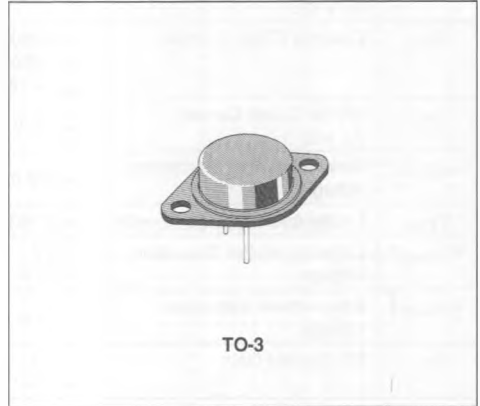


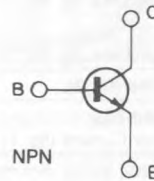
HIGH CURRENT, HIGH SPEED, HIGH POWER TRANSISTOR

DESCRIPTION

The BUX11 is a silicon multiepitaxial NPN transistor in JEDEC TO-3 metal case, intended for use in switching and linear applications in military and industrial equipment.



INTERNAL SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-base Voltage ($I_E = 0$)	250	V
V_{CEX}	Collector-emitter Voltage ($V_{BE} = -1.5$ V)	250	V
V_{CEO}	Collector-emitter Voltage ($I_B = 0$)	200	V
V_{EBO}	Emitter-base Voltage ($I_C = 0$)	7	V
I_C	Collector Current	20	A
I_{CM}	Collector Peak Current ($t_p = 10$ ms)	25	A
I_B	Base Current	4	A
P_{tot}	Total Power Dissipation at $T_{case} \leq 25$ °C	150	W
T_{stg}	Storage Temperature	- 65 to 200	°C
T_J	Junction Temperature	200	°C

THERMAL DATA

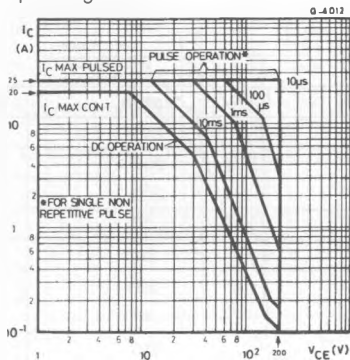
$R_{th\ j-case}$	Thermal Resistance Junction-case	Max	1.17	$^{\circ}C/W$
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ELECTRICAL CHARACTERISTICS ($T_{case} = 25\ ^{\circ}C$ unless otherwise specified)

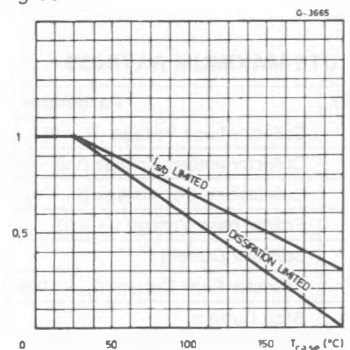
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CEO}	Collector Cutoff Current ($I_B = 0$)	$V_{CE} = 160\ V$			1.5	mA
I_{CEX}	Collector Cutoff Current	$V_{CE} = 250\ V$ $V_{BE} = -1.5\ V$ $V_{CE} = 250\ V$ $V_{BE} = -1.5\ V$ $T_{case} = 125\ ^{\circ}C$			1.5 6	mA mA
I_{EBO}	Emitter Cutoff Current ($I_C = 0$)	$V_{EB} = 5\ V$			1	mA
$V_{CEO(sus)}^*$	Collector-emitter Sustaining Voltage	$I_C = 200\ mA$	200			V
V_{EBO}	Emitter-base Voltage ($I_C = 0$)	$I_E = 50\ mA$	7			V
$V_{CE(sat)}^*$	Collector-emitter Saturation Voltage	$I_C = 6\ A$ $I_B = 0.6\ A$ $I_C = 12\ A$ $I_B = 1.5\ A$		0.3 0.6	0.6 1.5	V V
$V_{BE(sat)}^*$	Base-emitter Saturation Voltage	$I_C = 12\ A$ $I_B = 1.5\ A$		1.3	1.5	V
h_{FE}^*	DC Current Gain	$I_C = 6\ A$ $V_{CE} = 2\ V$ $I_C = 12\ A$ $V_{CE} = 4\ V$	20 10		60	
$I_{s/b}$	Second Breakdown Collector Current	$V_{CE} = 30\ V$ $t = 1\ s$ $V_{CE} = 140\ V$ $t = 1\ s$	5 0.15			A A
f_T	Transition Frequency	$I_C = 1\ A$ $V_{CE} = 15\ V$ $f = 10\ MHz$	8			MHz
t_{on}	Turn-on Time (fig. 2)	$I_C = 12\ A$ $I_{B1} = 1.5\ A$ $V_{CC} = 150\ V$		0.3	1	μs
t_s	Storage Time (fig. 2)	$I_C = 12\ A$ $I_{B1} = 1.5\ A$ $I_{B2} = -1.5\ A$ $V_{CC} = 150\ V$		1.2	1.8	μs
t_f	Fall Time (fig. 2)			0.24	0.4	μs
	Clamped $E_{s/b}$ Collector Current (fig. 1)	$V_{clamp} = 200\ V$ $L = 500\ \mu H$	12			A

* Pulsed : pulse duration = 300 μs , duty cycle $\leq 2\%$.

