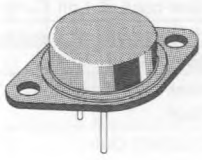
SGS-THOMSON
MICROELECTRONICS

BUX25

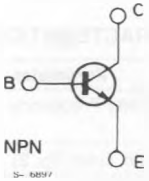
NPN SILICON TRANSISTOR

- HIGH SPEED, HIGH VOLTAGE, HIGH POWER TRANSISTOR
- SWITCHING AND AMPLIFIER TRANSISTOR



TO-3

INTERNAL SHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-base Voltage	500	V
V_{CEO}	Collector-emitter Voltage	500	V
V_{CER}	Collector-emitter Voltage (R_{BE} = 100Ω)	500	V
V_{CEX}	Collector-emitter Voltage (V_{BE} = – 1.5V)	500	V
V_{EBO}	Emitter-base Voltage	7	V
I_C I_{CM}	Collector Current (t_p = 10ms)	15 20	A
I_B	Base Current	3	A
P_{tot}	Power Dissipation (T_{case} 25°C)	350	W
t_j T_{stg}	Storage and Junction Temperature (max)	200 – 65 to + 200	°C

THERMAL DATA

$R_{th(j-c)}$	Junction-case Thermal Resistance	Max	0.5	°C/W

STATIC CHARACTERISTICS (t_{case} = 25°C unless otherwise stated)

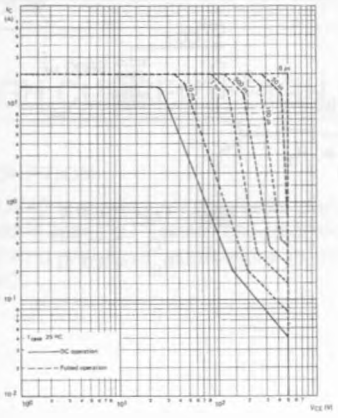
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CEO}	Collector-emitter Cut-off Current	V_{CE} = 400V I_B = 0			3	mA
I_{CEX}	Collector-emitter Cut-off Current	V_{CE} = 500V V_{BE} = − 1.5V			3	mA
		V_{CE} = 500V t_{case} = 125°C V_{BE} = − 1.5V			12	mA
I_{EBO}	Emitter-base Cut-off Current	V_{EB} = 5V I_C = 0			1	mA
$V_{CEO(sus)}$	Collector-emitter Breakdown Voltage (fig. 1)	I_C = 200mA L = 25mH I_B = 0	500			V
$V_{(BR)EBO}$	Emitter-base Breakdown Voltage	I_E = 50mA I_C = 0	7			V
h_{FE}*	DC Current Gain	V_{CE} = 4V I_C = 4A	15		60	
		V_{CE} = 4V I_C = 8A	8			
V_{CEsat}*	Collector-emitter Saturation Voltage	I_C = 4A I_B = 0.8A		0.2	0.6	V
		I_C = 8A I_B = 1.6A		0.6	1	V
V_{BEsat}*	Base-emitter Saturation Voltage	I_C = 8A I_B = 1.6A		1.2	1.5	V
$I_{S/B}$	Second Breakdown Collector Current	V_{CE} = 140V t = 1s	0.15			A
		V_{CE} = 25V t = 1s	14			A

* Pulsed t_p = 300 µs $\delta \leq 2$ %.

DYNAMIC CHARACTERISTICS (for small signals unless otherwise stated)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
f_T	Transition Frequency	V_{CE} = 15V f = 10MHz I_C = 2A	8			MHz
t_{on}	Turn-on Time (fig. 2)	I_C = 8A I_B = 1.6A		0.9	1.8	µs
t_f	Fall Time (fig. 2)	I_C = 8A I_{B2} = − 1.6A I_{B1} = 1.6A		0.9	1.6	µs
t_s	Carrier Storage Time (fig. 2)	I_C = 8A I_{B2} = − 1.6A I_{B1} = 1.6A		3.5	5	µs

Safe Operating Area.



