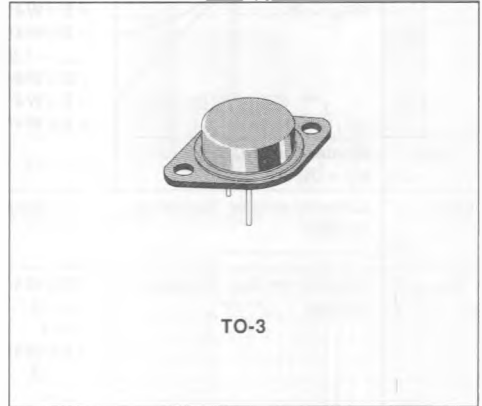




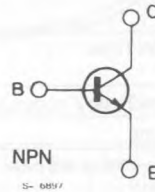
## HIGH VOLTAGE, HIGH CURRENT POWER SWITCH

### DESCRIPTION

The BUW44, BUW45 and BUW46 are multi-epitaxial mesa NPN transistors in Jedec TO-3 metal case intended in fast switching applications for high output powers.



### INTERNAL SCHEMATIC DIAGRAM



### ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value			Unit
		BUW44	BUW45	BUW46	
$V_{CES}$	Collector-emitter Voltage ( $V_{BE} = 0$ )	500	800	900	V
$V_{CEO}$	Collector-emitter Voltage ( $I_B = 0$ )	400	400	450	V
$V_{EBO}$	Emitter-base Voltage ( $I_C = 0$ )	7			V
$I_C$	Collector Current	15			A
$I_{CM}$	Collector Peak Current	30			A
$I_B$	Base Current	10			A
$P_{tot}$	Total Power Dissipation at $T_{case} \leq 25^\circ C$	175			W
$T_{stg}$	Storage Temperature	- 65 to 200			$^\circ C$
$T_J$	Junction Temperature	200			$^\circ C$

**THERMAL DATA**

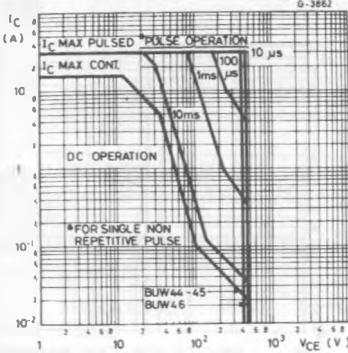
$R_{th(j-case)}$	Thermal Resistance Junction-case	max	1	$^{\circ}C/W$
------------------	----------------------------------	-----	---	---------------

**ELECTRICAL CHARACTERISTICS** ( $T_{case} = 25^{\circ}C$  unless otherwise specified)

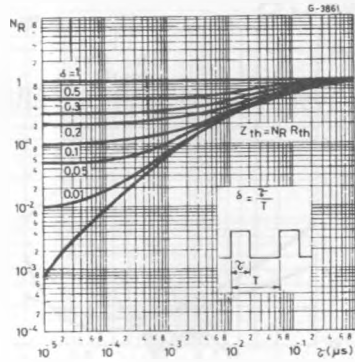
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$I_{CES}$	Collector Cutoff Current ( $V_{BE} = 0$ )	for <b>BUW44</b> $V_{CE} = 500V$ for <b>BUW45</b> $V_{CE} = 800V$ for <b>BUW46</b> $V_{CE} = 900V$ $T_{case} = 125^{\circ}C$ for <b>BUW44</b> $V_{CE} = 500V$ for <b>BUW45</b> $V_{CE} = 800V$ for <b>BUW46</b> $V_{CE} = 900V$			500 500 500 3 3 3	$\mu A$ $\mu A$ $\mu A$ mA mA mA
$I_{EBO}$	Emitter Cutoff Current ( $I_C = 0$ )	$V_{EB} = 7V$			1	mA
$V_{CEO(sus)^*}$	Collector-emitter Sustaining Voltage	$I_C = 100mA$ for <b>BUW44</b> for <b>BUW45</b> for <b>BUW46</b>	400 400 450			V V V
$V_{CE(sat)^*}$	Collector-emitter Saturation Voltage	for <b>BUW44</b> $I_C = 10A$ $I_B = 2A$ $I_C = 6A$ $I_B = 1A$ for <b>BUW45</b> and <b>BUW46</b> $I_C = 10A$ $I_S = 2A$ $I_C = 7A$ $I_B = 1A$			3 1.5 1.5 1.5	V V V V
$V_{BE(sat)^*}$	Base-emitter Saturation Voltage	for <b>BUW44</b> $I_C = 10A$ $I_B = 2A$ $I_C = 6A$ $I_B = 1A$ for <b>BUW45</b> and <b>BUW46</b> $I_C = 10A$ $I_B = 2A$ $I_C = 7A$ $I_B = 1A$			1.8 1.4 1.8 1.4	V V V V
$t_{on}$	Turn-on Time	$I_C = 10A$ $I_{B1} = 2A$ $V_{CC} = 250V$			0.75	$\mu s$
$t_s$	Storage Time	$I_C = 10A$ $I_{B1} = 2A$			3	$\mu s$
$t_f$	Fall Time	$I_{B2} = -2A$ $V_{CC} = 250V$			0.8	$\mu s$

