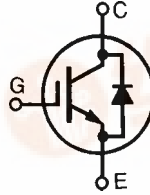




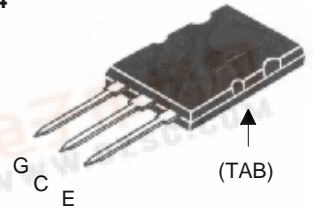
ADVANCE TECHNICAL INFORMATION

HiPerFAST™ IGBT with Diode IXGB 75N60BD1

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



Symbol	Test Conditions	Maximum Ratings	PLUS 264
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	$^\circ\text{C}$



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}

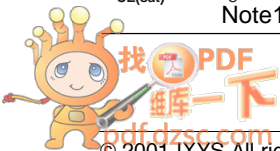
Applications

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

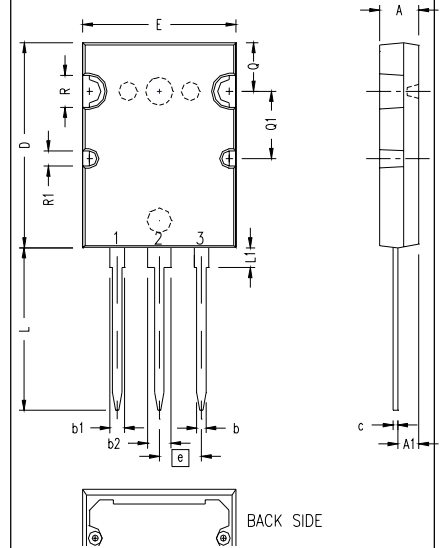
Advantages

- 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}	$V_{CE} = 0 \text{ V}, V_{GE} = \pm 20 \text{ V}$			$\pm 100 \text{ nA}$
$V_{CE(sat)}$	$I_C = I_{C90}, V_{GE} = 15 \text{ V}$ Note1			2.3 V



Symbol	Test Conditions	Characteristic Values (T _J = 25°C unless otherwise specified)		
		Min.	Typ.	Max.
g_{fs}	I _C = 60A; V _{CE} = 10 V, Note1	45	60	S
C_{ies}	V _{CE} = 25 V, V _{GE} = 0 V, f = 1 MHz		5300	pF
C_{oes}		730	pF	
C_{res}		190	pF	
Q_g	I _C = I _{C90} , V _{GE} = 15 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°C I _C = I _{C90} , V _{GE} = 15 V V _{CE} = 0.8 V _{CES} , R _G = R _{off} = 5 Ω Remarks: Switching times may increase for V _{CE} (Clamp) > 0.8 • 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°C I _C = I _{C90} , V _{GE} = 15 V V _{CE} = 0.8 V _{CES} , R _G = R _{off} = 5 Ω Remarks: Switching times may increase for V _{CE} (Clamp) > 0.8 • V _{CES} , higher T _J or increased R _G		63
t_{ri}	70		ns	
E_{on}	5		mJ	
t_{d(off)}	330		ns	
t_{fi}	270		ns	
E_{off}	6.0		mJ	
R_{thJC} R_{thCK}		0.19	0.35 K/W 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
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	Characteristic Values (T _J = 25°C unless otherwise specified)		
		min.	typ.	max.
V_F	I _F = 60A, V _{GE} = 0 V, Note1			1.6 V 2.5 V
I_{RM}	I _F = I _{C90} , V _{GE} = 0 V, -di _F /dt = 100 A/us V _R = 100 V		2	2.5 A 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%