

High Speed IGBT in Trench and Fieldstop Technology

Features:

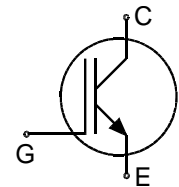
- 1200V Trench + Field stop technology
- low switching losses
- positive temperature coefficient
- easy paralleling

Recommended for:

- discrete components

Applications:

- high frequency drives
- UPS
- Welding
- Solar inverters



Chip Type	V _{CE}	I _{Cn} ¹⁾	Die Size	Package
IGC27T120T8Q	1200V	25A	4.99 x 5.45 mm ²	sawn on foil

¹⁾ nominal collector current at T_c = 100°C, not subject to production test - verified by design/characterization

Mechanical Parameters

Die size	4.99 x 5.45		mm ²
Emitter pad size	See chip drawing		
Gate pad size	0.826 x 1.31		
Area total	27.2		
Thickness	115		µm
Wafer size	200		mm
Max.possible chips per wafer	995		
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	



IGC27T120T8Q

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⁾	$I_{C,puls}$	75	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	$V_{(BR)CES}$	$V_{GE}=0V, I_C=0.85\text{ mA}$	1200			V
Collector-Emitter saturation voltage	V_{CEsat}	$V_{GE}=15V, I_C=25A$	1.78	2.05	2.42	
Gate-Emitter threshold voltage	$V_{GE(th)}$	$I_C=0.85\text{ mA}, V_{GE}=V_{CE}$	5.3	5.8	6.3	
Zero gate voltage collector current	I_{CES}	$V_{CE}=1200V, V_{GE}=0V$			2.4	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}	$V_{GE}=15V, I_C=25A, T_{vj}=175\text{ °C}$		2.7		V
Input capacitance	C_{ies}	$V_{CE}=25V, V_{GE}=0V, f=1\text{ MHz}, T_{vj}=25\text{ °C}$		1430		pF
Reverse transfer capacitance	C_{res}			75		



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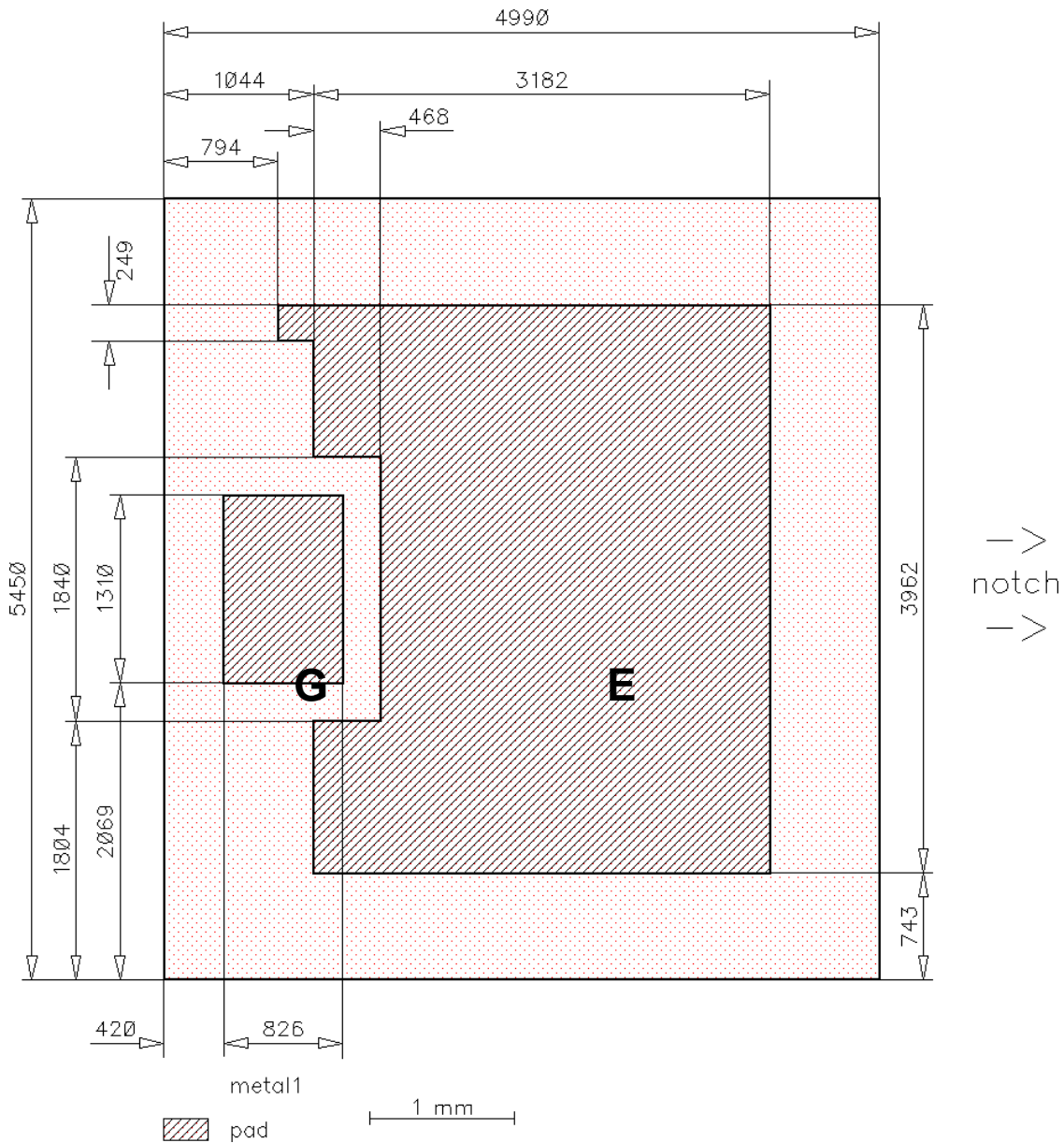
Further Electrical Characteristic

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	IKW25N120H3	Rev 1.2
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Chip Drawing

Die-Size 4990 um x 5450 um



E = Emitter

G = Gate



IGC27T120T8Q

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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