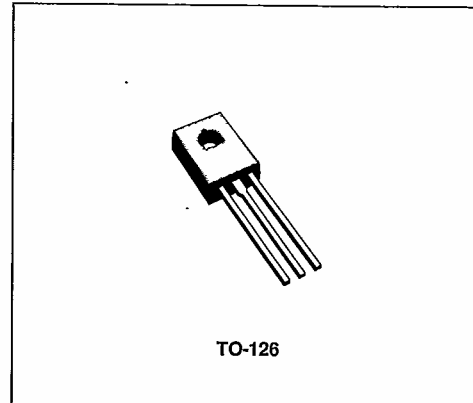
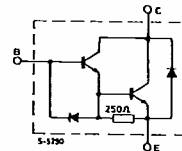


**DESCRIPTION**

The BU801 is a silicon epitaxial planar NPN Darlington transistor with integrated base-emitter speed-up diode, mounted in Jedec TO-126 plastic package. It is particularly suitable as output stage in medium power and driver stage in high power, fast switching applications.


**INTERNAL SCHEMATIC DIAGRAM**

**ABSOLUTE MAXIMUM RATINGS**

Symbol	Parameter	Value	Unit
$V_{CBO}$	Collector-base Voltage ( $I_E = 0$ )	600	V
$V_{CEO}$	Collector-emitter Voltage ( $I_B = 0$ )	400	V
$V_{EBO}$	Emitter-base Voltage ( $I_C = 0$ )	7	V
$I_C, I_E$	Collector and Emitter Currents	3	A
$I_B$	Base Current	1	A
$P_{tot}$	Total Power Dissipation at $T_{case} \leq 25^\circ\text{C}$	40	W
$T_{stg}$	Storage Temperature	- 65 to 150	$^\circ\text{C}$
$T_j$	Junction Temperature	150	$^\circ\text{C}$

$R_{thj-case}$	Thermal Resistance Junction-case	Max	3.12	°C/W
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**ELECTRICAL CHARACTERISTICS** ( $T_{case} = 25\text{ °C}$  unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$I_{CES}$	Collector-cutoff Current ( $V_{BE} = 0$ )	$V_{CE} = 600\text{ V}$			200	$\mu\text{A}$
$I_{CEO}$	Collector-cutoff Current ( $I_B = 0$ )	$V_{CE} = 400\text{ V}$			1	mA
$I_{EBO}^*$	Emitter Cutoff Current ( $I_C = 0$ )	$V_{EB} = 7\text{ V}$			100	mA
$V_{CE0(sus)}^*$	Collector-emitter Sustaining Voltage	$I_C = 10\text{ mA}$	400			V
$V_{CE(sat)}^*$	Collector-emitter Saturation Voltage	$I_C = 200\text{ A}$ $I_B = 2\text{ mA}$		1.0	1.5	V
		$I_C = 1\text{ A}$ $I_B = 20\text{ mA}$		1.2	2.0	V
		$I_C = 2\text{ A}$ $I_B = 200\text{ mA}$		1.8	3.0	V
$V_{BE(sat)}^*$	Base-emitter Saturation Voltage	$I_C = 200\text{ A}$ $I_B = 2\text{ mA}$			2	V
		$I_C = 1\text{ A}$ $I_B = 20\text{ mA}$			2.5	V
		$I_C = 2\text{ A}$ $I_B = 200\text{ mA}$			3	V
$h_{FE}^*$	DC Current Gain	$I_C = 200\text{ mA}$ $V_{CE} = 3\text{ V}$	100			
$V_F^*$	Diode Forward Voltage	$I_F = 1\text{ A}$			4	V

**RESISTIVE SWITCHING TIMES**

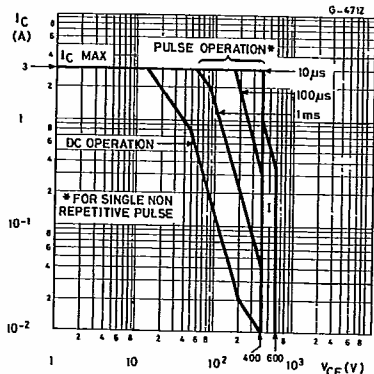
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit.
$t_{on}$	Turn-on Time	$V_{CC} = 250\text{ V}$ $I_C = 200\text{ mA}$ $I_{B1} = 2\text{ mA}$ $V_{BEoff} = -5\text{ V}$		0.17	0.8	$\mu\text{s}$
$t_s$	Storage Time			0.37	1	$\mu\text{s}$
$t_f$	Fall Time			0.13	0.5	$\mu\text{s}$
$t_{on}$	Turn-on Time	$V_{CC} = 250\text{ V}$ $I_C = 1\text{ A}$ $I_{B1} = 20\text{ mA}$ $V_{BEoff} = -5\text{ V}$		0.18	0.8	$\mu\text{s}$
$t_s$	Storage Time			0.38	1	$\mu\text{s}$
$t_f$	Fall Time			0.09	0.5	$\mu\text{s}$

