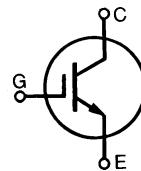
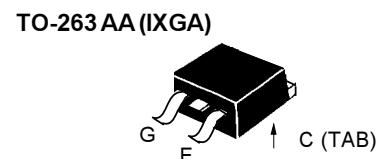
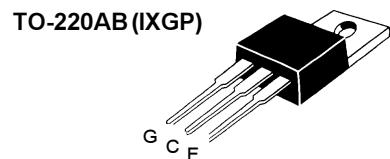


IGBT

IXGA 4N100
IXGP 4N100
 $V_{CES} = 1000 \text{ V}$
 $I_{C25} = 8 \text{ A}$
 $V_{CE(sat)} = 2.7 \text{ V}$


Symbol	Test Conditions	Maximum Ratings		
V_{CES}	$T_J = 25^\circ\text{C}$ to 150°C	1000	V	
V_{CGR}	$T_J = 25^\circ\text{C}$ to 150°C ; $R_{GE} = 1 \text{ M}\Omega$	1000	V	
V_{GES}	Continuous	± 20	V	
V_{GEM}	Transient	± 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 ms	16	A	
SSOA (RBSOA)	$V_{GE} = 15 \text{ V}$, $T_{VJ} = 125^\circ\text{C}$, $R_G = 120 \Omega$ 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	0.45/4	Nm/lb.in.	
	Mounting torque with screw M3.5	0.55/5	Nm/lb.in.	
Weight	TO-220	4	g	
	TO-263	2	g	



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

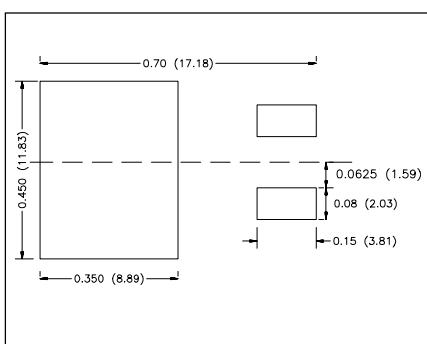
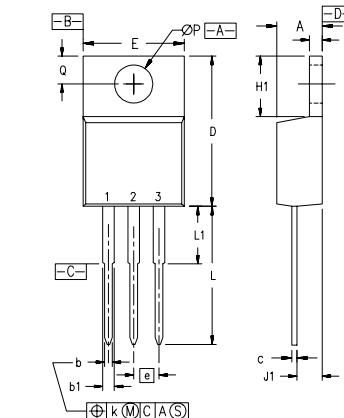
Advantages

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

Symbol	Test Conditions	Characteristic Values		
($T_J = 25^\circ\text{C}$, unless otherwise specified)		Min.	Typ.	Max.
BV_{CES}	$I_c = 250 \mu\text{A}$, $V_{GE} = 0 \text{ V}$	1000		V
$V_{GE(th)}$	$I_c = 100 \mu\text{A}$, $V_{CE} = V_{GE}$	2.5		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}	$V_{CE} = 0 \text{ V}$, $V_{GE} = \pm 20 \text{ V}$			$\pm 100 \text{ nA}$
$V_{CE(sat)}$	$I_c = I_{C90}$, $V_{GE} = 15 \text{ V}$	2.2	2.7	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, $t \leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$	2.5	4	S
C_{les}		343	pF	
C_{oes}	$V_{CE} = 25\text{ V}$, $V_{GE} = 0\text{ V}$, $f = 1\text{ MHz}$	21	pF	
C_{res}		5	pF	
$I_{C(ON)}$	$V_{GE} = 10\text{ V}$, $V_{CE} = 10\text{ V}$	21	A	
Q_g		13.6	nC	
Q_{ge}	$I_C = I_{C90}$, $V_{GE} = 15\text{ V}$, $V_{CE} = 0.5\text{ V}_{CES}$	2.5	nC	
Q_{gc}		6.5	nC	
$t_{d(on)}$	Inductive load, $T_J = 25^\circ\text{C}$	20	ns	
t_{ri}	$I_C = I_{C90}$, $V_{GE} = 15\text{ V}$	25	ns	
$t_{d(off)}$	$V_{CE} = 800\text{ V}$, $R_G = R_{off} = 120\text{ }\Omega$	390	800	ns
t_{fl}	Remarks: Switching times may increase for V_{CE} (Clamp) $> 0.8\text{ V}_{CES}$, higher T_J or increased R_G	340	700	ns
E_{off}		0.9	2.0	mJ
$t_{d(on)}$	Inductive load, $T_J = 125^\circ\text{C}$	20	ns	
t_{ri}	$I_C = I_{C90}$, $V_{GE} = 15\text{ V}$	25	ns	
E_{on}	$V_{CE} = 800\text{ V}$, $R_G = R_{off} = 120\text{ }\Omega$	0.16	mJ	
$t_{d(off)}$	Remarks: Switching times may increase for V_{CE} (Clamp) $> 0.8\text{ V}_{CES}$, higher T_J or increased R_G	700	ns	
t_{fl}		520	ns	
E_{off}		2.0	mJ	
R_{thJC}			3.1	KW
R_{thCK}	TO-220		0.5	KW

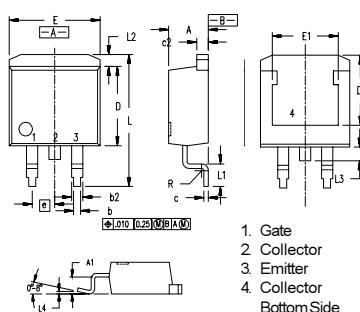
Min. Recommended Footprint
(Dimensions in inches and mm)


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	.125	2.54	3.18
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


1. Gate
2. Collector
3. Emitter
4. Collector
Bottom Side

Dim.	Millimeter Min.	Max.	Inches 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	0.038	0	.015
R	0.46	0.74	.018	.029

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