

## AK Trench-FS IGBT

### Features

- Trench FS technology
- Low  $V_{CE(sat)}$
- Low EMI

### Application

- Converters
- Power drivers

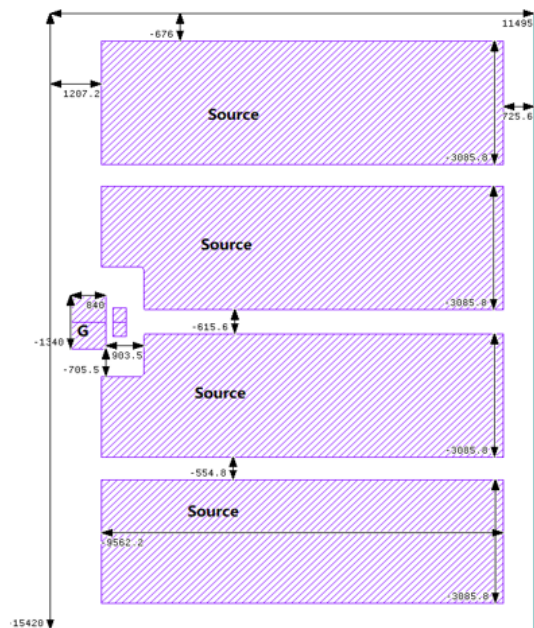
Wafer Size (inch)	8
Chip Size with scribe (mm <sup>2</sup> )	11.575 x 15.5
Wafer Thickness (μm)	120±10
Gate PAD Size (mm <sup>2</sup> )	0.84 x 1.34
Emitter PAD Size (mm <sup>2</sup> )	3.085 x 9.562
Top Metal	AlCu
Top Metal Thickness (μm)	5
Back Metal	Al/Ti/Ni/Ag
Scribe Line (μm)	80
Passivation	Polyimide
Gross Die	144
Recommended Storage Environment	Store in original container, in dry nitrogen, <3months at an ambient temperature of 23±3°C

### 1200V200A Trench FS IGBT

Parameter	Value	Unit
$V_{CE}$	1200	V
$I_c$	200	A
$V_{CE(sat)}$ at $I_c=200A$ (Wafer level test)	2.1	V

Unit: μm

Die Size Without 80μm scribe line



## Maximum Ratings (T<sub>j</sub>=25°C, unless otherwise specified)

Parameter	Symbol	Value	Unit
Collector-emitter voltage	V <sub>CE</sub>	1200	V
Gate-emitter voltage	V <sub>GE</sub>	+/-20	V
DC collector current	I <sub>C</sub>	400	A
T <sub>j</sub> =25°C		200	
T <sub>j</sub> =100°C	I <sub>CM</sub>	600	A
Pulsed collector current	t <sub>SC</sub>	20	us
Short circuit withstand time (V <sub>GE</sub> =15V, V <sub>CC</sub> =600V)	T <sub>vj</sub>	-40~+175	°C
Junction temperature range	T <sub>vjop</sub>	-40~+150	°C
Operating junction temperature			

## Electrical Characteristics at T<sub>j</sub>=25°C (unless otherwise specified)

Parameter	Symbol	Conditions	Value			Unit
			Min.	Typ.	Max.	
<b>Static Characteristic (Test on wafer)</b>						
Collector-emitter breakdown voltage	V <sub>(BR)CES</sub>	V <sub>GE</sub> =0V, I <sub>C</sub> =1mA	1200	-	-	V
Gate-emitter threshold voltage	V <sub>GE(th)</sub>	I <sub>C</sub> =7.5mA, V <sub>CE</sub> =V <sub>GE</sub>	5	5.8	6.6	V
Collector-emitter saturation voltage	V <sub>CE(sat)</sub>	V <sub>GE</sub> =15V, I <sub>C</sub> =200A	-	2.1	2.45	V
Gate leakage current	I <sub>GES</sub>	V <sub>CE</sub> =0V, V <sub>GE</sub> =+/-20V	-	-	500	nA
Collector leakage current	I <sub>CES</sub>	V <sub>CE</sub> =1200V, V <sub>GE</sub> =0V	-	-	250	uA
<b>Dynamic Characteristic <sup>(a)</sup></b>						
Input capacitance	C <sub>ies</sub>	V <sub>GE</sub> =0V, V <sub>CE</sub> =25V f=1MHz	-	14.5	-	nF
Output capacitance	C <sub>oes</sub>		-	490	-	pF
Reverse transfer capacitance	C <sub>res</sub>		-	420	-	pF
Gate charge	Q <sub>g</sub>	V <sub>CC</sub> =960V, I <sub>C</sub> =200A V <sub>GE</sub> =15V	-	4.5	-	uC

(a) Dynamic and switching test data depending on TO264 package, not subject to production test