XW15G120CX0

Trench Field-Stop Technology IGBT

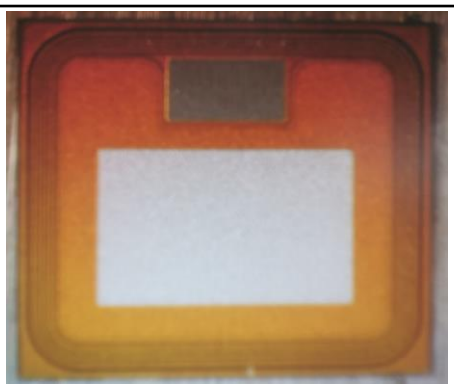
Features

- 1200V, 15A
- Low Switching Losses
- Low $V_{CE(sat)}$ with Positive Temperature Coefficient
- Pb-free Lead Plating; RoHS Compliant

Applications

- Frequency Converters
- Uninterruptive Power Supply
- Air Conditioning
- Motor Drives

Die Description



	Wafer Diameter	8 inches
	Wafer Thickness	5 mils
	Die Size(including SL)	4142*3800 um²
	Scribe Line Width	80 um
	Gross Die	1679
Metalization	Frontside	AlSiCu
	Backside	Al/Ti/NiV/Ag
Metal Thickness	Frontside	4 um
	Backside	1.1 um
Bonding Area	Gate	1081*602 um²
	Emitter	2316*1493 um²
Recommended Wire Bonding	Gate	Al/5mils*1
	Emitter	Al/15mils*1

Absolute Maximum Ratings[1] (T_C=25℃, unless otherwise noted)

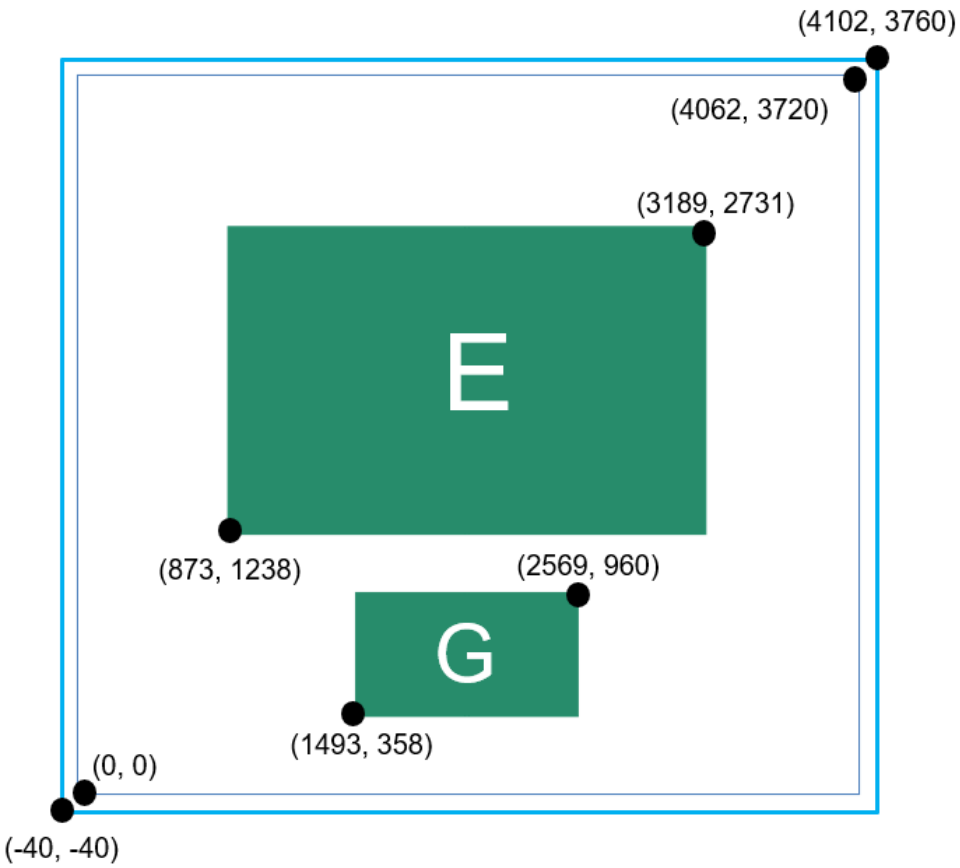
Symbol	Parameter	Value	Unit
V_{CES}	Collector-Emitter Voltage	1200	V
V_{GES}	Gate-Emitter Voltage	±20	V
I_C	Continuous Collector Current (T_C=25℃)	30	A
	Continuous Collector Current (T_C=100℃)	15	A
I_{CM}	Pulsed Collector Current[2]	45	A
t_{sc}	Short Circuit Withstand Time	10	us
T_J	Operating Junction Temperature Range	-55 to 175	℃
T_{STG}	Storage Temperature Range	-55 to 150	℃

Electrical Characteristic[1] (T_C=25℃, unless otherwise noted)

Symbol	Parameter	Conditions	Values			Unit
			Min.	Typ.	Max.	
B_{VCES}	Collector-Emitter Breakdown Voltage	V_{GE}=0V, I_C=500uA	1200	---	---	V
I_{CES}	Collector-Emitter Leakage Current	V_{CE}=1200V, V_{GE}=0V	---	---	1	mA
I_{GES}	Gate Leakage Current, Forward	V_{GE}=20V, V_{CE}=0V	---	---	400	nA
	Gate Leakage Current, Reverse	V_{GE}=-20V, V_{CE}=0V	---	---	-400	nA
$V_{GE(th)}$	Gate Threshold Voltage	V_{GE}=V_{CE}, I_C=480uA	5.2	5.8	6.4	V
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	V_{GE}=15V, I_C=15A	---	2.00	2.25	V
Q_G	Total Gate Charge	V_{CC}=960V V_{GE}=15V I_C=15A	---	68	---	nC
Q_{GE}	Gate-Emitter Charge		---	12.8	---	nC
Q_{GC}	Gate-Collector Charge		---	50.2	---	nC
$t_{d(on)}$	Turn-on Delay Time	V_{CC}=600V V_{GE}=±15V I_C=15A R_G=39Ω Inductive Load T_C=25℃	---	36	---	ns
t_r	Turn-on Rise Time		---	28	---	ns
$t_{d(off)}$	Turn-off Delay Time		---	215	---	ns
t_f	Turn-off Fall Time		---	226	---	ns
E_{on}	Turn-on Switching Loss		---	1.62	---	mJ
E_{off}	Turn-off Switching Loss		---	1.11	---	mJ
E_{ts}	Total Switching Loss		---	2.73	---	mJ
C_{ies}	Input Capacitance	V_{CE}=25V V_{GE}=0V f=1MHz	---	903	---	pF
C_{oes}	Output Capacitance		---	94	---	pF
C_{res}	Reverse Transfer Capacitance		---	48	---	pF

Note 1：Tested on package TO-247
2：Repetitive Rating, Pulse width limited by maximum junction temperature

Chip Outline& Information:



Die Size:
(including SL)
4142 * 3800 um^2
Gate Pad Size:
1076 * 602 um^2
Emitter Pad Size:
2316 * 1493 um^2
Scribe Line:
80 um

Revision History

Ver.	Date	Change Notice
1.0	2020/11/10	Released