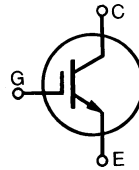


# IGBT

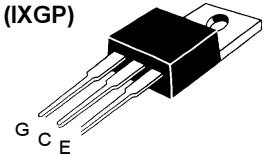
**IXGA 4N100**  
**IXGP 4N100**

$$\begin{aligned} V_{CES} &= 1000 \text{ V} \\ I_{C25} &= 8 \text{ A} \\ V_{CE(sat)} &= 2.7 \text{ V} \end{aligned}$$

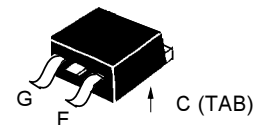


Symbol	Test Conditions	Maximum Ratings	
$V_{CES}$	$T_J = 25^\circ\text{C to } 150^\circ\text{C}$	1000	V
$V_{CGR}$	$T_J = 25^\circ\text{C to } 150^\circ\text{C}; R_{GE} = 1 \text{ M}\Omega$	1000	V
$V_{GES}$	Continuous	$\pm 20$	V
$V_{GEM}$	Transient	$\pm 30$	V
$I_{C25}$	$T_C = 25^\circ\text{C}$	8	A
$I_{C90}$	$T_C = 90^\circ\text{C}$	4	A
$I_{CM}$	$T_C = 25^\circ\text{C}, 1 \text{ ms}$	16	A
<b>SSOA</b> <b>(RBSOA)</b>	$V_{GE} = 15 \text{ V}, T_{VJ} = 125^\circ\text{C}, R_G = 120 \Omega$ Clamped inductive load	$I_{CM} = 8$ @ $0.8 V_{CES}$	A
$P_C$	$T_C = 25^\circ\text{C}$	40	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	$^\circ\text{C}$
$M_d$	Mounting torque with screw M3 Mounting torque with screw M3.5	0.45/4 Nm/lb.in. 0.55/5 Nm/lb.in.	
<b>Weight</b>	TO-220 TO-263	4 2	g g

TO-220AB (IXGP)



TO-263 AA (IXGA)



## Features

- International standard packages  
JEDEC TO-220AB and TO-263AA
- High current handling capability
- MOS Gate turn-on  
- drive simplicity

## Applications

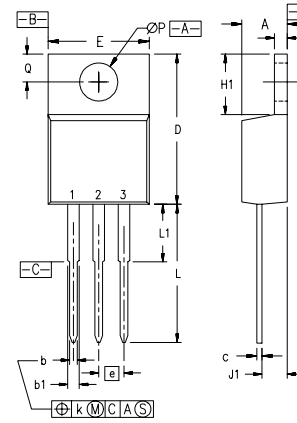
- AC motor speed control
- DC servo and robot drives
- DC choppers
- Uninterruptible power supplies (UPS)
- Switch-mode and resonant-mode power supplies
- Capacitor discharge

## Advantages

- Easy to mount with one screw
- Reduces assembly time and cost
- High power density

Symbol	Test Conditions ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)	Characteristic Values		
		Min.	Typ.	Max.
$BV_{CES}$	$I_C = 250 \mu\text{A}, V_{GE} = 0 \text{ V}$	1000		V
$V_{GE(th)}$	$I_C = 100 \mu\text{A}, V_{CE} = V_{GE}$	2.5		5.0 V
$I_{CES}$	$V_{CE} = 0.8 \cdot V_{CES}$ $V_{GE} = 0 \text{ V}$	$T_J = 25^\circ\text{C}$ $T_J = 125^\circ\text{C}$		25 $\mu\text{A}$ 250 $\mu\text{A}$
$I_{GES}$	$V_{CE} = 0 \text{ V}, V_{GE} = \pm 20 \text{ V}$			$\pm 100 \text{ nA}$
$V_{CE(sat)}$	$I_C = I_{CE90}, V_{GE} = 15 \text{ V}$	2.2	2.7	V

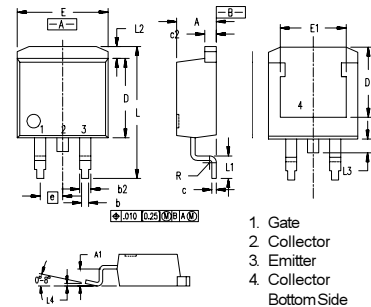
Symbol	Test Conditions	Characteristic Values		
		Min.	Typ.	Max.
$g_{fs}$	$I_C = I_{C90}, V_{CE} = 10 V$ , Pulse test, $t \leq 300 \mu s$ , duty cycle $\leq 2\%$	2.5	4	S
$C_{ies}$	$V_{CE} = 25 V, V_{GE} = 0 V, f = 1 MHz$		343	pF
$C_{oes}$			21	pF
$C_{res}$			5	pF
$I_{C(ON)}$	$V_{GE} = 10 V, V_{CE} = 10 V$		21	A
$Q_g$	$I_C = I_{C90}, V_{GE} = 15 V, V_{CE} = 0.5 V_{CES}$		13.6	nC
$Q_{ge}$			2.5	nC
$Q_{gc}$			6.5	nC
$t_{d(on)}$	<b>Inductive load, <math>T_J = 25^\circ C</math></b> $I_C = I_{C90}, V_{GE} = 15 V$ $V_{CE} = 800 V, R_G = R_{off} = 120 \Omega$ Remarks: Switching times may increase for $V_{CE}$ (Clamp) $> 0.8 V_{CES}$ , higher $T_J$ or increased $R_G$		20	ns
$t_{ri}$			25	ns
$t_{d(off)}$			390	800 ns
$t_{fi}$			340	700 ns
$E_{off}$			0.9	2.0 mJ
$t_{d(on)}$	<b>Inductive load, <math>T_J = 125^\circ C</math></b> $I_C = I_{C90}, V_{GE} = 15 V$ $V_{CE} = 800 V, R_G = R_{off} = 120 \Omega$ Remarks: Switching times may increase for $V_{CE}$ (Clamp) $> 0.8 V_{CES}$ , higher $T_J$ or increased $R_G$		20	ns
$t_{ri}$			25	ns
$E_{on}$			0.16	mJ
$t_{d(off)}$			700	ns
$t_{fi}$			520	ns
$E_{off}$			2.0	mJ
$R_{thJC}$				3.1 KW
$R_{thCK}$	TO-220		0.5	KW

**TO-220 AB Dimensions**


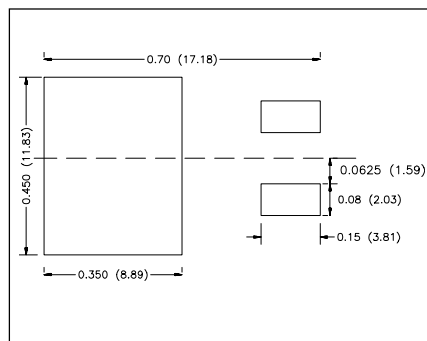
Pins: 1 - Gate  
2 - Collector  
3 - Emitter  
4 - Collector  
Bottom Side

SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.170	.190	4.32	4.83
b	.025	.040	0.64	1.02
b1	.045	.065	1.15	1.65
c	.014	.022	0.35	0.56
D	.580	.630	14.73	16.00
E	.390	.420	9.91	10.66
e	.100 BSC		2.54 BSC	
F	.045	.055	1.14	1.40
H1	.230	.270	5.85	6.85
J1	.090	.110	2.29	2.79
k	0	.015	0	0.38
L	.500	.550	12.70	13.97
L1	.110	.230	2.79	5.84
ØP	.139	.161	3.53	4.08
Q	.100	.125	2.54	3.18

NOTE: This drawing will meet all dimensions requirement of JEDEC outline TO-220 AB.

**TO-263 AA Outline**


Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.06	4.83	.160	.190
A1	2.03	2.79	.080	.110
b	0.51	0.99	.020	.039
b2	1.14	1.40	.045	.055
c	0.46	0.74	.018	.029
c2	1.14	1.40	.045	.055
D	8.64	9.65	.340	.380
D1	7.11	8.13	.280	.320
E	9.65	10.29	.380	.405
E1	6.86	8.13	.270	.320
e	2.54	BSC	.100	BSC
L	14.61	15.88	.575	.625
L1	2.29	2.79	.090	.110
L2	1.02	1.40	.040	.055
L3	1.27	1.78	.050	.070
L4	0	0.38	0	.015
R	0.46	0.74	.018	.029



**Min. Recommended Footprint**  
(Dimensions in inches and mm)

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  
4,850,072 4,931,844 5,034,796 5,063,307 5,237,481 5,381,025

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