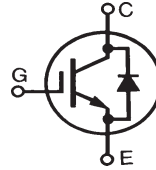


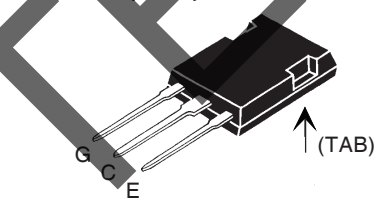
High Voltage IGBT with Diode

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}	$T_J = 25^\circ\text{C to } 150^\circ\text{C}$	1700	V
V_{CGR}	$T_J = 25^\circ\text{C to } 150^\circ\text{C}; R_{GE} = 1 \text{ M}\Omega$	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}	$T_C = 25^\circ\text{C}, 1 \text{ ms}$	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

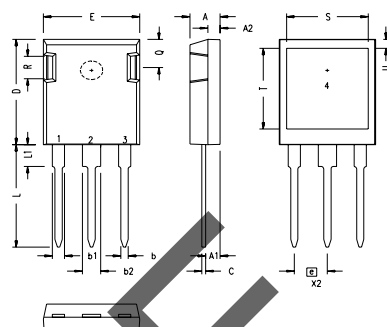
- Capacitor discharge & pulser circuits
- AC motor speed control
- DC servo and robot drives
- DC choppers
- Uninterruptible power supplies (UPS)
- Switched-mode and resonant-mode power supplies

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}	$V_{CE} = 0.8 \cdot V_{CES}$ $V_{GE} = 0 \text{ V}$	Note 1 $T_J = 25^\circ\text{C}$ $T_J = 125^\circ\text{C}$		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 V 3.0 V

Symbol	Test Conditions	Characteristic Values			
		(T _J = 25°C, unless otherwise specified)			
		min.	typ.	max.	
I_{fs}	I_C = I_{C25}; V_{CE} = 10 V Note 2	25	33	S	
C_{ies}	} V_{CE} = 25 V, V_{GE} = 0 V, f = 1 MHz		3500	pF	
C_{oes}			250	pF	
C_{res}			40	pF	
Q_g	} I_C = I_{C90}; V_{GE} = 15 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°C		45	ns	
t_{ri}	} I_C = I_{C90}; V_{GE} = 15 V R_G = 2.7 Ω, V_{CE} = 0.8 V_{CES} Note 3		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°C		48	ns	
t_{ri}	} I_C = I_{C90}; V_{GE} = 15 V R_G = 2.7 Ω, V_{CE} = 0.8 V_{CES} Note 3		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	

Reverse Diode (FRED) (Note 4)		Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
Symbol	Test Conditions	min.	typ.	max.
V_F	$I_F = 70\text{A}$, $V_{GE} = 0\text{V}$, Pulse test, $t \leq 300\text{ }\mu\text{s}$, duty cycle $d \leq 2\%$			2.7 V
I_{RM} t_{rr}	$I_F = 50\text{A}$, $V_{GE} = 0\text{V}$, $-di_F/dt = 800\text{ A}/\mu\text{s}$ $V_R = 600\text{V}$		50 150	A ns
R_{thJC}				0.4 K/W

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

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
Q	.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.



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