

## TRENCHSTOP™ IGBT3 Chip

### Features:

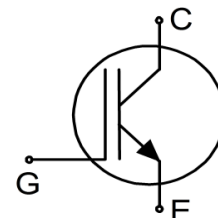
- 1700V trench & field stop technology
- Low turn-off losses
- Short tail current
- Positive temperature coefficient
- Easy paralleling

### Recommended for:

- Power modules

### Applications:

- Drives



Chip Type	$V_{CE}$	$I_{Cn}^1$	Die Size	Package
SIGC42T170R3GE	1700V	29A	6.5mm x 6.46mm	Sawn on foil

### Mechanical Parameters

Die size	6.5 x 6.46	mm <sup>2</sup>
Emitter pad size	See chip drawing	
Gate pad size	1.185 x 1.092	
Area total	41.99	
Thickness	190	μm
Wafer size	200	mm
Maximum possible chips per wafer	641	
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	Ø 0.65mm; max. 1.2mm	
Storage environment	for original and sealed MBB bags	Ambient atmosphere air, temperature 17°C – 25°C, <6 months
	for open MBB bags	Acc. to IEC62258-3: atmosphere >99% Nitrogen or inert gas, humidity <25%RH, temperature 17°C – 25°C, <6 months

<sup>1</sup> Nominal collector current at  $T_C = 100^\circ\text{C}$  assuming chip assembly in power module EconoPACK™ 2.

## Maximum Ratings

Parameter	Symbol	Value	Unit
Collector-emitter voltage, $T_{vj}=25^{\circ}\text{C}$	$V_{CE}$	1700	V
DC collector current, limited by $T_{vj\max}^2$	$I_C$	-	A
Pulsed collector current, $t_p$ limited by $T_{vj\max}^3$	$I_{C,puls}$	87	A
Gate-emitter voltage	$V_{GE}$	$\pm 20$	V
Maximum junction and storage temperature	$T_{vj,max}, T_{stg}$	-55 ... +150	$^{\circ}\text{C}$
Short circuit data <sup>3/4</sup> $V_{GE}=15\text{V}, V_{CC}=1200\text{V}, T_{vj}=125^{\circ}\text{C}$	$t_{sc}$	10	$\mu\text{s}$
Reverse bias safe operating area <sup>3</sup> (RBSOA)	$I_{C,max}=58\text{A}, V_{CE,max}=1700\text{V}, T_{vj,op}\leq 125^{\circ}\text{C}$		

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

Parameter	Symbol	Conditions	Value			Unit
			min.	typ.	max.	
Collector-emitter breakdown voltage	$V_{(BR)CES}$	$V_{GE}=0\text{V}, I_C=1.5\text{mA}$	1700	-	-	V
Collector-emitter saturation voltage	$V_{CEsat}$	$V_{GE}=15\text{V}, I_C=29\text{A}$	1.6	2	2.4	
Gate-emitter threshold voltage	$V_{GE(th)}$	$I_C=1.2\text{mA}, V_{GE}=V_{CE}$	5.2	5.8	6.4	
Zero gate voltage collector current	$I_{CES}$	$V_{CE}=1700\text{V}, V_{GE}=0\text{V}$	-	-	2	$\mu\text{A}$
Gate-emitter leakage current	$I_{GES}$	$V_{CE}=0\text{V}, V_{GE}=20\text{V}$	-	-	600	nA
Integrated gate resistor	$r_G$		32			$\Omega$

## Electrical Characteristics <sup>3</sup>

Parameter	Symbol	Conditions	Value			Unit
			min.	typ.	max.	
Collector-emitter saturation voltage	$V_{CEsat}$	$V_{GE}=15\text{V}, I_C=29\text{A}, T_{vj}=125^{\circ}\text{C}$	-	2.4	-	V
Input capacitance	$C_{ies}$	$V_{CE}=25\text{V}, V_{GE}=0\text{V}, f=1\text{MHz}, T_{vj}=25^{\circ}\text{C}$	-	2500	-	pF
Reverse transfer capacitance	$C_{res}$		-	84	-	

<sup>2</sup> Depending on thermal properties of assembly.

<sup>3</sup> Not subject to production test - verified by design/characterization.

<sup>4</sup> Allowed number of short circuits: <1000; time between short circuits: >1s.