

XMGW50T120HA1T

IGBT Chip

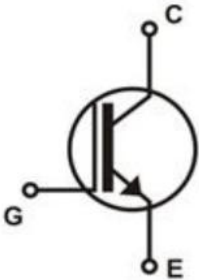
Features:

- Trench & Field Stop technology
- Low Vcesat
- Positive Vcesat temperature coefficient
- Low turn-off losses
- Short tail current
- Easy paralleling

V _{CE}	1200V
I _c	50A
Die Size	6473.9 um × 7454.3 um

Applications:

- The inverter



G: gate C: collector E: emitter

Internal Circuit

Mechanical Parameters

Parameter	Value
Die Size	6473.9 um × 7454.3 um
Scirbe line	80 μm
Gate Pad Size	1104 um, 730 um
Wafer Size	300mm
Wafer Thickness	130μm
Max. possible chips per wafer	1268
Front side Metal	Al /Cu, 5μm
Backside Metal	Al / Ti/ Ni / Ag

Maximum Ratings

Symbol	Description	Value	Unit
V_{CE}	Collector-Emitter Voltage, $T_j = 25^\circ\text{C}$	1200	V
I_C	DC Collector Current, Limited By $T_{jmax.}$	50 ¹⁾	A
$I_{C, puls}$	Pulsed Collector Current, tp Limited By $T_{jmax.}$	100	A
V_{GE}	Gate Emitter Voltage	± 20	V
T_{vj}	Junction Temperature Range	$-40....+175$	$^\circ\text{C}$
$T_{j, T_{stg}}$	Operating Junction And Storage Temperature	$-40....+150$	$^\circ\text{C}$
tsc	Short Circuit Data $V_{GE} = 15V, V_{CC} = 600V, T_j = 150^\circ\text{C}$	10 ¹⁾	μs
RBSOA	Reverse Bias Safe Operating Area ²⁾	$I_{C, max} = 100A, V_{CE, max} = 1200V,$ $T_{vj} \leq 150^\circ\text{C}$	

1) depending on Leading Energy L1 package

2) Not subject to production test - verified by design/characterization

Static Characteristics ($T_j = 25^\circ\text{C}$, unless otherwise specified) ¹⁾

Symbol	Description	Test conditions	Value			Unit
			Min.	Typ.	Max.	
$V_{(BR)CES}$	Collector-Emitter breakdown voltage	$V_{GE}=0V, I_C=1\text{mA}$	1200	-	-	V
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$V_{GE} = 15V, I_C = 50A$		1.7	2.0	V
$V_{GE(th)}$	Gate Threshold Voltage	$V_{CE} = V_{GE}, I_C = 2\text{mA}$	5.0	6.0	6.5	V
I_{CES}	Collector-Emitter Cut-off Current	$V_{CE} = 1200V, V_{GE} = 0V$	-	-	20	μA
I_{GES}	Gate - Emitter Leakage Current	$V_{CE} = 0V, V_{GE} = 20V$	-	-	200	nA
r_G	Integrated gate resister		-	1.1	-	Ω
C_{ies}	Input Capacitance	$V_{CE} = 25V, V_{GE} = 0V,$ $f = 1\text{MHZ}$	-	4.8	-	nF
C_{oes}	Output Capacitance		-	281	-	pF
C_{res}	Reverse Transfer Capacitance		-	140	-	pF

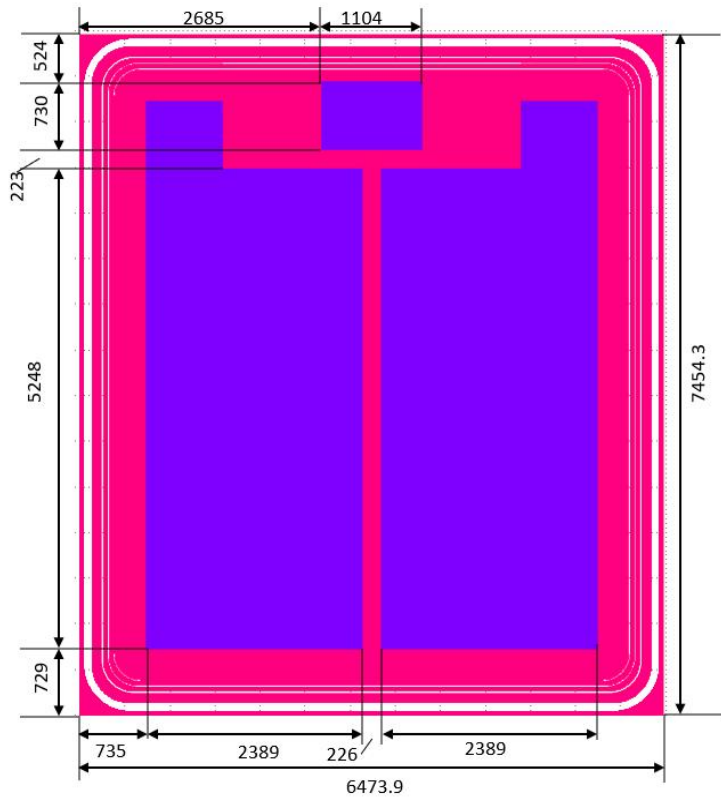
1) depending on Leading Energy L1 package

Dynamic Characteristics ($T_j = 25\text{ }^{\circ}\text{C}$, unless otherwise specified) ¹⁾

Symbol	Description	Test conditions	Value			Unit
			Min.	Typ.	Max.	
$t_{d(on)}$	Turn-on Delay Time	$I_C=50\text{ A}, V_{CE}=600\text{ V}$ $V_{GE}=\pm 15\text{ V}$ $R_{Gon}=10\Omega$ $T_j=25\text{ }^{\circ}\text{C}$	-	73	-	ns
t_r	Rise Time		-	41	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	232	-	ns
t_f	Fall TimeLeakage Current		-	159	-	ns
Eon	Turn-on Switching Loss		-	1.7	-	mJ
Eoff	Turn-off Switching Loss		-	3.4	-	mJ
$t_{d(on)}$	Turn-on Delay Time	$I_C=50\text{ A}, V_{CE}=600\text{ V}$ $V_{GE}=\pm 15\text{ V}$ $R_{Gon}=10\Omega$ $T_j=150\text{ }^{\circ}\text{C}$	-	62	-	ns
t_r	Rise Time		-	42	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	280	-	ns
t_f	Fall TimeLeakage Current		-	268	-	ns
Eon	Turn-on Switching Loss		-	3.5	-	mJ
Eoff	Turn-off Switching Loss		-	4.6	-	mJ

1) depending on Leading Energy L1 package

Chip Drawing (Dimensions: μm)



DISCLAIMER

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE
TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE