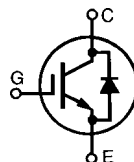


Preliminary data

HiPerFAST™ IGBT with Diode Combi Pack

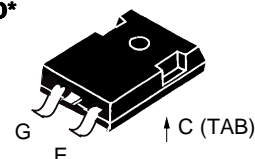
IXGH22N50BU1 IXGH22N50BU1S

$$\begin{aligned} V_{CES} &= 500 \text{ V} \\ I_{C(25)} &= 44 \text{ A} \\ V_{CE(sat)typ} &= 2.1 \text{ V} \\ t_{fi(typ)} &= 55 \text{ ns} \end{aligned}$$

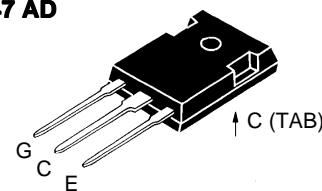


Symbol	Test Conditions	Maximum Ratings	
V_{CES}	$T_J = 25^\circ\text{C to } 150^\circ\text{C}$	500	V
V_{CGR}	$T_J = 25^\circ\text{C to } 150^\circ\text{C}; R_{GE} = 1 \text{ M}\Omega$	500	V
V_{GES}	Continuous	± 20	V
V_{GEM}	Transient	± 30	V
I_{C25}	$T_C = 25^\circ\text{C}$	44	A
I_{C90}	$T_C = 90^\circ\text{C}$	22	A
I_{CM}	$T_C = 25^\circ\text{C}, 1 \text{ ms}$	88	A
SSOA (RBSOA)	$V_{GE} = 15 \text{ V}, T_{VJ} = 125^\circ\text{C}, R_G = 22 \Omega$ Clamped inductive load, $L = 100 \mu\text{H}$	$I_{CM} = 44$ @ $0.8 V_{CES}$	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 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.
Weight	TO-247 SMD	4	g
	TO-247 AD	6	g

TO-247 SMD*



TO-247 AD



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

*Add suffix letter "S" for surface mountable package

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
- HiPerFAST™ HDMOS™ process
- MOS Gate turn-on
- drive simplicity

Applications

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

Advantages

- Space savings (two devices in one package)
- High power density
- Suitable for surface mounting
- Very low switching losses for high frequency applications
- Easy to mount with 1 screw, TO-247 (insulated mounting screw hole)

Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
		min.	typ.	max.
BV_{CES}	$I_C = 250 \mu\text{A}, V_{GE} = 0 \text{ V}$	500		V
$V_{GE(th)}$	$I_C = 250 \mu\text{A}, V_{CE} = V_{GE}$	2.5		5.5 V
I_{CES}	$V_{CE} = 0.8 \cdot V_{CES}$ $V_{GE} = 0 \text{ V}$			200 μA 8 mA
I_{GES}	$V_{CE} = 0 \text{ V}, V_{GE} = \pm 20 \text{ V}$			$\pm 100 \text{ nA}$
$V_{CE(sat)}$	$I_C = I_{C90}, V_{GE} = 15 \text{ V}$	2.1	2.5	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 $\leq 2\%$	9	16	S
C_{iss} C_{oss} C_{res}	$V_{CE} = 25\text{ V}$, $V_{GE} = 0\text{ V}$, $f = 1\text{ MHz}$		1450 120 37	pF pF pF
Q_g Q_{ge} Q_{gc}	$I_C = I_{C90}$, $V_{GE} = 15\text{ V}$, $V_{CE} = 0.5 V_{CES}$		90 11 30	nC nC nC
$t_{d(on)}$ t_{r} E_{on} $t_{d(off)}$ t_{f} E_{off}	Inductive load, $T_J = 25^\circ\text{C}$ $I_C = I_{C90}$, $V_{GE} = 15\text{ V}$, $L = 100\text{ }\mu\text{H}$, $V_{CE} = 0.8 V_{CES}$, $R_G = R_{off} = 10\text{ }\Omega$ Note 1	15 30 0.15 100 55 0.3	ns ns mJ ns ns mJ	
$t_{d(on)}$ t_{r} E_{on} $t_{d(off)}$ t_{f} E_{off}	Inductive load, $T_J = 125^\circ\text{C}$ $I_C = I_{C90}$, $V_{GE} = 15\text{ V}$, $L = 100\text{ }\mu\text{H}$, $V_{CE} = 0.8 V_{CES}$, $R_G = R_{off} = 10\text{ }\Omega$ Note 1	15 30 0.15 140 100 0.6	ns ns mJ ns ns mJ	
R_{thJC} R_{thCK}			0.25	0.83 K/W K/W

Reverse Diode (FRED)

