

关键参数

Key Parameters

V_{CES}		750	V
$V_{CE(sat)}$	Typ.	1.40	V
I_{CN}	Max.	315	A
Die Size		10.00×11.20	mm ²

特点

Features

- 沟槽栅，场截止 Trench Gate, Field Stop
- 低通态损耗 Low On-state Loss
- 低开关损耗 Low Switching Loss
- 软关断 Soft Turn Off
- 易并联使用 Easy Paralleling

电路结构

Circuit Configuration

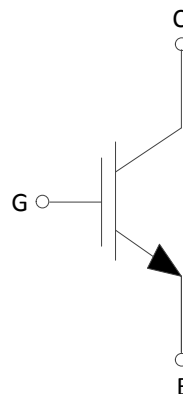


图 1. 电路结构

Fig. 1 Circuit configuration

最大额定值

Maximum Ratings

符号 Symbol	参数名称 Parameter	数值 Value	单位 Unit
V_{CE}	集电极-发射极电压, $T_{vj}=25\text{ }^{\circ}\text{C}$ Collector-emitter voltage, $T_{vj}=25\text{ }^{\circ}\text{C}$	750	V
V_{GE}	栅极-发射极电压 Gate-emitter voltage	± 20	V
I_C	集电极电流, 由 $T_{vj\text{ max}}$ 限制 Collector-emitter current, limited by $T_{vj\text{ max}}$	315	A
I_{CM}	集电极峰值电流, 由 $T_{vj\text{ max}}$ 限制 Peak collector current, limited by $T_{vj\text{ max}}$	630	A
$T_{vj\text{ max}}$	最大允许结温 Max. Junction temperature	175	$^{\circ}\text{C}$
$T_{vj(op)}$	工作结温 Operation Junction temperature	-40...+175	$^{\circ}\text{C}$
t_{SC}	短路脉宽, $V_{GE}=15\text{V}$, $V_{CC}=400\text{V}$, $T_{vj}=25^{\circ}\text{C}$ Short circuit pulse, $V_{GE}=15\text{V}$, $V_{CC}=400\text{V}$, $T_{vj}=150^{\circ}\text{C}$	6	μs
	短路脉宽, $V_{GE}=15\text{V}$, $V_{CC}=400\text{V}$, $T_{vj}=150^{\circ}\text{C}$ Short circuit pulse, $V_{GE}=15\text{V}$, $V_{CC}=400\text{V}$, $T_{vj}=150^{\circ}\text{C}$	3	μs

静态特性值
Static Characteristics

晶圆测试, $T_{vj}=25\text{ }^{\circ}\text{C}$

Tested on wafer, $T_{vj}=25\text{ }^{\circ}\text{C}$

符号 Symbol	参数名称 Parameter	条件 Test Conditions	最小值 Min.	典型值 Typ.	最大值 Max.	单位 Unit
V_{CES}	集电极-发射极击穿电压 Collector-Emitter breakdown voltage	$V_{GE}=0V, I_C=1mA$	750			V
$V_{CE(sat)}$	集电极-发射极饱和电压 Collector-emitter saturation voltage	$V_{GE}=15V, I_C=60A$	0.65	0.90	1.15	V
$V_{GE(th)}$	栅极-发射极阈值电压 Gate threshold voltage	$I_C=5mA, V_{GE}=V_{CE}$	5.4	6.0	6.6	V
I_{CES}	集电极截止漏电流 Zero gate voltage collector current	$V_{CE}=750V, V_{GE}=0V$			10	μA
I_{GES}	栅极漏电流 Gate leakage current	$V_{GE}=\pm 20V, V_{CE}=0V$			500	nA

电特性值
Electrical Characteristics

除非特别声明, 否则 $T_{vj}=25\text{ }^{\circ}\text{C}$
 $T_{vj}=25\text{ }^{\circ}\text{C}$ unless otherwise stated

符号 Symbol	参数名称 Parameter	条件 Test Conditions	最小值 Min.	典型值 Typ.	最大值 Max.	单位 Unit
$V_{CE(sat)}$	集电极-发射极饱和电压 Collector-emitter saturation voltage	$V_{GE}=15V, I_C=315A$		1.40		V
		$V_{GE}=15V, I_C=315A, T_{vj}=150\text{ }^{\circ}\text{C}$		1.60		V
C_{ies}	输入电容 Input capacitance	$V_{CE}=25V, V_{GE}=0V, f=100kHz$		30		nF
C_{oes}	输出电容 Output capacitance			0.86		nF
C_{res}	反向传输电容 Reverse transfer capacitance			0.11		nF
R_g	内部栅极电阻 Integrated gate resistor			5		Ω

