

preliminary

XPT IGBT

$$V_{CES} = 1200V$$

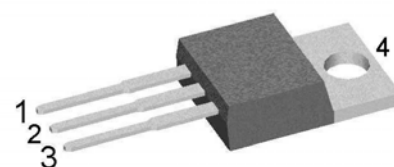
$$I_{C25} = 38A$$

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

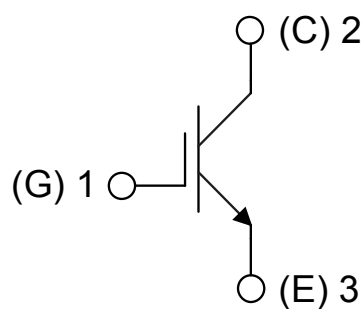
Single IGBT

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

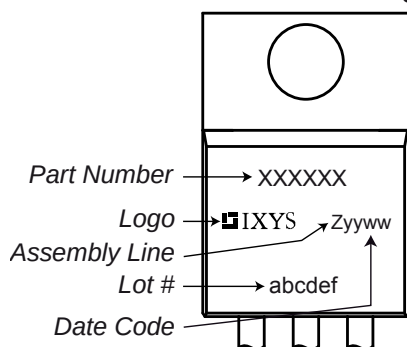
- Industry standard outline
- RoHS compliant
- Epoxy meets UL 94V-0

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		1.8	2.1	V	
				2.1		V	
V _{GE(th)}	gate emitter threshold voltage	I _C = 0.6mA; V _{GE} = V _{CE}	5.4	5.9	6.5	V	
I _{CES}	collector emitter leakage current	V _{CE} = V _{CES} ; V _{GE} = 0 V		0.1	0.1	mA	
						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} = 600V; 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 _{VJ} = 125°C				
t _{sc}	short circuit duration	V _{CE} = 900 V; V _{GE} = ±15 V			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)

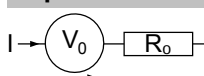
Ordering	Part Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	IXA20I1200PB	IXA20I1200PB	Tube	50	507929

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

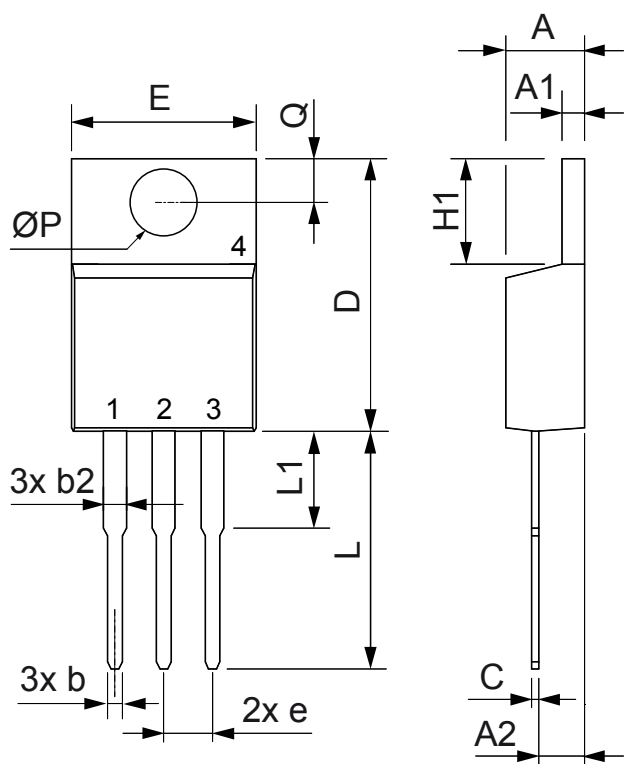
V

$R_{0\max}$ slope resistance *

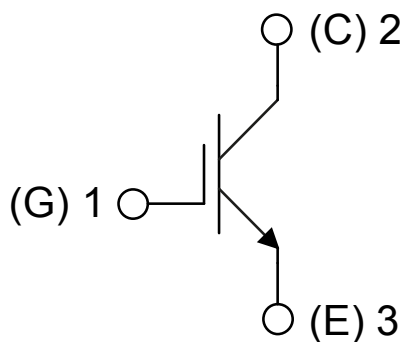
86

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
$\varnothing P$	3.54	4.08	0.139	0.161
Q	2.54	3.18	0.100	0.125





Disclaimer Notice - Information furnished is believed to be accurate and reliable. However, users should independently evaluate the suitability of and test each product selected for their own applications. Littelfuse products are not designed for, and may not be used in, all applications. Read complete Disclaimer Notice at www.littelfuse.com/disclaimer-electronics.