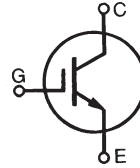


# IGBT

**IXGA 8N100**  
**IXGP 8N100**

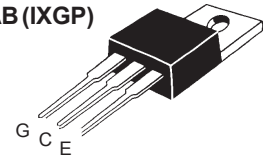
$V_{CES} = 1000 \text{ V}$   
 $I_{C25} = 16 \text{ A}$   
 $V_{CE(sat)} = 2.7 \text{ V}$

Preliminary data sheet

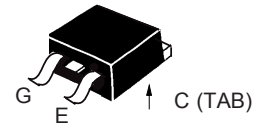


Symbol	Test Conditions	Maximum Ratings	
$V_{CES}$	$T_J = 25^\circ\text{C to } 150^\circ\text{C}$	1000	V
$V_{CGR}$	$T_J = 25^\circ\text{C to } 150^\circ\text{C}; R_{GE} = 1 \text{ M}\Omega$	1000	V
$V_{GES}$	Continuous	$\pm 20$	V
$V_{GEM}$	Transient	$\pm 30$	V
$I_{C25}$	$T_C = 25^\circ\text{C}$	16	A
$I_{C90}$	$T_C = 90^\circ\text{C}$	8	A
$I_{CM}$	$T_C = 25^\circ\text{C}, 1 \text{ ms}$	32	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	$I_{CM} = 16$ @ $0.8 V_{CES}$	A
$P_C$	$T_C = 25^\circ\text{C}$	54	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	4	g
	TO-263	2	g

**TO-220AB (IXGP)**



**TO-263 AA (IXGA)**



## Features

- International standard packages  
JEDEC TO-220AB and TO-263AA
- Low  $V_{CE(sat)}$   
- for minimum on-state conduction losses
- MOS Gate turn-on  
- drive simplicity

## Applications

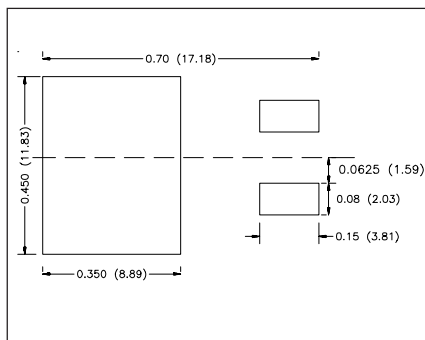
- AC motor speed control
- DC servo and robot drives
- DC choppers
- Uninterruptible power supplies (UPS)
- Switch-mode and resonant-mode power supplies
- Capacitor discharge

## Advantages

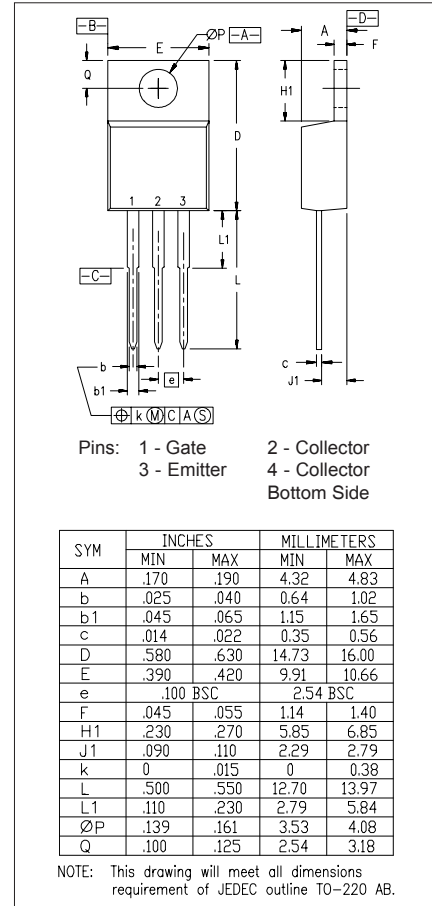
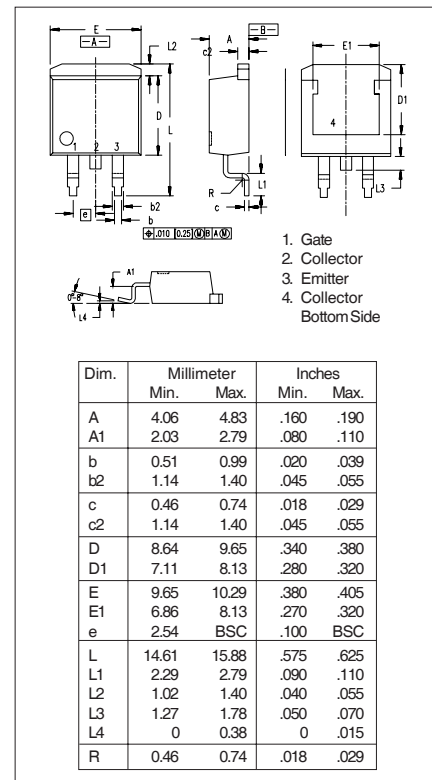
- Easy to mount with one screw
- Reduces assembly time and cost
- High power density

