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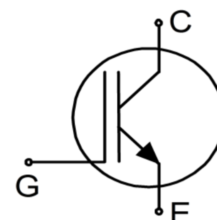
IGC142T120T8RH

TRENCHSTOP™ IGBT4 High Power Chip

Features:
- 1200V trench & field stop technology
- Low V_{CEsat}
- Soft turn off
- Positive temperature coefficient
- Easy paralleling

Recommended for:
- Medium / high power modules

Applications:
- Medium / high power drives



Chip Type	V_{CE}	I_{Cn}	Die Size	Package
IGC142T120T8RH	1200V	150A	11.31mm x 12.56mm	Sawn on foil

Mechanical Parameters

Die size		11.31 x 12.56	mm^2
Emitter pad size		See chip drawing	
Gate pad size		1.31 x 0.811	
Area total		142.05	
Silicon thickness		140	µm
Wafer size		200	mm
Maximum possible chips per wafer		170	
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		Al, ≤500µm	
Reject ink dot size		∅ 0.65mm; max. 1.2mm	
Storage environment (<6 months)	for original and sealed MBB bags	Ambient atmosphere air, temperature 17°C – 25°C	
	for open MBB bags	Acc. IEC62258-3; Section 9.4 Storage Environment.	

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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 $T_{vj\,max}$ [1]	I_C	-	A
Pulsed collector current, t_p limited by $T_{vj\,max}$ [2]	$I_{C,puls}$	450	A
Gate-emitter voltage	V_{GE}	±20	V
Virtual junction operating temperature	T_{vj}	-40 ... +175	°C
Short circuit data [1/2/3] V_{GE}=15V, V_{CC}=800V, T_{vj}=150°C	t_{sc}	10	µs

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

Parameter	Symbol	Conditions	Value			Unit
			min.	typ.	max.	
Collector-emitter breakdown voltage	$V_{(BR)CES}$	V_{GE}=0V, I_C=5.7mA	1200	-	-	V
Collector-emitter saturation voltage	V_{CEsat}	V_{GE}=15V, I_C=45A	0.97	1.1	1.26	V
Gate-emitter threshold voltage	$V_{GE(th)}$	I_C=5.7mA, V_{GE}=V_{CE}	5.1	5.8	6.4	V
Zero gate voltage collector current	I_{CES}	V_{CE}=1200V, V_{GE}=0V	-	-	20	µA
Gate-emitter leakage current	I_{GES}	V_{CE}=0V, V_{GE}=20V	-	-	120	nA
Integrated gate resistor	r_G		-	5	-	Ω

Electrical Characteristics [2]

Parameter		Symbol	Conditions	Value			Unit
				min.	typ.	max.	
Collector-emitter saturation voltage	T_{vj}=25°C	V_{CEsat}	V_{GE}=15V, I_C=150A	-	1.7	-	V
	T_{vj}=150°C			-	2.1	-	
Input capacitance		C_{ies}	V_{CE}=25V, V_{GE}=0V, f=1MHz T_{vj}=25°C	-	9300	-	pF
Reverse transfer capacitance		C_{res}		-	510	-	

[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.