

V_{CES}	650V
I_C (Nominal)	50A
$V_{CE(sat)}$ (Typ.)	1.65V
Max. Possible Chips per Wafer	1272pcs

●Features

- 1) Trench Light Punch Through Type
- 2) Low Collector - Emitter Saturation Voltage
- 3) Low Switching Loss
- 4) Short Circuit Withstand Time 5 μ s

●Application

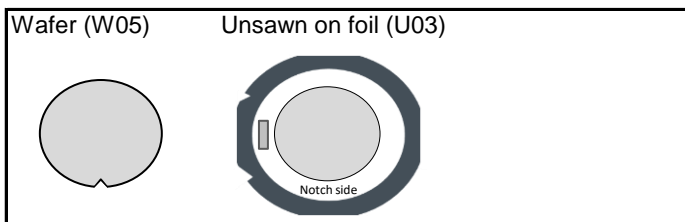
General Inverter

UPS

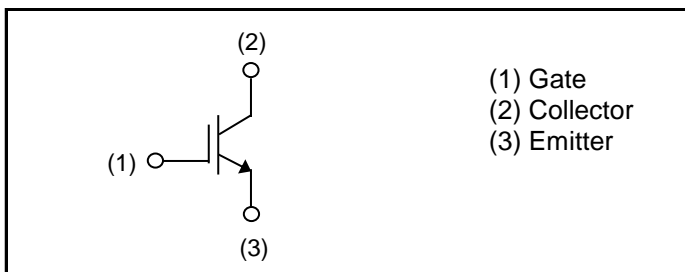
Power Conditioner

Welding

●Outline



●Inner Circuit



●Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Collector - Emitter Voltage, $T_j = 25^\circ\text{C}$	V_{CES}	650	V
Gate - Emitter Voltage	V_{GES}	± 30	V
Collector Current	I_C^{*1}	$^{*1)}$	A
Pulsed Collector Current	I_{CP}^{*2}	150	A
Operating Junction Temperature	T_j	-40 to +175	$^\circ\text{C}$

*1 Depending on thermal properties of assembly

*2 Pulse width limited by T_{jmax} .

●Design Assurance

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Short Circuit Withstand Time	t_{sc}^{*3}	$V_{CC} \leq 360V$, $V_{GE} = 15V$, $T_j = 25^\circ C$	5	-	-	μs
Reverse Bias Safe Operating Area	RBSOA ^{*3}	$I_C = 150A$, $V_{CC} = 520V$, $V_P = 650V$, $V_{GE} = 15V$, $R_G = 50\Omega$, $T_j = 175^\circ C$	FULL SQUARE			-

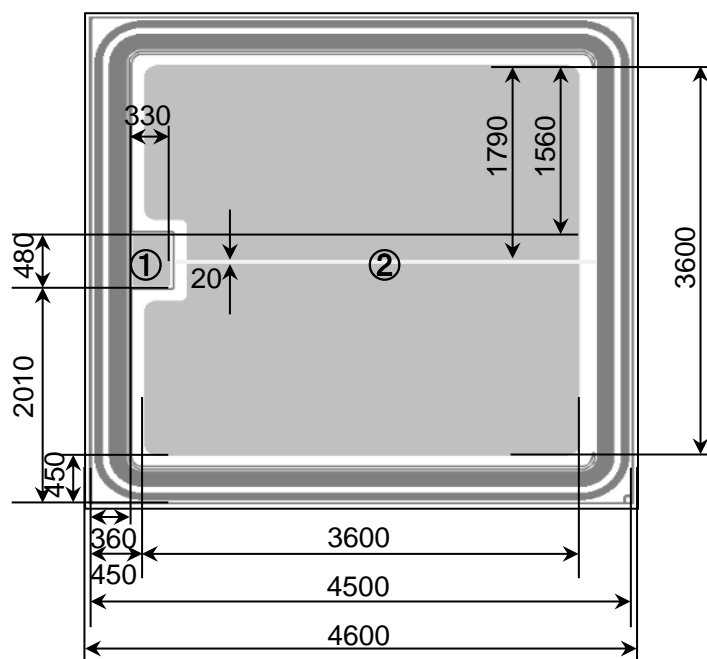
*3 Design assurance without measurement

●Electrical Characteristics (at $T_j = 25^\circ C$ unless otherwise specified, in case of TO-247N package)


Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Collector - Emitter Breakdown Voltage	BV_{CES}	$I_C = 10\mu A$, $V_{GE} = 0V$	650	-	-	V
Collector Cut - off Current	I_{CES}	$V_{CE} = 650V$, $V_{GE} = 0V$	-	-	10	μA
Gate - Emitter Leakage Current	I_{GES}	$V_{GE} = \pm 30V$, $V_{CE} = 0V$	-	-	± 200	nA
Gate - Emitter Threshold Voltage	$V_{GE(th)}$	$V_{CE} = 5V$, $I_C = 34.7mA$	5.0	6.0	7.0	V
Collector - Emitter Saturation Voltage	$V_{CE(sat)}^{*3}$	$I_C = 50A$, $V_{GE} = 15V$, $T_j = 25^\circ C$	-	1.65	2.1	V
		$T_j = 175^\circ C$	-	2.2	-	
Input Capacitance	C_{ies}	$V_{CE} = 30V$,	-	2770	-	pF
Output Capacitance	C_{oes}	$V_{GE} = 0V$,	-	106	-	
Reverse transfer Capacitance	C_{res}	$f = 1MHz$	-	43	-	
Total Gate Charge	Q_g	$V_{CE} = 300V$,	-	94	-	nC
Gate - Emitter Charge	Q_{ge}	$I_C = 50A$,	-	22	-	
Gate - Collector Charge	Q_{gc}	$V_{GE} = 15V$	-	31	-	

*3 Design assurance without measurement

●Chip Information



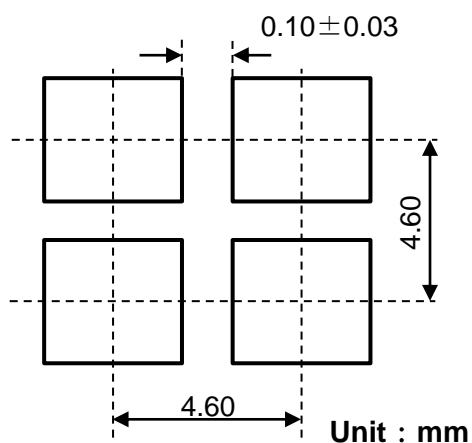
Unit : μm

 : Pad Area

① : Gate Bonding Pad

② : Emitter Bonding Pad

Backside : Collector



Unit : mm

Wafer Size	200mm
Wafer Thickness	0.08±0.01mm
Chip Size	4.60mm×4.60mm
Cut Line Width	0.10±0.03mm
Top Side Metallization	AlCu:4.4 μm
Back Side Metallization	Ti/Ni:0.4 μm /Au:0.05 μm
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

RGT00TS65D

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