

IGBT3 Chip

Features:

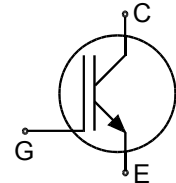
- 650V Trench & Field Stop technology
- low $V_{CE(sat)}$
- low turn-off losses
- short tail current
- positive temperature coefficient
- easy paralleling
- Qualified according to JEDEC for target applications

Recommended for:

- power modules

Applications:

- drives



Chip Type	V_{CE}	$I_{Cn}^{1)}$	Die Size	Package
SIGC39T65E	650V	75A	6.59 x 5.91 mm ²	sawn on foil

¹⁾ nominal collector current at $T_c = 100^\circ\text{C}$, not subject to production test - verified by design/characterization

Mechanical Parameters

Die size	6.59 x 5.91	mm ²
Emitter pad size (incl. gate pad)	See chip drawing	
Gate pad size	1.52 x 0.817	
Area total	38.9	
Thickness	70	µm
Wafer size	200	mm
Max.possible chips per wafer	686	
Passivation frontside	Photoimide	
Pad metal	3200 nm AlSiCu	
Backside metal	Ni Ag –system	
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

Maximum Ratings

Parameter	Symbol	Value	Unit
Collector-Emitter voltage, $T_{vj} = 25\text{ °C}$	V_{CE}	650	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)	$I_{C,puls}$	225	A
Gate emitter voltage	V_{GE}	±20	V
Operating junction temperature	T_{vj}	-40 ... +175	°C
Short circuit data 2)3) $V_{GE} = 15V, V_{CC} = 360V, T_{vj} = 150\text{ °C}$	t_{SC}	6	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	$V_{(BR)CES}$	$V_{GE}=0V, I_C=4\text{ mA}$	650			V
Collector-Emitter saturation voltage	V_{CEsat}	$V_{GE}=15V, I_C=75A$	0.93	1.45	1.77	
Gate-Emitter threshold voltage	$V_{GE(th)}$	$I_C=1.2mA, V_{GE}=V_{CE}$	5.1	5.8	6.4	
Zero gate voltage collector current	I_{CES}	$V_{CE}=650V, V_{GE}=0V$			3.8	µA
Gate-Emitter leakage current	I_{GES}	$V_{CE}=0V, V_{GE}=20V$			600	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}	$V_{GE}=15V, I_C=75A,$ $T_{vj}=175\text{ °C}$		1.9		V
Input capacitance	C_{ies}	$V_{CE}=25V,$ $V_{GE}=0V, f=1MHz$		4620		pF
Reverse transfer capacitance	C_{res}	$T_{vj}=25\text{ °C}$		137		



SIGC39T65E

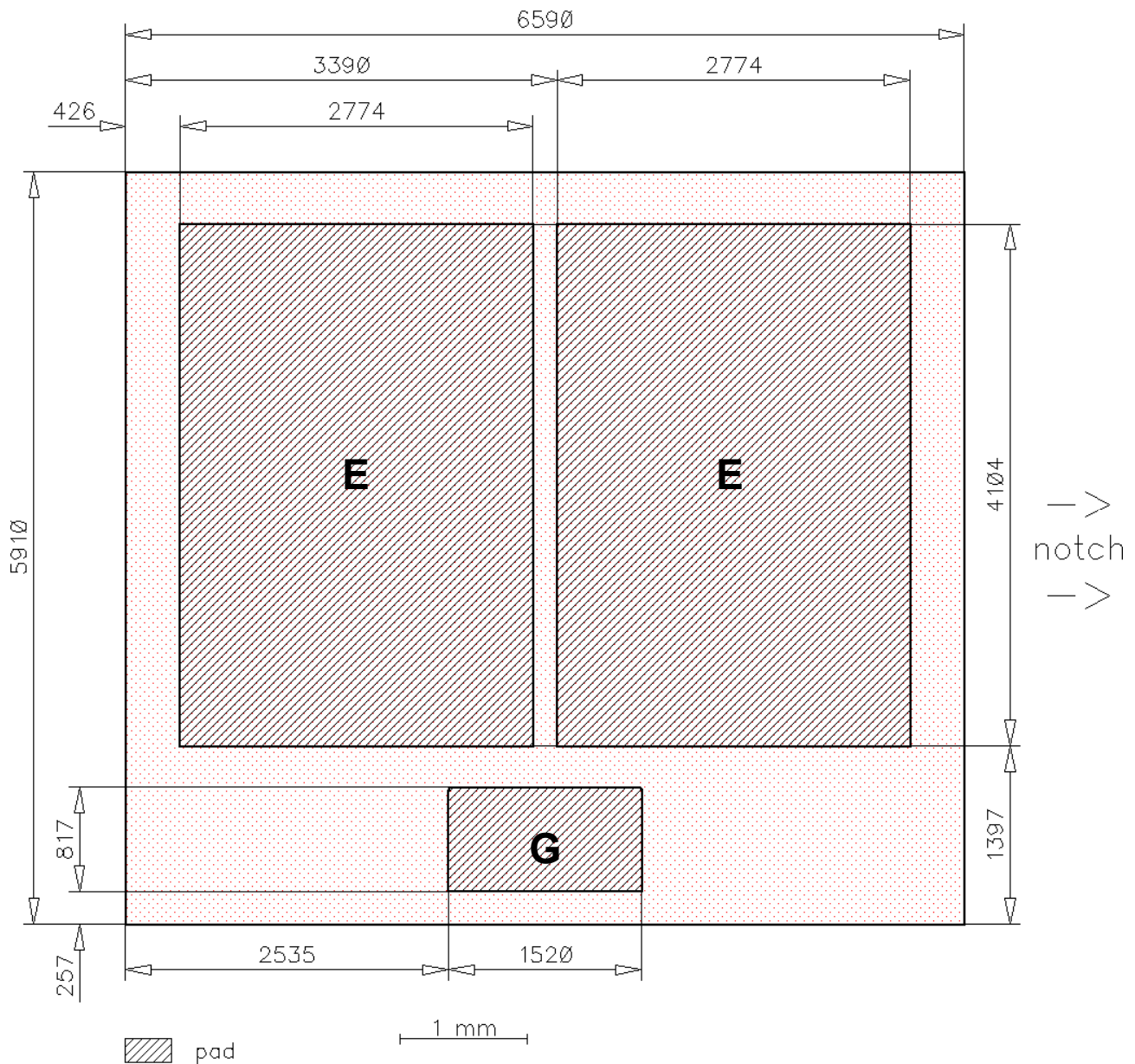
Further Electrical Characteristic

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	IGW75N60T	Rev 2.5
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Chip Drawing

Die-Size 6590 um x 5910 um



E = Emitter
G = Gate



SIGC39T65E

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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