

High Speed IGBT in Trench and Fieldstop Technology

Features:

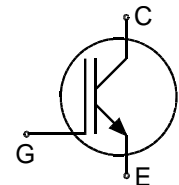
- 1200V Trench + Field stop technology
- low switching losses
- positive temperature coefficient
- easy paralleling

Recommended for:

- discrete components

Applications:

- high frequency drives
- UPS
- Welding
- Solar inverters



Chip Type	V _{CE}	I _{Cn}	Die Size	Package
IGC18T120T8Q	1200V	15A	4.16 x 4.34 mm ²	sawn on foil

Mechanical Parameters

Die size	4.16 x 4.34	mm ²
Emitter pad size	See chip drawing	
Gate pad size	1.185 x 0.702	
Area total	18.1	
Thickness	115	µm
Wafer size	200	mm
Max.possible chips per wafer	1510	
Passivation frontside	Photoimide	
Pad metal	3200 nm 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	Al, <500µm	
Reject ink dot size	Ø 0.65mm ; max 1.2mm	
Storage environment	for original and sealed MBB bags	Ambient atmosphere air, Temperature 17°C – 25°C, < 6 month
	for open MBB bags	Acc. to IEC62258-3: Atmosphere >99% Nitrogen or inert gas, Humidity <25%RH, Temperature 17°C – 25°C, < 6 month



IGC18T120T8Q

Maximum Ratings

Parameter	Symbol	Value	Unit
Collector-Emitter voltage, $T_{vj} = 25\text{ °C}$	V_{CE}	1200	V
DC collector current, limited by $T_{vj\text{ max}}$	I_C	¹⁾	A
Pulsed collector current, t_p limited by $T_{vj\text{ max}}$ ²⁾	$I_{C,puls}$	45	A
Gate emitter voltage	V_{GE}	±20	V
Operating junction temperature	T_{vj}	-40 ... +175	°C
Short circuit data ²⁾³⁾ $V_{GE} = 15V$, $V_{CC} = 800V$, $T_{vj} = 150\text{ °C}$	t_{SC}	10	µs

¹⁾ depending on thermal properties of assembly

²⁾ not subject to production test - verified by design/characterization

³⁾ allowed number of short circuits: <1000; time between short circuits: >1s.

Static Characteristics (tested on wafer), $T_{vj} = 25\text{ °C}$

Parameter	Symbol	Conditions	Value			Unit
			min.	typ.	max.	
Collector-Emitter breakdown voltage	$V_{(BR)CES}$	$V_{GE}=0V$, $I_C=0.5\text{ mA}$	1200			V
Collector-Emitter saturation voltage	V_{CEsat}	$V_{GE}=15V$, $I_C=15A$	1.78	2.05	2.42	
Gate-Emitter threshold voltage	$V_{GE(th)}$	$I_C=0.5mA$, $V_{GE}=V_{CE}$	5.3	5.8	6.3	
Zero gate voltage collector current	I_{CES}	$V_{CE}=1200V$, $V_{GE}=0V$			2	µA
Gate-Emitter leakage current	I_{GES}	$V_{CE}=0V$, $V_{GE}=20V$			120	nA
Integrated gate resistor	r_G			none		Ω

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

Parameter	Symbol	Conditions	Value			Unit
			min.	typ.	max.	
Collector-Emitter saturation voltage	V_{CEsat}	$V_{GE}=15V$, $I_C=15A$, $T_{vj}=175\text{ °C}$		2.7		V
Input capacitance	C_{ies}	$V_{CE}=25V$, $V_{GE}=0V$, $f=1MHz$ $T_{vj}=25\text{ °C}$		875		pF
Reverse transfer capacitance	C_{res}			45		



