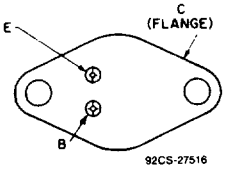
Silicon N-P-N Switching Transistor

For High-Voltage Switching and Amplifier Applications in Industrial and Commercial Equipment

Features:

- V_{CEO} — 400V
- I_C — 10 A
- P_T — 150 W

TERMINAL DESIGNATIONS



JEDEC TO-204AA

The RCA-BUX14 is a silicon n-p-n power transistor featuring fast switching speeds, low saturation voltage, and high safe-operating-area (SOA) ratings. It is especially designed for use in off-line power supplies and is also well suited for use in a wide range of inverter or converter circuits and pulse-width-modulated regulators.

The RCA-BUX14 transistor is supplied in a steel JEDEC TO-204AA hermetic package.

MAXIMUM RATINGS, *Absolute-Maximum Values:*

	BUX14
V_{CBO}	450 V
V_{CEO}	400 V
V_{CEX}	
V_{BE} = -1.5V	450 V
V_{CER}	
R_{BE} = 100 Ω	440 V
V_{EBO}	7 V
I_C	10 A
I_{CM}	15 A
I_B	2 A
P_T	
At T_C up to 25°C	150 W
T_J, T_{stg}	-65 to +200 °C
T_L	
At distances ≥ 1/16 in. (1.58 mm) from case for 10 s max.	235°C

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

CHARACTERISTIC	TEST CONDITIONS				LIMITS			UNITS
	VOLTAGE V dc		CURRENT A dc		BUX14			
	V_{CE}	V_{BE}	I_C	I_B	Min.	Typ.	Max.	
I_{CEO}	320	—	—	0	—	—	1.5	mA
I_{CEX}	450	−1.5	—	—	—	—	1.5	
T_C = 125°C	450	−1.5	—	—	—	—	6	
I_{EBO}	—	−5	0	—	—	—	1	
$V_{CEO(sus)}$[b]	—	—	0.2[a]	0	400[a]	—	—	V
$V_{(BR)EBO}$ I_E = 0.05 A	—	—	0	—	7	—	—	V
$V_{BE(sat)}$	—	—	6[a]	1.2	—	1	1.5	
$V_{CE(sat)}$	—	—	3[a]	0.6	—	0.2	0.6	
	—	—	6[a]	1.2	—	0.5	1.5	
h_{FE}	4	—	3[a]	—	15	—	60	
	4	—	6[a]	—	8	—	—	
$I_{S/b}$	140	—	—	—	0.15	—	—	A
t = 1 s, nonrepetitive	30	—	—	—	5	—	—	
f_T	15	—	1	—	8	—	—	MHz
t_{on}	V_{CC}	—	6	1.2	—	0.5	1.4	μs
t_s	=	—	6	1.2[c]	—	1	3	
t_f	30 V	—	6	1.2[c]	—	0.3	1.2	
$R_{\theta JC}$	—	—	—	—	—	—	1.17	°C/W

[a] Pulsed, pulse duration = 300 μs, duty factor ≤ 2%.

[b] **CAUTION:** Sustaining Voltage $V_{CEO(sus)}$ *MUST NOT* be measured on a curve tracer.

[c] $I_{B1} = I_{B2}$.

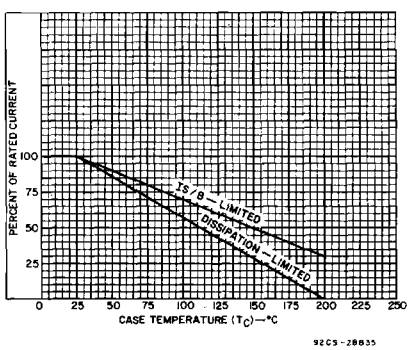


Fig. 1 — Dissipation and $I_{S/b}$ derating curves.

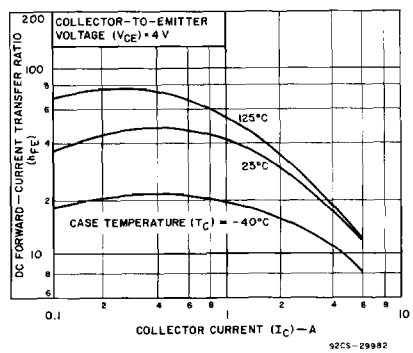


Fig. 2 — Typical dc beta characteristics.

