tentative

XPT IGBT

V_{CES}	=	650 V
I_{C25}	=	255 A
$V_{CE(sat)}$	=	1.6 V

Single IGBT

Part number

IXA220I650NA
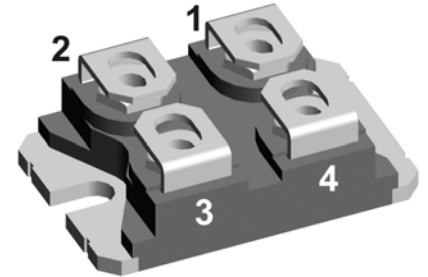
Backside: isolated

L E72873
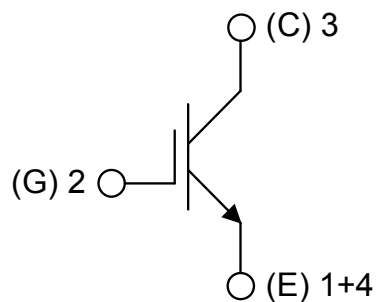
Features / Advantages:

● Easy paralleling due to the positive temperature coefficient of the on-state voltage
● Rugged XPT design (Xtreme light Punch Through) results in:
  - short circuit rated for 10 μsec.
  - very low gate charge
  - low EMI
  - square RBSOA @ 2x Ic
● Thin wafer technology combined with the XPT design results in a competitive low VCE(sat)

Applications:

● AC motor drives
● Solar inverter
● Medical equipment
● Uninterruptible power supply
● Air-conditioning systems
● Welding equipment
● Switched-mode and resonant-mode power supplies
● Inductive heating, cookers
● Pumps, Fans

Package: SOT-227B (minibloc)

● Isolation Voltage: 3000 V~
● Industry standard outline
● RoHS compliant
● Epoxy meets UL 94V-0
● Base plate: Copper internally DCB isolated
● Advanced power cycling
● Either emitter terminal can be used as main or Kelvin emitter

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IGBT				Ratings			
Symbol	Definition	Conditions		min.	typ.	max.	Unit
V_{CES}	collector emitter voltage		T_{VJ} = 25°C			650	V
V_{GES}	max. DC gate voltage					±20	V
V_{GEM}	max. transient gate emitter voltage					±30	V
I_{C25}	collector current		T_C = 25°C			255	A
I_{C80}			T_C = 80°C			156	A
P_{tot}	total power dissipation		T_C = 25°C			625	W
$V_{CE(sat)}$	collector emitter saturation voltage	I_C = 200A; V_{GE} = 15 V	T_{VJ} = 25°C		1.6	1.8	V
			T_{VJ} = 125°C		1.9		V
$V_{GE(th)}$	gate emitter threshold voltage	I_C = 3.2mA; V_{GE} = V_{CE}	T_{VJ} = 25°C	4	4.8	5.5	V
I_{CES}	collector emitter leakage current	V_{CE} = V_{CES}; V_{GE} = 0 V	T_{VJ} = 25°C			0.1	mA
			T_{VJ} = 125°C		0.1		mA
I_{GES}	gate emitter leakage current	V_{GE} = ±20 V				500	nA
$Q_{G(on)}$	total gate charge	V_{CE} = 300 V; V_{GE} = 15 V; I_C = 200 A			280		nC
$t_{d(on)}$	turn-on delay time	inductive load T_{VJ} = 125°C V_{CE} = 300V; I_C = 200A V_{GE} = ±15 V; R_G = 3.9 Ω			30		ns
t_r	current rise time				50		ns
$t_{d(off)}$	turn-off delay time				100		ns
t_f	current fall time				40		ns
E_{on}	turn-on energy per pulse				2		mJ
E_{off}	turn-off energy per pulse				7.6		mJ
RBSOA	reverse bias safe operating area	V_{GE} = ±15 V; R_G = 3.9 Ω T_{VJ} = 125°C V_{CEmax} = 650V					
I_{CM}						400	A
SCSOA	short circuit safe operating area	V_{CEmax} = 650 V V_{CE} = 360 V; V_{GE} = ±15 V T_{VJ} = 125°C R_G = 3.9 Ω; non-repetitive					
t_{SC}	short circuit duration					10	µs
I_{SC}	short circuit current				800		A
R_{thJC}	thermal resistance junction to case					0.2	K/W
R_{thCH}	thermal resistance case to heatsink				0.10		K/W

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Package	SOT-227B (minibloc)				Ratings		
Symbol	Definition	Conditions		min.	typ.	max.	Unit
I_{RMS}	RMS current	per terminal [1]				150	A
T_{VJ}	virtual junction temperature			-40		150	°C
T_{op}	operation temperature			-40		125	°C
T_{stg}	storage temperature			-40		150	°C
Weight					30		g
M_D	mounting torque				1.1	1.5	Nm
M_T	terminal torque				1.1	1.5	Nm
$d_{Spp/App}$	creepage distance on surface | striking distance through air	terminal to terminal	10.5	3.2			mm
$d_{Spb/Apb}$		terminal to backside	8.6	6.8			mm
V_{ISOL}	isolation voltage	t = 1 second	50/60 Hz, RMS; $I_{ISOL} \leq 1$ mA	3000			V
		t = 1 minute		2500			V

[1] I_{RMS} is typically limited by the pin-to-chip resistance (1); or by the current capability of the chip (2). In case of (1) and a product with multiple pins for one chip-potential, the current capability can be increased by connecting the pins as one contact.