Symbol	Test Conditions ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)	Characteristic Values		
		Min.	Typ.	Max.
$BV_{CES}$	$I_C = 1 \text{ mA}, V_{GE} = 0 \text{ V}$	1000		V
$V_{GE(th)}$	$I_C = 250 \mu\text{A}, V_{CE} = V_{GE}$	2.5		V
$I_{CES}$	$V_{CE} = 0.8 V_{CES}$ $V_{GE} = 0 \text{ V}$	$T_J = 25^\circ\text{C}$		25 $\mu\text{A}$
		$T_J = 125^\circ\text{C}$		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 ( $T_J = 25^\circ\text{C}$ , 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 $\leq 2\%$	4	7.6	S	
$I_{C(on)}$	$V_{GE} = 10\text{ V}$ , $V_{CE} = 10\text{ V}$		40	A	
$C_{ies}$	$V_{CE} = 25\text{ V}$ , $V_{GE} = 0\text{ V}$ , $f = 1\text{ MHz}$		595	pF	
$C_{oes}$			34	pF	
$C_{res}$			10	pF	
$Q_g$	$I_C = I_{C90}$ , $V_{GE} = 15\text{ V}$ , $V_{CE} = 0.5\text{ V}_{CES}$		26.5	nC	
$Q_{ge}$			4.8	nC	
$Q_{gc}$			8.5	nC	
$t_{d(on)}$	<b>Inductive load, <math>T_J = 25^\circ\text{C}</math></b> $I_C = I_{C90}$ , $V_{GE} = 15\text{ V}$ $V_{CE} = 800\text{ V}$ , $R_G = R_{off} = 120\ \Omega$ Remarks: Switching times may increase for $V_{CE}$ (Clamp) $> 0.8\text{ V}_{CES}$ , higher $T_J$ or increased $R_G$		15	ns	
$t_{ri}$			30	ns	
$t_{d(off)}$			600	1000	ns
$t_{fi}$			390	900	ns
$E_{off}$			2.3	5.0	mJ
$t_{d(on)}$	<b>Inductive load, <math>T_J = 125^\circ\text{C}</math></b> $I_C = I_{C90}$ , $V_{GE} = 15\text{ V}$ $V_{CE} = 800\text{ V}$ , $R_G = R_{off} = 120\ \Omega$ Remarks: Switching times may increase for $V_{CE}$ (Clamp) $> 0.8\text{ V}_{CES}$ , higher $T_J$ or increased $R_G$		15	ns	
$t_{ri}$			30	ns	
$E_{on}$			0.5	mJ	
$t_{d(off)}$			800	ns	
$t_{fi}$			630	ns	
$E_{off}$		3.7	mJ		
$R_{thJC}$			2.3	KW	
$R_{thCK}$	TO-220		0.5	KW	