工艺参数值**Mechanical Parameters**

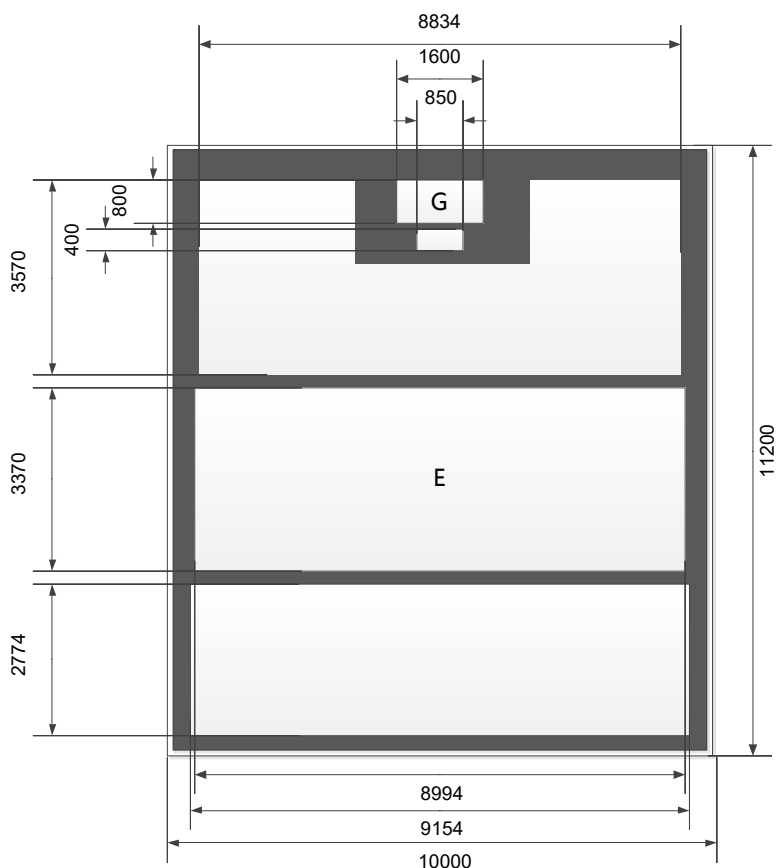
芯片尺寸 Chip size	10.00×11.20	mm ²
发射极键合区尺寸(包含栅极) Emitter pad size (incl. gate pad)	9.15×2.77+8.99×3.37+ 8.83×3.57	mm ²
栅极键合区尺寸 Gate pad size	1.60×0.80	mm ²
总面积 Area total	112.00	mm ²
厚度 Thickness	71	μm
晶圆尺寸 Wafer size	200	mm
每片晶圆上最大芯片数 Max. possible chips per wafer	228	
正面金属 Pad metal	Al/Si/Cu	
背面金属 Backside metal	Al-Ti-Ni-Ag	
正面钝化 Passivation frontside	Polyimide	
建议存储环境 Recommended storage environment	存储在原始容器中, 23°C 干燥氮气柜小于 6 个月 Store in original container, in dry nitrogen, <6 months at an ambient temperature of 23°C	

其他电特性**Further Electrical Characteristics**

开关和热学特性请参考相关模块数据手册

For switching characteristic and thermal properties, please refer to the device datasheet

This chip datasheet refers to the device datasheet	TG950FF08S3-S5A01	Ver 22.11
--	-------------------	-----------



E=发射极 G=栅极 单位：微米

E=Emitter G=Gate Unit: μm

图 2. 芯片外观尺寸

Fig. 2 Chip drawing

株洲中车时代半导体有限公司

ZHUZHOU CRRC TIMES SEMICONDUCTOR CO., LTD.

地 址	Address	湖南省株洲市石峰区田心工业园	Tianxin Industrial Park, Shifeng District, ZhuZhou City, Hunan Province, China
邮 编	Zipcode	412001	
电 话	Telephone	+86 (0)731-28498268, 28498238, 28493472	
传 真	Fax	+86 (0)731-28498851, 28498494	
电子邮箱	Email	sbu@crzczic.cc	
网 址	Web Site	http://www.sbu.crrczic.cc	

使用条件和条款

(1) 数据手册中的产品信息是专门为技术人员提供的。由于产品应用的多样性，本文件所包含的信息只能作为一般性指南，无法保证其在某些特殊应用中的适用性，建议用户在使用前评估产品的适用性。如果需要额外的产品信息和帮助，请联系我公司的销售或技术支持。

(2) 本产品数据手册中提供的一部分产品数据是产品的典型值，实际出厂测试的产品数据可能与典型值略有偏离，但我公司保证这些偏离不会影响产品的正常使用。如果产品信息发生变更，我公司会及时修订产品数据手册，请随时关注我公司网站发布的产品手册信息。

(3) 如果对本产品有特殊要求，或用于特殊行业（如航空航天、医疗、生命维持等），强烈建议用户与我公司联合进行应用风险和产品质量评估，建立统一的质量协议。

(4) 产品使用过程中，如有超出产品数据手册中所定义的产品极限温度、电压、电流或安全工作区范围的情况，我公司无法保证产品的应用可靠性。

(5) 产品数据手册首页的右上角，会显示产品的状态。如果它尚未完全批准，会标示**初版（preliminary）**，该标示意味着该产品已完成设计，量产的产品参数正在确定中，数据手册中的产品信息目前是可以参考的，但将来某些细节可能会发生变化。如果产品数据手册首页的右上角没有标注，则表示该产品已可以批量生产。

Terms and conditions of usage

(1) The product information in this datasheet are intended for use by technical personnel. Due to the diversity of product applications, the information contained in this document can only be used as a general guide, the application applicability cannot be guaranteed in some special applications. It is recommended that users do the assessment of the application applicability before applied. If users need additional product information and help, please contact our sales or technical support.

(2) Some product data in the datasheet of this product are the typical values, the actual factory testing data may deviate slightly from typical values, but our company guarantees that these deviations will not affect the normal use of the product. If the product information changes, our company will promptly amend the datasheet, please keeps your attention to product information changing in our company website.

(3) If there are special requirements for the product, or apply it in special industries (such as aerospace, medical, life support, etc.), we strongly recommend that to perform joint application risk and quality assessments, get the quality agreements.

(4) During the application, if the working conditions are beyond the limitation of temperature, voltage, current or safe operating area of the product defined in the product datasheet, our company cannot guarantee the reliability of the product.

(5) We annotate datasheet in the top right hand corner of the front page, to indicate product status. The annotation “Preliminary” indicates the product design is complete and final characterization for volume production is in progress, the product information in the datasheet is currently can be referenced, but some details may change in the future. There is no annotation indicates the product is capable to produce in batch quantity.