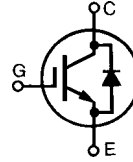
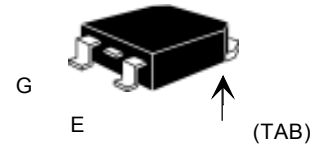
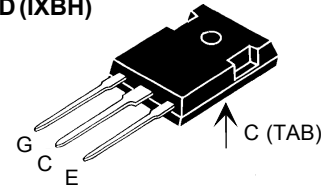


**BIMOSFET™ Monolithic  
Bipolar MOS Transistor**
**IXBH 42N170A  
IXBT 42N170A**

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



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	$\pm 20$	V
$V_{GEM}$	Transient	$\pm 30$	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 ms	120	A
<b>SSOA (RBSOA)</b>	$V_{GE} = 15 \text{ V}$ , $T_{VJ} = 125^\circ\text{C}$ , $R_G = 10 \Omega$ Clamped inductive load	$I_{CM} = 90$ $V_{CES} = 1350$	A V
<b><math>T_{SC}</math> (SCSOA)</b>	$V_{GE} = 15 \text{ V}$ , $V_{CES} = 1200 \text{ V}$ , $T_J = 125^\circ\text{C}$ $R_G = 10 \Omega$ non repetitive	10	$\mu\text{s}$
$P_c$	$T_C = 25^\circ\text{C}$	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.	
<b>Weight</b>	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

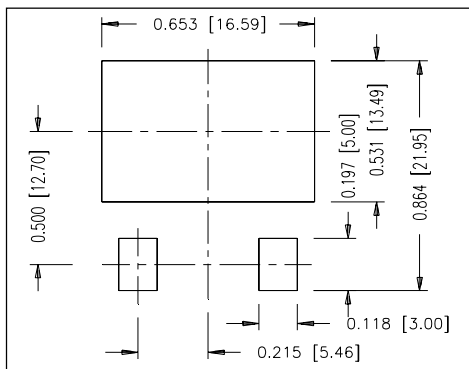
**Advantages**

- 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
$I_{CES}$	$V_{CE} = 0.8 V_{CES}$ , $T_J = 25^\circ\text{C}$ $V_{GE} = 0 \text{ V}$ , $T_J = 125^\circ\text{C}$			50 $\mu\text{A}$ 1.5 mA
$I_{GES}$	$V_{CE} = 0 \text{ V}$ , $V_{GE} = \pm 20 \text{ V}$			$\pm 100 \text{ nA}$
$V_{CE(sat)}$	$I_C = I_{C90}$ , $V_{GE} = 15 \text{ V}$ $T_J = 125^\circ\text{C}$	4.5 5.0		V V

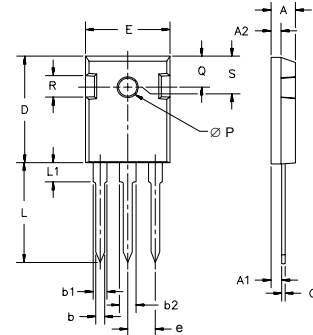
Symbol	Test Conditions	Characteristic Values		
		(T <sub>J</sub> = 25°C, unless otherwise specified)		
		min.	typ.	max.
<b>g<sub>fs</sub></b>	I <sub>C</sub> = I <sub>C90°</sub> ; V <sub>CE</sub> = 10 V, Pulse test, t ≤ 300 μs, duty cycle ≤ 2 %	15	24	S
<b>C<sub>ies</sub></b>	V <sub>CE</sub> = 25 V, V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

Symbol	Test Conditions	Characteristic Values		
		(T <sub>J</sub> = 25°C, unless otherwise specified)		
		min.	typ.	max.
<b>V<sub>F</sub></b>	I <sub>F</sub> = I <sub>C90°</sub> , V <sub>GE</sub> = 0 V, Pulse test, t < 300 μs, duty cycle d < 2%			5.0 V
<b>I<sub>RM</sub></b>	I <sub>F</sub> = 25A, V <sub>GE</sub> = 0 V, -di <sub>F</sub> /dt = 50 A/μs V <sub>R</sub> = 100V		15	A
<b>t<sub>rr</sub></b>			330	ns



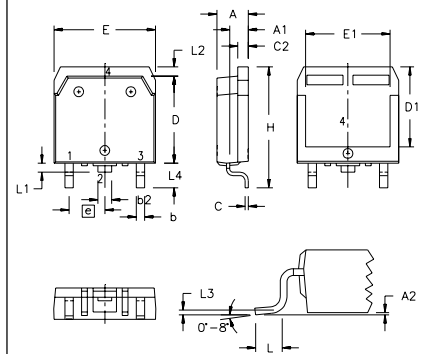
Min Recommended Footprint

**TO-247 AD Outline**



Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.7	5.3	.185	.209
A <sub>1</sub>	2.2	2.54	.087	.102
A <sub>2</sub>	2.2	2.6	.059	.098
b	1.0	1.4	.040	.055
b <sub>1</sub>	1.65	2.13	.065	.084
b <sub>2</sub>	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 <sub>1</sub>		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			242 BSC	

**TO-268 Outline**



SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.193	.201	4.90	5.10
A1	.106	.114	2.70	2.90
A2	.001	.010	0.02	0.25
b	.045	.057	1.15	1.45
b2	.075	.083	1.90	2.10
C	.016	.026	0.40	0.65
C2	.057	.063	1.45	1.60
D	.543	.551	13.80	14.00
D1	.488	.500	12.40	12.70
E	.624	.632	15.85	16.05
E1	.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
L1	.047	.055	1.20	1.40
L2	.039	.045	1.00	1.15
L3			.010 BSC	0.25 BSC
L4	.150	.161	3.80	4.10

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