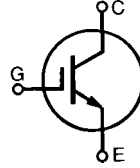


# IGBT

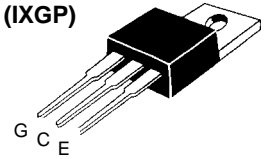
**IXGA 20N120**  
**IXGP 20N120**

$V_{CES} = 1200 \text{ V}$   
 $I_{C25} = 40 \text{ A}$   
 $V_{CE(sat)} = 2.5 \text{ V}$   
 $t_{fi(typ)} = 380 \text{ ns}$

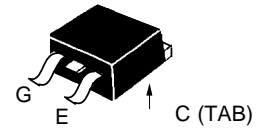


Symbol	Test Conditions	Maximum Ratings	
$V_{CES}$	$T_J = 25^\circ\text{C to } 150^\circ\text{C}$	1200	V
$V_{CGR}$	$T_J = 25^\circ\text{C to } 150^\circ\text{C}; R_{GE} = 1 \text{ M}\Omega$	1200	V
$V_{GES}$	Continuous	$\pm 20$	V
$V_{GEM}$	Transient	$\pm 30$	V
$I_{C25}$	$T_C = 25^\circ\text{C}$	40	A
$I_{C90}$	$T_C = 90^\circ\text{C}$	20	A
$I_{CM}$	$T_C = 25^\circ\text{C}, 1 \text{ ms}$	80	A
<b>SSOA</b> <b>(RBSOA)</b>	$V_{GE} = 15 \text{ V}, T_{VJ} = 125^\circ\text{C}, R_G = 47 \Omega$ Clamped inductive load	$I_{CM} = 40$ @ $0.8 V_{CES}$	A
$P_C$	$T_C = 25^\circ\text{C}$	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		260	$^\circ\text{C}$
$M_d$	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

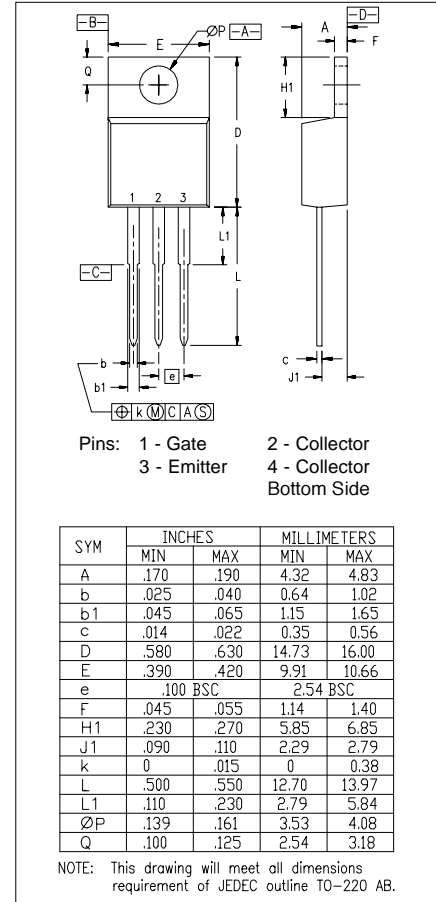
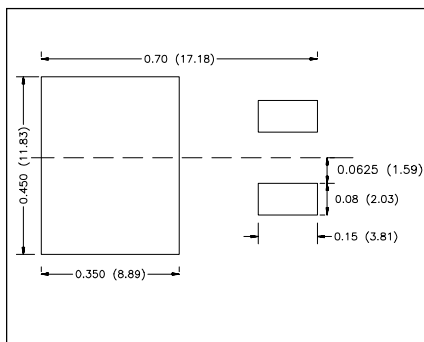
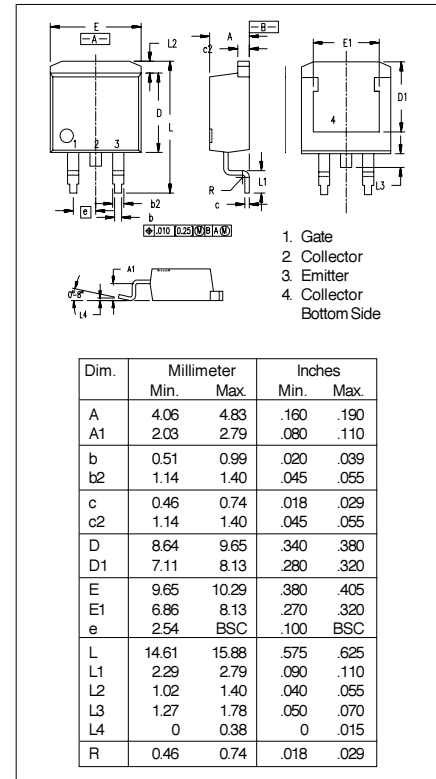
- AC motor speed control
- DC servo and robot drives
- DC choppers
- Uninterruptible power supplies (UPS)
- Switch-mode and resonant-mode power supplies
- Capacitor discharge