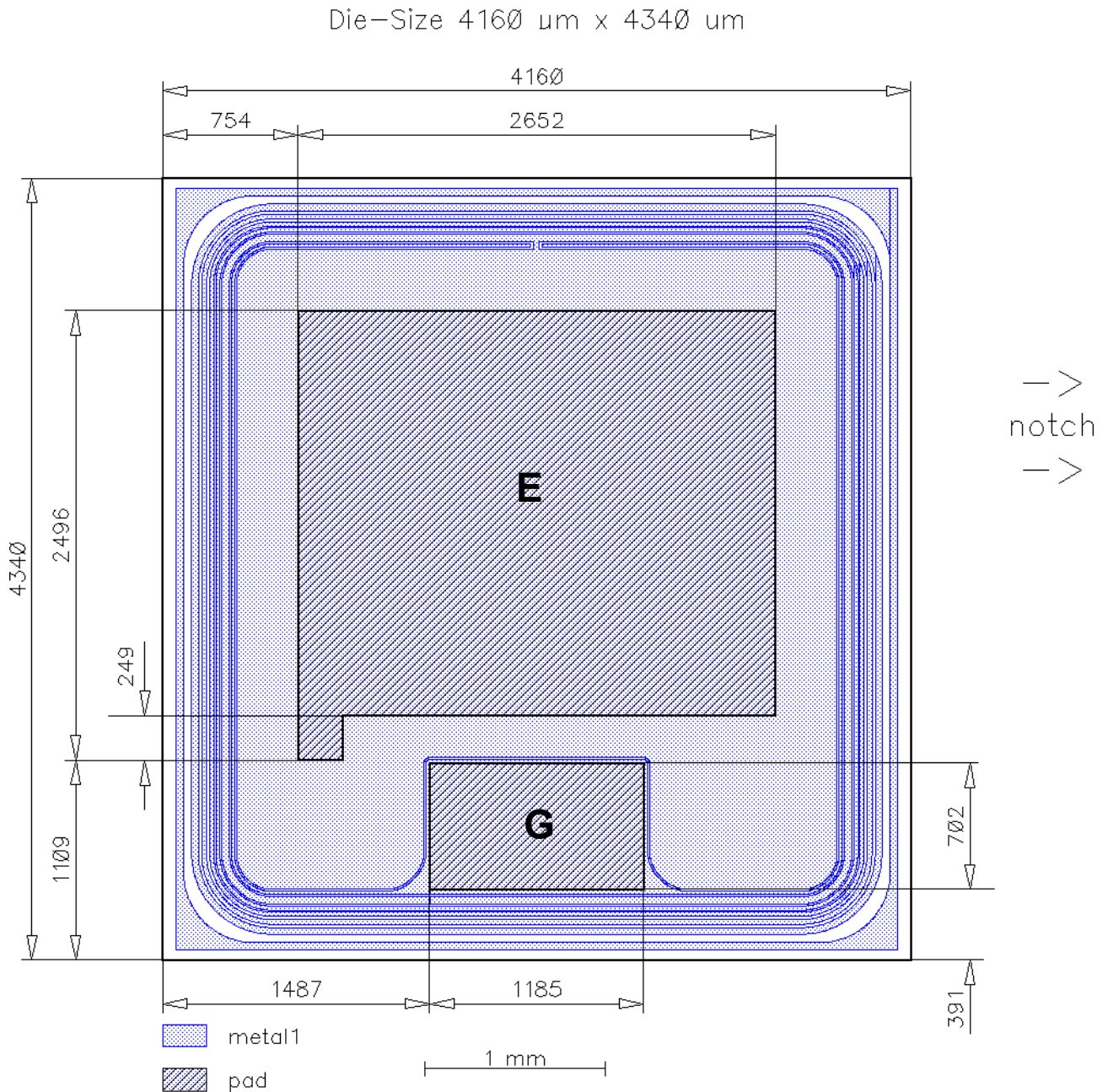
IGC18T120T8Q

Further Electrical Characteristic

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

This chip data sheet refers to the device data sheet	IKW15N120H3	Rev 1.2
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Chip Drawing



E = Emitter

G = Gate



IGC18T120T8Q

Description

AQL 0,65 for visual inspection according to failure catalogue

Electrostatic Discharge Sensitive Device according to MIL-STD 883

Revision History

Version	Subjects (major changes since last revision)	Date

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