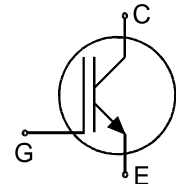
IGC50T120T8RL

IGBT4 Low Power Chip

Features:
- 1200V Trench & Field stop technology
- low switching losses
- positive temperature coefficient
- easy paralleling
- Qualified according to JEDEC for target applications

Recommended for:
- low / medium power modules

Applications:
- low / medium power drives



Chip Type	V_{CE}	I_{Cn} [1]	Die Size	Package
IGC50T120T8RL	1200V	50A	7.25 x 6.84 mm^2	sawn on foil

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

Mechanical Parameters

<table>
<tr><td colspan="2">Die size</td><td>7.25 x 6.84</td><td rowspan="4">mm²</td></tr>
<tr><td colspan="2">Emitter pad size (incl. gate pad)</td><td>See chip drawing</td></tr>
<tr><td colspan="2">Gate pad size</td><td>0.811 x 1.31</td></tr>
<tr><td colspan="2">Area total</td><td>49.6</td></tr>
<tr><td colspan="2">Thickness</td><td>115</td><td>µm</td></tr>
<tr><td colspan="2">Wafer size</td><td>200</td><td>mm</td></tr>
<tr><td colspan="2">Max.possible chips per wafer</td><td colspan="2">531</td></tr>
<tr><td colspan="2">Passivation frontside</td><td colspan="2">Photoimide</td></tr>
<tr><td colspan="2">Pad metal</td><td colspan="2">3200 nm AlSiCu</td></tr>
<tr><td colspan="2">Backside metal</td><td colspan="2">Ni Ag –system
To achieve a reliable solder connection it is strongly recommended not to consume the Ni layer completely during production process</td></tr>
<tr><td colspan="2">Die bond</td><td colspan="2">Electrically conductive epoxy glue and soft solder</td></tr>
<tr><td colspan="2">Wire bond</td><td colspan="2">Al, <500µm</td></tr>
<tr><td colspan="2">Reject ink dot size</td><td colspan="2">∅ 0.65mm ; max 1.2mm</td></tr>
<tr><td rowspan="2">Storage environment</td><td>for original and sealed MBB bags</td><td colspan="2">Ambient atmosphere air, Temperature 17°C – 25°C, < 6 month</td></tr>
<tr><td>for open MBB bags</td><td colspan="2">Acc. to IEC62258-3: Atmosphere >99% Nitrogen or inert gas, Humidity <25%RH, Temperature 17°C – 25°C, < 6 month</td></tr>
</table>

IGC50T120T8RL

Maximum Ratings

Parameter	Symbol	Value	Unit
Collector-Emitter voltage, T_{vj} =25 °C	V_{CE}	1200	V
DC collector current, limited by $T_{vj\,max}$	I_C	[1]	A
Pulsed collector current, t_p limited by $T_{vj\,max}$ [2]	$I_{c,puls}$	150	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°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 °C

Parameter	Symbol	Conditions	Value			Unit
			min.	typ.	max.	
Collector-Emitter breakdown voltage	$V_{(BR)CES}$	V_{GE}=0V , I_C=1.7 mA	1200			V
Collector-Emitter saturation voltage	V_{CEsat}	V_{GE}=15V, I_C=50A	1.58	1.85	2.07	V
Gate-Emitter threshold voltage	$V_{GE(th)}$	I_C=1.7mA , V_{GE}=V_{CE}	5.3	5.8	6.3	V
Zero gate voltage collector current	I_{CES}	V_{CE}=1200V , V_{GE}=0V			1	µA
Gate-Emitter leakage current	I_{GES}	V_{CE}=0V , V_{GE}=20V			120	nA
Integrated gate resistor	r_G			4		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=50A, T_{vj} =150 °C		2.25		V
Input capacitance	C_{ies}	V_{CE}=25V, V_{GE}=0V, f=1MHz T_{vj} =25 °C		2800		pF
Reverse transfer capacitance	C_{res}	V_{CE}=25V, V_{GE}=0V, f=1MHz T_{vj} =25 °C		100		pF

Edited by INFINEON Technologies, IFAT IPC ICD, L7663V, L7663P, Edition 1.1, 20.06.2013