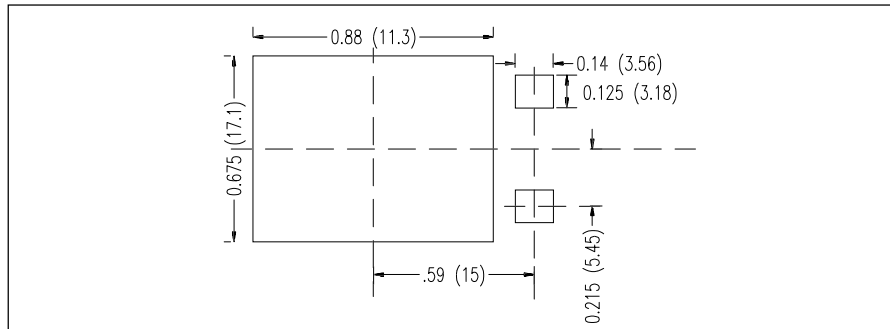
Characteristic Values

(T_J = 25°C, unless otherwise specified)

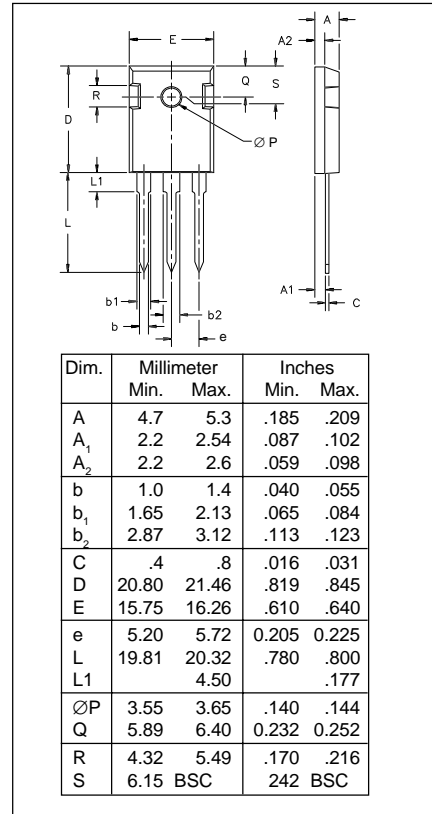
Symbol	Test Conditions	min.	typ.	max.
V_F	$I_F = I_{C90}$, $V_{GE} = 0\text{ V}$, Pulse test, $t \leq 300\text{ }\mu\text{s}$, duty cycle $d \leq 2\%$			1.6 V
I_{RM} t_{rr}	$I_F = I_{C90}$, $V_{GE} = 0\text{ V}$, $-di_F/dt = 240\text{ A}/\mu\text{s}$ $V_R = 360\text{ V}$ $T_J = 125^\circ\text{C}$ $I_F = 1\text{ A}$; $-di_F/dt = 100\text{ A}/\mu\text{s}$; $V_R = 30\text{ V}$ $T_J = 25^\circ\text{C}$		10 150 35	15 A ns ns
R_{thJC}				1 K/W

Note 1: Switching times may increase for V_{CE} (Clamp) > $0.8 \cdot V_{CES}$, higher T_J or increased R_G

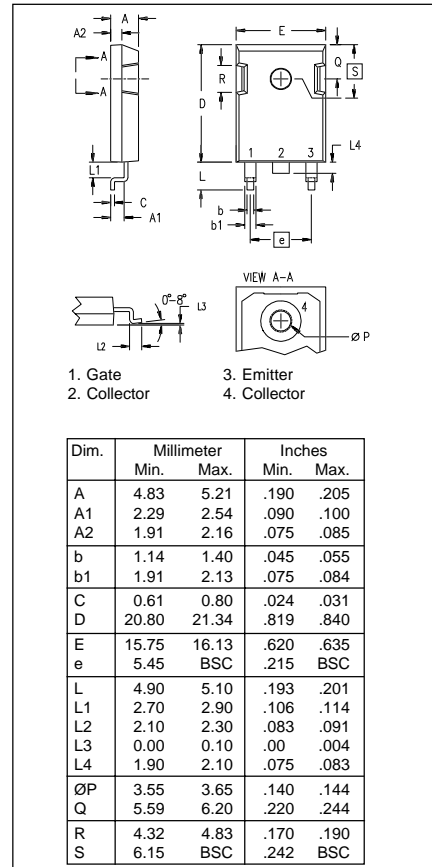
Min. Recommended Footprint (Dimensions in inches and mm)



TO-247 AD Outline



TO-247 SMD Outline



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

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
4,850,072 4,931,844 5,034,796 5,063,307 5,237,481 5,381,025