

Features:

- High Voltage Power Transistor is a fast switching high voltage transistor, more specially intended for operating in industrial
- Collector-Emitter Sustaining Voltage - $V_{CEO(sus)} = 450V$ (Min.) - BUW12A
- Low Collector-Emitter Saturation Voltage - $V_{CE(sat)} = 1.5V$ (Max.) at $I_C = 6A, I_B = 1.2A$

Maximum Ratings

Characteristic	Symbol	BU406	Unit
Collector-Emitter Voltage	V_{CEO}	450	V
Collector-Emitter Voltage ($V_{BE} = 0$)	V_{CES}	1,000	
Emitter-Base Voltage	V_{EBO}	9	
Collector Current-Continuous -Peak	I_C	8 20	A
Base Current-Continuous	I_B	4	
Total Power Dissipation at $T_C = 25^\circ C$ Derate above $25^\circ C$	P_D	125 0.833	W W/ $^\circ C$
Operating and Storage Junction Temperature Range	T_J, T_{STG}	-65 to +150	$^\circ C$

Thermal Characteristics

Characteristic	Symbol	Max.	Unit
Thermal Resistance Junction to Case	$R_{\theta jc}$	1.2	$^\circ C/W$

Power Transistor



Electrical Characteristics ($T_C = 25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Min.	Max.	Unit
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OFF Characteristics

Collector-Emitter Sustaining Voltage (1) $I_C = 100\text{mA}, I_B = 0, L = 25\text{mH}$	BUW12A	$V_{CE(sus)}$	200	-	V
Collector Cut off Current $V_{CE} = 1,000\text{V}, V_{BE} = 0$	BUW12A	I_{CES}	-	0.1	mA
Emitter Cut off Current $V_{EB} = 9\text{V}, I_C = 0$		I_{EBO}	-	10	

ON Characteristics (1)

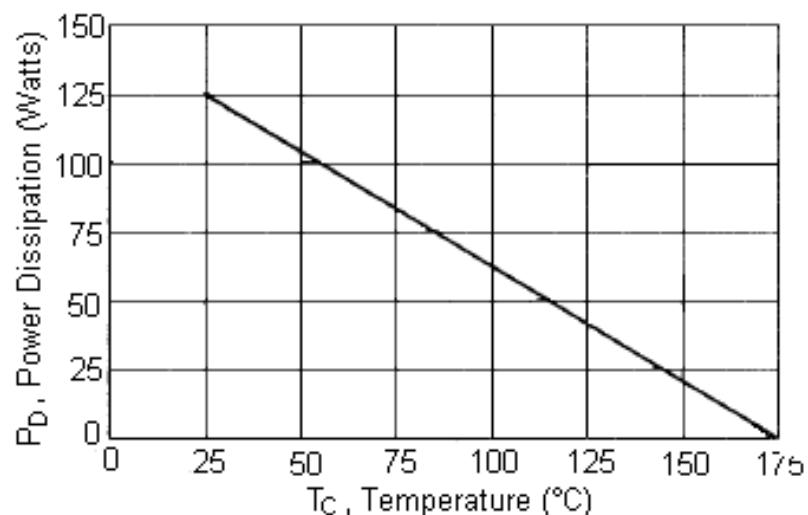
Collector-Emitter Saturation Voltage $I_C = 6\text{A}, I_B = 1.2\text{A}$	$V_{CE(sat)}$	-	1.5	V
Base-Emitter Saturation Voltage $I_C = 6\text{A}, I_B = 1.2\text{A}$	$V_{BE(sat)}$	-		

