BU801

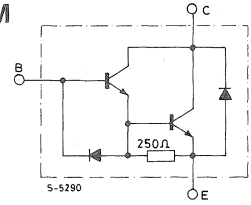
HIGH VOLTAGE FAST DARLINGTON

The BU801 is a silicon epitaxial planar NPN Darlington transistor with integrated base-emitter speed-up diode, mounted in Jedec TO-126 plastic package.

ABSOLUTE MAXIMUM RATINGS

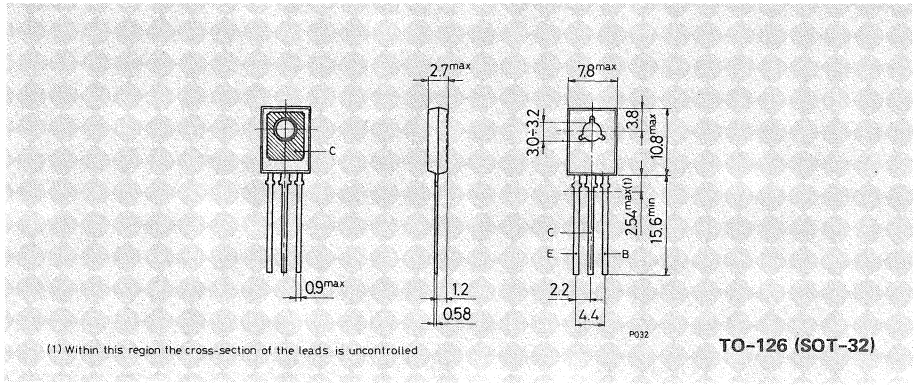
V_{CBO}	Collector-base voltage ($I_E = 0$)	600	V
V_{CEO}	Collector-emitter voltage ($I_B = 0$)	400	V
V_{EBO}	Emitter-base voltage ($I_C = 0$)	7	V
I_C, I_E	Collector and emitter currents	3	A
I_B	Base current	1	A
P_{tot}	Total power dissipation at $T_{case} \leqslant 25°C$	40	W
T_{stg}	Storage temperature	-65 to 150	°C
T_j	Junction temperature	150	°C

INTERNAL SCHEMATIC DIAGRAM



MECHANICAL DATA

Dimensions in mm



(1) Within this region the cross-section of the leads is uncontrolled

TO-126 (SOT-32)

THERMAL DATA

$R_{th\ j\text{-}case}$	Thermal resistance junction-case	max	3.12	°C/W

ELECTRICAL CHARACTERISTICS (T_{case} = 25°C unless otherwise specified)

Parameter		Test conditions		Min.	Typ.	Max.	Unit
I_{CES}	Collector-cutoff current (V_{BE} = 0)	V_{CE} = 600V				200	μA
I_{CEO}	Collector-cutoff current (I_B = 0)	V_{CE} = 400V				1	mA
I_{EBO}*	Emitter cutoff current (I_C = 0)	V_{EB} = 7V				100	mA
$V_{CEO(sus)}$*	Collector-emitter sustaining voltage	I_C = 10 mA		400			V
$V_{CE\ (sat)}$*	Collector-emitter saturation voltage	I_C = 200 mA I_C = 1A I_C = 2A	I_B = 2 mA I_B = 20 mA I_B = 200 mA		1.0 1.2 1.8	1.5 2.0 3.0	V V V
$V_{BE(sat)}$*	Base-emitter saturation voltage	I_C = 200 mA I_C = 1A I_C = 2A	I_B = 2 mA I_B = 20 mA I_B = 200 mA			2 2.5 3	V V V
h_{FE}*	DC current gain	I_C = 200 mA	V_{CE} = 3V	100			–
V_F*	Diode forward voltage	I_F = 1A				4	V

RESISTIVE SWITCHING TIMES

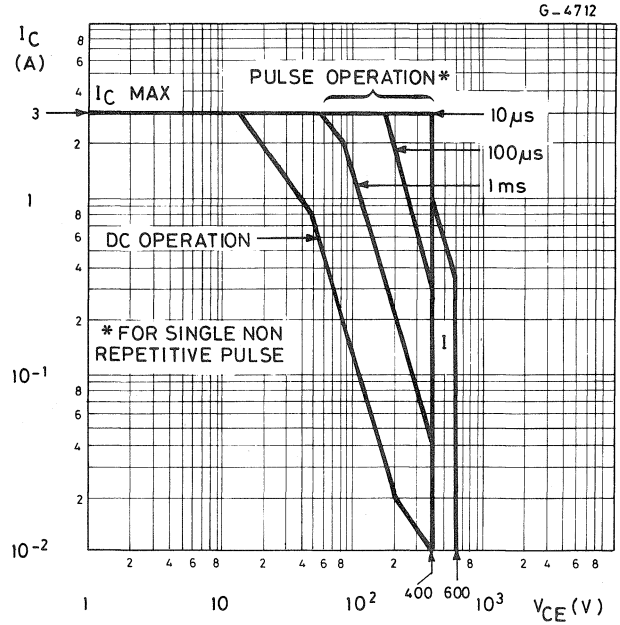
t_{on}	Turn-on time	V_{CC} = 250V I_C = 200 mA I_{B_1} = 2 mA $V_{BE\,off}$ = -5V	0.17	0.8	μs
t_s	Storage time		0.37	1	μs
t_f	Fall time		0.13	0.5	μs

ELECTRICAL CHARACTERISTICS (continued)