Product Marking

Logo →
Part No.
Assembly Line ↑
DateCode
Assembly Code
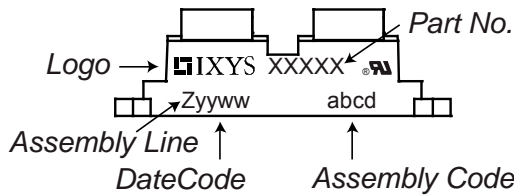
Part description
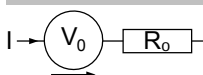
I = IGBT
X = XPT IGBT
A = Gen 1 / std
220 = Current Rating [A]
I = Single IGBT
650 = Reverse Voltage [V]
NA = SOT-227B (minibloc)

Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	IXA220I650NA	IXA220I650NA	Tube	10	514555

Equivalent Circuits for Simulation

on die level T_{VJ} = 150 °C

IGBT

$V_{0 max}$	threshold voltage	1.1	V
$R_{0 max}$	slope resistance *	5.3	mΩ

Outlines   SOT-227B (minibloc)
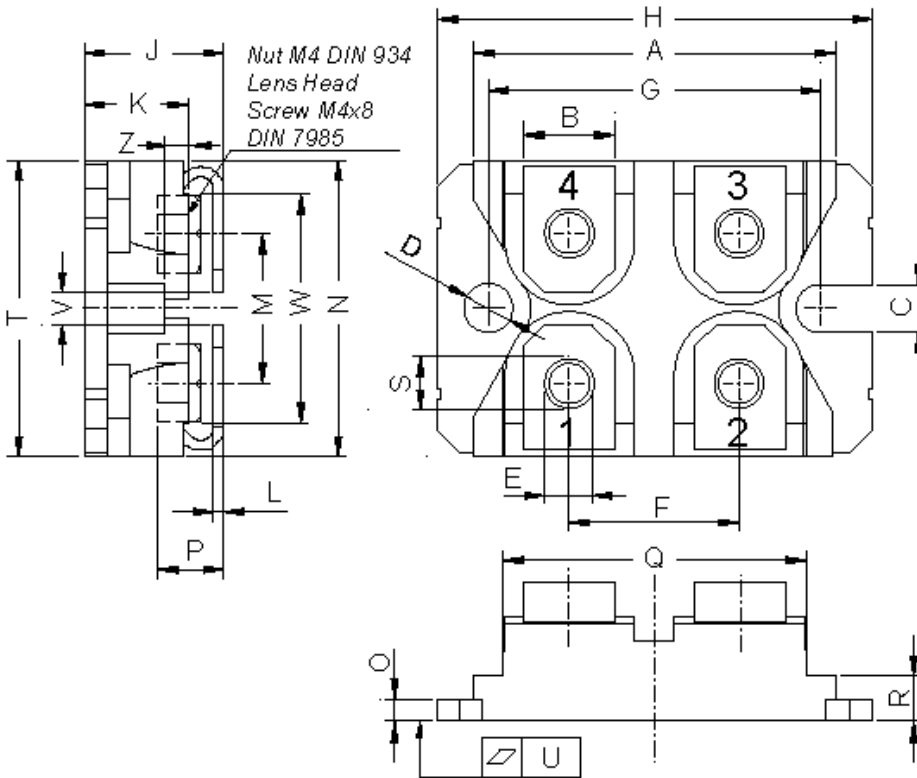
Dim.	Millimeter		Inches	
	min	max	min	max
A	31.50	31.88	1.240	1.255
B	7.80	8.20	0.307	0.323
C	4.09	4.29	0.161	0.169
D	4.09	4.29	0.161	0.169
E	4.09	4.29	0.161	0.169
F	14.91	15.11	0.587	0.595
G	30.12	30.30	1.186	1.193
H	37.80	38.23	1.488	1.505
J	11.68	12.22	0.460	0.481
K	8.92	9.60	0.351	0.378
L	0.74	0.84	0.029	0.033
M	12.50	13.10	0.492	0.516
N	25.15	25.42	0.990	1.001
O	1.95	2.13	0.077	0.084
P	4.95	6.20	0.195	0.244
Q	26.54	26.90	1.045	1.059
R	3.94	4.42	0.155	0.167
S	4.55	4.85	0.179	0.191
T	24.59	25.25	0.968	0.994
U	-0.05	0.10	-0.002	0.004
V	3.20	5.50	0.126	0.217
W	19.81	21.08	0.780	0.830
Z	2.50	2.70	0.098	0.106

Nut M4 DIN 934
Lens Head
Screw M4x8
DIN 7985

(C) 3

(G) 2

(E) 1+4

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

Data according to IEC 60747and per semiconductor unless otherwise specified

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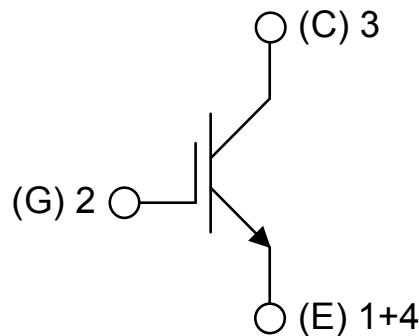
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