RoHS Compliant

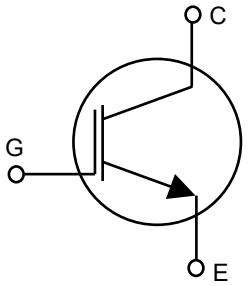
Magnachip

MBW75T120PS

1200V Field stop IGBT

General Descriptions

This IGBT is produced using advanced Magnachip's Field Stop Trench IGBT Technology, which provides low $V_{CE(SAT)}$, high switching performance and excellent quality.



Features

- 1200V Trench + Field stop technology
- Low switching losses
- Positive temperature coefficient
- High Input Impedance

Applications

- IH
- Welding machine

Chip Type	V_{CE}	I_C(Note 1)	Die Size	Package
MBW75T120PS	1200V	75A	9.22 X 7.82 mm^2	Wafer

Mechanical Parameters

Parameter	Condition/ Material	Value	Unit
Die size	L x W	9.22 x 7.82	mm^2
Scribe lane	Width	0.1 x 0.1	mm^2
Emitter pad size	-	See chip drawing	mm^2
Gate pad size	L x W	1.578 x 0.84	mm^2
Thickness		130±5	um
Wafer size		190	mm
Net die		326	EA
Pad metal	AlSiCu	4000	nm
Backside metal	Al/NiV/Ag	1400	nm
Passivation frontside		Polyimide	
Die bond		Conductive epoxy glue and soft solder	
Wire bond		Al< 500um	
Reject die identification		Mapping or Inking	
Storage environment	For original and sealed MBB bags	Ambient atmosphere air, Temperature 15˚C~30˚C, Humidity < 60%RH, <6 month	
	For open MBB bags	Acc.to IEC62258-3: Atmosphere >99% Nitrogen or inert gas, Humidity <25%RH, Temperature 17˚C~25˚C, <6month	

Absolute Maximum Ratings

Parameter	Symbol	Rating	Unit
Collector-emitter voltage T_{vj} =25 ºC	V_{CE}	1200	V
Gate-emitter voltage	V_{GE}	±20	V
DC collector current, limited by $T_{vj\ max}$	I_C	(Note 2)	A
Pulsed collector current, t_p limited by $T_{vj\ max}$ (Note 3)	$I_{C,\ Pulse}$	225	A
Short circuit data V_{GE}=15V, V_{CC}=800V, T_{vj}=150 ºC(Note 3)	t_{sc}	5	μs
Operating Junction temperature	T_{vj}	-40~175	ºC

Note 1: nominal collector current at T_C=100 ˚C, not subject to production test-verified by design/characterization
Note 2: depending on thermal properties of assembly
Note 3: not subject to production test - verified by design/characterization

