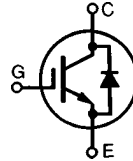


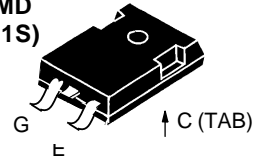
# HiPerFAST™ IGBT with Diode Combi Pack

**IXGH32N50BU1**  
**IXGH32N50BU1S**

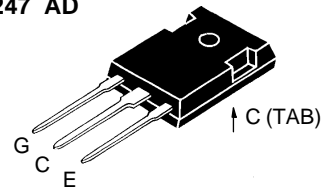
$V_{CES} = 500\text{ V}$   
 $I_{C25} = 60\text{ A}$   
 $V_{CE(sat)} = 2.0\text{ V}$   
 $t_{fi} = 80\text{ ns}$



**TO-247 SMD  
(32N50BU1S)**



**TO-247 AD**



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

Symbol	Test Conditions	Maximum Ratings	
$V_{CES}$	$T_J = 25^\circ\text{C}$ to $150^\circ\text{C}$	500	V
$V_{CGR}$	$T_J = 25^\circ\text{C}$ to $150^\circ\text{C}$ ; $R_{GE} = 1\text{ M}\Omega$	500	V
$V_{GES}$	Continuous	$\pm 20$	V
$V_{GEM}$	Transient	$\pm 30$	V
$I_{C25}$	$T_C = 25^\circ\text{C}$	60	A
$I_{C90}$	$T_C = 90^\circ\text{C}$	32	A
$I_{CM}$	$T_C = 25^\circ\text{C}$ , 1 ms	120	A
<b>SSOA (RBSOA)</b>	$V_{GE} = 15\text{ V}$ , $T_{VJ} = 125^\circ\text{C}$ , $R_G = 33\ \Omega$ Clamped inductive load, $L = 100\ \mu\text{H}$	$I_{CM} = 64$ @ $0.8 V_{CES}$	A
$P_C$	$T_C = 25^\circ\text{C}$	200	W
$T_J$		-55 ... +150	$^\circ\text{C}$
$T_{JM}$		150	$^\circ\text{C}$
$T_{stg}$		-55 ... +150	$^\circ\text{C}$
Maximum Lead and Tab temperature for soldering 1.6 mm (0.062 in.) from case for 10 s		300	$^\circ\text{C}$
$M_d$	Mounting torque, TO-247 AD	1.13/10	Nm/lb.in.
<b>Weight</b>	TO-247 SMD	4	g
	TO-247 AD	6	g

Symbol	Test Conditions	Characteristic Values ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)		
		min.	typ.	max.
$BV_{CES}$	$I_C = 750\ \mu\text{A}$ , $V_{GE} = 0\text{ V}$	500		V
$V_{GE(th)}$	$I_C = 250\ \mu\text{A}$ , $V_{CE} = V_{GE}$	2.5		5.5 V
$I_{CES}$	$V_{CE} = 0.8 \cdot V_{CES}$ $V_{GE} = 0\text{ V}$		$T_J = 25^\circ\text{C}$	500 $\mu\text{A}$
			$T_J = 125^\circ\text{C}$	8 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 V

## Features

- \* International standard packages  
JEDEC TO-247 SMD surface mountable and JEDEC TO-247 AD
- \* High frequency IGBT and antiparallel FRED in one package
- \* High current handling capability
- \* Newest generation HDMOS™ process
- \* MOS Gate turn-on - drive simplicity

## Applications

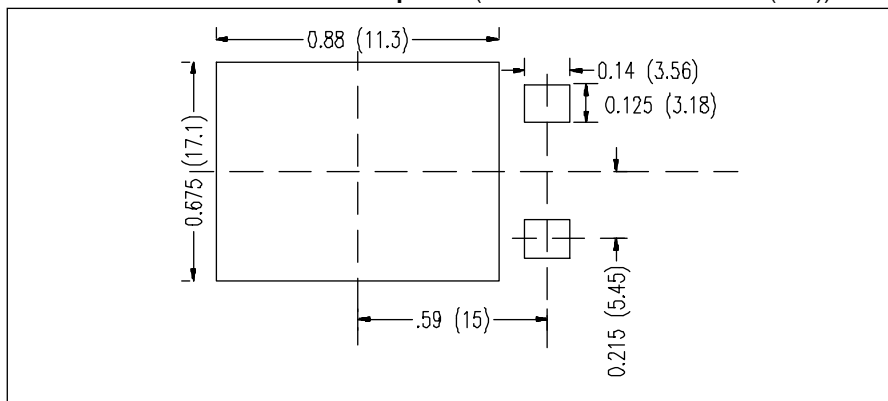
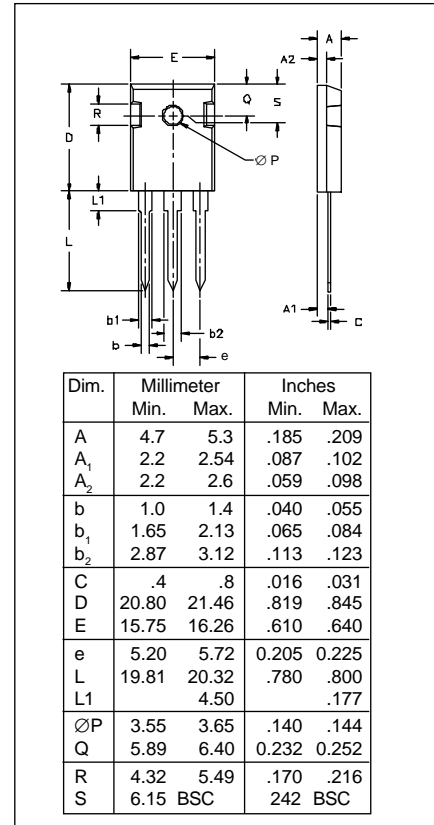
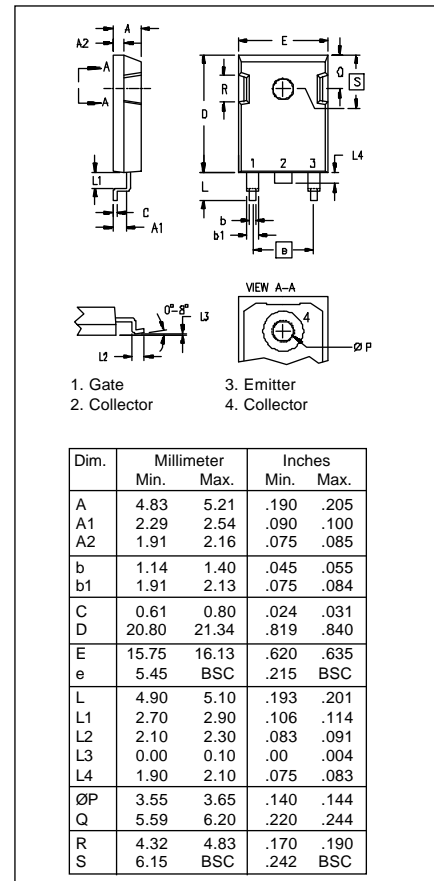
- \* AC motor speed control
- \* DC servo and robot drives
- \* DC choppers
- \* Uninterruptible power supplies (UPS)
- \* Switched-mode and resonant-mode power supplies