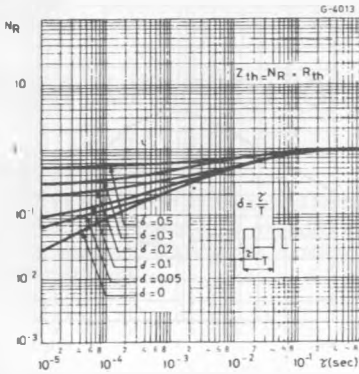
Safe Operating Areas.



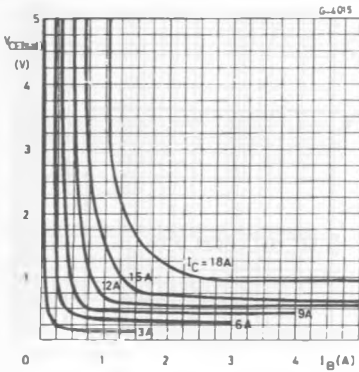
Derating Curves.



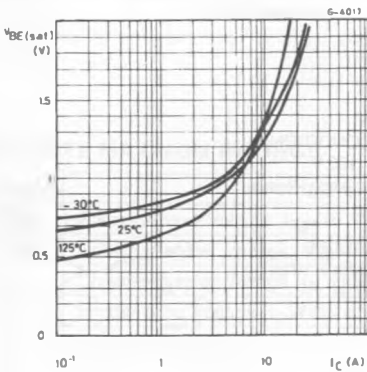
Thermal Transient Response.



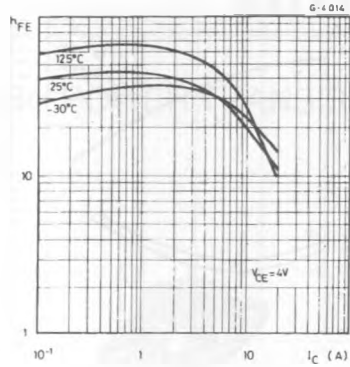
Collector-emitter Saturation Voltage.



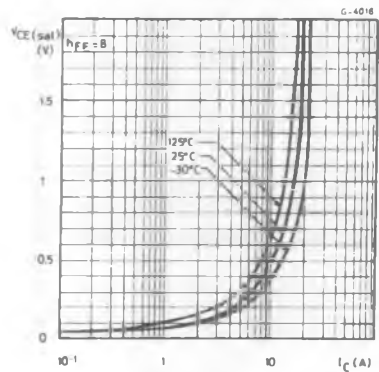
Base-emitter Saturation Voltage.



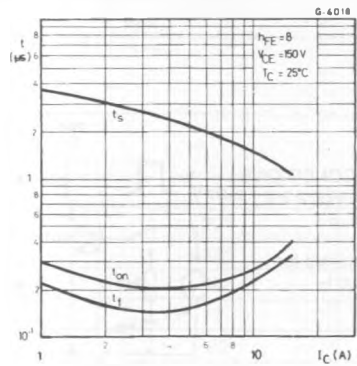
DC Current Gain.



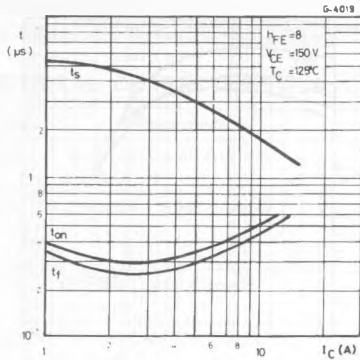
Collector-emitter Saturation Voltage.



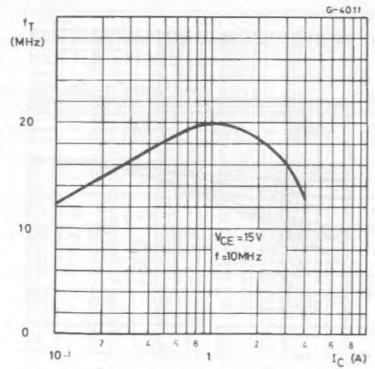
Saturated Switching Characteristics.



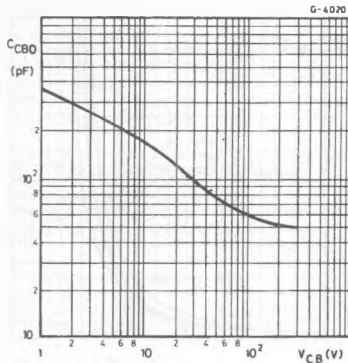
Saturated Switching Characteristics.



Transition Frequency.



Collector-base Capacitance.



Clamped Reverse Bias Safe Operating Area.

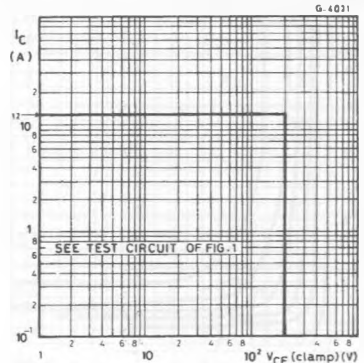


Figure 1 : Clamped $E_{s/b}$ Test Circuit.

Figure 2 : Switching Times Test Circuit (resistive load).

