

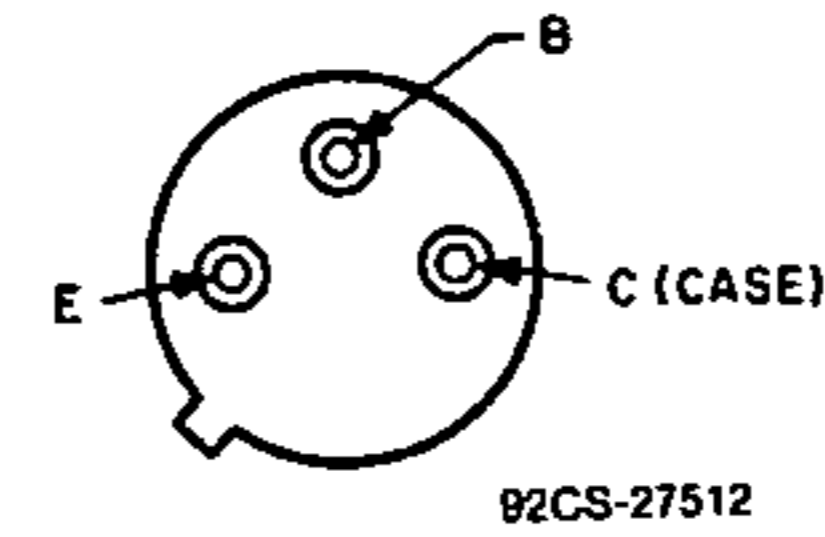
Silicon N-P-N Planar Transistor

General-Purpose Type for Small-Signal,
Medium-Power Applications

Features:

- Minimum gain-bandwidth product = 100 MHz;
useful in applications from dc to 20 MHz
- Operation at high junction temperatures
- Planar construction for low-noise and low-leakage characteristics
- Very low output capacitances

TERMINAL DESIGNATIONS



JEDEC TO-205AD

The RCA-2N2270 is a silicon n-p-n planar transistor intended for a wide variety of small-signal and medium-power applications in military and industrial equipment. It features exceptionally low noise and leakage characteristics, and very low output capacitance.

The 2N2270 is supplied in a TO-205AD package.

MAXIMUM RATINGS, Absolute-Maximum Values:

* COLLECTOR-TO-BASE VOLTAGE	V_{CBO}	60	V
* COLLECTOR-TO-EMITTER VOLTAGE:			
With external base-to-emitter resistance (R_{BE}) $\leq 10 \Omega$	V_{CER}	60	V
With base open	V_{CEO}	45	V
* EMITTER-TO-BASE VOLTAGE	V_{EBO}	7	V
* COLLECTOR CURRENT	I_C	1	A
* TRANSISTOR DISSIPATION:	P_T		
At case temperatures up to 25°C		5	W
At case temperatures above 25°C		See Fig. 1	
At free-air temperatures up to 25°C		1	W
At free-air temperatures above 25°C		See Fig. 1	
* TEMPERATURE RANGE:			
Storage and operating (Junction)	T_{stg}, T_J	-65 to +200	°C
* LEAD TEMPERATURE (During soldering):			
At distance $\geq 1/16$ in. (1.58 mm) from seating plane for 10 s max.	T_L	255	°C

* In accordance with JEDEC registration data format (JS-6 RDF-1).

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

CHARACTERISTIC	TEST CONDITIONS					LIMITS		UNITS
	VOLTAGE V dc			CURRENT mA dc		2N2270		
	V _{CB}	V _{CE}	V _{BE}	I _C	I _B	Min.	Max.	
* I _{CBO} T _C = 150°C	60 60					— —	0.05 50	μA
* I _{EBO}			—5	0		—	0.1	μA
* V _{(BR)EBO} I _E = 0.1 mA				0		7	—	V
* V _{(BR)CBO}				0.1		60	—	V
* V _{CE(sus)} ^a R _{BE} = 10 Ω				100 ^b		60	—	V
* V _{CEO(sus)} ^a				100 ^b	0	45	—	V
* V _{CE(sat)}				150 ^b	15		0.9	
* V _{BE(sat)}				150	15	—	1.2	V
* h _{FE}		10 10		150 ^b 1		50 30	200 —	
* h _{fe} f = 1 kHz		10		5		50	275	
* h _{fe} f = 20 MHz		10		50		5	—	
* f _T		10		50		100	—	MHz
* NF f = 1 kHz R _G = 1 KΩ BW = 1 Hz		10		0.3		—	10	dB
* t _{ON} + t _{OFF} (See Fig. 8)							30	ns
* C _{ob} I _E = 0	10					—	15	pF
* C _{ib}			—0.5	0		—	80	pF
* R _{θJC}						—	35	°C/W
* R _{θJA}						—	175	

