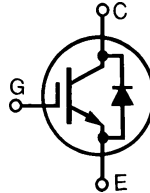


HiPerFAST™ IGBT with Diode

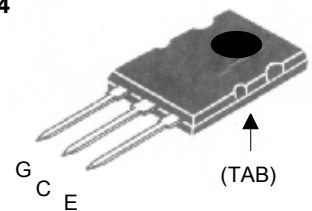
IXGB 75N60BD1

$$\begin{aligned} V_{CES} &= 600 \text{ V} \\ I_{C25} &= 120 \text{ A} \\ V_{CE(sat)} &= 2.3 \text{ V} \\ t_{fi} &= 150 \text{ ns} \end{aligned}$$



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	± 20	V
V_{GEM}	Transient	± 30	V
I_{C25}	$T_C = 25^\circ\text{C}$	120	A
I_{C90}	$T_C = 90^\circ\text{C}$	75	A
I_{CM}	$T_C = 25^\circ\text{C}, 1 \text{ ms}$	300	A
SSOA (RBSOA)	$V_{GE} = 15 \text{ V}, T_{VJ} = 125^\circ\text{C}, R_G = 5 \Omega$	$I_{CM} = 100$ @ $0.8 V_{CES}$	A
P_C	$T_C = 25^\circ\text{C}$	360	W
T_J		-55 ... +150	$^\circ\text{C}$
T_{JM}		150	$^\circ\text{C}$
T_{stg}		-55 ... +150	$^\circ\text{C}$
Weight		10	g
Maximum lead temperature for soldering 1.6 mm (0.062 in.) from case for 10 s		300	$^\circ\text{C}$

PLUS 264



G = Gate C = Collector
E = Emitter Tab = Collector

Features

- High current handling capability in holeless TO-264 package
- High frequency IGBT and antiparallel FRED in one package
- New generation HDMOS™ process
- MOS Gate turn-on for drive simplicity
- Fast Recovery Epitaxial Diode (FRED) with soft recovery and low I_{RM}

Applications

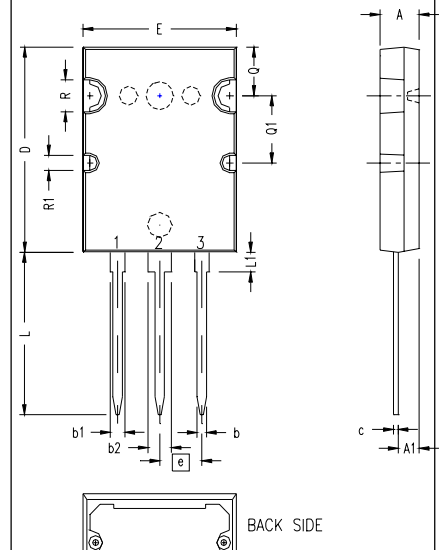
- AC motor speed control
- DC servo and robot drives
- DC choppers
- Uninterruptible power supplies (UPS)
- Switch-mode and resonant-mode power supplies

Advantages

- Space savings (two devices on one package)
- Easy spring or clip mounting

Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$ unless otherwise specified)		
		Min.	Typ.	Max.
BV_{CES}	$I_C = 1 \text{ mA}, V_{GE} = 0 \text{ V}$	600		V
$V_{GE(th)}$	$I_C = 500 \mu\text{A}, V_{CE} = V_{GE}$	2.5		V
I_{CES}	$V_{CE} = V_{CES}$ $V_{GE} = 0 \text{ V}$ $T_J = 125^\circ\text{C}$			650 μA 5 mA
I_{GES}	$V_{CE} = 0 \text{ V}, V_{GE} = \pm 20 \text{ V}$			$\pm 100 \text{ nA}$
$V_{CE(sat)}$	$I_C = I_{C90}, V_{GE} = 15 \text{ V}$ Note 1			2.3 V

Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$ unless otherwise specified)			
		Min.	Typ.	Max.	
g_{fs}	$I_C = 60\text{A}; V_{CE} = 10\text{V}$, Note1	45	60	S	
C_{ies}	$V_{CE} = 25\text{V}, V_{GE} = 0\text{V}, f = 1\text{MHz}$		5300	pF	
C_{oes}			730	pF	
C_{res}			190	pF	
Q_g	$I_C = I_{C90}, V_{GE} = 15\text{V}, V_{CE} = 0.5 V_{CES}$		248	nC	
Q_{ge}			40	nC	
Q_{gc}			76	nC	
$t_{d(on)}$	Inductive load, $T_J = 25^\circ\text{C}$ $I_C = I_{C90}, V_{GE} = 15\text{V}$ $V_{CE} = 0.8 V_{CES}, R_G = R_{off} = 5\ \Omega$ Remarks: Switching times may increase for $V_{CE}(\text{Clamp}) > 0.8 \cdot V_{CES}$, higher T_J or increased R_G		62	ns	
t_{ri}			57	ns	
$t_{d(off)}$			220	400	ns
t_{fi}			150	270	ns
E_{off}			3.3	6	mJ
$t_{d(on)}$	Inductive load, $T_J = 125^\circ\text{C}$ $I_C = I_{C90}, V_{GE} = 15\text{V}$ $V_{CE} = 0.8 V_{CES}, R_G = R_{off} = 5\ \Omega$ Remarks: Switching times may increase for $V_{CE}(\text{Clamp}) > 0.8 \cdot V_{CES}$, higher T_J or increased R_G		63	ns	
t_{ri}			70	ns	
E_{on}			5	mJ	
$t_{d(off)}$			330	ns	
t_{fi}			270	ns	
E_{off}		6.0	mJ		
R_{thJC}			0.35	K/W	
R_{thCK}		0.19		K/W	

PLUS 264 OUTLINE


SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.185	.209	4.70	5.31
A1	.102	.118	2.59	3.00
b	.037	.055	0.94	1.40
b1	.087	.102	2.21	2.59
b2	.110	.126	2.79	3.20
c	.017	.029	0.43	0.74
D	1.007	1.047	25.58	26.59
E	.760	.799	19.30	20.29
e	.215 BSC		5.46 BSC	
L	.779	.842	19.79	21.39
L1	.087	.102	2.21	2.59
Q	.240	.256	6.10	6.50
Q1	.330	.346	8.38	8.79
$\varnothing R$.155	.187	3.94	4.75
$\varnothing R1$.085	.093	2.16	2.36

- 1 - GATE
2, 4 - DRAIN (COLLECTOR)
3 - SOURCE (EMITTER)

NOTE: This drawing meets all dimensions requirement of JEDEC outlines TO-264 AA except screw hole area dimensions.

Reverse Diode (FRED)

Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$ unless otherwise specified)		
		min.	typ.	max.
V_F	$I_F = 60\text{A}, V_{GE} = 0\text{V}$, Note1	$T_J = 150^\circ\text{C}$ $T_J = 25^\circ\text{C}$	1.6 2.5	V V
I_{RM}	$I_F = I_{C90}, V_{GE} = 0\text{V}, -di_F/dt = 100\text{A/us}$ $V_R = 100\text{V}$		2	2.5 A 175 ns
t_{rr}	$I_F = 1\text{A}; -di/dt = 200\text{A/ms}; V_R = 30\text{V}$		35	50 ns
R_{thJC}				0.65 K/W

Notes:

1. Pulse test, $t < 300\mu\text{s}$, duty cycle $< 2\%$

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