

IGBT

TRENCHSTOP[™] IGBT4 Low Power Chip IGC18T120T8L

Data Sheet

Industrial Power Control



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TRENCHSTOP[™] IGBT4 Low Power Chip

Features:

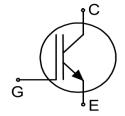
- 1200V trench & field stop technology
- Low switching losses
- Positive temperature coefficient
- Easy paralleling

Recommended for:

• Low / medium power modules

Applications:

Low / medium power drives



Chip Type	V _{CE}	<i>I</i> _{Cn} ¹	Die Size	Package
IGC18T120T8L	1200V	15A	4.16mm x 4.34mm	Sawn on foil

Mechanical Parameters

Die size		4.16 x 4.34			
Emitter pad size		See chip drawing	2		
Gate pad size		1.185 x 0.702	mm ²		
Area total		18.05			
Thickness		115	μm		
Wafer size		200	mm		
Maximum possible ch	ips per wafer	1510			
Passivation frontside		Photoimide			
Pad metal		3200nm AlSiCu			
Backside metal		Ni Ag – system To achieve a reliable solder connection it is strongly recommended not to consume the Ni layer completely during production process			
Die bond	Electrically conductive epoxy glue and soft solder				
Wire bond		AI, ≤500μm			
Reject ink dot size		Ø 0.65mm; max. 1.2mm			
0	for original and sealed MBB bags	Ambient atmosphere air, temperature 17°C – 25°C, <6 months			
Storage environment	for open MBB bags	Acc. to IEC62258-3: atmosphere >99% Nitrogen or inert ga humidity <25%RH, temperature 17°C – 25°C, <6 months			

¹ Nominal collector current at T_C =100°C for chip packaged in power modules, see application example cited on page 5.

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Maximum Ratings

Parameter	Symbol	Value	Unit
Collector-emitter voltage, T _{vj} =25°C	V _{CE}	1200	V
DC collector current, limited by $T_{\rm vjmax}^{\ \ 2}$	I _C	-	А
Pulsed collector current, t_p limited by $T_{vj \max}$ 3	I _{C,puls}	45	А
Gate-emitter voltage	V_{GE}	±20	V
Operating junction temperature	$T_{\rm vj}$	-40 +175	°C
Short circuit data ^{3/4} V _{GE} =15V, V _{CC} =800V, T _{vj} =150°C	t _{sc}	10	μs

Static Characteristics (tested on wafer), T_{vi}=25°C

Dozomotov	Symbol	Conditions	Value			Unit
Parameter			min.	typ.	max.]
Collector-emitter breakdown voltage	$V_{(BR)CES}$	$V_{\rm GE} = 0 \text{V}, I_{\rm C} = 0.5 \text{mA}$	1200	-	-	
Collector-emitter saturation voltage	V _{CEsat}	V _{GE} =15V, I _C =15A	1.58	1.85	2.07	V
Gate-emitter threshold voltage	$V_{\rm GE(th)}$	$I_{\rm C}$ =0.5mA, $V_{\rm GE}$ = $V_{\rm CE}$	5.3	5.8	6.3	
Zero gate voltage collector current	I _{CES}	V _{CE} =1200V, V _{GE} =0V	-	-	2	μΑ
Gate-emitter leakage current	I _{GES}	$V_{CE} = 0V, V_{GE} = 20V$	-	-	120	nA
Integrated gate resistor	r _G			none		Ω

Electrical Characteristics ³

Parameter	Symbol	Conditions	Value			Unit
raiametei			min.	typ.	max.	Ullit
Collector-emitter saturation voltage	V_{CEsat}	V_{GE} =15V, I_{C} =15A, T_{vj} =150°C	-	2.25	-	V
Input capacitance	C _{ies}	V _{CE} =25V,	-	890	-	pF
Reverse transfer capacitance	C _{res}	$V_{ m GE}$ =0V, f =1MHz $T_{ m vj}$ =25°C	ı	30	ı	Pi

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 $^{^2}$ Depending on thermal properties of assembly. 3 Not subject to production test - verified by design/characterization.

⁴ Allowed number of short circuits: <1000; time between short circuits: >1s.



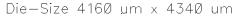
Further Electrical Characteristics

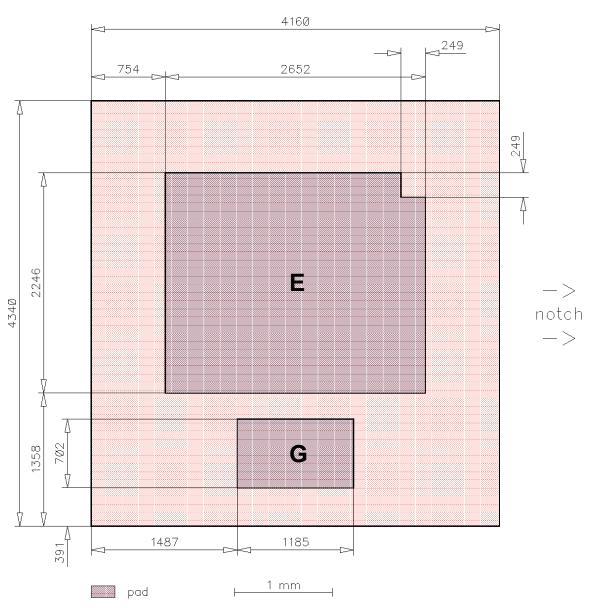
Switching characteristics and thermal properties are depending strongly on module design and mounting technology and can therefore not be specified for a bare die.

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Chip Drawing





E = Emitter

G = Gate



Bare Die Product Specifics

Test coverage at wafer level cannot cover all application conditions. Therefore it is recommended to test all characteristics which are relevant for the application at package level, including RBSOA and SCSOA.

Description

AQL 0.65 for visual inspection according to failure catalogue

Electrostatic Discharge Sensitive Device according to MIL-STD 883

Revision History

Revision	Subjects (major changes since last revision)	Date
2.0	Final data sheet	18.02.2015
2.1	Update disclaimer	20.08.2015

Relevant Application Notes					



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