

650V IGBT Wafer

Ordering Information

Wafer Name	CD192IG650AF	Chip Name	/
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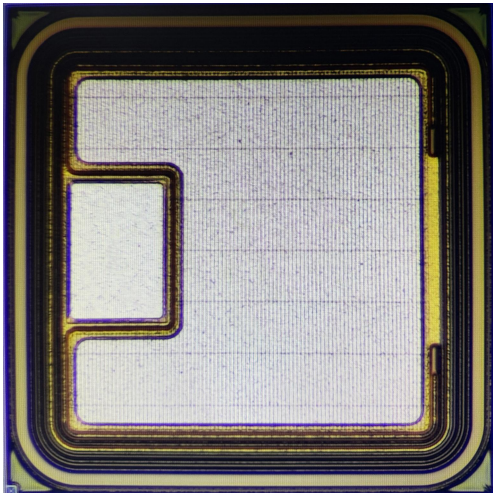
Applications

- 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.

	<p>$V_{CE}=650V, I_c=6A$</p> <p>$V_{CE(sat)}=1.7V$</p> <p>Die Size: $1920\mu m \times 1920\mu m$ (含划片槽)</p> <p>Gate Pad Size: $474\mu m \times 324\mu m$</p> <p>Source Pad Size: As Die Drawing, With PA Layer</p> <p>Back Metal: AlTiNiAg, $1.3\mu m$</p> <p>Front Metal, Thickness: AlSiCu, $5.5\mu m$</p> <p>Gross Die: 7001</p>
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Mechanical Data

Nominal Back Metal Composition:	AlTiNiAg $1.3\mu m$
Nominal Front Metal Composition, Thickness:	AlSiCu(98.5%-1%-0.5%) $5.5\mu m$
Wafer Diameter:	200 mm (8 inch)
Wafer Thickness:	$85 \pm 10\mu m$
Minimum Street Width	$60\mu m$
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 $300^\circ C$

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

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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