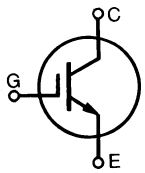
IXYS

Preliminary data

HiPerFAST™ IGBT

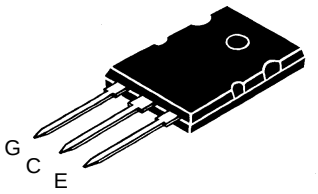
IXGK80N60A

V_{CES} = 600 V
I_{C25} = 80 A
$V_{CE(sat)}$ = 2.7 V
t_{fi} = 275 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, limited by leads	80	A
I_{C90}	T_C = 90°C	80	A
I_{CM}	T_C = 25°C, 1 ms	200	A
SSOA (RBSOA)	V_{GE}= 15 V, T_{VJ} = 125°C, R_G = 10 Ω Clamped inductive load, L = 30 µH	I_{CM} = 100 @ 0.8 V_{CES}	A
P_C	T_C = 25°C	500	W
T_J		-55 ... +150	°C
T_{JM}		150	°C
T_{stg}		-55 ... +150	°C
M_d	Mounting torque (M4)	0.9/6	Nm/lb.in.
Weight		10	g
Maximum lead temperature for soldering 1.6 mm (0.062 in.) from case for 10s		300	°C

TO-264 AA



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

Symbol	Test Conditions	Characteristic Values (T_J = 25°C, unless otherwise specified) min.	typ.	max.	
BV_{CES}	I_C = 500 µA, V_{GE} = 0 V	600			V
$V_{GE(th)}$	I_C = 500 µA, V_{CE} = V_{GE}	2.5		5	V
I_{CES}	V_{CE} = 0.8 • V_{CES} T_J = 25°C V_{GE} = 0 V T_J = 125°C			400 2	µA mA
I_{GES}	V_{CE} = 0 V, V_{GE} = ±20 V			±100	nA
$V_{CE(sat)}$	I_C = I_{C90}, V_{GE} = 15 V			2.7	V

Features

- International standard package JEDEC TO-264 AA
- Two mached dice connected in parallel
- Low $V_{CE(sat)}$
  - for minimum on-state conduction losses
- MOS Gate turn-on
  - drive simplicity

Applications

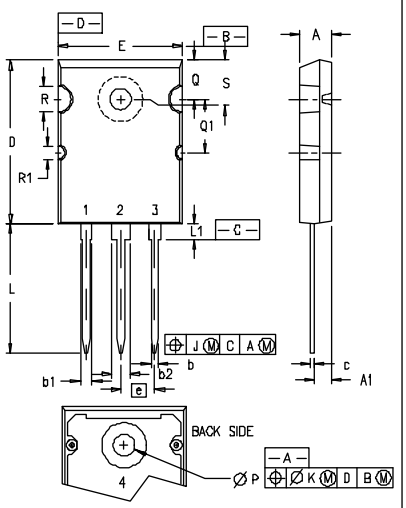
- AC motor speed control
- DC servo and robot drives
- DC choppers
- Uninterruptible power supplies (UPS)
- Switch-mode and resonant-mode power supplies

Advantages

- Easy to mount with 1 screw (isolated mounting screw hole)
- Reduces assembly time and cost
- High power density

Symbol	Test Conditions (T_J = 25°C, unless otherwise specified)	Characteristic Values min.	typ.	max.	
g_{fs}	I_C = 40A; V_{CE} = 10 V, Pulse test, t ≤ 300 µs, duty cycle ≤ 2 %	30	50		S
Q_g	$I_C = I_{C90}$, V_{GE} = 15 V, $V_{CE} = 0.5\ V_{CES}$		400		nC
Q_{ge}			70		nC
Q_{gc}			160		nC
C_{ies}	V_{CE} = 25 V, V_{GE} = 0 V, f = 1 MHz		8000		pF
C_{oes}			860		pF
C_{res}			200		pF
$t_{d(on)}$	**Inductive load, T_J = 25°C**		50		ns
t_{ri}	$I_C = I_{C90}$, V_{GE} = 15 V, L = 100 µH,		210		ns
$t_{d(off)}$	$V_{CE} = 0.8\ V_{CES}$, $R_G = R_{off}$ = 2.7 Ω		300		ns
t_{fi}	Remarks: Switching times may increase		350	500	ns
E_{off}	for V_{CE} (Clamp) > 0.8 • V_{CES}, higher T_J or increased R_G		10	12.5	mJ
$t_{d(on)}$			50		ns
t_{ri}	**Inductive load, T_J = 125°C**		240		ns
E_{on}	$I_C = I_{C90}$, V_{GE} = 15 V, L = 100 µH		3		mJ
$t_{d(off)}$	$V_{CE} = 0.8\ V_{CES}$, $R_G = R_{off}$ = 2.7 Ω		400		ns
t_{fi}	Remarks: Switching times may increase		600		ns
E_{off}	for V_{CE} (Clamp) > 0.8 • V_{CES}, higher T_J or increased R_G		15		mJ
R_{thJC}				0.25	K/W
R_{thCK}			0.15		K/W

TO-264 AA 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	
J	.000	.010	0.00	0.25
K	.000	.010	0.00	0.25
L	.779	.842	19.79	21.39
L1	.087	.102	2.21	2.59
ØP	.122	.138	3.10	3.51
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
S	.243	.253	6.17	6.43

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