File Number 1353

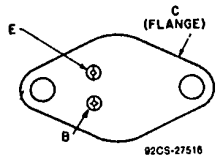
BUX11A

High-Current, High-Power, High-Speed Silicon N-P-N Power Transistor

Features:

- V_{CEO} - 190 V
- I_C - 20 A
- P_T - 200 W

TERMINAL DESIGNATIONS



JEDEC TO-204AA

The RCA-BUX11A epitaxial-base silicon n-p-n transistor features high-voltage and high-current capabilities together with fast switching speed at low saturation voltage. It is especially suitable for control amplifiers and power-switching circuits, such as converters, inverters, switching regulators, and switching-control amplifiers.

The RCA-BUX11A is supplied in a steel JEDEC TO-204AA hermetic package.

MAXIMUM RATINGS, *Absolute-Maximum Values:*

	BUX11A	
V_{CBO}	250	V
V_{CER}		
R_{BE} = 100 Ω	240	V
V_{CEO}	190	V
V_{CEX}		
V_{BE} = −1.5 V	250	V
V_{EBO}	7	V
I_C	20	A
I_{CM}	25	A
I_B	4	A
P_T		
$T_C \leq 25°C$	200	W
$T_C > 25°C$ derate linearly	1.14	W/°C
T_{stg}, T_J	−65 to + 200	°C
T_L		
At distances ≥ 1/32 in. (0.8 mm) from seating plane for 10 s max	235	°C

BUX11A

ELECTRICAL CHARACTERISTICS, *at Case Temperature* (T_C) = 25°C *unless otherwise specified*

CHARACTERISTIC	TEST CONDITIONS				LIMITS		UNITS
	VOLTAGE V dc		CURRENT A dc		BUX11A		
	V_{CE}	V_{BE}	I_C	I_B	Min.	Max.	
I_{CEO}	160			0	—	1.5	mA
I_{CEX}	250	−1.5			—	1.5	
I_{CEX} T_C = 125°C	250	−1.5			—	6	
I_{EBO}		−5			—	1	
$V_{CEO(SUS)}$[a]			0.2[b]		190	—	V
$V_{(BR)EBO}$ I_E = 50 mA			0		7	—	
h_{FE}	2		8[b]		20	60	
	4		15[b]		10	—	
V_{BE}(sat)			15[b]	1.88	—	1.8	V
V_{CE}(sat)			8[b]	0.8	—	0.6	
			15[b]	1.88	—	1.5	
$I_{S/b}$	140				0.15	—	A
t_p = 1s nonrep.	18				11.1	—	
f_T	15		1	—	8	—	MHz
t_{ON}	150[c]		15	1.88	—	1	μs
t_s $I_{B1} = I_{B2}$	150[c]		15	1.88	—	1.5	
t_f $I_{B1} = I_{B2}$	150[c]		15	1.88	—	0.4	
$R\theta_{JC}$					—	0.875	°C/W

[a]CAUTION: The sustaining voltage $V_{CEO(sus)}$ *MUST NOT* be measured on a curve tracer.
[b]Pulsed; pulse duration = 300 μs, duty factor ≤ 2%.
[c]V_{CC}.

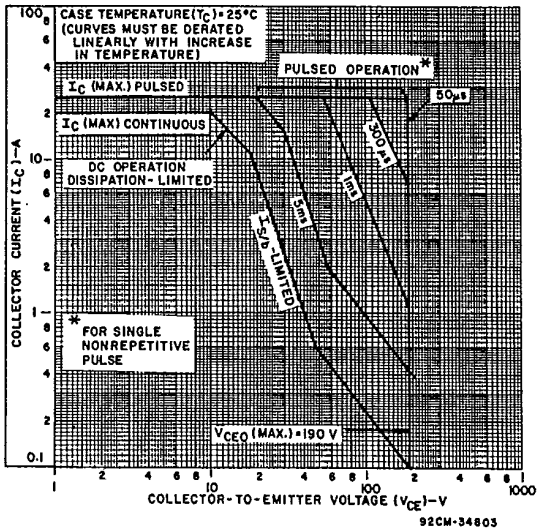


Fig. 1 — Maximum safe-operating areas for BUX11A (T_c = 25°C).