**INDUCTIVE SWITCHING TIMES**

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit.
$t_s$	Storage Time	$V_{Clamp} = 250\text{ V}$ $I_C = 200\text{ mA}$ $I_{B1} = 2\text{ mA}$ $V_{BEoff} = -5\text{ V}$		0.35	1	$\mu\text{s}$
$t_f$	Fall Time			0.09	0.4	$\mu\text{s}$
$t_s$	Storage Time	$V_{Clamp} = 250\text{ V}$ $I_C = 1\text{ A}$ $I_{B1} = 20\text{ mA}$ $V_{BEoff} = -5\text{ V}$		0.5	1	$\mu\text{s}$
$t_f$	Fall Time			0.06	0.4	$\mu\text{s}$

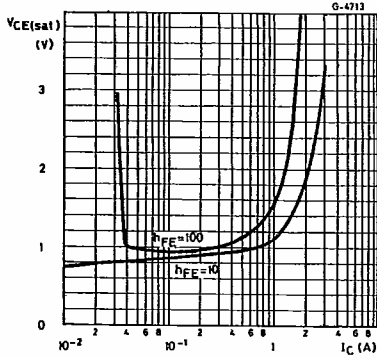
\* Pulsed : pulse duration = 300  $\mu\text{s}$ , duty cycle = 1.5 %.

Safe Operating Area.

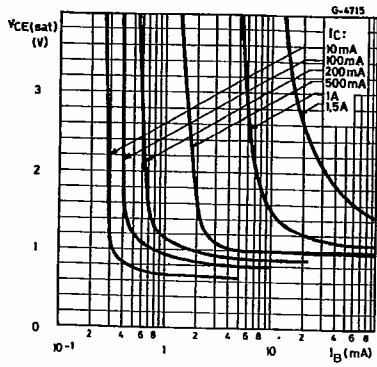


I = Area of permissible operation during turn-on with  $t_b \leq 1$  ms.

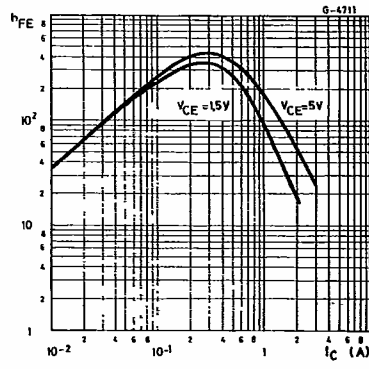
Collector-emitter Saturation Voltage.



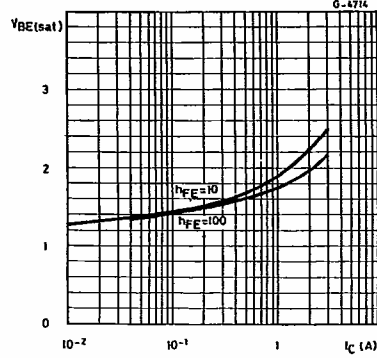
Collector-emitter Saturation Voltage.



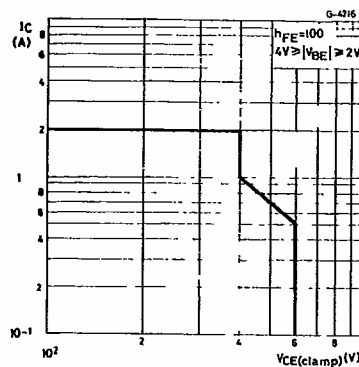
DC Current Gain.



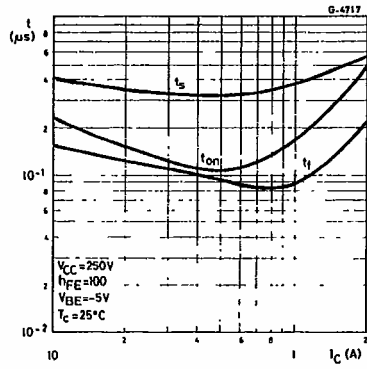
Base-emitter Saturation Voltage.



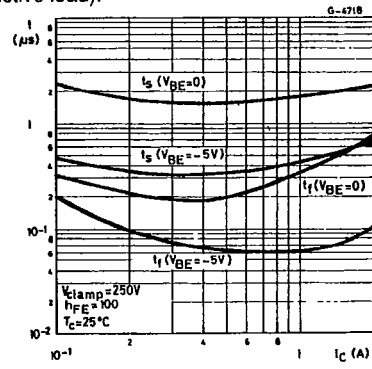
Clamped Reverse Bias Safe Operating Area.



Saturated Switching Characteristics (resistive load).



Saturated Switching Characteristics (inductive load).



Derating Curves.

S G S-THOMSON

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