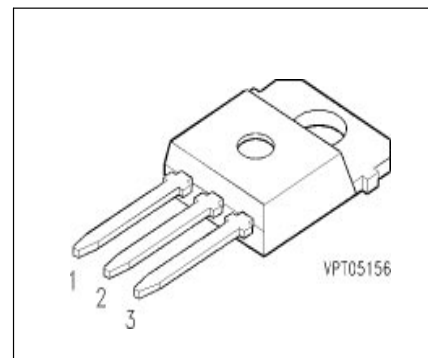


IGBT

Preliminary data

- High switching speed
- Low tail current
- Latch-up free
- Avalanche rated
- Low forward voltage drop

Remark: The TO-218 AB case doesn't solve the standards VDE 0110 and UL 508 for creeping distance



Pin 1	Pin 2	Pin 3
G	C	E

Type	V_{CE}	I_C	Package	Ordering Code
BUP 309	1700V	25A	TO-218 AB	Q67078-A4204-A2

Maximum Ratings

Parameter	Symbol	Values	Unit
Collector-emitter voltage	V_{CE}	1700	V
Collector-gate voltage $R_{GE} = 20 \text{ k}\Omega$	V_{CGR}	1700	
Gate-emitter voltage	V_{GE}	± 20	
DC collector current $T_C = 25 \text{ }^\circ\text{C}$ $T_C = 90 \text{ }^\circ\text{C}$	I_C	25 16	A
Pulsed collector current, $t_p = 1 \text{ ms}$ $T_C = 25 \text{ }^\circ\text{C}$ $T_C = 90 \text{ }^\circ\text{C}$	I_{Cpuls}	50 32	
Avalanche energy, single pulse $I_C = 15 \text{ A}$, $V_{CC} = 50 \text{ V}$, $R_{GE} = 25 \text{ }\Omega$ $L = 200 \text{ }\mu\text{H}$, $T_j = 25 \text{ }^\circ\text{C}$	E_{AS}	23	
Power dissipation $T_C = 25 \text{ }^\circ\text{C}$	P_{tot}	310	W
Chip or operating temperature	T_j	-55 ... + 150	$^\circ\text{C}$
Storage temperature	T_{stg}	-55 ... + 150	

Maximum Ratings

Parameter	Symbol	Values	Unit
DIN humidity category, DIN 40 040	-	E	-
IEC climatic category, DIN IEC 68-1	-	55 / 150 / 56	

Thermal Resistance

Thermal resistance, chip case	R_{thJC}	≤ 0.4	K/W
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Electrical Characteristics, at $T_j = 25\text{ °C}$, unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	

Static Characteristics

Gate threshold voltage $V_{GE} = V_{CE}, I_C = 1\text{ mA}$	$V_{GE(th)}$	4.5	5.5	6.5	V
Collector-emitter saturation voltage $V_{GE} = 15\text{ V}, I_C = 15\text{ A}, T_j = 25\text{ °C}$ $V_{GE} = 15\text{ V}, I_C = 15\text{ A}, T_j = 125\text{ °C}$ $V_{GE} = 15\text{ V}, I_C = 15\text{ A}, T_j = 150\text{ °C}$	$V_{CE(sat)}$	-	3.5	4.2	
		-	-	-	
		-	4.5	-	
Zero gate voltage collector current $V_{CE} = 1700\text{ V}, V_{GE} = 0\text{ V}, T_j = 25\text{ °C}$ $V_{CE} = 1700\text{ V}, V_{GE} = 0\text{ V}, T_j = 125\text{ °C}$	I_{CES}	-	1	250	μA
		-	-	1000	
Gate-emitter leakage current $V_{GE} = 20\text{ V}, V_{CE} = 0\text{ V}$	I_{GES}	-	-	100	nA

AC Characteristics

Transconductance $V_{CE} = 20\text{ V}, I_C = 15\text{ A}$	g_{fs}	-	-	-	S
Input capacitance $V_{CE} = 25\text{ V}, V_{GE} = 0\text{ V}, f = 1\text{ MHz}$	C_{iss}	-	2000	2700	pF
Output capacitance $V_{CE} = 25\text{ V}, V_{GE} = 0\text{ V}, f = 1\text{ MHz}$	C_{oss}	-	160	240	
Reverse transfer capacitance $V_{CE} = 25\text{ V}, V_{GE} = 0\text{ V}, f = 1\text{ MHz}$	C_{rss}	-	65	100	