BUX11A

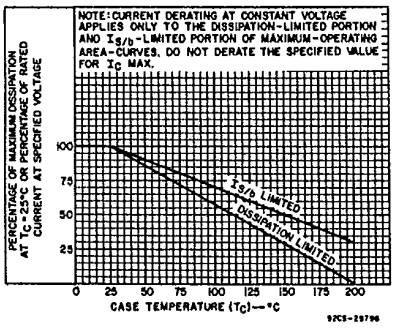


Fig. 2 — Derating curves for $I_{S/b}$ and dissipation.

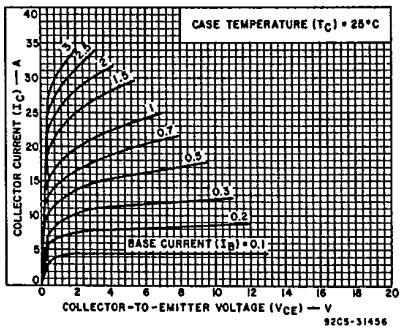


Fig. 3 — Typical output characteristics.

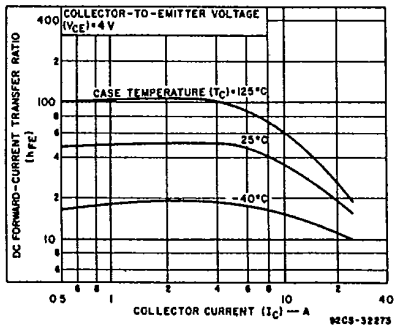


Fig. 4 — Typical dc beta characteristics.

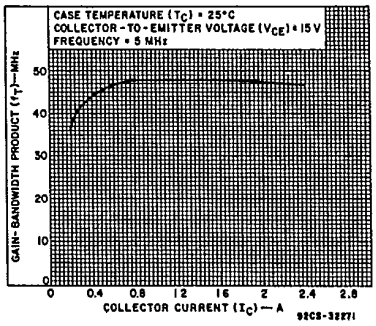


Fig. 5 — Typical gain-bandwidth product.

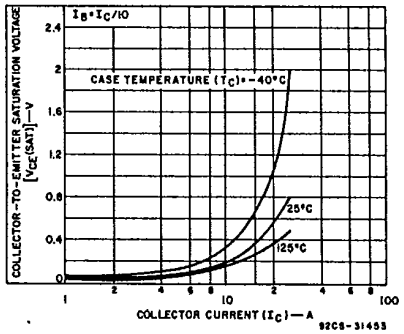


Fig. 6 — Typical collector-to-emitter saturation voltage characteristics.

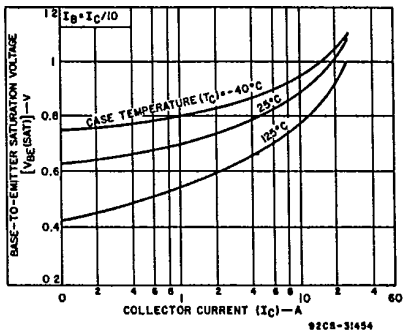


Fig. 7 — Typical base-to-emitter saturation voltage characteristics.

BUX11A'

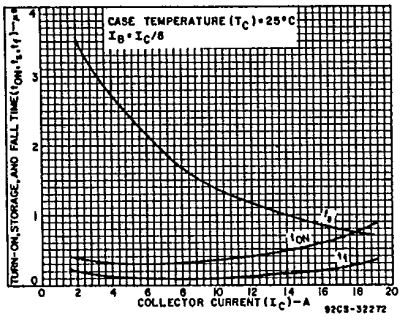


Fig. 8 — Typical saturated-switching times as a function of collector current.

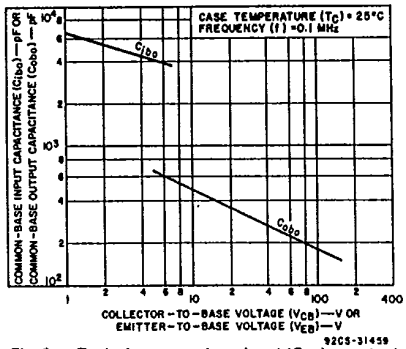


Fig. 9 — Typical common-base input (C_{ibo}) or output (C_{obo}) capacitance characteristic.