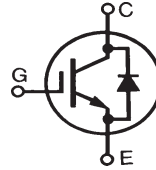


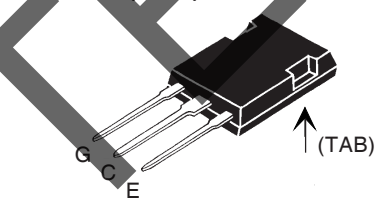
High Voltage IGBT with Diode

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

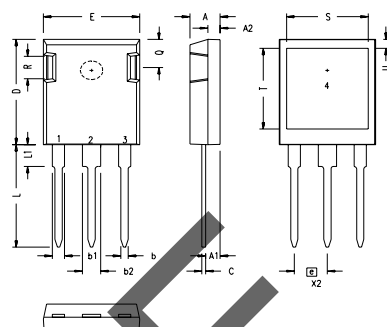
- High current handling capability
- MOS Gate turn-on
- drive simplicity
- Rugged NPT structure
- Molding epoxies meet UL 94 V-0 flammability classification

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

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.

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

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

IXYS MOSFETs and IGBTs are covered by one or more of the following U.S. patents:

4,835,592	4,881,106	5,017,508	5,049,961	5,187,117	5,486,715	6,306,728B1	6,259,123B1	6,306,728B1
4,850,072	4,931,844	5,034,796	5,063,307	5,237,481	5,381,025	6,404,065B1	6,162,665	6,534,343



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