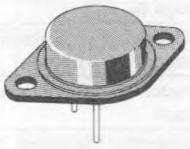
SGS-THOMSON MICROELECTRONICS

BUX80

HIGH VOLTAGE POWER SWITCH

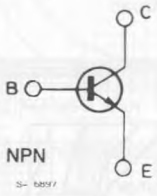
DESCRIPTION

The BUX80 is a silicon multiepitaxial mesa NPN transistor in Jedec TO-3 metal case, particularly intented for converters, inverters, switching regulators and motor control systems applications.



TO-3

INTERNAL SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{CES}	Collector-emitter Voltage (V_{BE} = 0)	800	V
V_{CER}	Collector-emitter Voltage (R_{BE} = 50 Ω)	500	V
V_{CEO}	Collector-emitter Voltage (I_B = 0)	400	V
V_{EBO}	Emitter-base Voltage (I_C = 0)	10	V
I_C	Collector Current	10	A
I_{CM}	Collector Peak Current	15	A
I_B	Base Current	5	A
P_{tot}	Total Power Dissipation at $T_{case} \leq 40$ °C	100	W
T_{stg}	Storage Temperature	– 65 to 150	°C
T_j	Junction Temperature	150	°C

THERMAL DATA

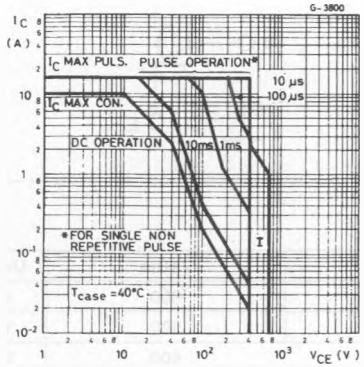
$R_{th\ j\text{-}case}$	Thermal Resistance Junction-case	Max	1.1	°C/W

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

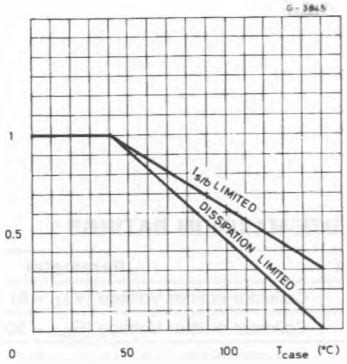
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CES}	Collector Cutoff Current (V_{BE} = 0)	V_{CE} = 800 V V_{CE} = 800 V T_{case} = 125 °C			1 3	mA mA
I_{EBO}	Emitter Cutoff Current (I_C = 0)	V_{EB} = 10 V			10	mA
$V_{CEO(sus)}$*	Collector-emitter Sustaining Voltage (I_B = 0)	I_C = 100 mA	400			V
$V_{CER(sus)}$*	Collector-emitter Sustaining Voltage (R_{BE} = 50 Ω)	I_C = 100 mA	500			V
$V_{CE(sat)}$*	Collector-emitter Saturation Voltage	I_C = 5 A I_B = 1 A I_C = 8 A I_B = 2.5 A			1.5 3	V V
$V_{BE(sat)}$*	Base-emitter Saturation Voltage	I_C = 5 A I_B = 1 A I_C = 8 A I_B = 2.5 A			1.4 1.8	V V
h_{FE}*	DC Current Gain	I_C = 1.2 A V_{CE} = 5 V		30		
t_{on}	Turn-on Time	I_C = 5 A I_{B1} = 1 A V_{CC} = 250 V			0.5	µs
t_s	Storage Time	I_C = 5 A I_{B1} = 1 A I_{B2} = − 2 A V_{CC} = 250 V			3.5	µs
t_f	Fall Time	I_C = 5 A I_{B1} = 1 A I_{B2} = − 2 A V_{CC} = − 250 V			0.5	µs

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

Safe Operating Areas.

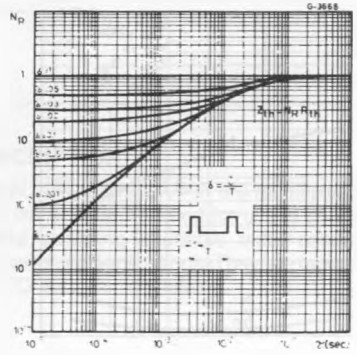


Derating Curves.