* In accordance with JEDEC registration data

^a CAUTION: The sustaining voltages V_{CEO(sus)} and V_{CER(sus)} MUST NOT be measured on a curve tracer.^b Pulsed; pulse duration ≤ 300 μs, duty factor ≤ 18%.

2N2270

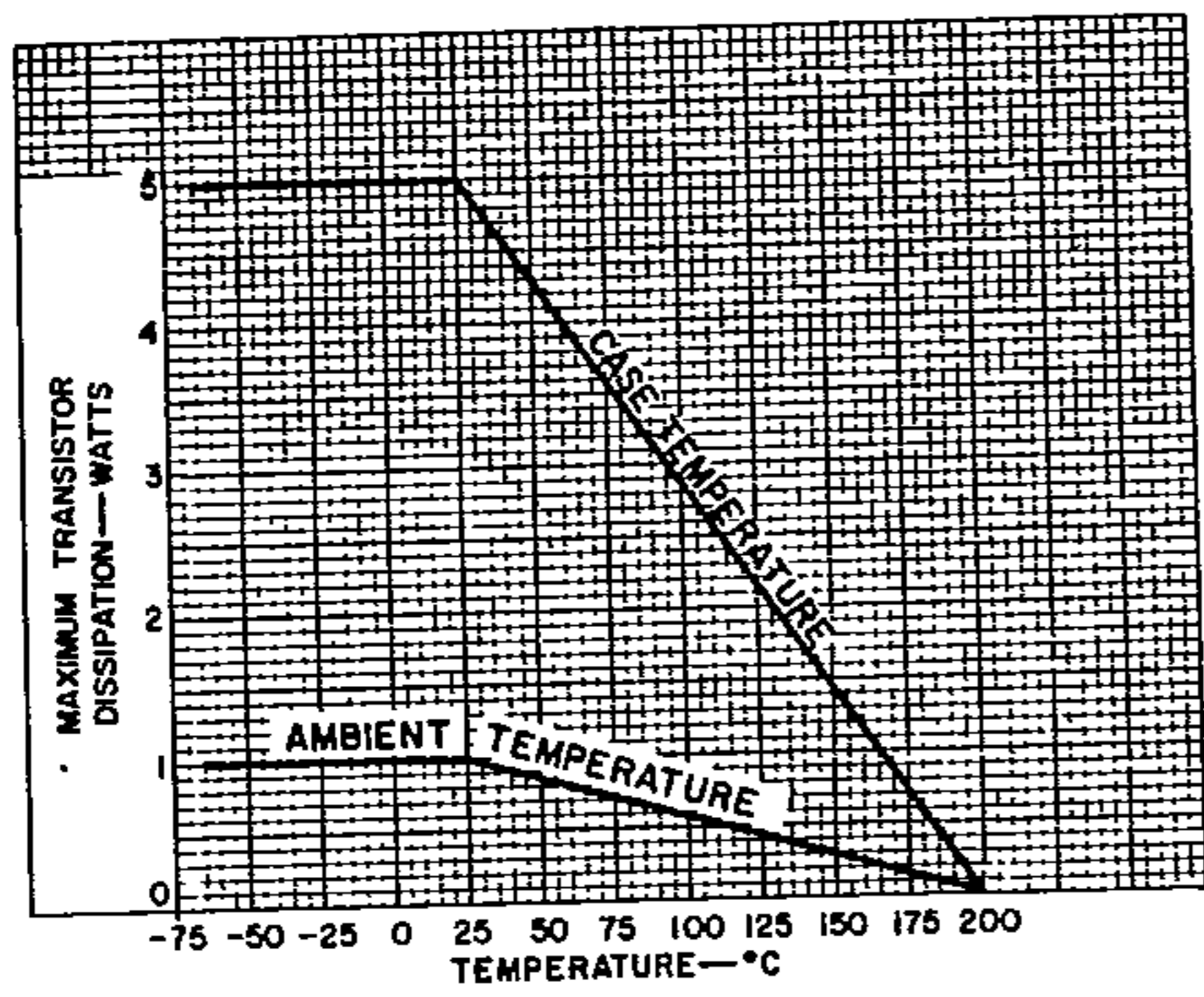


Fig. 1 - Rating Chart.