Dissipation and $I_{S/B}$ derating.

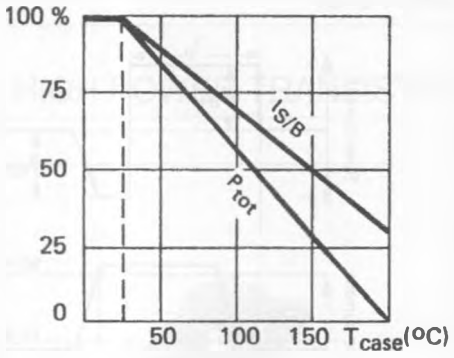
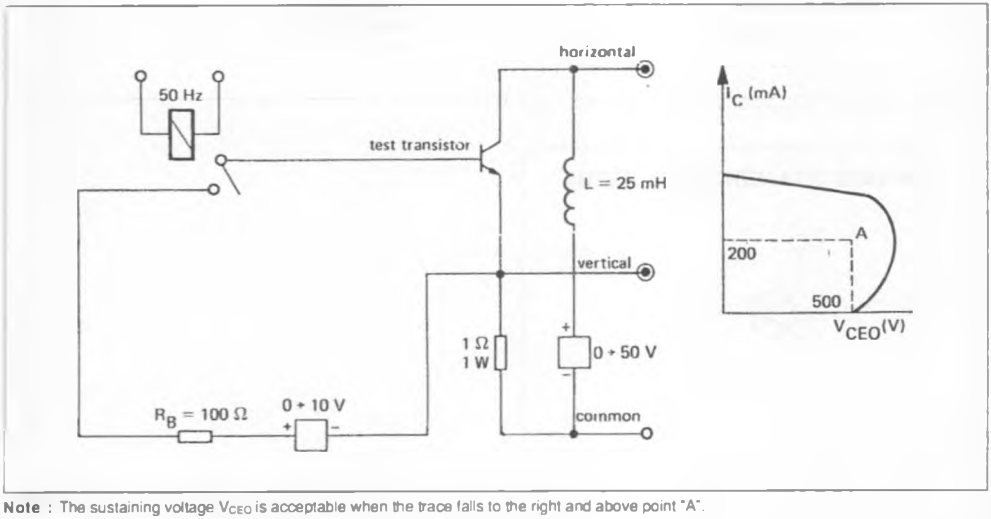
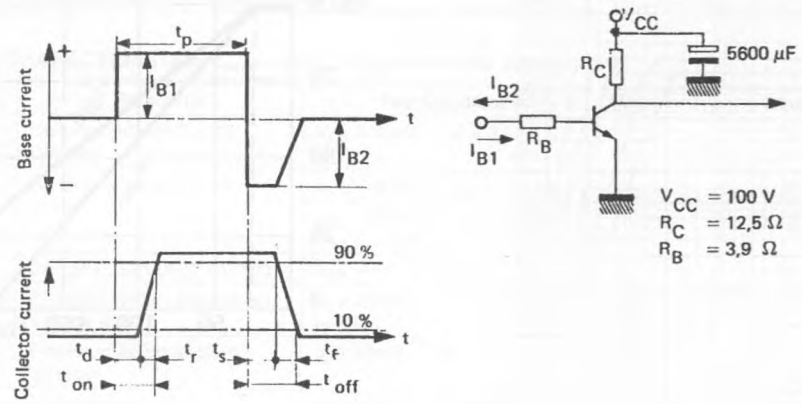


Figure 1 : Test Circuit $V_{CEO(sus)}$.



Note : The sustaining voltage V_{CEO} is acceptable when the trace falls to the right and above point "A".

Figure 2 : Switching Times Test Circuits (and oscillograms).



I_{B1} and I_{B2} mesured with Tektronix probe P 6021 and Amplifier type 134.

R_C - R_B : non-inductive resistances
t_p : Pulse width = 10µs
Forme factor ≤ 1%
Rise and fall time ≤ 100ns.