## 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.
$BV_{CES}$	$I_C = 1 \text{ mA}, V_{GE} = 0 \text{ V}$	1200		V
$V_{GE(th)}$	$I_C = 250 \mu\text{A}, V_{CE} = V_{GE}$	2.5		V
$I_{CES}$	$V_{CE} = V_{CES}, V_{GE} = 0 \text{ V}$		$T_J = 25^\circ\text{C}$ $T_J = 125^\circ\text{C}$	250 $\mu\text{A}$ 1 mA
$I_{GES}$	$V_{CE} = 0 \text{ V}, V_{GE} = \pm 20 \text{ V}$			$\pm 100 \text{ nA}$
$V_{CE(sat)}$	$I_C = I_{C90}, V_{GE} = 15 \text{ V}$		2.0	2.5 V

Symbol	Test Conditions ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)	Characteristic Values		
		Min.	Typ.	Max.
$g_{fs}$	$I_C = I_{C90}$ ; $V_{CE} = 10\text{ V}$ , Pulse test, $t \leq 300\ \mu\text{s}$ , duty cycle $\leq 2\%$	12	16	S
$C_{ies}$	$V_{CE} = 25\text{ V}$ , $V_{GE} = 0\text{ V}$ , $f = 1\text{ MHz}$		1750	pF
$C_{oes}$			90	pF
$C_{res}$			31	pF
$I_{C(ON)}$	$V_{GE} = 10\text{ V}$ , $V_{CE} = 10\text{ V}$		90	A
$Q_g$	$I_C = I_{C90}$ ; $V_{GE} = 15\text{ V}$ , $V_{CE} = 0.5 V_{CES}$		63	nC
$Q_{ge}$			13	nC
$Q_{gc}$			26	nC
$t_{d(on)}$	<b>Inductive load, <math>T_J = 25^\circ\text{C}</math></b>		28	ns
$t_{ri}$	$I_C = I_{C90}$ ; $V_{GE} = 15\text{ V}$		20	ns
$t_{d(off)}$	$V_{CE} = 800\text{ V}$ , $R_G = R_{off} = 47\ \Omega$	400	800	ns
$t_{fi}$	Remarks: Switching times may increase for $V_{CE}$ (Clamp) $> 0.8 V_{CES}$ ,	380	700	ns
$E_{off}$	higher $T_J$ or increased $R_G$	6.5	10.5	mJ
$t_{d(on)}$	<b>Inductive load, <math>T_J = 125^\circ\text{C}</math></b>		30	ns
$t_{ri}$	$I_C = I_{C90}$ ; $V_{GE} = 15\text{ V}$		27	ns
$E_{on}$	$V_{CE} = 800\text{ V}$ , $R_G = R_{off} = 47\ \Omega$	0.90		mJ
$t_{d(off)}$	Remarks: Switching times may increase for $V_{CE}$ (Clamp) $> 0.8 V_{CES}$ ,	700		ns
$t_{fi}$	higher $T_J$ or increased $R_G$	550		ns
$E_{off}$		9.5		mJ
$R_{thJC}$			0.83	K/W
$R_{thCK}$	TO-220		0.5	K/W

**TO-220 AB Dimensions**

**TO-263 AA Outline**

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

IXYS reserves the right to change limits, test conditions, and dimensions.