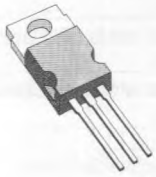
SGS-THOMSON MICROELECTRONICS

BU810

MEDIUM POWER FAST SWITCHING DARLINGTON

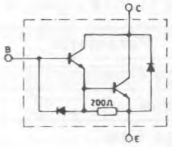
DESCRIPTION

The BU810 is a silicon epitaxial planar NPN Darlington transistor with integrated base-emitter speed-up diode, mounted in Jedec TO-220 plastic package. It is particularly suitable as output stage in medium power, fast switching applications.



TO-220

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)	5	V
I_C	Collector Current	7	A
I_{CM}	Collector Peak Current	10	A
I_B	Base Current	2	A
P_{tot}	Total Power Dissipation at $T_{case} \leq 25$ °C	75	W
T_{stg}	Storage Temperature	– 65 to 150	°C
T_j	Junction Temperature	150	°C

THERMAL DATA

$R_{thj\text{-}case}$	Thermal Resistance Junction-case	Max	1.66	°C/W

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

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CES}	Collector Cutoff Current (V_{BE} = 0)	V_{CE} = 600 V			200	µA
I_{CEO}	Collector Cutoff Current (I_B = 0)	V_{CE} = 400 V			1	mA
I_{EBO}*	Emitter Cutoff Current (I_C = 0)	V_{EB} = 5 V			150	mA
$V_{CEO(sus)}$*	Collector-emitter Sustaining Voltage	I_C = 100 mA	400			V
$V_{CE(sat)}$*	Collector-emitter Saturation Voltage	I_C = 2 A I_B = 20 mA I_C = 4 A I_B = 200 mA I_C = 7 A I_B = 0.7 A			2 2.5 3	V V V
$V_{BE(sat)}$*	Base-emitter Saturation Voltage	I_C = 2 A I_B = 20 mA I_C = 4 A I_B = 200 mA			2.2 3	V V
V_F*	Diode Forward Voltage	I_F = 7 A			3	V

RESISTIVE SWITCHING TIMES

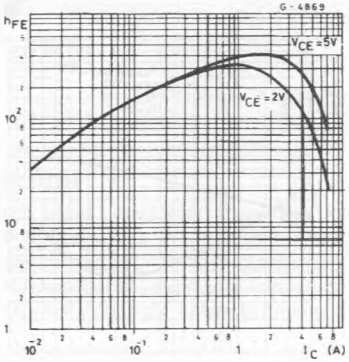
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit.
t_{on}	Turn-on Time	V_{CC} = 250 V I_C = 2 A I_{B1} = 20 mA $V_{BE(off)}$ = – 5 V			0.6	µs
t_s	Storage Time				1.5	µs
t_f	Fall Time				0.5	µs

INDUCTIVE SWITCHING TIMES

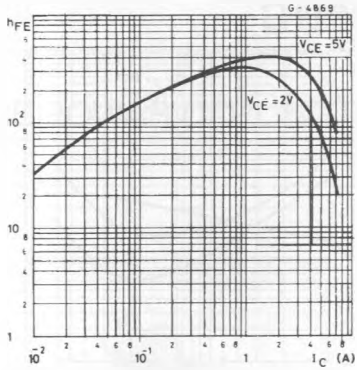
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit.
t_s	Storage Time	V_{Clamp} = 250 V I_C = 7 A I_{B1} = 0.7 A $V_{BE(off)}$ = – 5 V			1.5	µs
t_f	Fall Time				0.4	µs
t_s	Storage Time				1.5	µs
t_f	Fall Time				0.7	µs

* Pulsed : pulse duration = 300 ms, duty cycle = 1.5 %

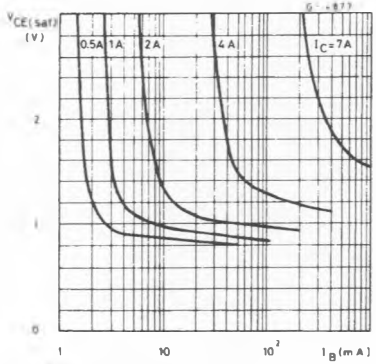
Safe Operating Areas.



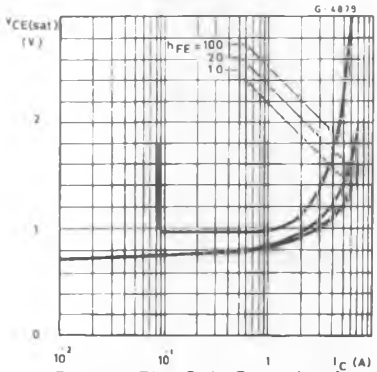
DC Current Gain.



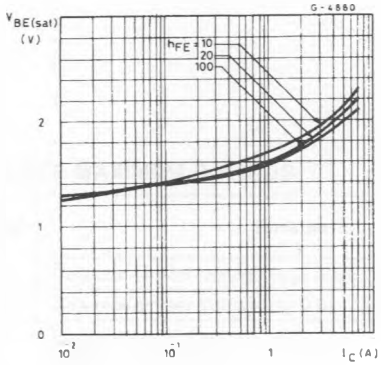
Collector–emitter Saturation Voltage.



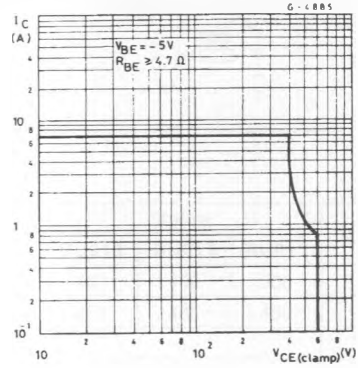
Collector–emitter Saturation Voltage.



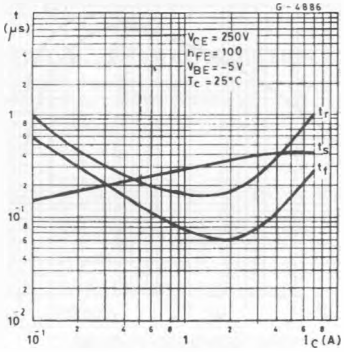
Base–emitter Saturation Voltage.



Clamped Reverse Bias Safe Operating Areas.



Saturated Switching Characteristics (resistive load).



Saturated Switching Characteristics.