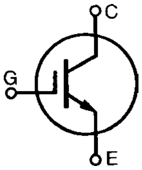
IXYS

IGBT

IXGA 20N100
IXGP 20N100

V_{CES} = 1000 V
I_{C25} = 40 A
$V_{CE(sat)}$ = 3.0 V

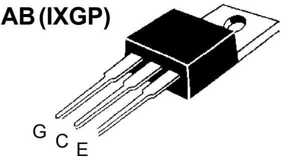
Preliminary Data Sheet



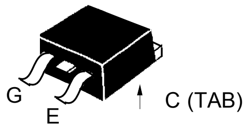
Symbol	Test Conditions	Maximum Ratings	
V_{CES}	T_J = 25°C to 150°C	1000	V
V_{CGR}	T_J = 25°C to 150°C; R_{GE} = 1 MΩ	1000	V
V_{GES}	Continuous	±20	V
V_{GEM}	Transient	±30	V
I_{C25}	T_C = 25°C	40	A
I_{C90}	T_C = 90°C	20	A
I_{CM}	T_C = 25°C, 1 ms	80	A
SSOA **(RBSOA)**	V_{GE} = 15 V, T_{VJ} = 125°C, R_G = 47 Ω Clamped inductive load, L = 300 µH	I_{CM} = 40 @ 0.8 V_{CES}	A
P_C	T_C = 25°C	150	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
M_d	Mounting torque with screw M3 Mounting torque with screw M3.5	0.45/4 0.55/5	Nm/lb.in. Nm/lb.in.
Weight	TO-220 TO-263	4 2	g g

Symbol	Test Conditions (T_J = 25°C, unless otherwise specified)		Characteristic Values Min.	 Typ.	 Max.	
BV_{CES}	I_C = 1 mA, V_{GE} = 0 V		1000			V
$V_{GE(th)}$	I_C = 250 µA, V_{CE} = V_{GE}		2.5		5.0	V
I_{CES}	V_{CE} = V_{CES}	T_J = 25°C			250	µA
	V_{GE} = 0 V	T_J = 125°C			1	mA
I_{GES}	V_{CE} = 0 V, V_{GE} = ±20 V				±100	nA
$V_{CE(sat)}$	I_C = I_{CE90}, V_{GE} = 15			2.2	3.0	V

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

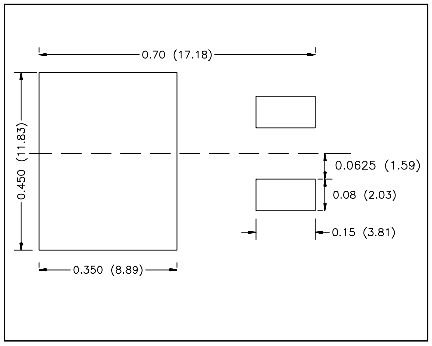
Applications

- 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

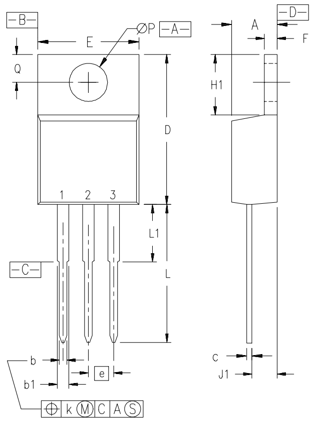
- Easy to mount with one screw
- Reduces assembly time and cost
- High power density

Symbol	**Test Conditions** (T_J = 25°C, unless otherwise specified)	**Characteristic Values** **Min.**	 **Typ.**	 **Max.**	
g_{fs}	I_C = I_{C90}; V_{CE} = 10 V, Pulse test, t ≤ 300 µs, duty cycle ≤ 2 %	12	16		S
C_{ies}	V_{CE} = 25 V, V_{GE} = 0 V, f = 1 MHz		1750		pF
C_{oes}			100		pF
C_{res}			38		pF
$I_{C(ON)}$	V_{GE} = 10V, V_{CE} = 10V		90		A
Q_g	I_C = I_{C90}, V_{GE} = 15 V, V_{CE} = 0.5 V_{CES}		73		nC
Q_{ge}			13		nC
Q_{gc}			26		nC
$t_{d(on)}$	**Inductive load, T_J = 25°C** I_C = I_{C90}, V_{GE} = 15 V V_{CE} = 800 V, R_G = R_{off} = 47 Ω Remarks: Switching times may increase for V_{CE} (Clamp) > 0.8 V_{CES}, higher T_J or increased R_G		30		ns
t_{ri}			30		ns
$t_{d(off)}$			350	700	ns
t_{fi}			280	700	ns
E_{off}			3.5	8.0	mJ
$t_{d(on)}$	**Inductive load, T_J = 125°C** I_C = I_{C90}, V_{GE} = 15 V V_{CE} = 800 V, R_G = R_{off} = 47 Ω Remarks: Switching times may increase for V_{CE} (Clamp) > 0.8 V_{CES}, higher T_J or increased R_G		30		ns
t_{ri}			30		ns
E_{on}			0.65		mJ
$t_{d(off)}$			700		ns
t_{fi}			520		ns
E_{off}			6.5		mJ
R_{thJC}				0.83	K/W
R_{thCK}	TO-220		0.5		K/W



Min. Recommended Footprint
(Dimensions in inches and mm)

TO-220 AB Dimensions

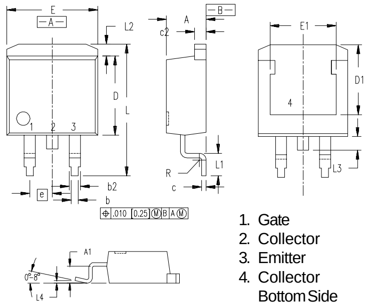


Pins: 1 - Gate 2 - Collector
3 - Emitter 4 - Collector
Bottom Side

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 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



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

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

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