SIGC03T60E

TRENCHSTOP™ IGBT3 Chip

Features:

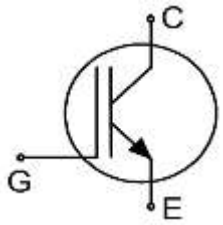
- 600V trench & field stop technology
- Low V_{CEsat}
- Low turn-off losses
- Short tail current
- Positive temperature coefficient
- Easy paralleling

Recommended for:

- Power modules
- Discrete components

Applications:

- Drives
- White goods
- Resonant applications



Chip Type	V_{CE}	I_{Cn}	Die Size	Package
SIGC03T60E	600V	4A	1.75mm x 1.79mm	Sawn on foil

Mechanical Parameters

Die size		1.75 x 1.79	mm^2
Emitter pad size		See chip drawing	
Gate pad size		0.36 x 0.51	
Area total		3.13	
Silicon thickness		70	µm
Wafer size		200	mm
Maximum possible chips per wafer		8982	
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. IEC 62258-3; Section 9.4 Storage Environment.	

Maximum Ratings

In general, from reliability and lifetime point of view, the lower the operation junction temperature and/or the applied voltage, the greater the expected lifetime of any semiconductor device.

Parameter	Symbol	Value	Unit
Collector-emitter voltage, T_{vj}=25°C	V_{CE}	600	V
DC collector current, limited by $T_{vj\ max}$ [1]	I_C	-	A
Pulsed collector current, t_p limited by $T_{vj\ max}$ [2]	$I_{C,puls}$	12	A
Gate-emitter voltage	V_{GE}	±20	V
Virtual junction temperature	T_{vj}	-40 ... +175	°C
Short circuit data [1/2/3] V_{GE}=15V, V_{CC}=360V, T_{vj}=150°C	t_{sc}	6	µs
Reverse bias safe operating area (RBSOA) [2]	$I_{C,max}$ = 8A, V_{CEmax} = 600V, $T_{vj} \leq$ 150°C		

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= 2mA	600	-	-	V
Collector-emitter saturation voltage	V_{CEsat}	V_{GE}=15V, I_C=4A	1.1	1.5	1.9	
Gate-emitter threshold voltage	$V_{GE(th)}$	I_C=60µA, V_{GE}=V_{CE}	5.0	5.8	6.5	
Zero gate voltage collector current	I_{CES}	V_{CE}=600V, V_{GE}=0V	-	-	0.2	µA
Gate-emitter leakage current	I_{GES}	V_{CE}=0V, V_{GE}=20V	-	-	200	nA
Integrated gate resistor	r_G		none			Ω

Electrical Characteristics [2]

Parameter	Symbol	Conditions	Value			Unit
			min.	typ.	max.	
Input capacitance	C_{ies}	V_{CE}=25V, V_{GE}=0V, f=1MHz T_{vj}=25°C	-	264	-	pF
Output capacitance	C_{oes}		-	29	-	
Reverse transfer capacitance	C_{res}		-	17	-	

[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.