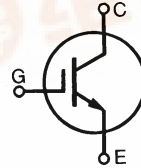




# HiPerFAST™ IGBT

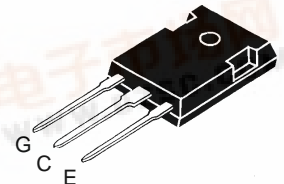
# IXGH 24N60A

$V_{CES} = 600 \text{ V}$   
 $I_{C25} = 48 \text{ A}$   
 $V_{CE(sat)} = 2.7 \text{ V}$   
 $t_{fi} = 275 \text{ ns}$



Symbol	Test Conditions	Maximum Ratings	
$V_{CES}$	$T_J = 25^\circ\text{C to } 150^\circ\text{C}$	600	V
$V_{CGR}$	$T_J = 25^\circ\text{C to } 150^\circ\text{C}; R_{GE} = 1 \text{ M}\Omega$	600	V
$V_{GES}$	Continuous	$\pm 20$	V
$V_{GEM}$	Transient	$\pm 30$	V
$I_{C25}$	$T_C = 25^\circ\text{C}$	48	A
$I_{C90}$	$T_C = 90^\circ\text{C}$	24	A
$I_{CM}$	$T_C = 25^\circ\text{C}, 1 \text{ ms}$	96	A
<b>SSOA (RBSOA)</b>	$V_{GE} = 15 \text{ V}, T_{VJ} = 125^\circ\text{C}, R_G = 22 \Omega$ Clamped inductive load, $L = 100 \mu\text{H}$	$I_{CM} = 48$ @ $0.8 V_{CES}$	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	$^\circ\text{C}$
$M_d$	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
- High frequency IGBT
- 2nd generation HDMOS™ process
- 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

### Advantages

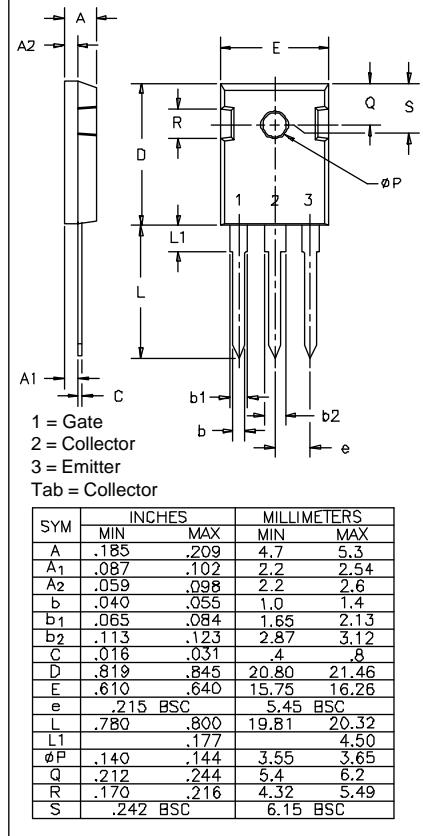
- Easy to mount with 1 screw (isolated mounting screw hole)
- Switching speed for high frequency applications
- High power density

Symbol	Test Conditions	Characteristic Values ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)		
		min.	typ.	max.
$BV_{CES}$	$I_C = 250 \mu\text{A}, V_{GE} = 0 \text{ V}$	600		V
$V_{GE(th)}$	$I_C = 250 \mu\text{A}, V_{CE} = V_{GE}$	2.5		V
$I_{CES}$	$V_{CE} = 0.8 \cdot V_{CES}$ $V_{GE} = 0 \text{ V}$			$T_J = 25^\circ\text{C}$ $T_J = 125^\circ\text{C}$ 200 $\mu\text{A}$ 1 mA
$I_{GES}$	$V_{CE} = 0 \text{ V}, V_{GE} = \pm 20 \text{ V}$			$\pm 100 \text{ nA}$
$V_{CE(sat)}$	$I_C = I_{C90}, V_{GE} = 15 \text{ V}$			2.7 V



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 %	9	13	S	
<b>C<sub>ies</sub></b> <b>C<sub>oes</sub></b> <b>C<sub>res</sub></b>	V <sub>CE</sub> = 25 V, V <sub>GE</sub> = 0 V, f = 1 MHz		1500	pF	
			135	pF	
			40	pF	
<b>Q<sub>g</sub></b> <b>Q<sub>ge</sub></b> <b>Q<sub>gc</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>		90	120 nC	
			11	15 nC	
			30	40 nC	
<b>t<sub>d(on)</sub></b> <b>t<sub>ri</sub></b> <b>E<sub>on</sub></b> <b>t<sub>d(off)</sub></b> <b>t<sub>fi</sub></b> <b>E<sub>off</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> = 10 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	
				15	ns
				0.6	mJ
				150	200 ns
				110	270 ns
				1.5	mJ
<b>t<sub>d(on)</sub></b> <b>t<sub>ri</sub></b> <b>E<sub>on</sub></b> <b>t<sub>d(off)</sub></b> <b>t<sub>fi</sub></b> <b>E<sub>off</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> = 10 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	
				15	ns
				0.8	mJ
				250	ns
				400	ns
				2.3	mJ
<b>R<sub>thJC</sub></b> <b>R<sub>thCK</sub></b>				0.83 K/W K/W	

TO-247 AD Outline



IXGH 24N60A characteristic curves are located on the IXGH 24N60AU1 data sheet.