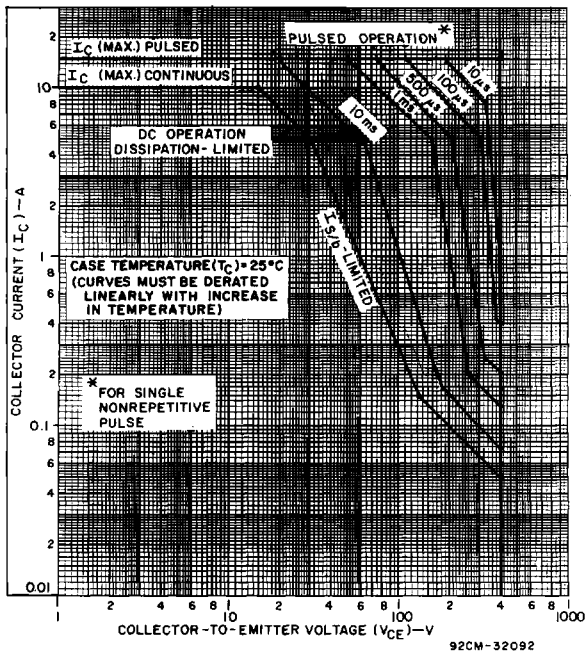


Fig. 3 — Maximum safe-operating areas (T_C = 25°C).

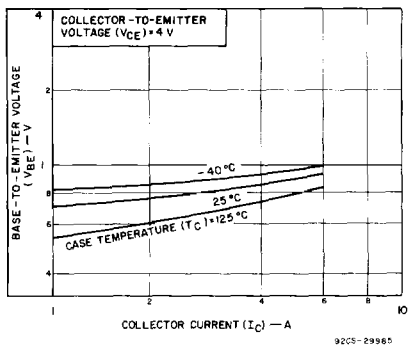


Fig. 4 — Typical base-to-emitter voltage as a function of collector current.

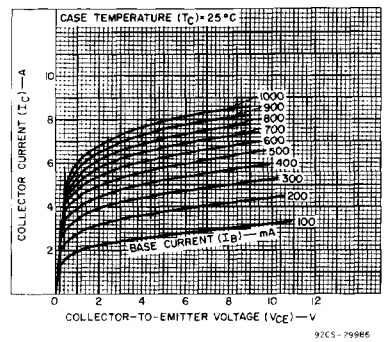


Fig. 5 — Typical output characteristics.

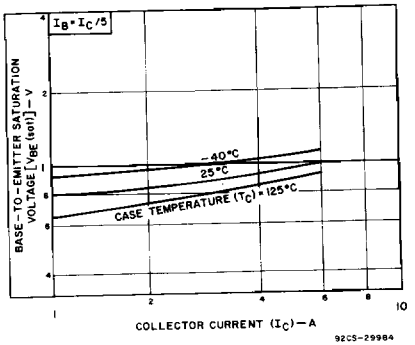


Fig. 6 — Typical base-to-emitter saturation voltage as a function of collector current.

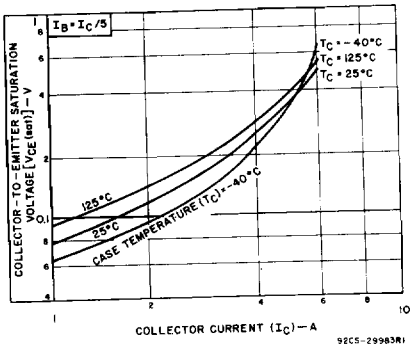


Fig. 7 — Typical collector-to-emitter saturation voltage as a function of collector current.

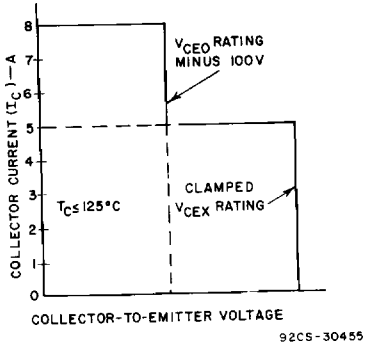


Fig. 8 — Maximum operating conditions for switching between saturation and cutoff.

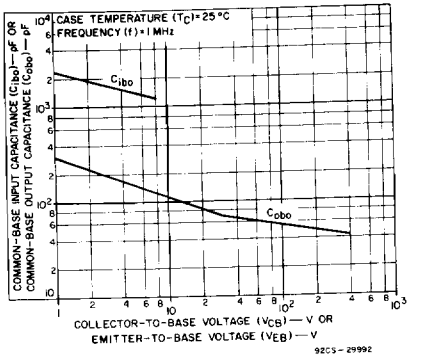


Fig. 9 — Typical common-base input or output capacitance characteristics as a function of collector-to-base voltage or emitter-to-base voltage.