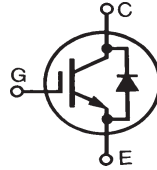


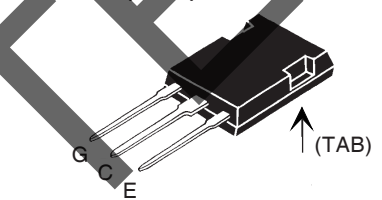
High Voltage IGBT with Diode

IXGX 32N170H1

$$\begin{aligned}
 V_{CES} &= 1700 \text{ V} \\
 I_{C25} &= 75 \text{ A} \\
 V_{CE(sat)} &= 3.3 \text{ V} \\
 t_{fi(typ)} &= 290 \text{ ns}
 \end{aligned}$$



PLUS247 (IXGX)



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

Symbol	Test Conditions	Maximum Ratings	
V_{CES}	$T_J = 25^\circ\text{C}$ to 150°C	1700	V
V_{CGR}	$T_J = 25^\circ\text{C}$ to 150°C ; $R_{GE} = 1 \text{ M}\Omega$	1700	V
V_{GES}	Continuous	± 20	V
V_{GEM}	Transient	± 30	V
I_{C25}	$T_C = 25^\circ\text{C}$	75	A
I_{C90}	$T_C = 90^\circ\text{C}$	32	A
I_{CM}	$T_C = 25^\circ\text{C}$, 1 ms	200	A
SSOA (RBSOA)	$V_{GE} = 15 \text{ V}$, $T_{VJ} = 125^\circ\text{C}$, $R_G = 5 \Omega$ Clamped inductive load	$I_{CM} = 90$ @ $0.8 V_{CES}$	A
t_{SC}	$T_J = 125^\circ\text{C}$, $V_{CE} = 1200 \text{ V}$; $V_{GE} = 15 \text{ V}$, $R_G = 10 \Omega$	10	μs
P_C	$T_C = 25^\circ\text{C}$	350	W
T_J		-55 ... +150	$^\circ\text{C}$
T_{JM}		150	$^\circ\text{C}$
T_{stg}		-55 ... +150	$^\circ\text{C}$
F_C	Mounting force with chip	22...130/5...30	N/lb
Maximum lead temperature for soldering 1.6 mm (0.062 in.) from case for 10 s		300	$^\circ\text{C}$
Weight		6	g

Features

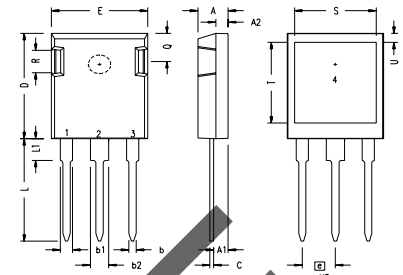
- High current handling capability
- MOS Gate turn-on
- drive simplicity
- Rugged NPT structure
- Molding epoxies meet UL 94 V-0 flammability classification

Applications

- Capacitor discharge & pulser circuits
- AC motor speed control
- DC servo and robot drives
- DC choppers
- Uninterruptible power supplies (UPS)
- Switched-mode and resonant-mode power supplies

Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
		min.	typ.	max.
BV_{CES}	$I_C = 1 \text{ mA}$, $V_{GE} = 0 \text{ V}$	1700		V
$V_{GE(th)}$	$I_C = 250 \mu\text{A}$, $V_{CE} = V_{GE}$	3.0		V
I_{CES}	$V_{CE} = 0.8 \cdot V_{CES}$ $V_{GE} = 0 \text{ V}$			500 μA 8 mA
I_{GES}	$V_{CE} = 0 \text{ V}$, $V_{GE} = \pm 20 \text{ V}$			$\pm 100 \text{ nA}$
$V_{CE(sat)}$	$I_C = I_{C90}$, $V_{GE} = 15 \text{ V}$			$T_J = 25^\circ\text{C}$ $T_J = 125^\circ\text{C}$
		2.5	3.3	V
		3.0		V

Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
		min.	typ.	max.
g_{fs}	$I_C = I_{C25}; V_{CE} = 10\text{ V}$ Note 2	25	33	S
C_{ies}	$V_{CE} = 25\text{ V}, V_{GE} = 0\text{ V}, f = 1\text{ MHz}$		3500	pF
C_{oes}			250	pF
C_{res}			40	pF
Q_g	$I_C = I_{C90}, V_{GE} = 15\text{ V}, V_{CE} = 0.5 V_{CES}$		155	nC
Q_{ge}			30	nC
Q_{gc}			51	nC
$t_{d(on)}$	Inductive load, $T_J = 25^\circ\text{C}$ $I_C = I_{C90}, V_{GE} = 15\text{ V}$ $R_G = 2.7\ \Omega, V_{CE} = 0.8 V_{CES}$ Note 3		45	ns
t_{ri}			38	ns
$t_{d(off)}$			270	500 ns
t_{fi}			250	500 ns
E_{off}			15	25 mJ
$t_{d(on)}$	Inductive load, $T_J = 125^\circ\text{C}$ $I_C = I_{C90}, V_{GE} = 15\text{ V}$ $R_G = 2.7\ \Omega, V_{CE} = 0.8 V_{CES}$ Note 3		48	ns
t_{ri}			42	ns
E_{on}			6.0	mJ
$t_{d(off)}$			360	ns
t_{fi}			560	ns
E_{off}		22	mJ	
R_{thJC}				0.35 K/W
R_{thCK}		0.15		K/W

PLUS247 Outline (IXGX)


SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.190	.205	4.83	5.21
A1	.090	.100	2.29	2.54
A2	.075	.085	1.91	2.16
b	.045	.055	1.14	1.40
b1	.075	.084	1.91	2.13
b2	.115	.123	2.92	3.12
C	.024	.031	0.61	0.80
D	.819	.840	20.80	21.34
E	.620	.635	15.75	16.13
e	.215 BSC		5.45 BSC	
L	.780	.800	19.81	20.32
L1	.150	.170	3.81	4.32
O	.220	.244	5.59	6.20
R	.170	.190	4.32	4.83
S	.520	.540	13.21	13.72
T	.620	.640	15.75	16.26
U	.065	.080	1.65	2.03

- 1 - GATE
- 2 - DRAIN (COLLECTOR)
- 3 - SOURCE (EMITTER)
- 4 - NO CONNECTION

NOTE: This drawing will meet all dimensions requirement of JEDEC outline TO-247AD except screw hole.

Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
		min.	typ.	max.
V_F	$I_F = 70\text{ A}, V_{GE} = 0\text{ V}$, Pulse test, $t \leq 300\ \mu\text{s}$, duty cycle $d \leq 2\%$			2.7 V
I_{RM}	$I_F = 50\text{ A}, V_{GE} = 0\text{ V}, -di_F/dt = 800\text{ A}/\mu\text{s}$ $V_R = 600\text{ V}$		50	A
t_{rr}			150	ns
R_{thJC}				0.4 K/W

- Notes:
- Device must be heatsunk for high temperature leakage current measurements to avoid thermal runaway.
 - Pulse test, $t \leq 300\ \mu\text{s}$, duty cycle $\leq 2\%$
 - Switching times may increase for V_{CE} (Clamp) $> 0.8 \cdot V_{CES}$, higher T_J or increased R_G .
 - See DH60-18A and IXGH32N170A datasheets for additional characteristics

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



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