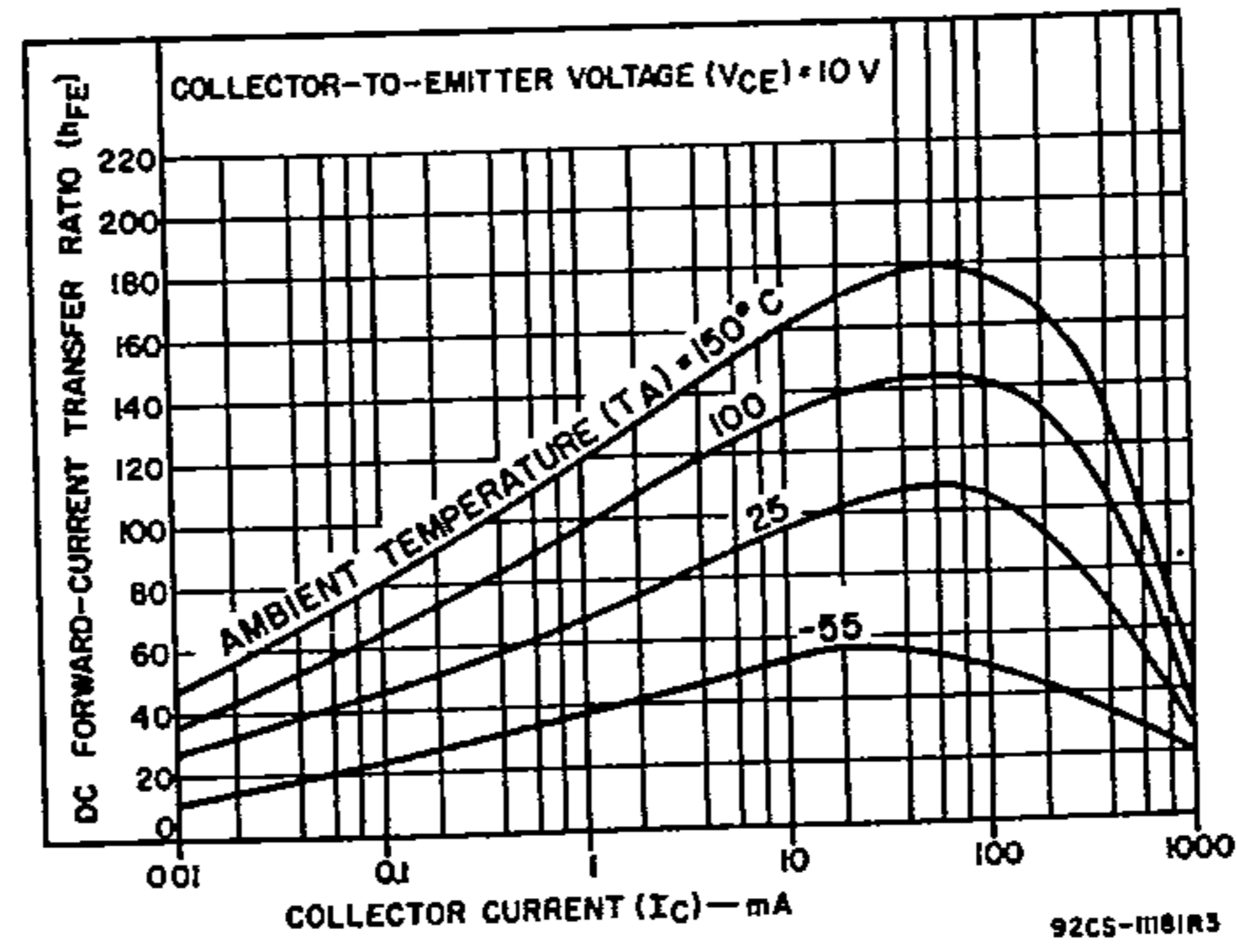


Fig. 2 - Typical dc forward-current transfer ratio characteristics.

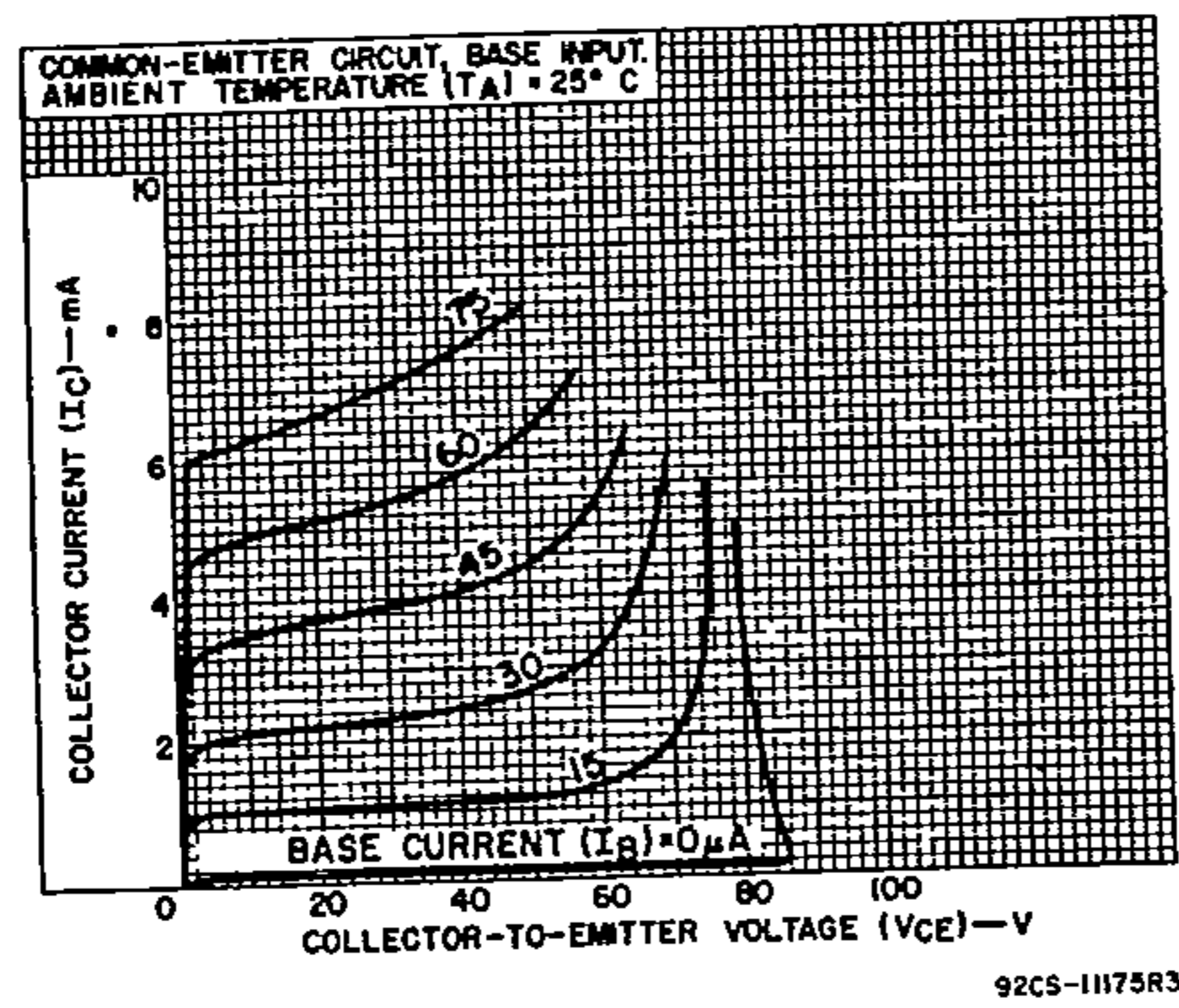


Fig. 3 - Typical collector characteristics.

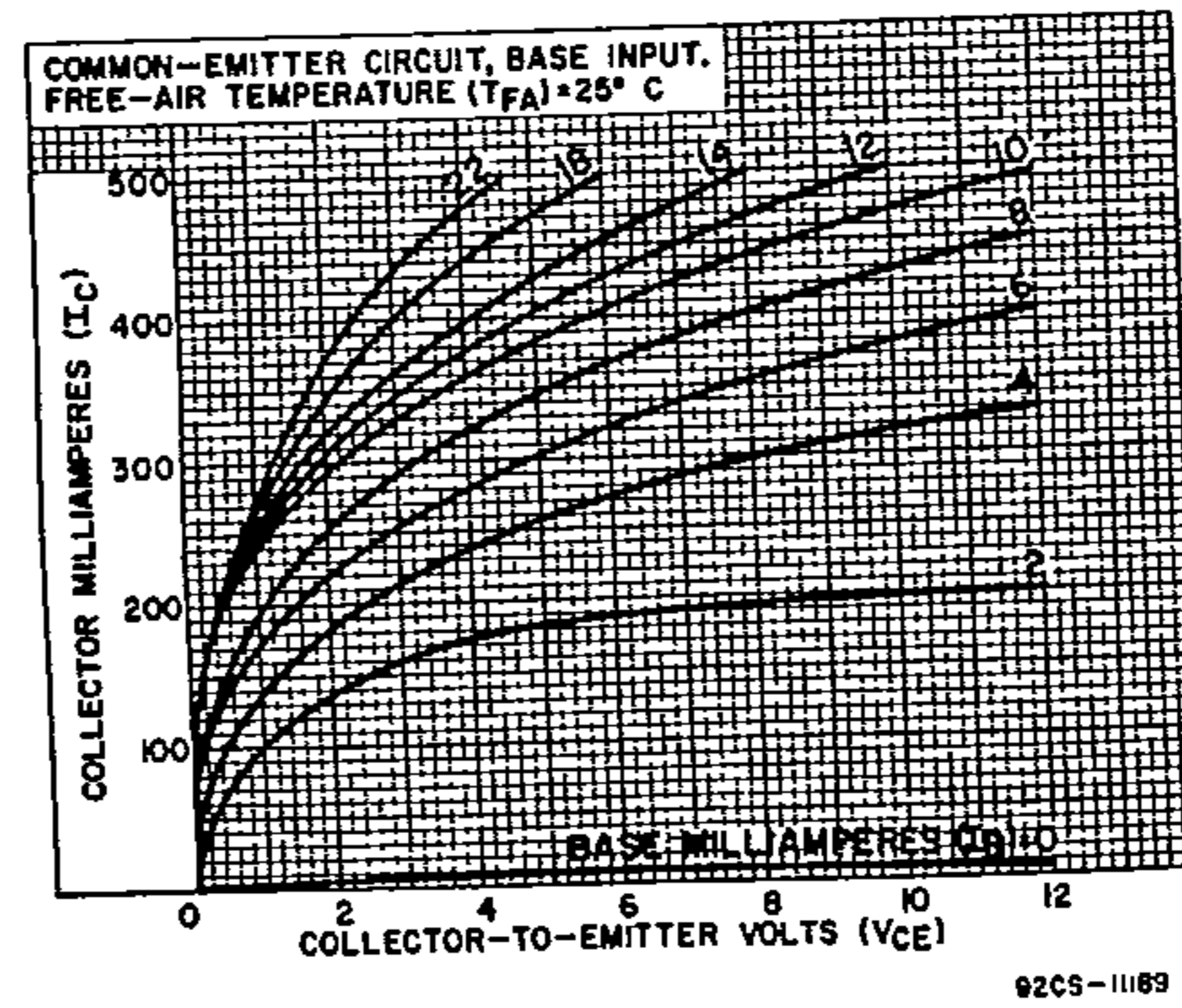


Fig. 4 - Typical collector characteristics.

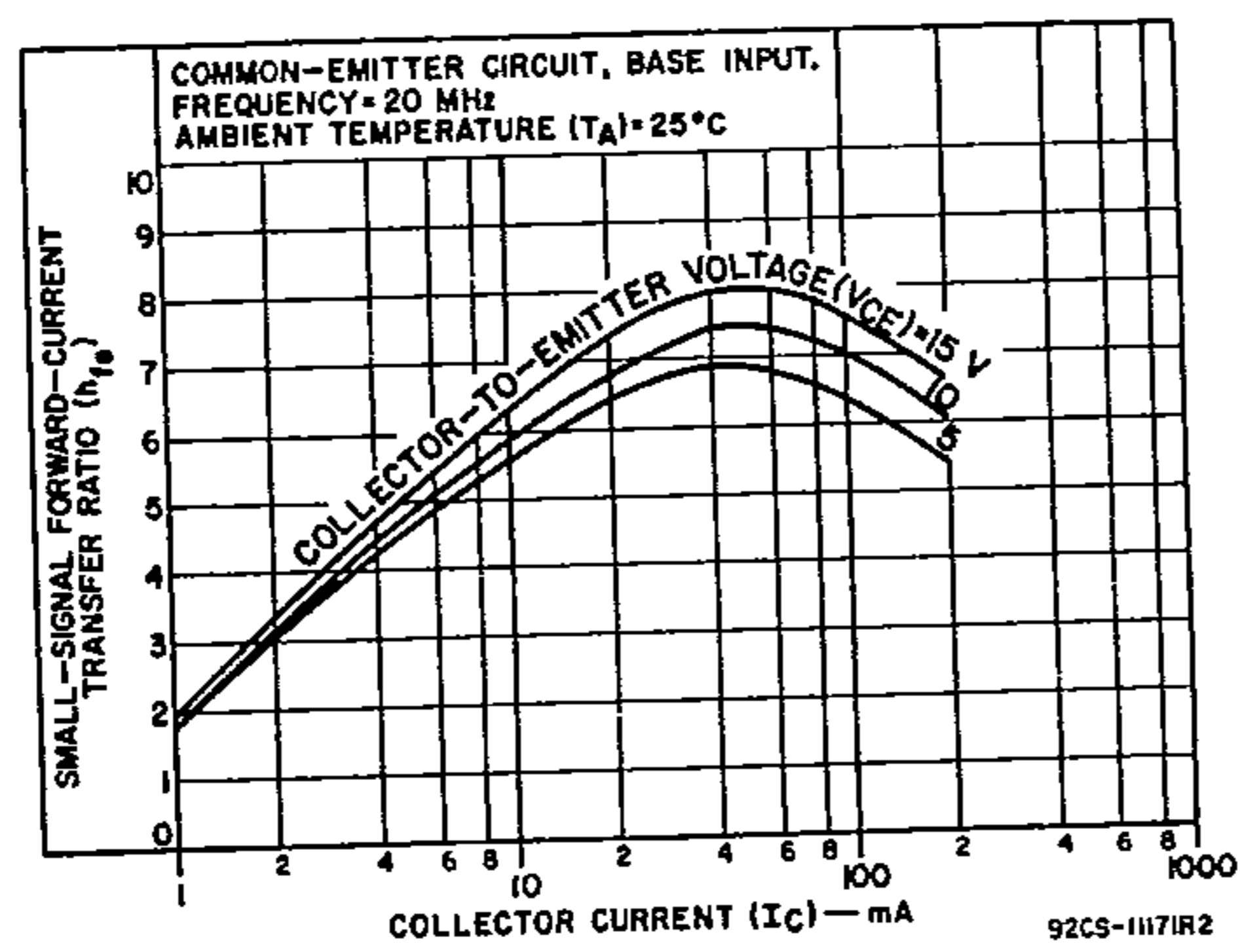


Fig. 5 - Typical small-signal forward-current ratio characteristics.