Electrical Characteristics, at $T_j = 25\text{ °C}$, unless otherwise specified

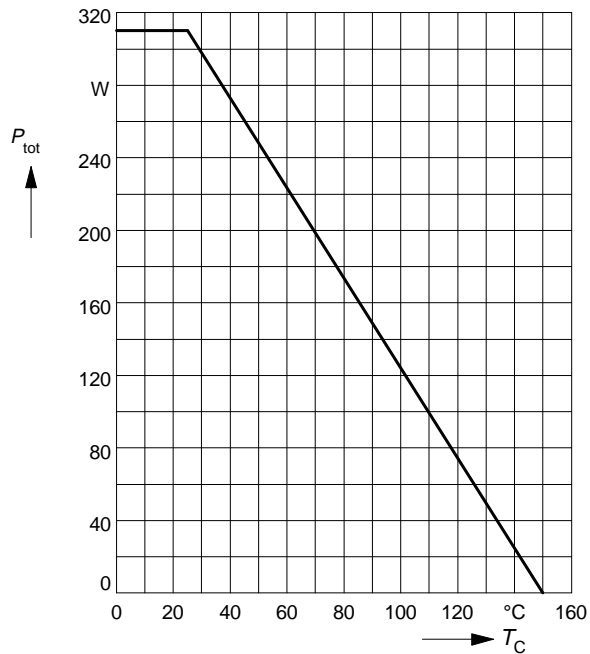
Parameter	Symbol	Values			Unit
		min.	typ.	max.	

Switching Characteristics, Inductive Load at $T_j = 125\text{ °C}$

Turn-on delay time $V_{CC} = 1200\text{ V}$, $V_{GE} = 15\text{ V}$, $I_C = 15\text{ A}$ $R_{Gon} = 33\ \Omega$	$t_{d(on)}$	-	-	-	ns
Rise time $V_{CC} = 1200\text{ V}$, $V_{GE} = 15\text{ V}$, $I_C = 15\text{ A}$ $R_{Gon} = 33\ \Omega$	t_r	-	-	-	
Turn-off delay time $V_{CC} = 1200\text{ V}$, $V_{GE} = -15\text{ V}$, $I_C = 15\text{ A}$ $R_{Goff} = 33\ \Omega$	$t_{d(off)}$	-	150	230	
Fall time $V_{CC} = 1200\text{ V}$, $V_{GE} = -15\text{ V}$, $I_C = 15\text{ A}$ $R_{Goff} = 33\ \Omega$	t_f	-	50	80	

