

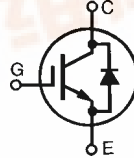


Preliminary data

HiPerFAST™ IGBT with Diode Combi Pack

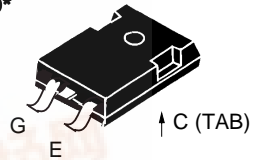
IXGH22N50BU1 IXGH22N50BU1S

V_{CES}	=	500 V
$I_{C(25)}$	=	44 A
$V_{CE(sat)typ}$	=	2.1 V
$t_{fi(typ)}$	=	55 ns

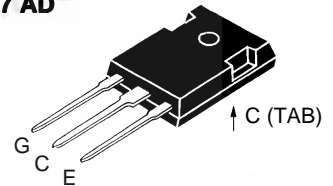


Symbol	Test Conditions	Maximum Ratings	
V_{CES}	$T_J = 25^\circ\text{C to } 150^\circ\text{C}$	500	V
V_{CGR}	$T_J = 25^\circ\text{C to } 150^\circ\text{C}; R_{GE} = 1\text{ M}\Omega$	500	V
V_{GES}	Continuous	± 20	V
V_{GEM}	Transient	± 30	V
I_{C25}	$T_C = 25^\circ\text{C}$	44	A
I_{C90}	$T_C = 90^\circ\text{C}$	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		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 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

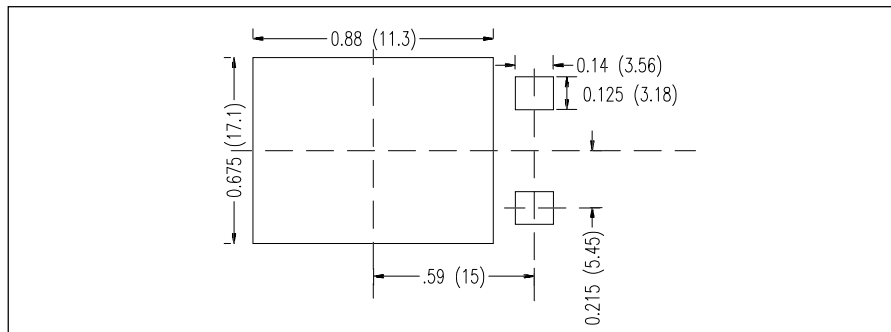


Symbol	Test Conditions	Characteristic Values		
		(T _J = 25°C, unless otherwise specified)		
		min.	typ.	max.
g_{fs}	I _C = I _{C90°} ; V _{CE} = 10 V, Pulse test, t ≤ 300 μs, duty cycle ≤ 2 %	9	16	S
C_{ces}	V _{CE} = 25 V, V _{GE} = 0 V, f = 1 MHz		1450	pF
C_{oes}			120	pF
C_{res}			37	pF
Q_{gc}	I _C = I _{C90°} , V _{GE} = 15 V, V _{CE} = 0.5 V _{CES}		90	nC
Q_{ge}			11	nC
Q_{gc}			30	nC
t_{d(on)}	Inductive load, T_J = 25°C		15	ns
t_{ri}			30	ns
E_{on}	I _C = I _{C90°} , V _{GE} = 15 V, L = 100 μH, V _{CE} = 0.8 V _{CES} , R _G = R _{off} = 10 Ω		0.15	mJ
t_{d(off)}			100	150 ns
t_{ri}	Note 1		55	ns
E_{off}			0.3	0.5 mJ
t_{d(on)}	Inductive load, T_J = 125°C		15	ns
t_{ri}			30	ns
E_{on}	I _C = I _{C90°} , V _{GE} = 15 V, L = 100 μH, V _{CE} = 0.8 V _{CES} , R _G = R _{off} = 10 Ω		0.15	mJ
t_{d(off)}			140	ns
t_{ri}	Note 1		100	ns
E_{off}			0.6	0.6 mJ
R_{thJC}				0.83 K/W
R_{thCK}				0.25 K/W

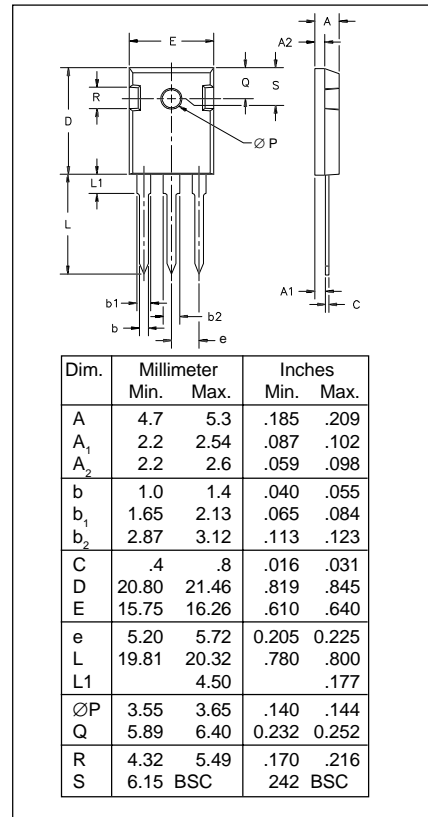
Reverse Diode (FRED)		Characteristic Values		
		(T _J = 25°C, unless otherwise specified)		
Symbol	Test Conditions	min.	typ.	max.
V_F	I _F = I _{C90°} , V _{GE} = 0 V, Pulse test, t ≤ 300 μs, duty cycle d ≤ 2 %			1.6 V
I_{RM}	I _F = I _{C90°} , V _{GE} = 0 V, -di _F /dt = 240 A/μs V _R = 360 V I _F = 1 A; -di/dt = 100 A/μs; V _R = 30 V		10	15 A
t_{rr}			150	ns
		T _J = 125°C T _J = 25°C	35	50
R_{thJC}				1 K/W

Note 1: Switching times may increase for V_{CE} (Clamp) > 0.8 • 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

