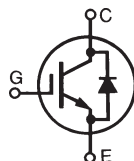


GenX3™ 1200V IGBT w/ Diode

IXGN82N120C3H1

High-Speed PT IGBT for
20-50 kHz Switching

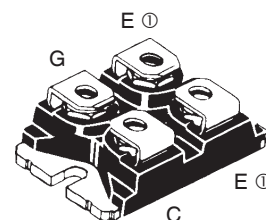


$$\begin{aligned} V_{CES} &= 1200V \\ I_{C110} &= 58A \\ V_{CE(sat)} &\leq 3.9V \end{aligned}$$

Symbol	Test Conditions	Maximum Ratings	
V_{CES}	$T_J = 25^\circ\text{C to } 150^\circ\text{C}$	1200	V
V_{CGR}	$T_J = 25^\circ\text{C to } 150^\circ\text{C}, R_{GE} = 1M\Omega$	1200	V
V_{GES}	Continuous	± 20	V
V_{GEM}	Transient	± 30	V
I_{C25}	$T_C = 25^\circ\text{C}$	130	A
I_{C110}	$T_C = 110^\circ\text{C}$	58	A
I_{F110}	$T_C = 110^\circ\text{C}$	42	A
I_{CM}	$T_C = 25^\circ\text{C}, 1\text{ms}$	500	A
SSOA	$V_{GE} = 15V, T_{VJ} = 125^\circ\text{C}, R_G = 3\Omega$	$I_{CM} = 164$	A
(RBSOA)	Clamped Inductive Load	$V_{CE} \leq V_{CES}$	
P_C	$T_C = 25^\circ\text{C}$	595	W
T_J		-55 ... +150	$^\circ\text{C}$
T_{JM}		150	$^\circ\text{C}$
T_{stg}		-55 ... +150	$^\circ\text{C}$
V_{ISOL}	50/60Hz	$t = 1\text{min}$	2500 V~
	$I_{ISOL} \leq 1\text{mA}$	$t = 1\text{s}$	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

SOT-227B, miniBLOC

E153432



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

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

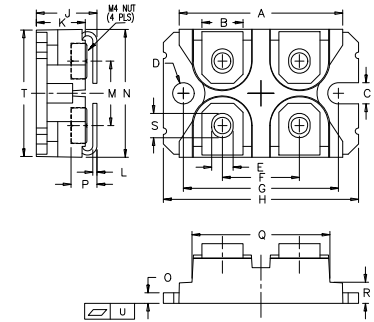
Applications

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

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

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

SOT-227B miniBLOC (IXGN)



SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	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 ($T_J = 25^\circ\text{C}$, Unless Otherwise Specified)	Characteristic Values		
		Min.	Typ.	Max.
V_F	$I_F = 60\text{A}$, $V_{GE} = 0\text{V}$, Note 1 $T_J = 150^\circ\text{C}$		1.4	2.5 V 1.8 V
I_{RM}	$I_F = 60\text{A}$, $V_{GE} = 0\text{V}$, $T_J = 100^\circ\text{C}$ $-di_F/dt = 200\text{A}/\mu\text{s}$, $V_R = 300\text{V}$		8.3	A
t_{rr}			140	ns
R_{thJC}				0.42 $^\circ\text{C/W}$

Notes:

1. Part must be heatsunk for high-temp I_{ces} measurement.
2. Pulse test, $t \leq 300\mu\text{s}$, duty cycle, $d \leq 2\%$.
3. Switching times & energy losses may increase for higher $V_{CE}(\text{Clamp})$, 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.

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	7,005,734 B2	7,157,338B2
	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	7,063,975 B2	
	4,881,106	5,034,796	5,187,117	5,486,715	6,306,728 B1	6,583,505	6,710,463	6,771,478 B2	7,071,537	



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