETs
- High power density
- Suitable for surface mounting
- Easy to mount with 1 screw, (isolated mounting screw hole)

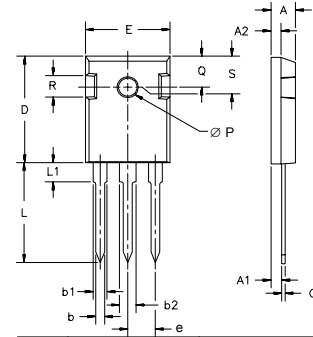
| Symbol | Test Conditions | Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified) | | |
|---------------|---|---|---|----------------------------|
| | | min. | typ. | max. |
| BV_{CES} | $I_C = 250 \mu\text{A}, V_{GE} = 0 \text{ V}$ | 1700 | | V |
| $V_{GE(th)}$ | $I_C = 750 \mu\text{A}, V_{CE} = V_{GE}$ | 2.5 | | V |
| I_{CES} | $V_{CE} = 0.8 V_{CES}$ $V_{GE} = 0 \text{ V}$ | | $T_J = 25^\circ\text{C}$ $T_J = 125^\circ\text{C}$ | 50 μA 1.5 mA |
| I_{GES} | $V_{CE} = 0 \text{ V}, V_{GE} = \pm 20 \text{ V}$ | | | $\pm 100 \text{ nA}$ |
| $V_{CE(sat)}$ | $I_C = I_{C90}, V_{GE} = 15 \text{ V}$ | 4.5 5.0 | | V V |

| Symbol | Test Conditions | Characteristic Values | | |
|---------------------------|--|---|------|----------|
| | | (T _J = 25°C, unless otherwise specified) | | |
| | | min. | typ. | max. |
| g_{fs} | I _C = I _{C90°} ; V _{CE} = 10 V, Pulse test, t ≤ 300 μs, duty cycle ≤ 2 % | 15 | 24 | S |
| C_{ies} | V _{CE} = 25 V, V _{GE} = 0 V, f = 1 MHz | | 3700 | pF |
| C_{oes} | | | 170 | pF |
| C_{res} | | | 45 | pF |
| Q_g | I _C = I _{C90°} , V _{GE} = 15 V, V _{CE} = 0.5 V _{CES} | | 155 | nC |
| Q_{ge} | | | 30 | nC |
| Q_{gc} | | | 55 | nC |
| t_{d(on)} | Inductive load, T_J = 25°C I _C = I _{C90°} , V _{GE} = 15 V V _{CE} = 0.8 V _{CES} , R _G = R _{off} = 1.0 Ω Remarks: Switching times may increase for V _{CE} (Clamp) > 0.8 • V _{CES} , higher T _J or increased R _G | | 25 | ns |
| t_{ri} | | | 35 | ns |
| t_{d(off)} | | | 230 | ns |
| t_{fi} | | | 50 | ns |
| E_{off} | | | 2.8 | mJ |
| t_{d(on)} | | Inductive load, T_J = 125°C I _C = I _{C90°} , V _{GE} = 15 V V _{CE} = 0.8 V _{CES} , R _G = R _{off} = 1.0 Ω Remarks: Switching times may increase for V _{CE} (Clamp) > 0.8 • V _{CES} , higher T _J or increased R _G | | 25 |
| t_{ri} | | | 38 | ns |
| E_{on} | | | 5.0 | mJ |
| t_{d(off)} | | | 300 | ns |
| t_{fi} | | | 120 | ns |
| E_{off} | | | 6 | mJ |
| R_{thJC} | | | | 0.35 K/W |
| R_{thCK} | (TO-247) | 0.25 | | K/W |

| Symbol | Test Conditions | Characteristic Values | | |
|-----------------------|--|---|------|-------|
| | | (T _J = 25°C, unless otherwise specified) | | |
| | | min. | typ. | max. |
| V_F | I _F = I _{C90°} , V _{GE} = 0 V, Pulse test, t < 300 μs, duty cycle d < 2% | | | 5.0 V |
| I_{RM} | I _F = 25A, V _{GE} = 0 V, -di _F /dt = 50 A/μs V _R = 100V | | 15 | A |
| t_{rr} | | | 330 | ns |

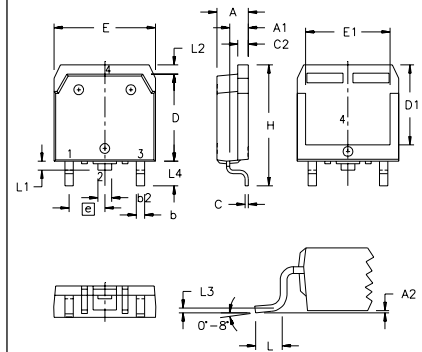


TO-247 AD Outline



| Dim. | Millimeter | | Inches | |
|----------------|------------|----------|--------|----------|
| | Min. | Max. | Min. | Max. |
| A | 4.7 | 5.3 | .185 | .209 |
| A ₁ | 2.2 | 2.54 | .087 | .102 |
| A ₂ | 2.2 | 2.6 | .059 | .098 |
| b | 1.0 | 1.4 | .040 | .055 |
| b ₁ | 1.65 | 2.13 | .065 | .084 |
| b ₂ | 2.87 | 3.12 | .113 | .123 |
| C | .4 | .8 | .016 | .031 |
| D | 20.80 | 21.46 | .819 | .845 |
| E | 15.75 | 16.26 | .610 | .640 |
| e | 5.20 | 5.72 | 0.205 | 0.225 |
| L | 19.81 | 20.32 | .780 | .800 |
| L ₁ | | 4.50 | | .177 |
| ∅P | 3.55 | 3.65 | .140 | .144 |
| Q | 5.89 | 6.40 | 0.232 | 0.252 |
| R | 4.32 | 5.49 | .170 | .216 |
| S | | 6.15 BSC | | .242 BSC |

TO-268 Outline



| SYM | INCHES | | MILLIMETERS | |
|----------------|--------|----------|-------------|----------|
| | MIN | MAX | MIN | MAX |
| A | .193 | .201 | 4.90 | 5.10 |
| A ₁ | .106 | .114 | 2.70 | 2.90 |
| A ₂ | .001 | .010 | 0.02 | 0.25 |
| b | .045 | .057 | 1.15 | 1.45 |
| b ₂ | .075 | .083 | 1.90 | 2.10 |
| C | .016 | .026 | 0.40 | 0.65 |
| C ₂ | .057 | .063 | 1.45 | 1.60 |
| D | .543 | .551 | 13.80 | 14.00 |
| D ₁ | .488 | .500 | 12.40 | 12.70 |
| E | .624 | .632 | 15.85 | 16.05 |
| E ₁ | .524 | .535 | 13.30 | 13.60 |
| e | | .215 BSC | | 5.45 BSC |
| H | .736 | .752 | 18.70 | 19.10 |
| L | .094 | .106 | 2.40 | 2.70 |
| L ₁ | .047 | .055 | 1.20 | 1.40 |
| L ₂ | .039 | .045 | 1.00 | 1.15 |
| L ₃ | | .010 BSC | | 0.25 BSC |
| L ₄ | .150 | .161 | 3.80 | 4.10 |

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