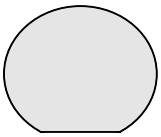
MG7405WZ

1800V 40A Insulated Gate Bipolar Transistor Datasheet

V_{CES}	1800V
$I_{C\ (Nominal)}$	40A
$V_{CE(sat)\ (Typ.)}$	2.2V
Max. Possible Chips per Wafer	288pcs

●Outline

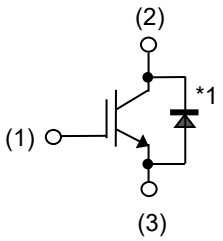
Wafer



●Features

1) Trench Light Punch Through Type
2) Low Collector - Emitter Saturation Voltage
3) High Speed Switching
4) Low Switching Loss & Soft Switching
5) Monolithic Body Diode
with Low Forward Voltage

●Inner Circuit



(1) Gate
(2) Collector
(3) Emitter

*1 Monolithic Body Diode

●Application

Voltage - Resonance Inverter

Induction Heating

●Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Collector - Emitter Voltage, T_j = 25°C	V_{CES}	1800	V
Gate - Emitter Voltage	V_{GES}	±30	V
Collector Current	I_C *1	*1)	A
Pulsed Collector Current	I_{CP} *2	120	A
Diode Forward Current	I_F *1	*1)	A
Diode Pulsed Forward Current	I_{FP} *2	80	A
Operating Junction Temperature	T_j	-40 to +175	°C

*1 Depending on thermal properties of assembly

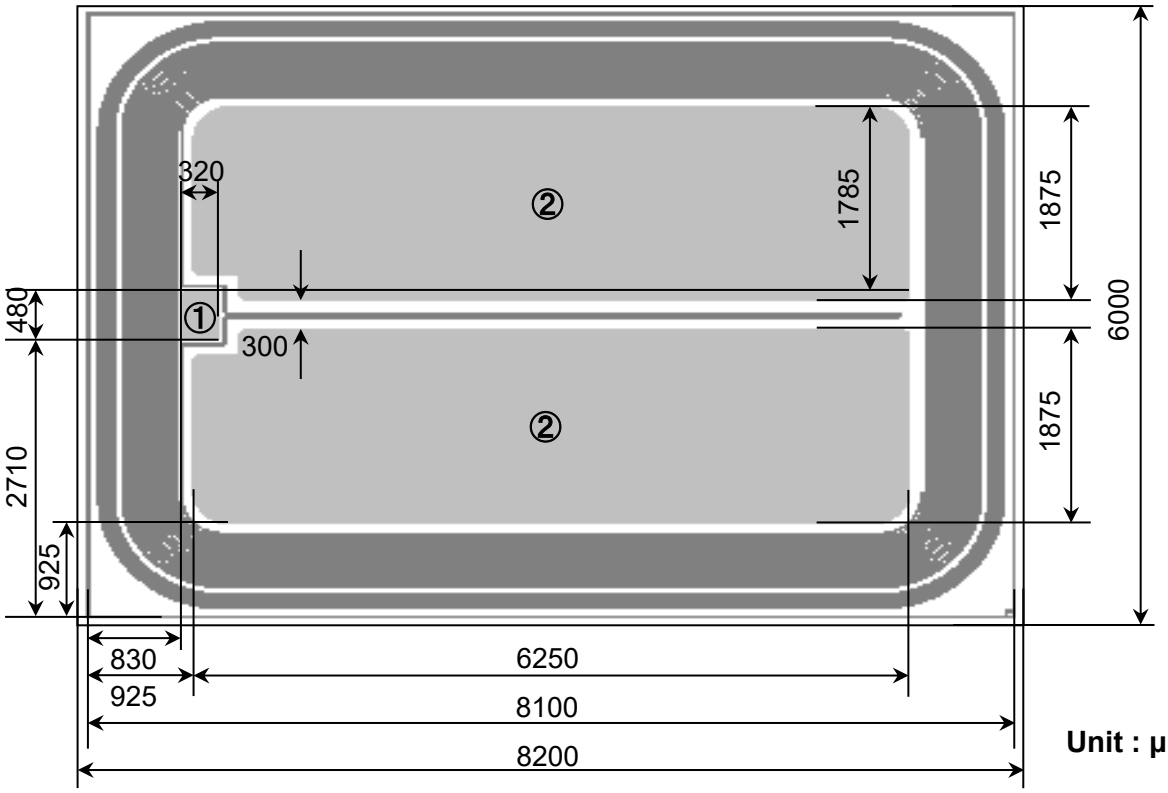
*2 Pulse width limited by $T_{jmax.}$

●**Electrical Characteristics** (at Tj = 25°C unless otherwise specified, in case of TO-247N package)

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Collector - Emitter Breakdown Voltage	BV_{CES}	I_C = 10μA, V_{GE} = 0V	1800	-	-	V
Collector Cut - off Current	I_{CES}	V_{CE} = 1860V, V_{GE} = 0V	-	-	10	μA
Gate - Emitter Leakage Current	I_{GES}	V_{GE} = ±30V, V_{CE} = 0V	-	-	±200	nA
Gate - Emitter Threshold Voltage	$V_{GE(th)}$	V_{CE} = 5V, I_C = 120.7mA	5.0	6.0	7.0	V
Collector - Emitter Saturation Voltage	$V_{CE(sat)}$ *3	I_C = 40A, V_{GE} = 15V,				V
		T_j = 25°C	-	2.2	5.0	
		T_j = 175°C	-	2.9	-	
Input Capacitance	C_{ies}	V_{CE} = 30V,	-	9550	-	pF
Output Capacitance	C_{oes}	V_{GE} = 0V,	-	115	-	
Reverse transfer Capacitance	C_{res}	f = 1MHz	-	102	-	
Total Gate Charge	Q_g	V_{CE} = 600V,	-	468	-	nC
Gate - Emitter Charge	Q_{ge}	I_C = 40A,	-	93	-	
Gate - Collector Charge	Q_{gc}	V_{GE} = 15V	-	155	-	
Diode Forward Voltage	V_F *3	I_F = 40A, V_{GE} = 0V,				V
		T_j = 25°C	-	1.8	2.3	
		T_j = 175°C	-	2.4	-	

*3 Design assurance without measurement

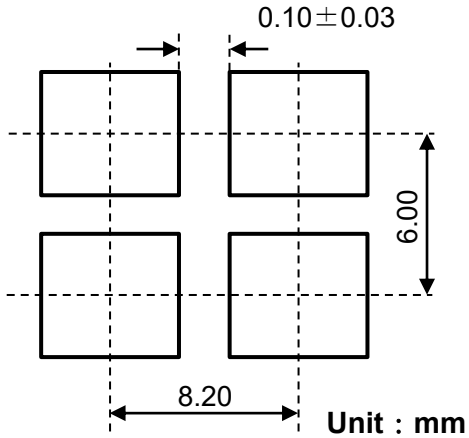
●Chip Information



: Pad Area

① : Gate Bonding Pad

② : Emitter Bonding Pad



Backside : Collector

Wafer Size	150mm
Wafer Thickness	0.18±0.01mm
Chip Size	8.20mm×6.00mm
Cut Line Width	0.10±0.03mm
Top Side Metallization	AlSiCu:4.4μm
Back Side Metallization	Ti/Ni:0.4μm/Au:0.05μm
Passivation	Polyimide

●Further Electrical Characteristics

Switching characteristics and thermal properties are depending strongly on module design and mounting technology and can therefore not be specified for a bare die.

This chip data sheet refers to the device data sheet	RGC80TSX8R

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