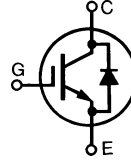


High Voltage, High Gain BIMOSFET™ Monolithic Bipolar MOS Transistor

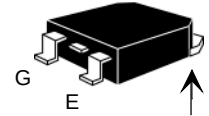
IXBH 16N170A
IXBT 16N170A

$$\begin{aligned} V_{CES} &= 1700 \text{ V} \\ I_{C25} &= 16 \text{ A} \\ V_{CE(sat)} &= 6.0 \text{ V} \\ t_{fi(typ)} &= 50 \text{ ns} \end{aligned}$$

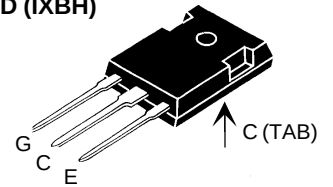


Symbol	Test Conditions	Maximum Ratings	
V_{CES}	$T_J = 25^\circ\text{C to } 150^\circ\text{C}$	1700	V
V_{CGR}	$T_J = 25^\circ\text{C to } 150^\circ\text{C}; R_{GE} = 1 \text{ M}\Omega$	1700	V
V_{GES}	Continuous	± 20	V
V_{GEM}	Transient	± 30	V
I_{C25}	$T_C = 25^\circ\text{C}$	16	A
I_{C90}	$T_C = 90^\circ\text{C}$	10	A
I_{CM}	$T_C = 25^\circ\text{C}, 1 \text{ ms}$	40	A
SSOA (RBSOA)	$V_{GE} = 15 \text{ V}, T_{VJ} = 125^\circ\text{C}, R_G = 33 \Omega$ Clamped inductive load	$I_{CM} = 40$ $V_{CES} = 1350$	A V
t_{SC} (SCSOA)	$V_{GE} = 15 \text{ V}, V_{CES} = 1200 \text{ V}, T_J = 125^\circ\text{C}$ $R_G = 33 \Omega$ non repetitive	10	μs
P_C	$T_C = 25^\circ\text{C}$	150	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		300	$^\circ\text{C}$
Maximum tab temperature for soldering SMD devices for 10 s		260	$^\circ\text{C}$
M_d	Mounting torque (M3) (TO-247)	1.13/10	Nm/lb.in.
Weight	TO-247	6	g
	TO-268	4	g

**TO-268
(IXBT)**



TO-247 AD (IXBH)



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

Features

- Monolithic fast reverse diode
- High Blocking Voltage
- JEDEC TO-268 surface mount and JEDEC TO-247 AD packages
- Low switching 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

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

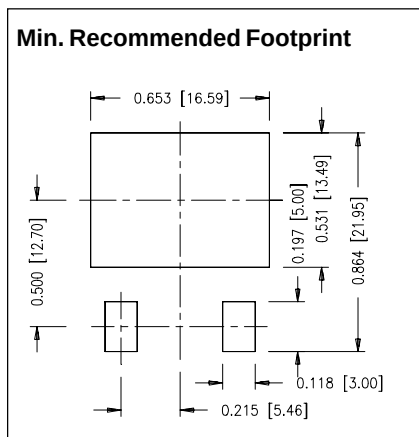
Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
		min.	typ.	max.
BV_{CES}	$I_C = 250 \mu\text{A}, V_{GE} = 0 \text{ V}$	1700		V
$V_{GE(th)}$	$I_C = 250 \mu\text{A}, V_{CE} = V_{GE}$	2.5		V
I_{CES}	$V_{CE} = 0.8 V_{CES}$ $V_{GE} = 0 \text{ V}; \text{Note 1}$ $T_J = 125^\circ\text{C}$			50 μA 1.5 mA
I_{GES}	$V_{CE} = 0 \text{ V}, V_{GE} = \pm 20 \text{ V}$			$\pm 100 \text{ nA}$
$V_{CE(sat)}$	$I_C = I_{C90}, V_{GE} = 15 \text{ V}$ Note 2 $T_J = 125^\circ\text{C}$	5.0		6.0 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 %	8	12.5	S	
C_{ies} C_{oes} C_{res}	V_{CE} = 25 V, V_{GE} = 0 V, f = 1 MHz		1400	pF	
			90	pF	
			31	pF	
Q_g Q_{ge} Q_{gc}	I_C = I_{C90}, V_{GE} = 15 V, V_{CE} = 0.5 V_{CES}		65	nC	
			13	nC	
			22	nC	
t_{d(on)} t_{ri} t_{d(off)} t_{fi} E_{off}	Inductive load, T_j = 25°C I_C = I_{C90}, V_{GE} = 15 V V_{CE} = 0.8 V_{CES}, R_G = R_{off} = 10 Ω Remarks: Switching times may increase for V _{CE} (Clamp) > 0.8 • V _{CES} , higher T _j or increased R _G		15	ns	
				25	ns
				160	250 ns
				50	100 ns
				1.2	2.5 mJ
t_{d(on)} t_{ri} E_{on} t_{d(off)} t_{fi} E_{off}	Inductive load, T_j = 125°C I_C = I_{C90}, V_{GE} = 15 V V_{CE} = 0.8 V_{CES}, R_G = R_{off} = 10 Ω Remarks: Switching times may increase for V _{CE} (Clamp) > 0.8 • V _{CES} , higher T _j or increased R _G		15	ns	
				28	ns
				2.0	mJ
				220	ns
				150	ns
				2.6	mJ
R_{thJC} R_{thCK}	(TO-247)			0.83 K/W	
			0.25	K/W	