Parameter		Test conditions	Min.	Typ.	Max.	Unit
t_{on}	Turn-on time	V_{CC}= 250V I_C= 1A I_{B1}= 20 mA $V_{BE\,off}$= -5V		0.18	0.8	μs
t_s	Storage time			0.38	1	μs
t_f	Fall time			0.09	0.5	μs
INDUCTIVE SWITCHING TIMES						
t_s	Storage time	V_{Clamp}= 250V I_C= 200 mA I_{B1}= 2 mA V_{BEoff}= -5V		0.35	1	μs
t_f	Fall time			0.09	0.4	μs
t_s	Storage time	V_{Clamp}= 250V I_C= 1A I_{B1}= 20 mA V_{BEoff}= -5V		0.5	1	μs
t_f	Fall time			0.06	0.4	μs

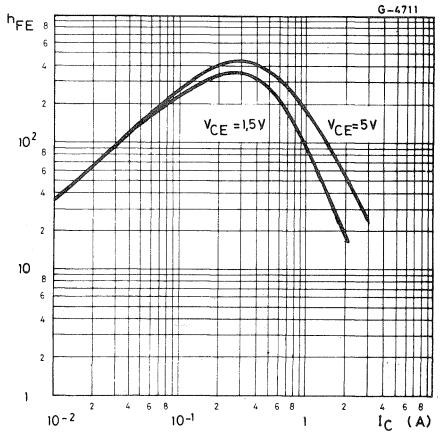
* Pulsed: Pulse duration = 300 μs, duty cycle = 1.5%

Safe operating areas

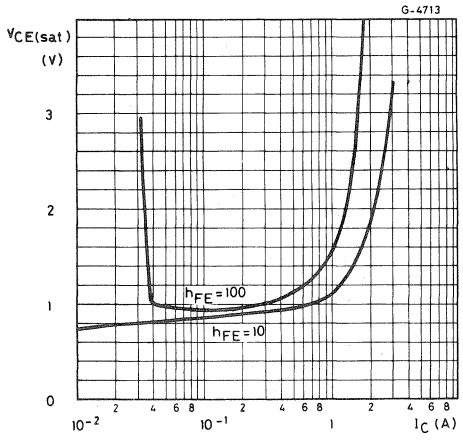


I = Area of permissible operation during turn-on with $t_p \leq 1$ μs.

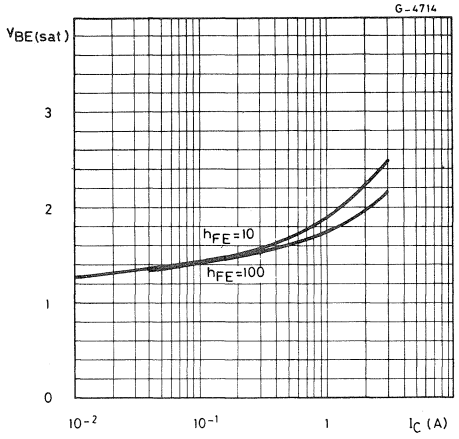
DC current gain



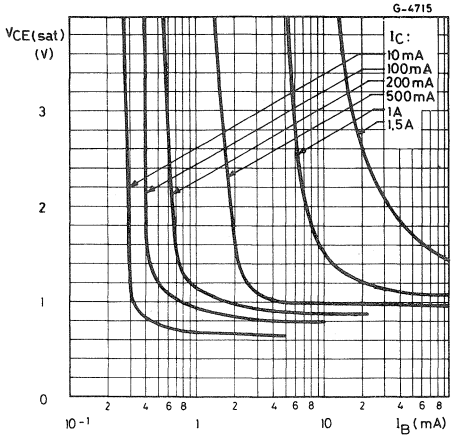
Collector-emitter saturation voltage



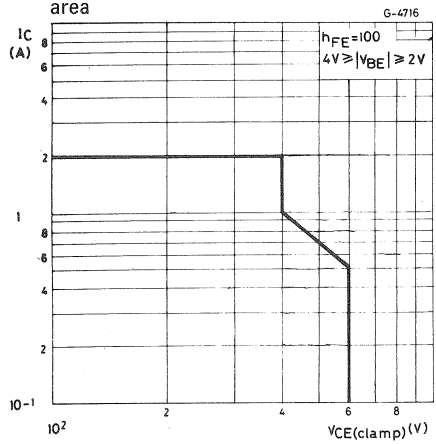
Base-emitter saturation voltage



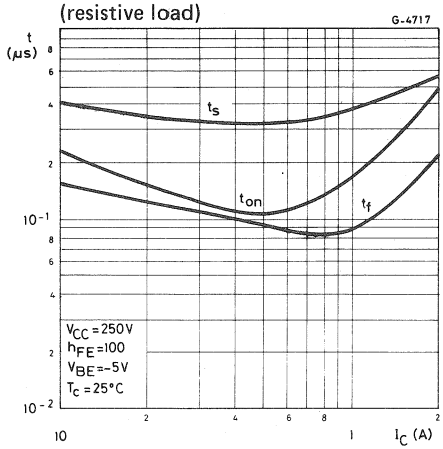
Collector-emitter saturation voltage



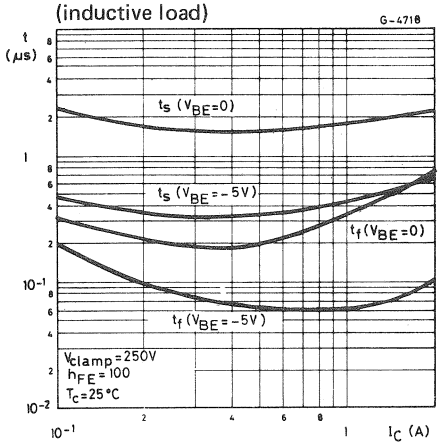
Clamped reverse bias safe operating area



Saturated switching characteristics (resistive load)



Saturated switching characteristics (inductive load)



Derating curves