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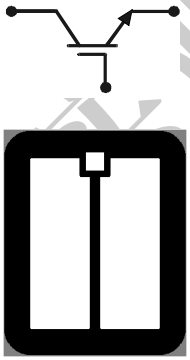
XPT IGBT Chip



Type	V_{CE} [V]	I_C [A]	Chip Size [mm] x [mm]	Package	Ordering Code
IX193X33	3300	63	12.5 15.45	sawn on foil ☐	-
				unsawn wafer ☐	-
				in waffle pack ☑	tbd

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
  - square RBSOA @ 2x Ic
  - low EMI
- Thin wafer technology combined with the high voltage XPT design results in low losses

Applications:

- Drives
- Traction
- Uninterruptible power supply
- Multilevel inverters
- Smart Grid
- Power conversion

Mechanical Parameters

Parameters	Conditions		Ratings	Unit
Area active			107	mm²
Area total			193.13	mm²
Wafer size Ø			150	mm
Thickness			400	µm
Material	Si	Orientation	<100>	
Max. possible chips	per wafer		66	
Passivation	front side		Polyimide	
Metalization	top side		AlSi	
	backside		Al / Ti / Ni / Ag	
Recom. wire bonds (Al)	Emitter	Number / Ø	8 / 380	- / µm
	Gate	Number / Ø	1 / 380	- / µm
Reject Ink Dot Size	Ø		0.4-1.0	mm
Recom. Storage Environment	in orig. container, in dry nitrogen		< 6	month
	Storage Temperature (Tstg)		-40 ... 40	°C
Virtual junction temperature T_{VJ}			-40 ... 150	°C

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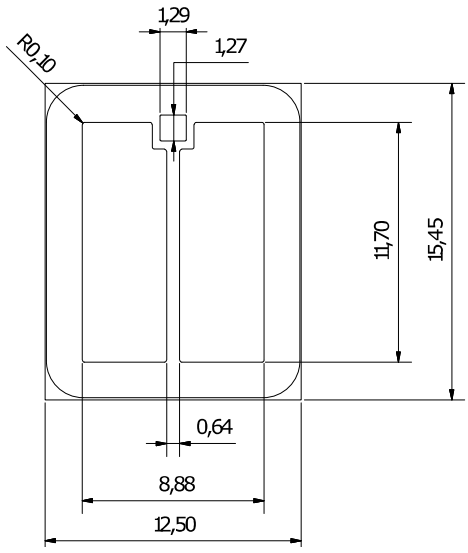
Electrical Parameters

Symbol	Definition	Conditions			Ratings min.	typ.	max.	Unit
V_{CES}	Collector emitter voltage	V_{GE} = 0 V	I_C = 1 mA	T_{VJ} = 25°C			3300	V
V_{GES}	Maximum DC gate voltage						±20	V
I_C	Collector current	*(depending on thermal properties of assembly)*					63	A
$V_{CE\ sat}$	Collector emitter saturation voltage	V_{GE} = 15 V	I_C = 63 A	T_{VJ} = 25°C		2.4	2.8	V
				T_{VJ} = 125°C		2.95		V
V_{TO}	Threshold voltage	V_{GE} = 15 V;	T_{VJ} = 150°C				1.5	V
r_T	(for power loss calculation)						32	mΩ
I_{CES}	Collector emitter leakage current	V_{CE} = 3300 V	V_{GE} = 0 V	T_{VJ} = 25°C		10	100	µA
				T_{VJ} = 125°C		200		µA
I_{GES}	Gate emitter leakage current	V_{CE} = 0 V	V_{GE} = ±20 V				500	nA
$V_{GE(th)}$	Gate emitter threshold voltage	I_C = 3 mA	V_{CE} = V_{GE}	T_{VJ} = 25°C	5.5		7	V
Q_{Gon}	Total gate charge	I_C = 63 A	V_{CE} = 1800V	V_{GE} = ±15 V		500		nC
$R_{G\ int}$	Internal gate resistor					5		Ω
C_{ies}	Input capacitance	V_{CE} = 25 V	V_{GE} = 0 V	T_{VJ} = 25°C		tbd		nF
C_{oes}	Output capacitance	f = 1 MHz				tbd		pF
C_{res}	Reverse transfer capacitance					tbd		pF
$t_{d(on)}$	Turn-on delay time					400		ns
t_r	Current rise time					90		ns
$t_{d(off)}$	Turn-off delay time	V_G = 1800 V	I_C = 63 A			1100		ns
t_f	Current fall time	R_G = 47 Ω	V_{GE} = ±15 V	T_{VJ} = 125°C		400		ns
E_{on}	Turn-on energy per pulse	measured with: DSHP109-33, Cge=6.8nF				110		mJ
E_{off}	Turn-off energy per pulse					60		mJ
RBSOA	Reverse bias safe operation area	V_{GE} = 15 V	R_G = 47 Ω	T_{VJ} = 150°C				
				V_{CE} = 3300 V			125	A
SCSOA	Short circuit safe operation area							
t_{SC}	Short circuit duration	V_{CE} = 2500 V	V_{GE} = ±15 V	T_{VJ} = 150°C			10	µs
I_{SC}	Short circuit current	R_G = 47 Ω	non-repetitive			275		A

Data according to IEC 60747

Dimensions (1 mm = 0.0394")



A [mm]	B [mm]	C [mm]	D [mm]	E [mm]
12.5	15.45	n/a	n/a	n/a

F [mm]	G [mm]	H [mm]	I [mm]	J [mm]
n/a	n/a	n/a	n/a	n/a

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