



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



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XPT IGBT

preliminary

$$V_{CES} = 1200V$$

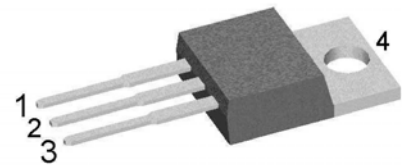
$$I_{C25} = 38A$$

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

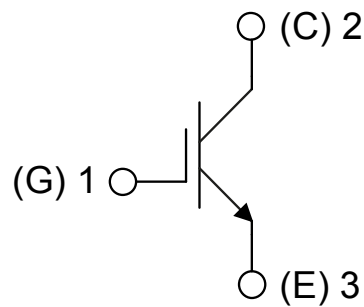
Single IGBT

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

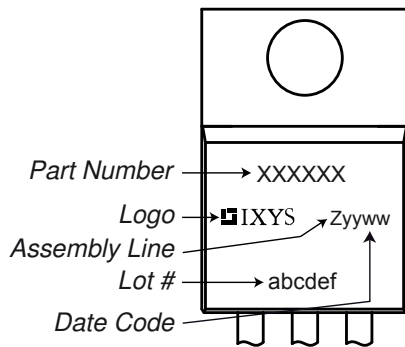
- Industry standard outline
- RoHS compliant
- Epoxy meets UL 94V-0

IGBT				Ratings					
Symbol	Definition	Conditions	min.	typ.	max.	Unit			
V_{CES}	collector emitter voltage	$T_{VJ} = 25^{\circ}\text{C}$			1200	V			
V_{GES}	max. DC gate voltage				± 20	V			
V_{GEM}	max. transient gate emitter voltage				± 30	V			
I_{C25}	collector current	$T_C = 25^{\circ}\text{C}$			38	A			
I_{C80}		$T_C = 80^{\circ}\text{C}$			22	A			
P_{tot}	total power dissipation	$T_C = 25^{\circ}\text{C}$			165	W			
$V_{CE(sat)}$	collector emitter saturation voltage	$I_C = 15\text{A}; V_{GE} = 15\text{V}$		1.8	2.1	V			
				2.1		V			
$V_{GE(th)}$	gate emitter threshold voltage	$I_C = 0.6\text{mA}; V_{GE} = V_{CE}$	5.4	5.9	6.5	V			
I_{CES}	collector emitter leakage current	$V_{CE} = V_{CES}; V_{GE} = 0\text{V}$			0.1	mA			
				0.1		mA			
I_{GES}	gate emitter leakage current	$V_{GE} = \pm 20\text{V}$			500	nA			
$Q_{G(on)}$	total gate charge	$V_{CE} = 600\text{V}; V_{GE} = 15\text{V}; I_C = 15\text{A}$		47		nC			
$t_{d(on)}$	turn-on delay time	inductive load $V_{CE} = 600\text{V}; I_C = 15\text{A}$ $V_{GE} = \pm 15\text{V}; R_G = 56\ \Omega$							
t_r	current rise time						$T_{VJ} = 125^{\circ}\text{C}$	70	ns
$t_{d(off)}$	turn-off delay time						40	ns	
t_f	current fall time						250	ns	
E_{on}	turn-on energy per pulse						100	ns	
E_{off}	turn-off energy per pulse						1.65	mJ	
E_{off}		1.7	mJ						
RBSOA	reverse bias safe operating area	$V_{GE} = \pm 15\text{V}; R_G = 56\ \Omega$							
I_{CM}		$V_{CEmax} = 1200\text{V}$			45	A			
SCSOA	short circuit safe operating area	$V_{CEmax} = 900\text{V}$							
t_{sc}	short circuit duration	$V_{CE} = 900\text{V}; V_{GE} = \pm 15\text{V}$			10	μs			
I_{sc}	short circuit current	$R_G = 56\ \Omega; \text{non-repetitive}$		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)

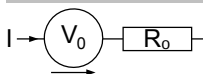
Ordering	Part Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	IXA20I1200PB	IXA20I1200PB	Tube	50	507929

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

Equivalent Circuits for Simulation

* on die level

$T_{VJ} = 150\text{ }^{\circ}\text{C}$



IGBT

$V_{0\text{ max}}$ threshold voltage

1.1

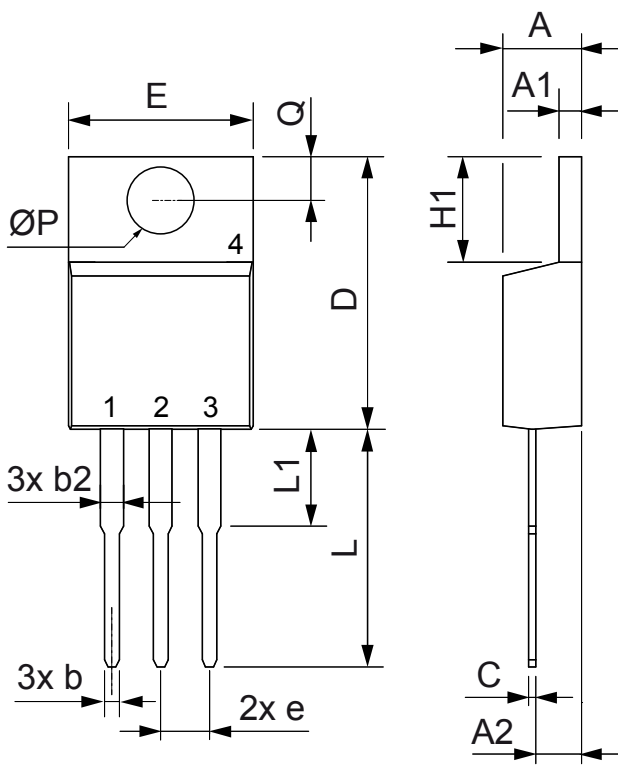
V

$R_{0\text{ max}}$ 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

