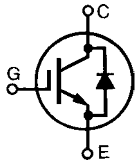
High Voltage, High Gain
BIMOSFET™ Monolithic Bipolar MOS Transistor

IXBH 6N170
IXBT 6N170

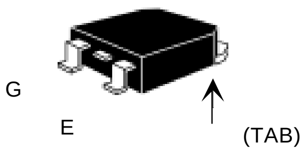
V_{CES} = 1700 V
I_{C25} = 12 A
$V_{CE(sat)}$ = 3.6 V



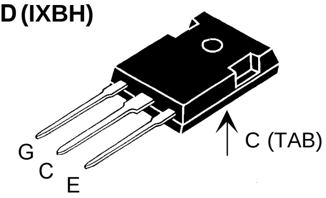
Symbol	Test Conditions	Maximum Ratings	
V_{CES}	T_J = 25°C to 150°C	1700	V
V_{CGR}	T_J = 25°C to 150°C; R_{GE} = 1 MΩ	1700	V
V_{GES}	Continuous	±20	V
V_{GEM}	Transient	±30	V
I_{C25}	T_C = 25°C	12	A
I_{C90}	T_C = 90°C	6	A
I_{CM}	T_C = 25°C, 1 ms	24	A
SSOA (RBSOA)	V_{GE} = 15 V, T_{VJ} = 125°C, R_G = 33 Ω Clamped inductive load	I_{CM} = 16 V_{CES} = 1350	A V
P_C	T_C = 25°C	75	W
T_J		-55 ... +150	°C
T_{JM}		150	°C
T_{stg}		-55 ... +150	°C
	Maximum Lead temperature for soldering 1.6 mm (0.062 in.) from case for 10 s	300	°C
	Maximum Tab temperature for soldering SMD devices for 10 s	260	°C
M_d	Mounting torque (M3)	1.13/10Nm/lb.in.	
Weight	TO-247 AD	6	g
	TO-268	4	g

Symbol	Test Conditions	(T_J = 25°C, unless otherwise specified)	Characteristic Values min.	typ.	max.	
BV_{CES}	I_C = 250 μA, V_{GE} = 0 V		1700			V
$V_{GE(th)}$	I_C = 250 μA, V_{CE} = V_{GE}		3.0		6	V
I_{CES}	V_{CE} = 0.8 V_{CES}	T_J = 25°C			10	μA
	V_{GE} = 0 V	T_J = 125°C			100	μA
I_{GES}	V_{CE} = 0 V, V_{GE} = ±20 V				±100	nA
$V_{CE(sat)}$	I_C = I_{C90}, V_{GE} = 15 V			3.0	3.6	V
		T_J = 125°C		3.3		V

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
- Low conduction losses
- 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
- Capacitor discharge circuits

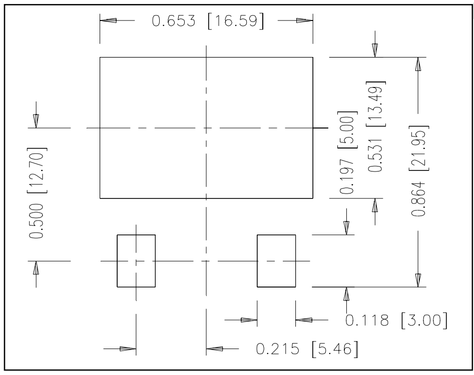
Advantages

- 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°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 %	3	4		S
C_{ies}	V_{CE} = 25 V, V_{GE} = 0 V, f = 1 MHz		330		pF
C_{oes}			23		pF
C_{res}			6		pF
Q_g	$I_C = I_{C90}$, V_{GE} = 15 V, $V_{CE} = 0.5\ V_{CES}$		20		nC
Q_{ge}			3.6		nC
Q_{gc}			8		nC
$t_{d(on)}$	**Inductive load, T_J = 25°C** $I_C = I_{C90}$, V_{GE} = 15 V $V_{CE} = 0.8\ V_{CES}$, $R_G = R_{off}$ = 120 Ω		25		ns
t_{ri}			18		ns
$t_{d(off)}$			600	1000	ns
t_{fi}			1110	1600	ns
E_{off}			4	6	mJ
$t_{d(on)}$	**Inductive load, T_J = 125°C** $I_C = I_{C90}$, V_{GE} = 15 V $V_{CE} = 0.8\ V_{CES}$, $R_G = R_{off}$ = 120 Ω		25		ns
t_{ri}			20		ns
E_{on}			0.7		mJ
$t_{d(off)}$			660		ns
t_{fi}			1600		ns
E_{off}			5		mJ
R_{thJC}				1.65	K/W
R_{thCK}	(TO-247)		0.25		K/W

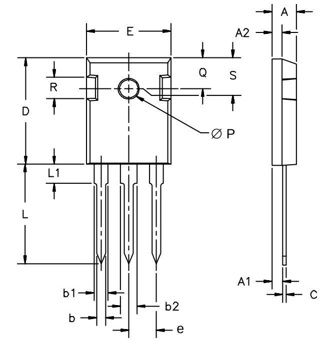
Reverse Diode

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 us, duty cycle d < 2%			3.0	V
I_{RM}	I_F = 6 A, V_{GE} = 0 V, -di_F/dt = 50 A/us V_R = 100A		6		A
t_{rr}			360		ns



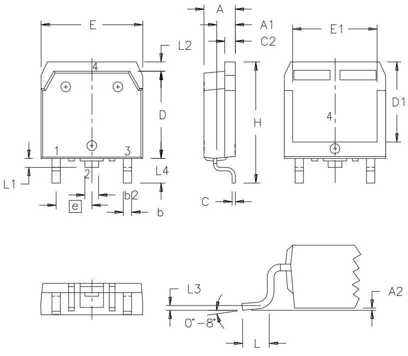
Min Recommended Footprint

TO-247 AD Outline



Dim.	Millimeter Min.	 Max.	Inches 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
L1		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 MIN	 MAX	MILLIMETERS 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