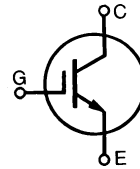


## Low $V_{CE(sat)}$ IGBT High speed IGBT

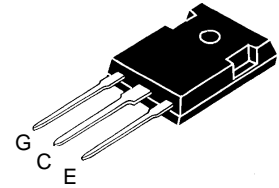
**IXGH 10 N100**  
**IXGH 10 N100A**

$V_{CES}$	$I_{C25}$	$V_{CE(sat)}$
<b>1000 V</b>	<b>20 A</b>	<b>3.5 V</b>
<b>1000 V</b>	<b>20 A</b>	<b>4.0 V</b>



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
$I_{C25}$	$T_C = 25^\circ\text{C}$	20	A
$I_{C90}$	$T_C = 90^\circ\text{C}$	10	A
$I_{CM}$	$T_C = 25^\circ\text{C}$ , 1 ms	40	A
<b>SSOA (RBSOA)</b>	$V_{GE} = 15\text{ V}$ , $T_{VJ} = 125^\circ\text{C}$ , $R_G = 150\text{ }\Omega$ Clamped inductive load, $L = 300\text{ }\mu\text{H}$	$I_{CM} = 20$ @ $0.8 V_{CES}$	A
$P_C$	$T_C = 25^\circ\text{C}$	100	W
$T_J$		$-55 \dots +150$	$^\circ\text{C}$
$T_{JM}$		150	$^\circ\text{C}$
$T_{stg}$		$-55 \dots +150$	$^\circ\text{C}$
$M_d$	Mounting torque (M3)	1.13/10	Nm/lb.in.
<b>Weight</b>		6	g
Maximum lead temperature for soldering 1.6 mm (0.062 in.) from case for 10 s		300	$^\circ\text{C}$

TO-247 AD



G = Gate, C = Collector,  
E = Emitter, TAB = Collector

### Features

- International standard package JEDEC TO-247 AD
- 2nd generation HDMOS™ process
- Low  $V_{CE(sat)}$ 
  - for low on-state conduction losses
- High current handling capability
- MOS Gate turn-on
  - drive simplicity
- Voltage rating guaranteed at high temperature ( $125^\circ\text{C}$ )

### Applications

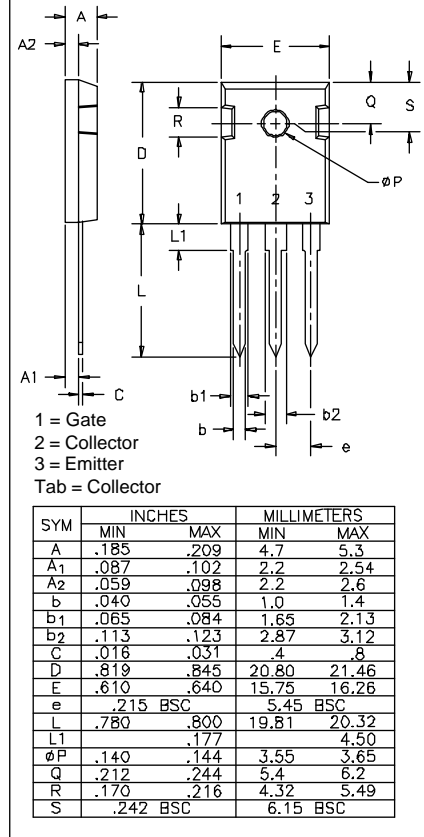
- AC motor speed control
- DC servo and robot drives
- DC choppers
- Uninterruptible power supplies (UPS)
- Switch-mode and resonant-mode power supplies

### Advantages

- Easy to mount with 1 screw (isolated mounting screw hole)
- High power density

Symbol	Test Conditions	Characteristic Values ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)		
		min.	typ.	max.
$BV_{CES}$	$I_C = 3\text{ mA}$ , $V_{GE} = 0\text{ V}$	1000		V
$V_{GE(th)}$	$I_C = 250\text{ }\mu\text{A}$ , $V_{CE} = V_{GE}$	2.5		V
$I_{CES}$	$V_{CE} = 0.8 \cdot V_{CES}$ $V_{GE} = 0\text{ V}$			$250\text{ }\mu\text{A}$ 1 mA
$I_{GES}$	$V_{CE} = 0\text{ V}$ , $V_{GE} = \pm 20\text{ V}$			$\pm 100\text{ nA}$
$V_{CE(sat)}$	$I_C = I_{C90}$ , $V_{GE} = 15\text{ V}$			3.5 V 4.0 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 $\leq 2\%$	4	8	S
$C_{ies}$	$V_{CE} = 25\text{ V}$ , $V_{GE} = 0\text{ V}$ , $f = 1\text{ MHz}$		750	pF
$C_{oes}$			150	pF
$C_{res}$			30	pF
$Q_g$	$I_C = I_{C90}$ , $V_{GE} = 15\text{ V}$ , $V_{CE} = 0.5 V_{CES}$		52	nC
$Q_{ge}$			13	nC
$Q_{gc}$			24	nC
$t_{d(on)}$	<b>Inductive load, <math>T_J = 25^\circ\text{C}</math></b> $I_C = I_{C90}$ , $V_{GE} = 15\text{ V}$ , $L = 300\text{ }\mu\text{H}$ , $V_{CE} = 0.8 V_{CES}$ , $R_G = R_{off} = 150\text{ }\Omega$ Remarks: Switching times may increase for $V_{CE}(\text{Clamp}) > 0.8 \cdot V_{CES}$ , higher $T_J$ or increased $R_G$		100	ns
$t_{ri}$			200	ns
$t_{d(off)}$			550	ns
$t_{fi}$		10N100	800	ns
$t_{fi}$		10N100A	500	ns
$E_{off}$		10N100A	2	3 mJ
$t_{d(on)}$	<b>Inductive load, <math>T_J = 125^\circ\text{C}</math></b> $I_C = I_{C90}$ , $V_{GE} = 15\text{ V}$ , $L = 300\text{ }\mu\text{H}$ , $V_{CE} = 0.8 V_{CES}$ , $R_G = R_{off} = 150\text{ }\Omega$ Remarks: Switching times may increase for $V_{CE}(\text{Clamp}) > 0.8 \cdot V_{CES}$ , higher $T_J$ or increased $R_G$		100	ns
$t_{ri}$			200	ns
$E_{on}$			1.1	mJ
$t_{d(off)}$			600	ns
$t_{fi}$		10N100	1250	ns
$t_{fi}$		10N100A	950	ns
$E_{off}$		10N100	5.0	mJ
$E_{off}$		10N100A	2.5	mJ
$R_{thJC}$				1.2 K/W
$R_{thCK}$			0.25	K/W

**TO-247 AD Outline**


**IXGH 10N100 and IXGH 10N100A characteristic curves are located on the IXGH 10N100U1 and IXGH 10N100AU1 data sheets.**