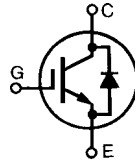
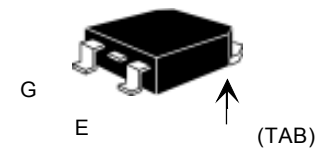
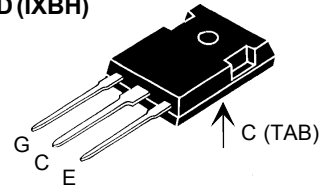


**BIMOSFET™ Monolithic
Bipolar MOS Transistor**
**IXBH 42N170A
IXBT 42N170A**
 $V_{CES} = 1700 \text{ V}$
 $I_{C25} = 42 \text{ A}$
 $V_{CE(sat)} = 6.0 \text{ V}$
 $t_{fi} = 50 \text{ ns}$


Symbol	Test Conditions	Maximum Ratings
V_{CES}	$T_J = 25^\circ\text{C}$ to 150°C	1700 V
V_{CGR}	$T_J = 25^\circ\text{C}$ to 150°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 ms	120 A
SSOA (RBSOA)	$V_{GE} = 15 \text{ V}$, $T_{VJ} = 125^\circ\text{C}$, $R_G = 10 \Omega$ Clamped inductive load	$I_{CM} = 90$ A $V_{CES} = 1350$ 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

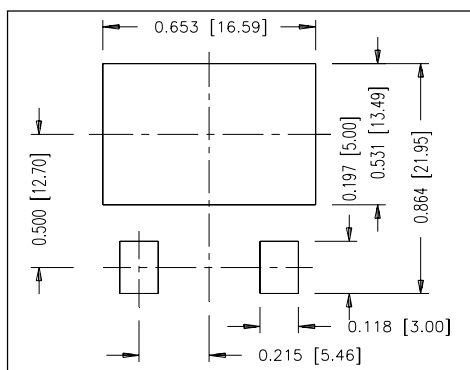
Advantages

- 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}	$V_{CE} = 0.8 V_{CES}$ $V_{GE} = 0 \text{ V}$	$T_J = 25^\circ\text{C}$		50 μA
		$T_J = 125^\circ\text{C}$		1.5 mA
I_{GES}	$V_{CE} = 0 \text{ V}$, $V_{GE} = \pm 20 \text{ V}$			± 100 nA
$V_{CE(sat)}$	$I_C = I_{C90}$, $V_{GE} = 15 \text{ V}$	$T_J = 125^\circ\text{C}$	4.5	6.0 V
			5.0	V

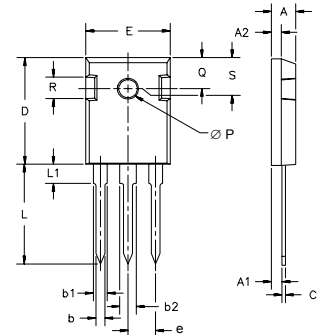
Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)			
		min.	typ.	max.	
g_{fs}	$I_C = I_{C90}, V_{CE} = 10\text{ V}$, Pulse test, $t \leq 300\ \mu\text{s}$, duty cycle $\leq 2\%$	15	24	S	
C_{ies}	$V_{CE} = 25\text{ V}, V_{GE} = 0\text{ V}, f = 1\text{ MHz}$		3700	pF	
C_{oes}			170	pF	
C_{res}			45	pF	
Q_g	$I_C = I_{C90}, V_{GE} = 15\text{ V}, V_{CE} = 0.5 V_{CES}$		155	nC	
Q_{ge}			30	nC	
Q_{gc}			55	nC	
$t_{d(on)}$	Inductive load, $T_J = 25^\circ\text{C}$ $I_C = I_{C90}, V_{GE} = 15\text{ V}$ $V_{CE} = 0.8 V_{CES}, R_G = R_{off} = 1.0\ \Omega$ Remarks: Switching times may increase for V_{CE} (Clamp) $> 0.8 \cdot V_{CES}$, 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, $T_J = 125^\circ\text{C}$ $I_C = I_{C90}, V_{GE} = 15\text{ V}$ $V_{CE} = 0.8 V_{CES}, R_G = R_{off} = 1.0\ \Omega$ Remarks: Switching times may increase for V_{CE} (Clamp) $> 0.8 \cdot V_{CES}$, higher T_J or increased R_G		25	ns	
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 ($T_J = 25^\circ\text{C}$, unless otherwise specified)			
		min.	typ.	max.	
V_F	$I_F = I_{C90}, V_{GE} = 0\text{ V}$, Pulse test, $t < 300\ \mu\text{s}$, duty cycle $d < 2\%$			5.0	V
I_{RM}	$I_F = 25\text{ A}, V_{GE} = 0\text{ V}, -di_F/dt = 50\text{ A}/\mu\text{s}$ $V_R = 100\text{ V}$		15	A	
t_{rr}			330	ns	



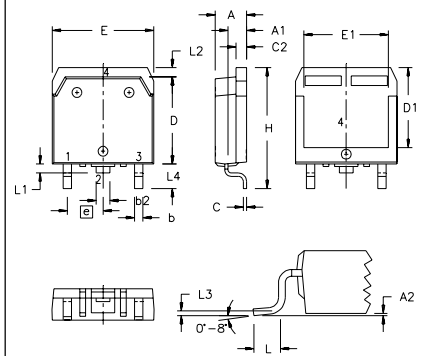
Min Recommended Footprint

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
ØP	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.

IXYS MOSFETs and IGBTs are covered by one or more of the following U.S. patents:

4,835,592	4,881,106	5,017,508	5,049,961	5,187,117	5,486,715	6,306,728B1
4,850,072	4,931,844	5,034,796	5,063,307	5,237,481	5,381,025	