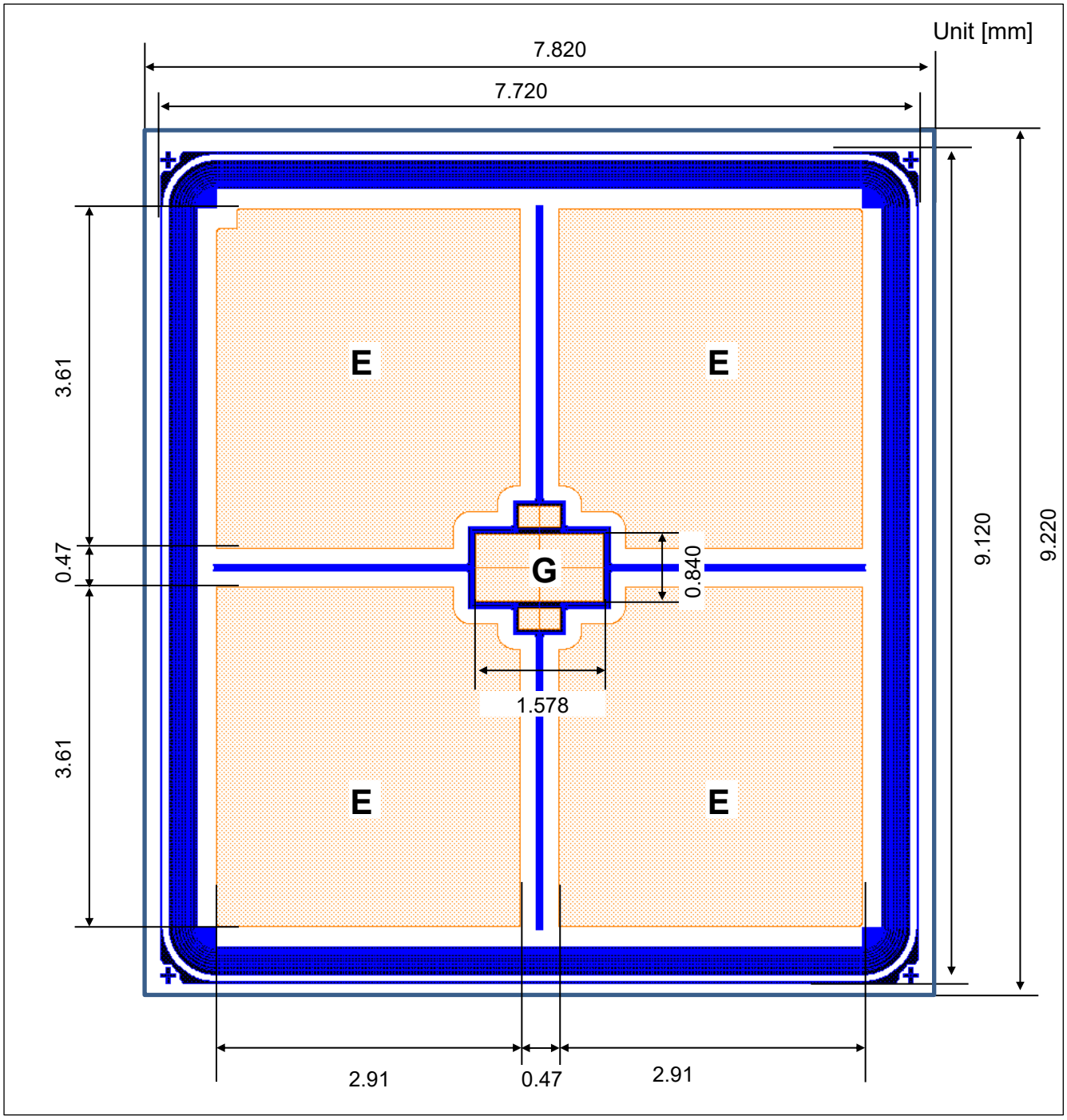
Static Characteristics (T_{vj} =25ºC unless otherwise specified and Tested on wafer)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit.
Collector-emitter breakdown voltage	BV_{CES}	I_C = 5mA, V_{GE} = 0V	1200	-	-	V
Gate-emitter threshold voltage	$V_{GE(th)}$	I_C = 4mA, V_{CE} = V_{GE}	4.8	-	6.8	V
Zero gate voltage collector current	I_{CES}	V_{CE} = 1200V, V_{GE} = 0V	-	-	10	uA
Gate-emitter leakage current, Forward	$I_{GES(F)}$	V_{GE} = 20V, V_{CE} = 0V	-	-	200	nA
Gate-emitter leakage current, Reverse	$I_{GES(R)}$	V_{GE} = -20V, V_{CE} = 0V	-	-	200	nA
Collector-emitter saturation voltage	$V_{CE(sat)}$	V_{GE} = 15V, I_C = 75A		2.1	2.5	V
Integrated gate resistor	r_G			7.5		Ω

Electrical Characteristics (not subject to production test - verified by design / characterization)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit.
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C = 75A, V_{GE} = 15V, T_{vj} = 150°C		2.7		V
Input capacity	C_{ies}	f = 1MHz, T_{vj} = 25°C, V_{CE}=25V		5200		pF
Reverse transfer capacitance	C_{res}			210		pF

Chip Outline



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