\* Pulsed : pulse duration = 300  $\mu s$ , duty cycle = 1.5 %.

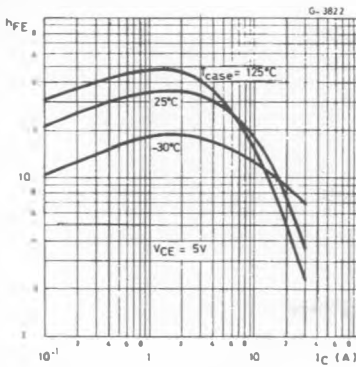
Safe Operating Areas.



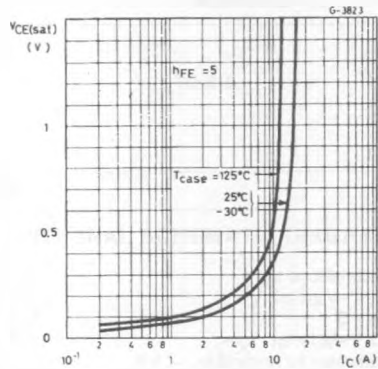
Thermal Transient Response.



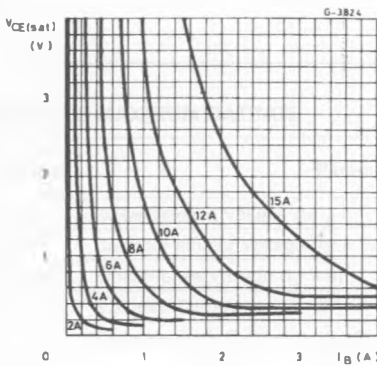
DC Current Gain.



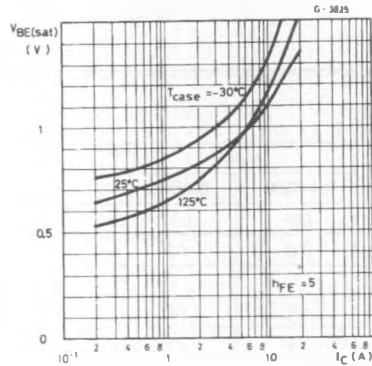
Collector-emitter Saturation Voltage.



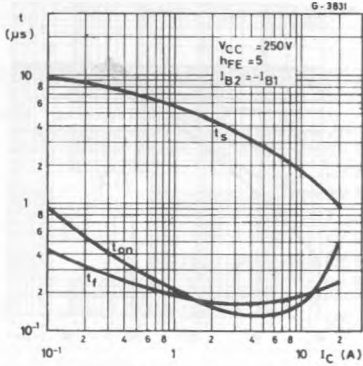
Collector-emitter Saturation Voltage.



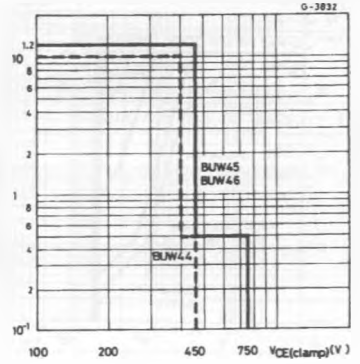
Base-emitter Saturation Voltage.



Saturated Switching Characteristics.



Clamped Reverse Bias Safe Operating Areas.



Clamped  $E_{S/b}$  Test Circuit.

Test conditions :  
 $5 V \geq | -V_{B B} | \geq 2 V$   
 $I_C / I_B = 5$   
 $2I_{B 1} > | -I_{B 2} | > I_{B 1}$   
 $t_0 = \text{adjusted for nominal } I_C$   
 $R_{B B} = \text{adjusted for } I_{B 2}$