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	FP50R12KT4_B11	Rev. 3.0

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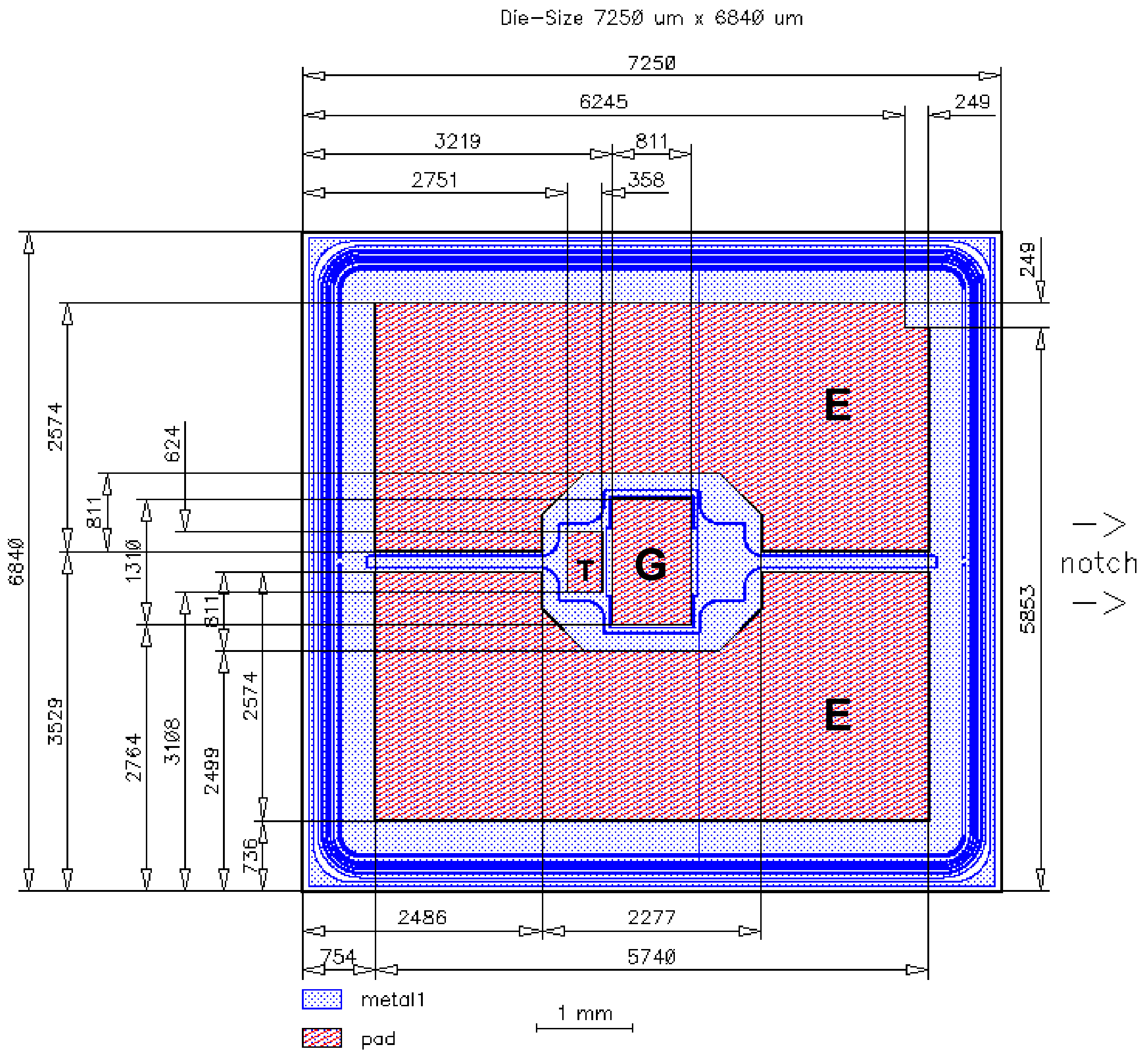
Chip Drawing



E = Emitter
G = Gate
T = Test pad do not contact

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IGC50T120T8RL

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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