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

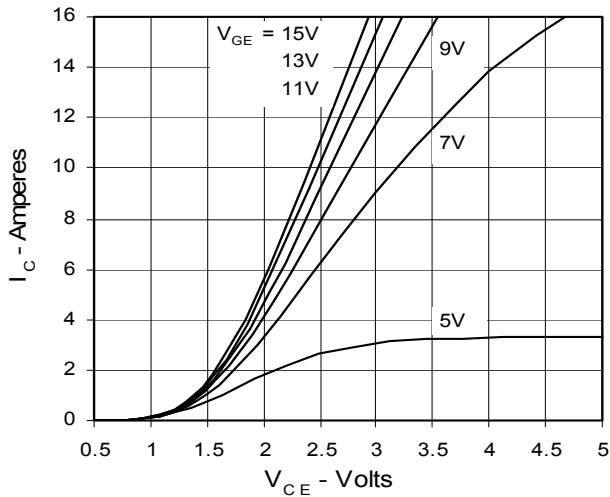
**TO-220 AB Dimensions**

**TO-263 AA Outline**


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

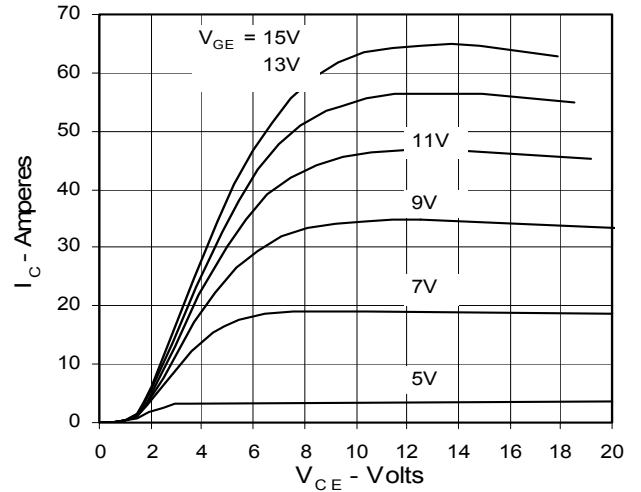
IXYS MOSFETs and IGBTs are covered by one or more of the following U.S. patents:

4,835,592 4,881,106 5,017,508 5,049,961 5,187,117 5,486,715 6,306,728B1 6,259,123B1 6,306,728B1  
 4,850,072 4,931,844 5,034,796 5,063,307 5,237,481 5,381,025 6,404,065B1 6,162,665 6,534,343 6,583,505

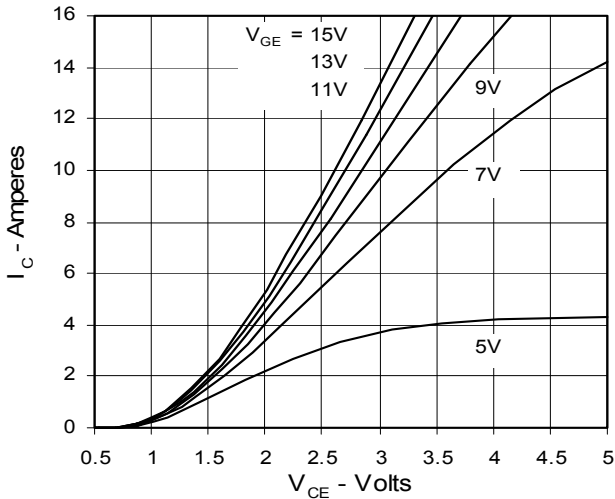
**Fig. 1. Output Characteristics  
@ 25 Deg. C**



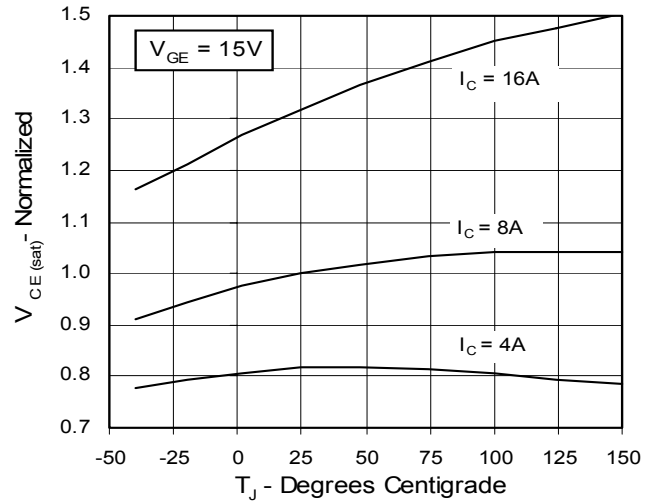
**Fig. 2. Extended Output Characteristics  
@ 25 deg. C**