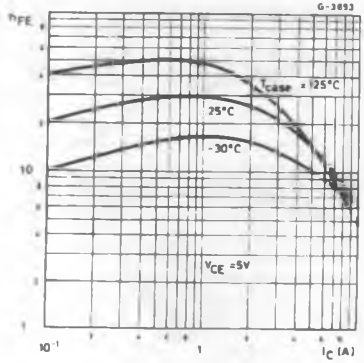


I - Area of permissible operation during Turn-on provided $R_{BE} \leq 100\ \Omega$ and $t_p \leq 0{,}6$ µs.

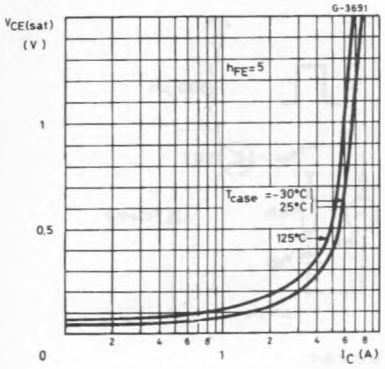
Transient Thermal Response.



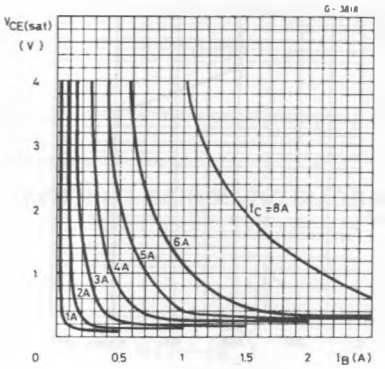
DC Current Gain.



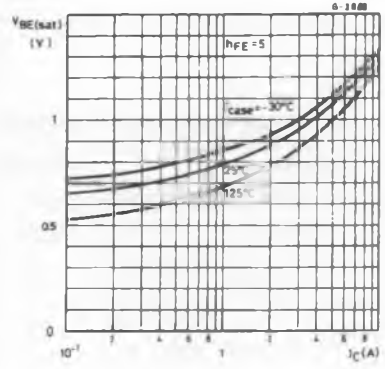
Collecteur-emitter Saturation Voltage.



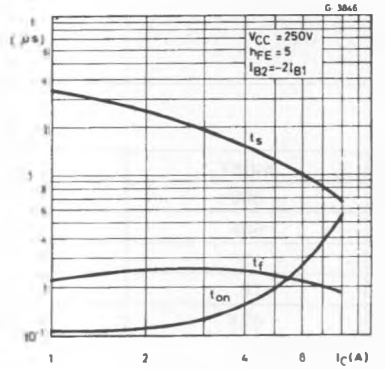
Collector-emitter Saturation Voltage.



Base-emitter Saturation Voltage.



Saturated Switching Characteristics.



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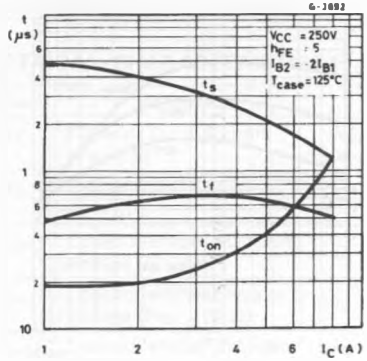

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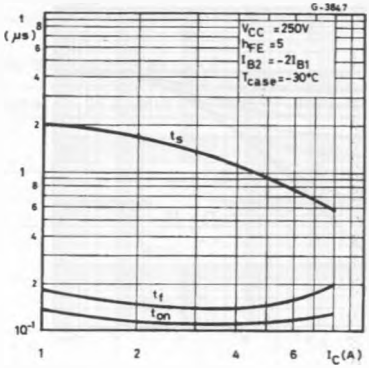
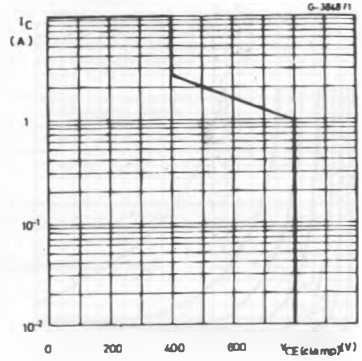
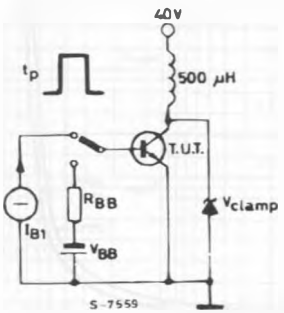


Clamped Reverse Bias Safe Operating Areas.



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



TEST CONDITIONS :
$V_{BE\ off}$ = -5 V
I_C / I_B = 5
I_o = adjusted for nominal I_C
R_{BB} = 1 Ω