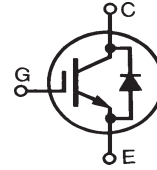


High Voltage IGBT with Diode

Electrically Isolated Tab

Preliminary Data Sheet

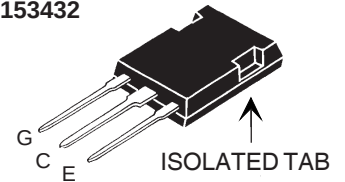
IXGR 32N170H1



$$\begin{aligned} V_{CES} &= 1700 \text{ V} \\ I_{C25} &= 38 \text{ A} \\ V_{CE(sat)} &= 3.5 \text{ V} \\ t_{fi(typ)} &= 250 \text{ ns} \end{aligned}$$

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}	$T_C = 25^\circ\text{C}$	38	A
I_{C90}	$T_C = 90^\circ\text{C}$	20	A
I_{F90}		14	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	$I_{CM} = 70$ @ $0.8 V_{CES}$	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	$T_C = 25^\circ\text{C}$	200	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 clamp	22...130/5...30	N/lb
V_{ISOL}	50/60 Hz, 1 minute	2500	~V
Maximum lead temperature for soldering 1.6 mm (0.062 in.) from case for 10 s		300	$^\circ\text{C}$
Weight		5	g

ISOPLUS247 (IXGR)
E153432



G = Gate,
E = Emitter

C = Collector,

Features

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

Applications

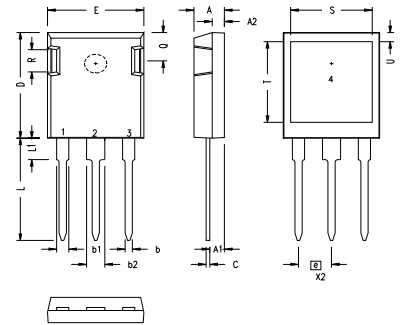
- Capacitor discharge & pulser circuits
- AC motor speed control
- DC servo and robot drives
- DC choppers
- Uninterruptible power supplies (UPS)
- Switched-mode and resonant-mode power supplies

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 $T_J = 125^\circ\text{C}$			100 μA 3 mA
I_{GES}	$V_{CE} = 0 \text{ V}$, $V_{GE} = \pm 20 \text{ V}$			$\pm 100 \text{ nA}$
$V_{CE(sat)}$	$I_C = I_T$, $V_{GE} = 15 \text{ V}$ Notes 2, 3 $T_J = 125^\circ\text{C}$	2.6 3.1		3.5 V V

Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$ unless otherwise specified)		
		min.	typ.	max.
g_{fs}	$I_C = I_T, V_{CE} = 10\text{ V}$, Note 2	22	30	S
C_{ies}	$V_{CE} = 25\text{ V}$, $V_{GE} = 0\text{ V}$, $f = 1\text{ MHz}$		3670	pF
C_{oes}			210	pF
C_{res}			41	pF
Q_g	$I_C = I_T, V_{GE} = 15\text{ V}$, $V_{CE} = 0.5 V_{CES}$		155	nC
Q_{ge}			28	nC
Q_{gc}			52	nC
$t_{d(on)}$	Inductive load, $T_J = 25^\circ\text{C}$		45	ns
t_{ri}	$I_C = I_T, V_{GE} = 15\text{ V}$		38	ns
$t_{d(off)}$	$R_G = 2.7\ \Omega$, $V_{CE} = 0.8 V_{CES}$		270	ns
t_{fi}	Note 4		250	ns
E_{off}		10.6	20	mJ
$t_{d(on)}$	Inductive load, $T_J = 125^\circ\text{C}$		48	ns
t_{ri}	$I_C = I_T, V_{GE} = 15\text{ V}$		42	ns
E_{on}	$R_G = 2.7\ \Omega$, $V_{CE} = 0.8 V_{CES}$		6.0	mJ
$t_{d(off)}$	Note 4		360	ns
t_{fi}			560	ns
E_{off}			13.6	mJ
R_{thJC}				0.65 K/W
R_{thCK}			0.15	K/W

Reverse Diode (FRED)		Characteristic Values ($T_J = 25^\circ\text{C}$ unless otherwise specified)		
Symbol	Test Conditions	min.	typ.	max.
V_F	$I_F = 20\text{ A}$, $V_{GE} = 0\text{ V}$, Note 2			2.85 V
	$T_J = 150^\circ\text{C}$			2.9 V
V_{TO}	For conduction power losses only			2.1 V
r_{FO}	$T_J = 150^\circ\text{C}$			40 m Ω
I_{RM}	$I_F = 20\text{ A}$, $V_{GE} = 0\text{ V}$, $V_R = 1200\text{ V}$ $-di_F/dt = 450\text{ A}/\mu\text{s}$		23	A
	$T_J = 125^\circ\text{C}$		27	A
t_{rr}	$T_J = 125^\circ\text{C}$		230	ns
			400	ns
R_{thJC}				1.5 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. Test current $I_T = 21\text{ A}$.
4. Switching times may increase for $V_{CE}(\text{Clamp}) > 0.8 \cdot V_{CES}$, higher T_J or increased R_G .
5. See IXGH32N170 datasheets for additional IGBT characteristics.

ISOPLUS247 Outline


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.

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	4,931,844	5,049,961	5,237,481	6,162,665	6,404,065 B1	6,683,344	6,727,585
	4,850,072	5,017,508	5,063,307	5,381,025	6,259,123 B1	6,534,343	6,710,405 B2	6,759,692
	4,881,106	5,034,796	5,187,117	5,486,715	6,306,728 B1	6,583,505	6,710,463	



Disclaimer Notice - Information furnished is believed to be accurate and reliable. However, users should independently evaluate the suitability of and test each product selected for their own applications. Littelfuse products are not designed for, and may not be used in, all applications. Read complete Disclaimer Notice at www.littelfuse.com/disclaimer-electronics.