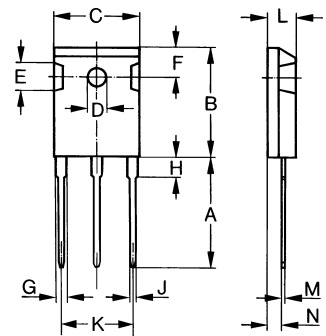
Reverse Diode		Characteristic Values (T _j = 25°C, unless otherwise specified)		
Symbol	Test Conditions	min.	typ.	max.
V _F	I _F = I _{C90} , V _{GE} = 0 V, Pulse test, t ≤ 300 μs, duty cycle d ≤ 2%			5.0 V
I _{RM} t _{rr}	I _F = I _{C90} , V _{GE} = 0 V, -di _F /dt = 50 A/μs V _R = 100V		10 360	A ns

Notes:

1. Device must be heatsunk for high temperature leakage current measurements to avoid thermal runaway.
2. Pulse test, $t \leq 300 \mu\text{s}$, duty cycle $\leq 2 \%$.

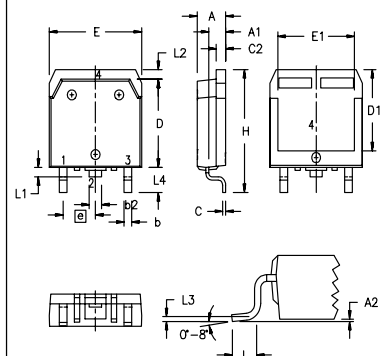


TO-247 AD Outline



Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	19.81	20.32	0.780	0.800
B	20.80	21.46	0.819	0.845
C	15.75	16.26	0.610	0.640
D	3.55	3.65	0.140	0.144
E	4.32	5.49	0.170	0.216
F	5.4	6.2	0.212	0.244
G	1.65	2.13	0.065	0.084
H	-	4.5	-	0.177
J	1.0	1.4	0.040	0.055
K	10.8	11.0	0.426	0.433
L	4.7	5.3	0.185	0.209
M	0.4	0.8	0.016	0.031
N	1.5	2.49	0.087	0.102

TO-268AA (D³ PAK)



Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.9	5.1	.193	.201
A ₁	2.7	2.9	.106	.114
A ₂	.02	.25	.001	.010
b	1.15	1.45	.045	.057
b ₂	1.9	2.1	.75	.83
	.4	.65	.016	.026
D	13.80	14.00	.543	.551
E	15.85	16.05	.624	.632
E ₁	13.3	13.6	.524	.535
e	5.45 BSC		.215 BSC	
H	18.70	19.10	.736	.752
L	2.40	2.70	.094	.106
L1	1.20	1.40	.047	.055
L2	1.00	1.15	.039	.045
L3	0.25 BSC		.010 BSC	
L4	3.80	4.10	.150	.161



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