Switching Characteristics

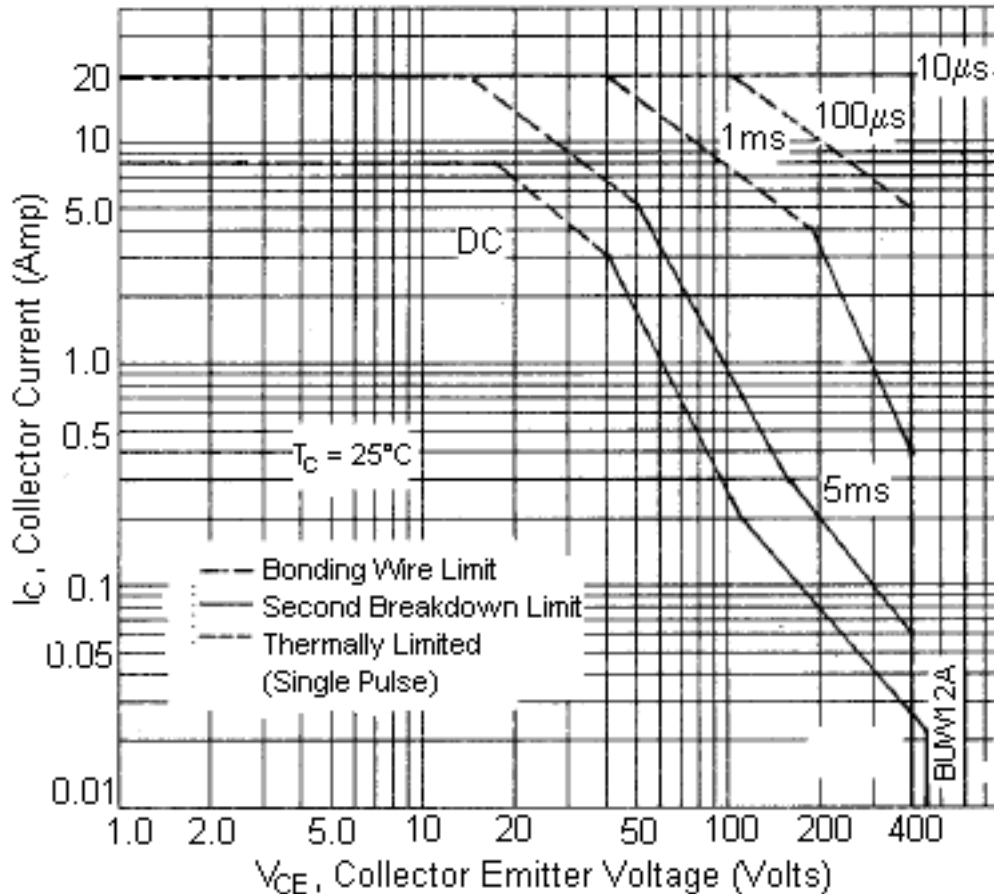
Turn On Time	$V_{CC} = 240\text{V}, I_C = 6\text{A}$ $I_{B1} = 1.2\text{A}, I_{B2} = -1.2\text{A}$	t_{on}	-	1	μs
Storage Time		t_s	-	4	
Fall Time		t_f	-	0.8	

(1) Pulse Test: Pulse Width = $300\mu\text{s}$, Duty Cycle $\leq 2\%$

Power Derating



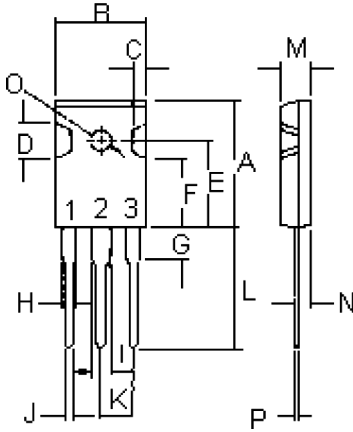
Active-Region Safe Operating Area (SOA)



There are two limitations on the power handling ability of a transistor: average junction temperature and second breakdown safe operating area curves indicate I_C - V_{CE} limits of the transistor that must be observed for reliable operation i.e., the transistor must not be subjected to greater dissipation than the curves indicate.

The data of SOA curve is based on $T_{J(PK)} = 175^\circ\text{C}$; T_C is variable depending on conditions. Second breakdown pulse limits are valid for duty cycles to 10% provided $T_{J(PK)} \leq 175^\circ\text{C}$. At high case temperatures, thermal limitation will reduce the power that can be handled to values less than the limitations imposed by second breakdown.

Power Transistor



Pin Configuration:

1. Base
2. Collector
3. Emitter

Dimensions	Min.	Max.
A	20.63	22.38
B	15.38	16.2
C	1.9	2.7
D	5.1	6.1
E	14.81	15.22
F	11.72	12.84
G	4.2	4.5
H	1.82	2.46
I	2.92	3.23
J	0.89	1.53
K	5.26	5.66
L	18.5	21.5
M	4.68	5.36
N	2.4	2.8
O	3.25	3.65
P	0.55	0.7

Dimensions : Millimetres

Part Number Table

Description	Part Number
Transistor, NPN, TO-247	BUW12A

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