IXYS

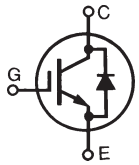
Advance Technical Information

GenX3™ 1200V IGBT w/ Diode

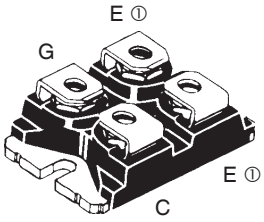
IXGN82N120C3H1

V_{CES} = 1200V
I_{C110} = 58A
$V_{CE(sat)}$ ≤ 3.9V

High-Speed PT IGBT for
20-50 kHz Switching



SOT-227B, miniBLOC
E153432



G = Gate, C = Collector, E = Emitter
① either emitter terminal can be used as Main or Kelvin Emitter

Symbol	Test Conditions	Maximum Ratings	
V_{CES}	T_J = 25°C to 150°C	1200	V
V_{CGR}	T_J = 25°C to 150°C, R_{GE} = 1MΩ	1200	V
V_{GES}	Continuous	±20	V
V_{GEM}	Transient	±30	V
I_{C25}	T_C = 25°C	130	A
I_{C110}	T_C = 110°C	58	A
I_{F110}	T_C = 110°C	42	A
I_{CM}	T_C = 25°C, 1ms	500	A
SSOA	V_{GE}= 15V, T_{VJ} = 125°C, R_G = 3Ω	I_{CM} = 164	A
(RBSOA)	Clamped Inductive Load	$V_{CE} \le V_{CES}$	
P_C	T_C = 25°C	595	W
T_J		-55 ... +150	°C
T_{JM}		150	°C
T_{stg}		-55 ... +150	°C
V_{ISOL}	50/60Hz t = 1min	2500	V~
	$I_{ISOL} \le$ 1mA t = 1s	3000	V~
M_d	Mounting Torque	1.5/13	Nm/lb.in.
	Terminal Connection Torque	1.3/11.5	Nm/lb.in.
Weight		30	g

Symbol	Test Conditions (T_J = 25°C, Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max.	
$V_{GE(th)}$	I_C = 1mA, V_{CE} = V_{GE}	3.0		5.0	V
I_{CES}	V_{CE} = V_{CES}, V_{GE} = 0V, Note 1			50	μA
	T_J = 125°C			6	mA
I_{GES}	V_{CE} = 0V, V_{GE} = ± 20V			±200	nA
$V_{CE(sat)}$	I_C = 82A, V_{GE} = 15V, Note 2		3.3	3.9	V

Features

- Optimized for Low Switching Losses
- Square RBSOA
- High Current Capability
- Isolation Voltage 2500 V~
- Anti-Parallel Ultra Fast Diode
- International Standard Package

Advantages

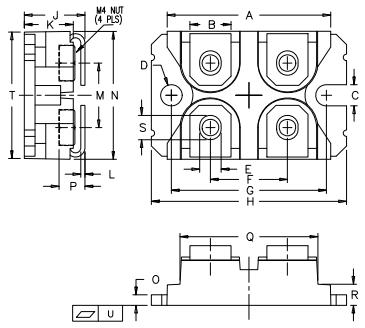
- High Power Density
- Low Gate Drive Requirement

Applications

- Power Inverters
- UPS
- SMPS
- PFC Circuits
- Welding Machines
- Lamp Ballasts

Symbol	Test Conditions (T_J = 25°C, Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max.	
g_{fs}	I_C = 60A, V_{CE} = 10V, Note 2	38	62		S
C_{ies}	V_{CE} = 25V, V_{GE} = 0V, f = 1 MHz		7900		pF
C_{oes}			685		pF
C_{res}			197		pF
$Q_{g(on)}$	I_C = 82A, V_{GE} = 15V, V_{CE} = 0.5 • V_{CES}		340		nC
Q_{ge}			55		nC
Q_{gc}			145		nC
$t_{d(on)}$	**Inductive load, T_J = 25°C**		30		ns
t_{ri}	I_C = 82A, V_{GE} = 15V		77		ns
E_{on}	V_{CE} = 0.5 • V_{CES}, R_G = 2Ω		5.0		mJ
$t_{d(off)}$	Note 3		194		ns
t_{fi}			100		ns
E_{off}			2.5	5.0	mJ
$t_{d(on)}$	**Inductive load, T_J = 125°C**		32		ns
t_{ri}	I_C = 82A, V_{GE} = 15V		80		ns
E_{on}	V_{CE} = 0.5 • V_{CES}, R_G = 2Ω		6.8		mJ
$t_{d(off)}$	Note 3		230		ns
t_{fi}			270		ns
E_{off}			4.0		mJ
R_{thJC}				0.21	°C/W
R_{thCK}			0.05		°C/W

SOT-227B miniBLOC (IXGN)



SYM	INCHES MIN	INCHES MAX	MILLIMETERS MIN	MILLIMETERS MAX
A	1.240	1.255	31.50	31.88
B	.307	.323	7.80	8.20
C	.161	.169	4.09	4.29
D	.161	.169	4.09	4.29
E	.161	.169	4.09	4.29
F	.587	.595	14.91	15.11
G	1.186	1.193	30.12	30.30
H	1.496	1.505	38.00	38.23
J	.460	.481	11.68	12.22
K	.351	.378	8.92	9.60
L	.030	.033	0.76	0.84
M	.496	.506	12.60	12.85
N	.990	1.001	25.15	25.42
O	.078	.084	1.98	2.13
P	.195	.235	4.95	5.97
Q	1.045	1.059	26.54	26.90
R	.155	.174	3.94	4.42
S	.186	.191	4.72	4.85
T	.968	.987	24.59	25.07
U	-.002	.004	-0.05	0.1

Reverse Diode (FRED)

Symbol	Test Conditions (T_J = 25°C, Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max.	
V_F	I_F = 60A, V_{GE} = 0V, Note 1			2.5	V
	T_J = 150°C		1.4	1.8	V
I_{RM}	I_F = 60A, V_{GE} = 0V, T_J = 100°C		8.3		A
t_{rr}	$-di_F/dt$ = 200A/μs, V_R = 300V		140		ns
R_{thJC}				0.42	°C/W

Notes:

1. Part must be heatsunk for high-temp Ices measurement.
2. Pulse test, t ≤ 300μs, duty cycle, d ≤ 2%.
3. Switching times & energy losses may increase for higher V_{CE}(Clamp), T_J or R_G.

ADVANCE TECHNICAL INFORMATION

The product presented herein is under development. The Technical Specifications offered are derived from a subjective evaluation of the design, based upon prior knowledge and experience, and constitute a "considered reflection" of the anticipated result. IXYS reserves the right to change limits, test conditions, and dimensions without notice.