

XPT IGBT

preliminary

$$V_{CES} = 1200V$$

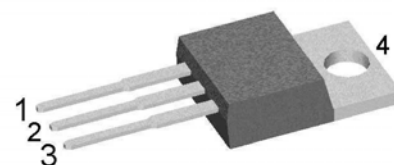
$$I_{C25} = 38A$$

$$V_{CE(sat)} = 1.8V$$

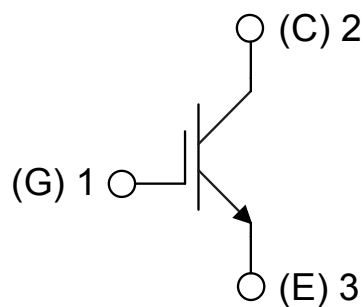
Single IGBT

Part number

IXA20I1200PB



Backside: collector



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 μ sec.
 - very low gate charge
 - low EMI
 - square RBSOA @ 3x I_C
- Thin wafer technology combined with the XPT design results in a competitive low $V_{CE(sat)}$

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: TO-220

- Industry standard outline
- RoHS compliant
- Epoxy meets UL 94V-0

IGBT				Ratings			
Symbol	Definition	Conditions		min.	typ.	max.	Unit
V _{CES}	collector emitter voltage	T _{VJ} = 25°C				1200	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				38	A
I _{C80}		T _C = 80°C				22	A
P _{tot}	total power dissipation	T _C = 25°C				165	W
V _{CE(sat)}	collector emitter saturation voltage	I _C = 15A; V _{GE} = 15 V	T _{VJ} = 25°C		1.8	2.1	V
			T _{VJ} = 125°C		2.1		V
V _{GE(th)}	gate emitter threshold voltage	I _C = 0.6mA; V _{GE} = V _{CE}	T _{VJ} = 25°C	5.4	5.9	6.5	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} = 600 V; V _{GE} = 15 V; I _C = 15 A			47		nC
t _{d(on)}	turn-on delay time	inductive load V _{CE} = 600 V; I _C = 15 A V _{GE} = ±15 V; R _G = 56 Ω	T _{VJ} = 125°C		70		ns
t _r	current rise time				40		ns
t _{d(off)}	turn-off delay time				250		ns
t _f	current fall time				100		ns
E _{on}	turn-on energy per pulse				1.65		mJ
E _{off}	turn-off energy per pulse				1.7		mJ
RBSOA	reverse bias safe operating area	V _{GE} = ±15 V; R _G = 56 Ω	T _{VJ} = 125°C				
I _{CM}		V _{CEmax} = 1200V				45	A
SCSOA	short circuit safe operating area	V _{CEmax} = 900 V					
t _{sc}	short circuit duration	V _{CE} = 900 V; V _{GE} = ±15 V	T _{VJ} = 125°C			10	μs
I _{sc}	short circuit current	R _G = 56 Ω; non-repetitive			60		A
R _{thJC}	thermal resistance junction to case					0.76	K/W
R _{thCH}	thermal resistance case to heatsink				0.50		K/W

preliminary

Package TO-220			Ratings			
Symbol	Definition	Conditions	min.	typ.	max.	Unit
I_{RMS}	RMS current	per terminal			35	A
T_{VJ}	virtual junction temperature		-40		150	°C
T_{op}	operation temperature		-40		125	°C
T_{stg}	storage temperature		-40		150	°C
Weight				2		g
M_D	mounting torque		0.4		0.6	Nm
F_C	mounting force with clip		20		60	N

Product Marking



Part number

I = IGBT
 X = XPT IGBT
 A = Gen 1 / std
 20 = Current Rating [A]
 I = Single IGBT
 1200 = Reverse Voltage [V]
 PB = TO-220AB (3)

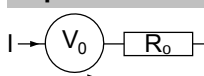
Ordering	Part Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	IXA20I1200PB	IXA20I1200PB	Tube	50	507929

Similar Part	Package	Voltage class
IXA20IF1200HB	TO-247AD (3)	1200

Equivalent Circuits for Simulation

* on die level

$T_{VJ} = 150\text{ °C}$



IGBT

$V_{0\max}$ threshold voltage

1.1

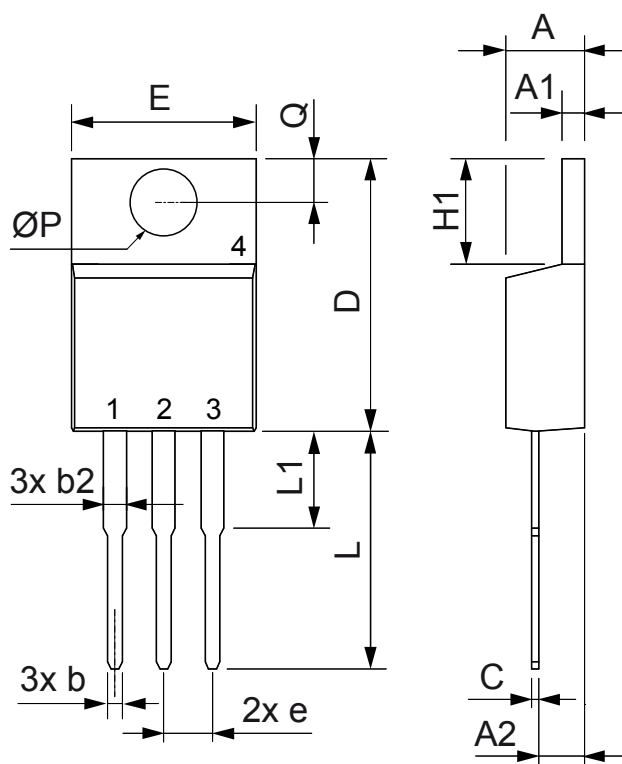
V

$R_{0\max}$ slope resistance *

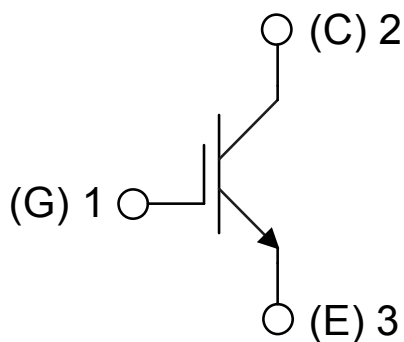
86

mΩ

Outlines TO-220



Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.32	4.82	0.170	0.190
A1	1.14	1.39	0.045	0.055
A2	2.29	2.79	0.090	0.110
b	0.64	1.01	0.025	0.040
b2	1.15	1.65	0.045	0.065
C	0.35	0.56	0.014	0.022
D	14.73	16.00	0.580	0.630
E	9.91	10.66	0.390	0.420
e	2.54	BSC	0.100	BSC
H1	5.85	6.85	0.230	0.270
L	12.70	13.97	0.500	0.550
L1	2.79	5.84	0.110	0.230
ØP	3.54	4.08	0.139	0.161
Q	2.54	3.18	0.100	0.125





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