## Advantages

- \* Space savings (two devices in one package)
- \* High power density
- \* Very fast switching speeds for high frequency applications

Symbol	Test Conditions	Characteristic Values		
		(T <sub>J</sub> = 25°C, unless otherwise specified)		
		min.	typ.	max.
<b>g<sub>fs</sub></b>	I <sub>C</sub> = I <sub>C90</sub> ; V <sub>CE</sub> = 10 V, Pulse test, t ≤ 300 μs, duty cycle ≤ 2 %	15	20	S
<b>C<sub>ies</sub></b>	V <sub>CE</sub> = 25 V, V <sub>GE</sub> = 0 V, f = 1 MHz		2500	pF
<b>C<sub>oes</sub></b>			270	pF
<b>C<sub>res</sub></b>			70	pF
<b>Q<sub>g</sub></b>	I <sub>C</sub> = I <sub>C90</sub> , V <sub>GE</sub> = 15 V, V <sub>CE</sub> = 0.5 V <sub>CES</sub>		125	150 nC
<b>Q<sub>ge</sub></b>			23	35 nC
<b>Q<sub>gc</sub></b>			50	75 nC
<b>t<sub>d(on)</sub></b>	<b>Inductive load, T<sub>J</sub> = 25°C</b> I <sub>C</sub> = I <sub>C90</sub> , V <sub>GE</sub> = 15 V, L = 100 μH, V <sub>CE</sub> = 0.8 V <sub>CES</sub> , R <sub>G</sub> = R <sub>off</sub> = 4.7 Ω Remarks: Switching times may increase for V <sub>CE</sub> (Clamp) > 0.8 • V <sub>CES</sub> , higher T <sub>J</sub> or increased R <sub>G</sub>		25	ns
<b>t<sub>ri</sub></b>			30	ns
<b>t<sub>d(off)</sub></b>			100	200 ns
<b>t<sub>fi</sub></b>			80	150 ns
<b>E<sub>off</sub></b>			0.7	1.5 mJ
<b>t<sub>d(on)</sub></b>		<b>Inductive load, T<sub>J</sub> = 125°C</b> I <sub>C</sub> = I <sub>C90</sub> , V <sub>GE</sub> = 15 V, L = 100 μH, V <sub>CE</sub> = 0.8 V <sub>CES</sub> , R <sub>G</sub> = R <sub>off</sub> = 4.7 Ω Remarks: Switching times may increase for V <sub>CE</sub> (Clamp) > 0.8 • V <sub>CES</sub> , higher T <sub>J</sub> or increased R <sub>G</sub>		25
<b>t<sub>ri</sub></b>			35	ns
<b>E<sub>on</sub></b>			1	mJ
<b>t<sub>d(off)</sub></b>			120	ns
<b>t<sub>fi</sub></b>			120	ns
<b>E<sub>off</sub></b>			1.2	mJ
<b>R<sub>thJC</sub></b>				0.62 K/W
<b>R<sub>thCK</sub></b>		0.25		K/W

Symbol	Test Conditions	Characteristic Values		
		(T <sub>J</sub> = 25°C, unless otherwise specified)		
		min.	typ.	max.
<b>V<sub>F</sub></b>	I <sub>F</sub> = I <sub>C90</sub> , V <sub>GE</sub> = 0 V, Pulse test, t ≤ 300 μs, duty cycle d ≤ 2 %			1.6 V
<b>I<sub>RM</sub></b>	I <sub>F</sub> = I <sub>C90</sub> , V <sub>GE</sub> = 0 V, -di <sub>F</sub> /dt = 240 A/μs V <sub>R</sub> = 360 V I <sub>F</sub> = 1 A; -di <sub>F</sub> /dt = 100 A/μs; V <sub>R</sub> = 30 V		10	15 A
<b>t<sub>rr</sub></b>		T <sub>J</sub> = 125°C	150	ns
		T <sub>J</sub> = 25°C	35	50 ns
<b>R<sub>thJC</sub></b>				1 K/W

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

**TO-247 AD Outline**

**TO-247 SMD Outline**


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