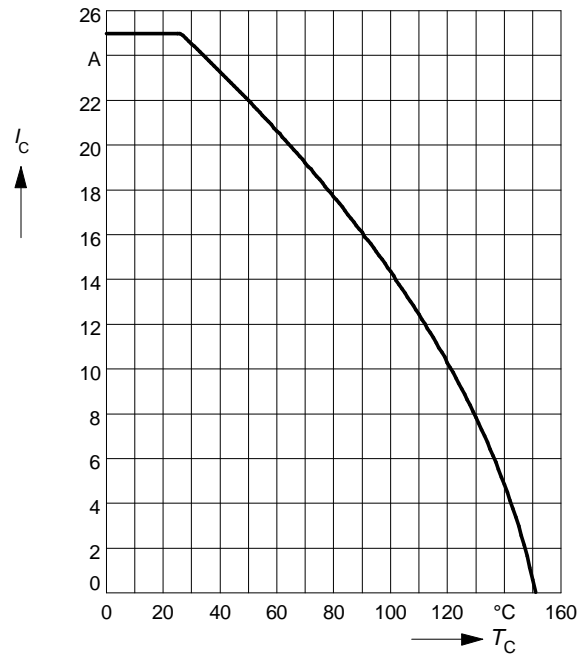
Power dissipation

$P_{tot} = f(T_C)$
parameter: $T_j \leq 150\text{ }^\circ\text{C}$



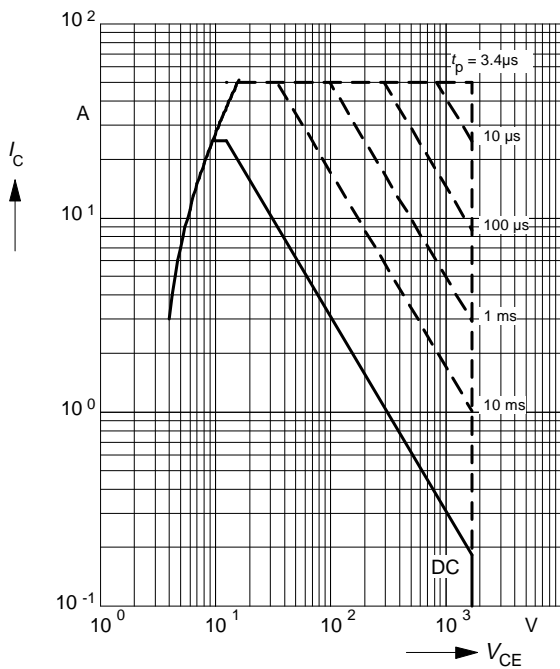
Collector current

$I_C = f(T_C)$
parameter: $V_{GE} \geq 15\text{ V}$, $T_j \leq 150\text{ }^\circ\text{C}$



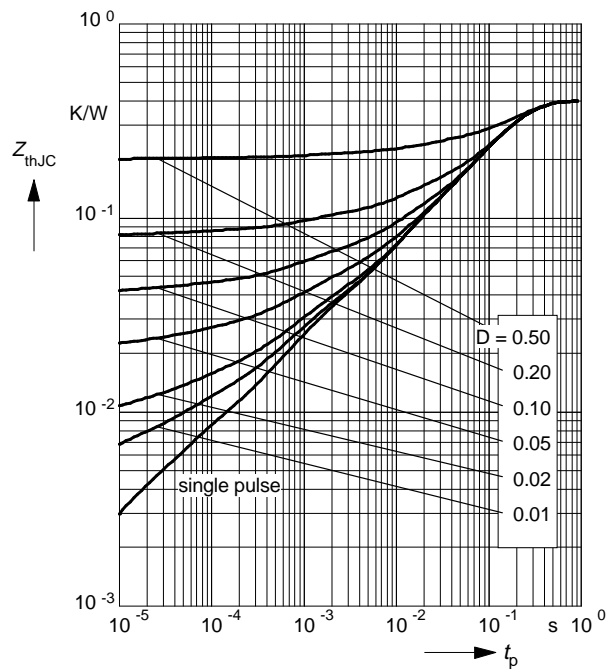
Safe operating area

$I_C = f(V_{CE})$
parameter: $D = 0$, $T_C = 25\text{ }^\circ\text{C}$, $T_j \leq 150\text{ }^\circ\text{C}$



Transient thermal impedance IGBT

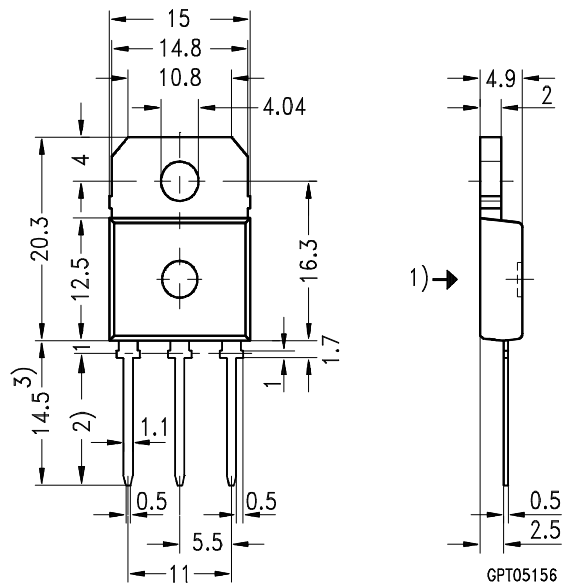
$Z_{thJC} = f(t_p)$
parameter: $D = t_p / T$



Package Outlines

Dimensions in mm

Weight: 8 g



- 1) punch direction, burr max. 0.04
- 2) dip tinning
- 3) max. 15.5 by dip tinning press burr max. 0.05