

650V IGBT Wafer

Ordering Information

Wafer Name	CD192IG650AF	Chip Name	/
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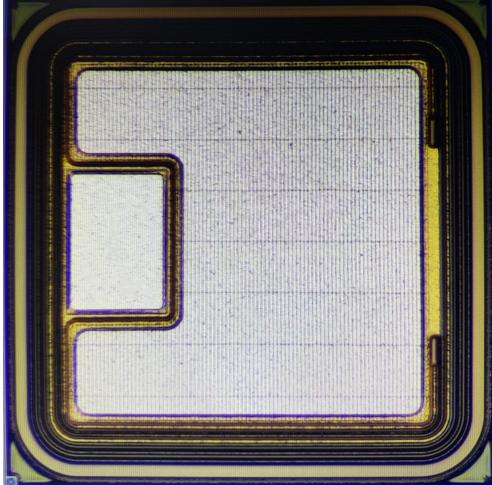
Applications

- Home appliances
- Motor drives
- Fan, Pumps, Vacuum cleaner

Features

- ① Trench field-stop IGBT technology.
- ② High ruggedness performance.
- ③ Positive $V_{CE(sat)}$ temperature coefficient.
- ④ Very tight parameter distribution.
- ⑤ HBM $\geq \pm 2000V$
- ⑥ CDM $\geq \pm 500V$

Die outline and Info.

	$V_{CE}=650V, I_C=6A$ $V_{CE(sat)}=1.7V$ Die Size: 1920 μm * 1920 μm (含划片槽) Gate Pad Size: 474 μm * 324 μm Source Pad Size: As Die Drawing, With PA Layer Back Metal: AlTiNiAg, 1.3 μm Front Metal, Thickness: AlSiCu, 5.5 μm Gross Die: 7001
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Mechanical Data

Nominal Back Metal Composition:	AlTiNiAg 1.3 μm
Nominal Front Metal Composition, Thickness:	AlSiCu(98.5%-1%-0.5%) 5.5 μm
Wafer Diameter:	200 mm (8 inch)
Wafer Thickness:	85 \pm 10 μm
Minimum Street Width	60 μm
Reject Ink Dot	ink
Recommended Storage Environment:	Store in original container, in desiccated nitrogen, with no contamination
Recommended Die Attach Conditions:	For optimum electrical results, die attach temperature should not exceed 300 °C

Electrical Characteristic Note*

(Device Major Electrical Characteristics for TO-247H package Reference ; $T_{vj}=25^{\circ}\text{C}$ unless otherwise specified.)

Parameter	Description	Min.	Typ.	Max.	Test Conditions	Unit	
$V_{(\text{BR})\text{CES}}$	Collector-to-Emitter BV	650	--	--	$V_{\text{GE}} = 0\text{V}$, $I_{\text{C}} = 1\text{mA}$	V	
V_{GES}	Gate-to-Emitter Voltage	--	--	± 20	NA	V	
I_{C}	DC collector current	--	6	--	$T_{\text{C}} = 100^{\circ}\text{C}$	A	
I_{CM}	Pulsed collector current	--	24	--	$V_{\text{GE}} = 15\text{V}$, t_{p} limited by $T_{vj\text{ max}}$	A	
$V_{\text{CE}(\text{sat})}$	Collector-to-Emitter saturation Voltage	--	1.7	2.0	$V_{\text{GE}} = 15\text{V}$, $I_{\text{C}} = 6\text{A}$	V	
$V_{\text{GE}(\text{th})}$	Gate-to-Emitter Threshold Voltage	5.8	6.3	6.8	$V_{\text{CE}} = V_{\text{GE}}$, $I_{\text{C}} = 1\text{mA}$	V	
I_{CES}	Collector-to-Emitter Leakage Current	--	--	10	$V_{\text{CE}} = 650\text{V}$, $V_{\text{GE}} = 0\text{V}$, $T_{vj} = 25^{\circ}\text{C}$	μA	
I_{GES}	Gate-to-Emitter Leakage Current	--	--	± 100	$V_{\text{GE}} = \pm 20\text{V}$	μA	
C_{ies}	Input capacitance	--	355	--	$V_{\text{GE}} = 0\text{V}$, $V_{\text{CE}} = 30\text{V}$, $f = 1\text{MHz}$	pF	
C_{res}	Reverse transfer capacitance	--	8	--		pF	
$t_{\text{d}(\text{on})}$	Turn-on delay time	--	9	--	$V_{\text{CC}} = 400\text{V}$, $I_{\text{C}} = 6\text{A}$ $V_{\text{GE}} = 0/15\text{V}$ $R_{\text{g}} = 10\Omega$	ns	
t_{r}	Rise time	--	18	--		ns	
$t_{\text{d}(\text{off})}$	Turn-off delay time	--	24	--		ns	
t_{f}	Fall time	--	91	--		ns	
E_{off}	Turn-off energy	--	0.09	--	$V_{\text{GE}} = 15\text{V}$, $V_{\text{CE}} \leq 400\text{V}$, $T_{\text{J}} \leq 150^{\circ}\text{C}$	mJ	
T_{sc}	Short circuit withstand time	8	--	--		μs	
T_{vj}	Operating Junction and Storage Temperature Range	-40°C to 175°C Max.				$^{\circ}\text{C}$	
T_{STG}							

Note*

Electrical characteristics are reported for the reference packaged part (TO-247H) and can not be guaranteed in die sales form. Variations in customer packaging materials, dimensions and processes may affect parametric performance.

Shipping

- One shipping options is offered as standard.
- Un-sawn wafer

Handling

- Product must be handled only at ESD safe workstations. Standard ESD precautions and safe work environments are as defined in MIL-HDBK-263.
- Product must be handled only in a class 10,000 or better-designated clean room environment.

Wafer/Die Storage

- Proper storage conditions are necessary to prevent product contamination and/or degradation after shipment.
- Un-sawn wafers and singulated die can be stored for up to 12 months when in the original sealed packaging at room temperature (45% +/- 15% RH controlled environment).
- Un-sawn wafers and singulated die that have been opened can be stored when returned to their containers and placed in a Nitrogen purged cabinet, at room temperature (45% +/- 15% RH controlled environment).
- Note: To reduce the risk of contamination or degradation, it is recommended that product not being used in the assembly process be returned to their original containers and resealed with a vacuum seal process.
- Sawn wafers on a film frame are intended for immediate use and have a limited shelf life.

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