IXYS

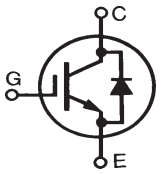
High Voltage IGBT with Diode

Electrically Isolated Tab

Preliminary Data Sheet

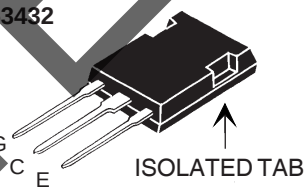
IXGR 32N170H1

V_{CES} = 1700 V
I_{C25} = 38 A
$V_{CE(sat)}$ = 3.5 V
$t_{fi(typ)}$ = 250 ns



Symbol	Test Conditions	Maximum Ratings	
V_{CES}	T_J = 25°C to 150°C	1700	V
V_{CGR}	T_J = 25°C to 150°C; R_{GE} = 1 MΩ	1700	V
V_{GES}	Continuous	±20	V
V_{GEM}	Transient	±30	V
I_{C25}	T_C = 25°C	38	A
I_{C90}	T_C = 90°C	20	A
I_{F90}		14	A
I_{CM}	T_C = 25°C, 1 ms	200	A
SSOA (RBSOA)	V_{GE} = 15 V, T_{VJ} = 125°C, R_G = 5Ω Clamped inductive load	I_{CM} = 70 @ 0.8 V_{CES}	A
t_{SC}	T_J = 125°C, V_{CE} = 1200 V; V_{GE} = 15 V, R_G = 10Ω	10	µs
P_C	T_C = 25°C	200	W
T_J		-55 ... +150	°C
T_{JM}		150	°C
T_{stg}		-55 ... +150	°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	°C
Weight		5	g

ISOPLUS247 (IXGR)
E153432



G = Gate, C = Collector,
E = Emitter

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°C unless otherwise specified) min.	typ.	max.	
BV_{CES}	I_C = 1mA, V_{GE} = 0 V		1700			V
$V_{GE(th)}$	I_C = 250 µA, V_{CE} = V_{GE}		3.0		5.0	V
I_{CES}	V_{CE} = 0.8 • V_{CES}				100	µA
	V_{GE} = 0 V, Note 1	T_J = 125°C			3	mA
I_{GES}	V_{CE} = 0 V, V_{GE} = ±20 V				±100	nA
$V_{CE(sat)}$	I_C = I_T, V_{GE} = 15 V			2.6	3.5	V
	Notes 2, 3	T_J = 125°C		3.1		V

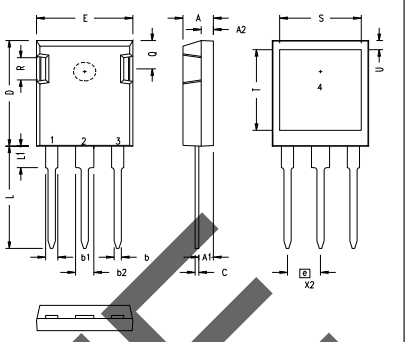
Symbol	Test Conditions	Characteristic Values (T_J = 25°C unless otherwise specified) min.	typ.	max.	
g_{fs}	$I_C = I_T$ V_{CE} = 10 V, Note 2	22	30		S
C_{ies}			3670		pF
C_{oes}	V_{CE} = 25 V, V_{GE} = 0 V, f = 1 MHz		210		pF
C_{res}			41		pF
Q_g			155		nC
Q_{ge}	$I_C = I_T$ V_{GE} = 15 V, V_{CE} = 0.5 V_{CES}		28		nC
Q_{gc}			52		nC
$t_{d(on)}$	**Inductive load, T_J = 25°C**		45		ns
t_{ri}	$I_C = I_T$, V_{GE} = 15 V		38		ns
$t_{d(off)}$	R_G = 2.7 Ω, V_{CE} = 0.8 V_{CES}		270	500	ns
t_{fi}	Note 4		250	500	ns
E_{off}			10.6	20	mJ
$t_{d(on)}$	**Inductive load, T_J = 125°C**		48		ns
t_{ri}	$I_C = I_T$, V_{GE} = 15 V		42		ns
E_{on}	R_G = 2.7 Ω, 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)

Symbol	Test Conditions	Characteristic Values (T_J = 25°C unless otherwise specified) min.	typ.	max.	
V_F	I_F = 20A, V_{GE} = 0 V, Note 2			2.85	V
	T_J = 150°C			2.9	V
V_{TO}	For conduction power losses only			2.1	V
r_{FO}	T_J = 150°C			40	mΩ
I_{RM}	I_F = 20A, V_{GE} = 0 V, V_R = 1200 V		23		A
	$-di_F/dt$ = 450 A/μs T_J = 125°C		27		A
t_{rr}			230		ns
	T_J = 125°C		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 ≤ 300 μs, duty cycle ≤ 2 %
3. Test current I_T = 21 A.
4. Switching times may increase for V_{CE} (Clamp) > 0.8 • V_{CES}, higher T_J or increased R_G.
5. See IXGH32N170 datasheets for additional IGBT characteristics.

ISOPLUS247 Outline



SYM	INCHES MIN	INCHES MAX	MILLIMETERS MIN	MILLIMETERS 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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