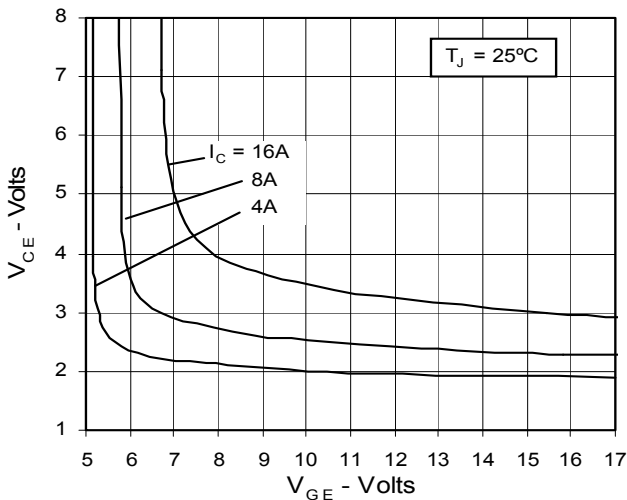
**Fig. 3. Output Characteristics  
@ 125 Deg. C**



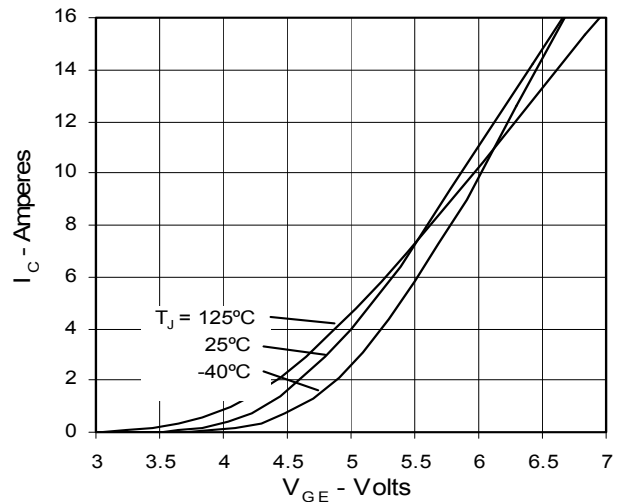
**Fig. 4. Dependence of  $V_{CE(sat)}$  on  
Temperature**



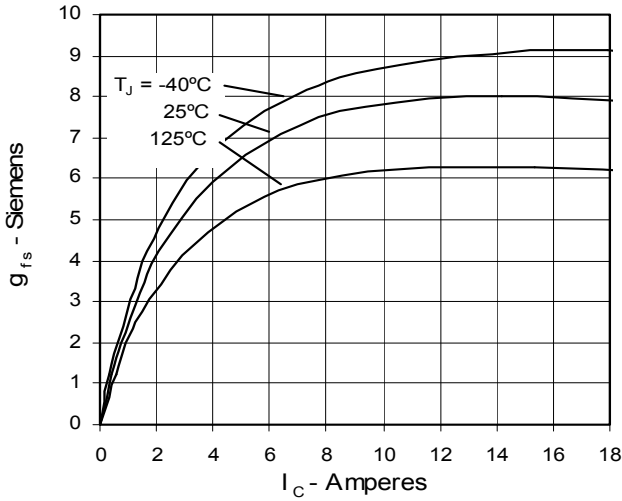
**Fig. 5. Collector-to-Emitter Voltage  
vs. Gate-to-Emitter voltage**



