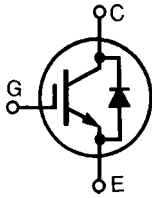
IXYS

ADVANCE TECHNICAL INFORMATION

HiPerFAST™ IGBT with Diode

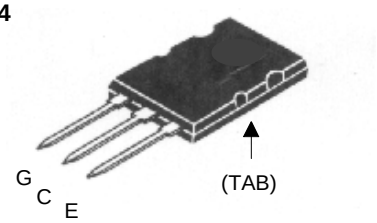
IXGB 75N60BD1

V_{CES} = 600 V
I_{C25} = 120 A
$V_{CE(sat)}$ = 2.3 V
t_{fi} = 150 ns



Symbol	Test Conditions	Maximum Ratings	
V_{CES}	T_J = 25°C to 150°C	600	V
V_{CGR}	T_J = 25°C to 150°C; R_{GE} = 1 MΩ	600	V
V_{GES}	Continuous	±20	V
V_{GEM}	Transient	±30	V
I_{C25}	T_C = 25°C	120	A
I_{C90}	T_C = 90°C	75	A
I_{CM}	T_C = 25°C, 1 ms	300	A
SSOA (RBSOA)	V_{GE} = 15 V, T_{VJ} = 125°C, R_G = 5 Ω	I_{CM} = 100 @ 0.8 V_{CES}	A
P_C	T_C = 25°C	360	W
T_J		-55 ... +150	°C
T_{JM}		150	°C
T_{stg}		-55 ... +150	°C
Weight		10	g
Maximum lead temperature for soldering 1.6 mm (0.062 in.) from case for 10 s		300	°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 antparallel FRED in one package
- New generation HDMOS™ process
- MOS Gate turn-on fordrive 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

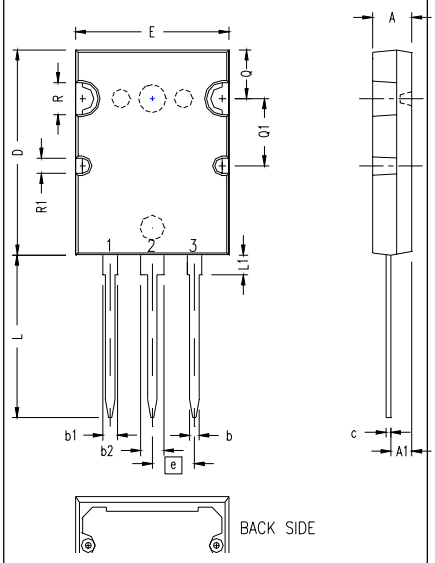
Advantages

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

Symbol	Test Conditions	Characteristic Values (T_J = 25°C unless otherwise specified) Min.	Typ.	Max.	
BV_{CES}	I_C = 1 mA, V_{GE} = 0 V	600			V
$V_{GE(th)}$	I_C = 500 µA, V_{CE} = V_{GE}	2.5		5.5	V
I_{CES}	V_{CE} = V_{CES}			650	µA
	V_{GE} = 0 V, T_J = 125°C			5	mA
I_{GES}	V_{CE} = 0 V, V_{GE} = ±20 V			±100	nA
$V_{CE(sat)}$	I_C = I_{C90}, V_{GE} = 15 V Note1			2.3	V

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

PLUS 264 OUTLINE



SYM	INCHES MIN	INCHES MAX	MILLIMETERS MIN	MILLIMETERS 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
ØR	.155	.187	3.94	4.75
ØR1	.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 (T_J = 25°C unless otherwise specified)	Characteristic Values min.	typ.	max.	
V_F	I_F = 60A, V_{GE} = 0 V, T_J = 150°C			1.6	V
	Note1 T_J = 25°C			2.5	V
I_{RM}	$I_F = I_{C90}$, V_{GE} = 0 V, -di$_F$/dt = 100 A/us		2	2.5	A
	V_R = 100 V			175	ns
t_{rr}	I_F = 1 A; -di/dt = 200 A/ms; V_R = 30 V		35	50	ns
R_{thJC}				0.65	K/W

Notes:
1. Pulse test, t < 300µs,duty cycle < 2%

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