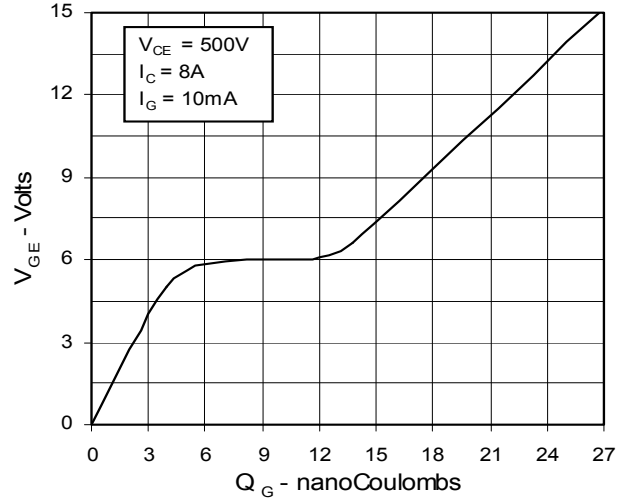
**Fig. 6. Input Admittance**



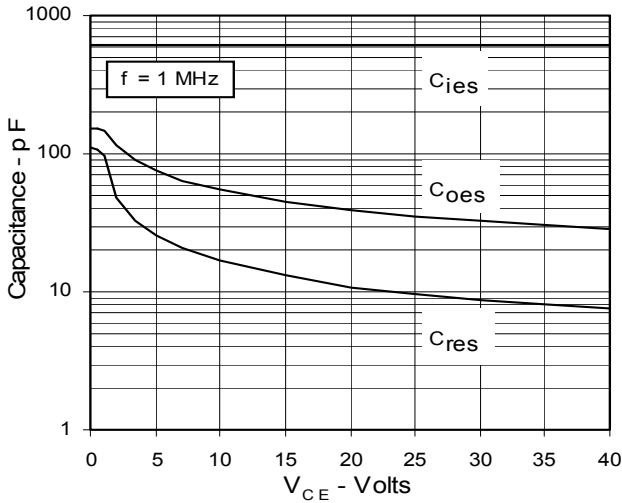
**Fig. 7. Transconductance**



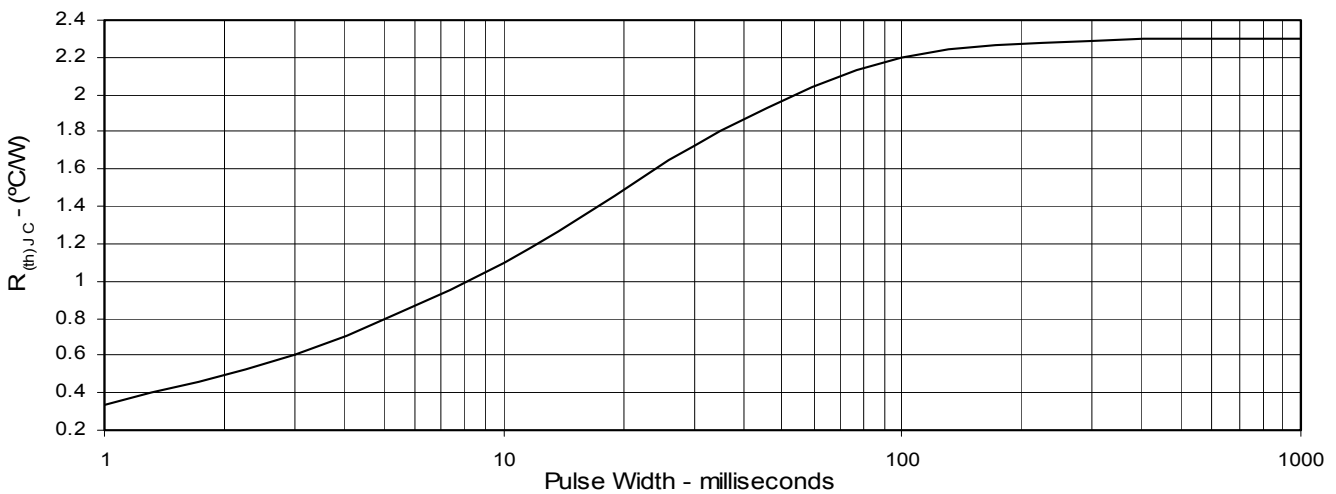
**Fig. 8. Gate Charge**



**Fig. 9. Capacitance**



**Fig. 10. Maximum Transient Thermal Resistance**



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