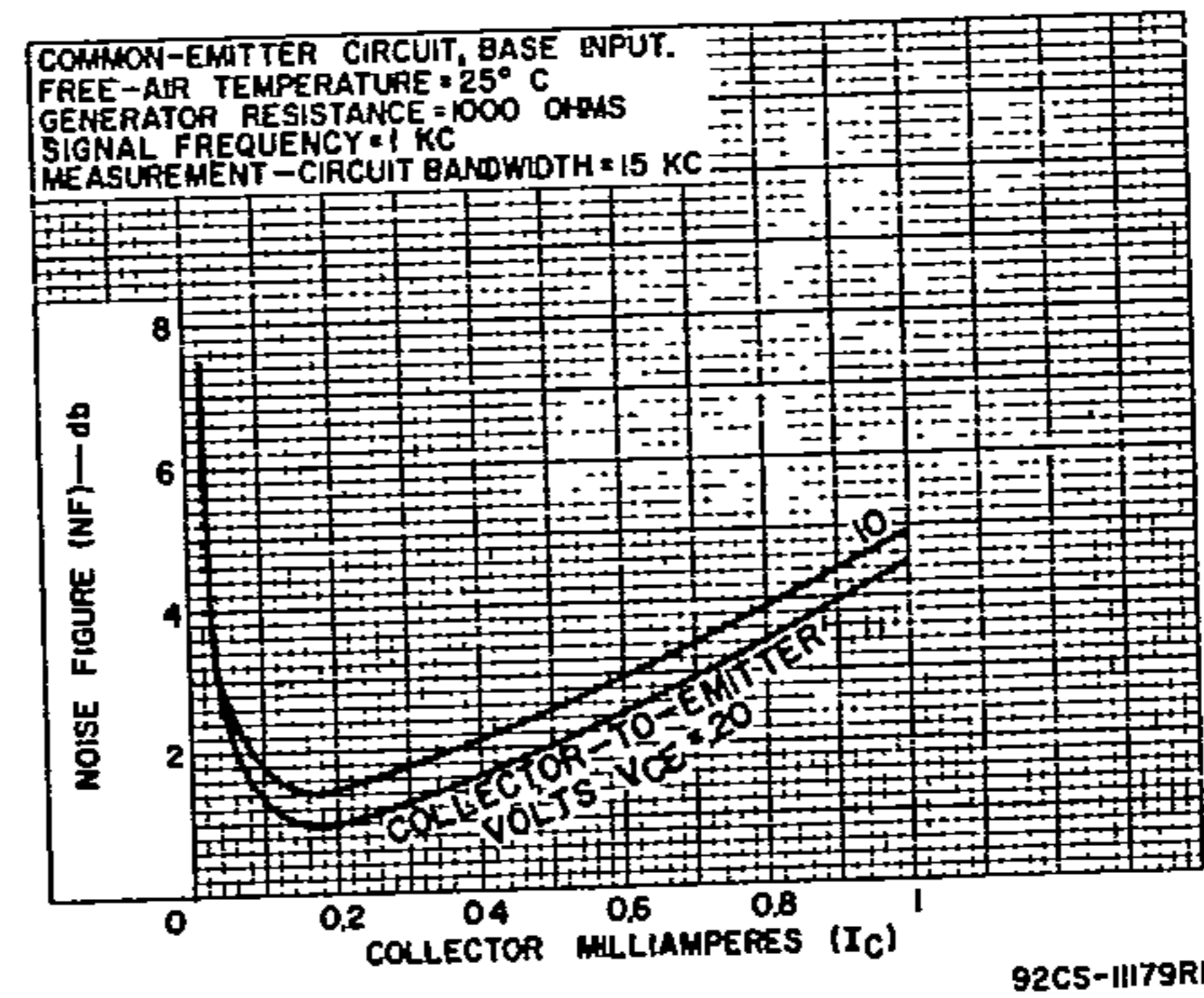


Fig. 6 - Typical noise-figure characteristics.

2N2270

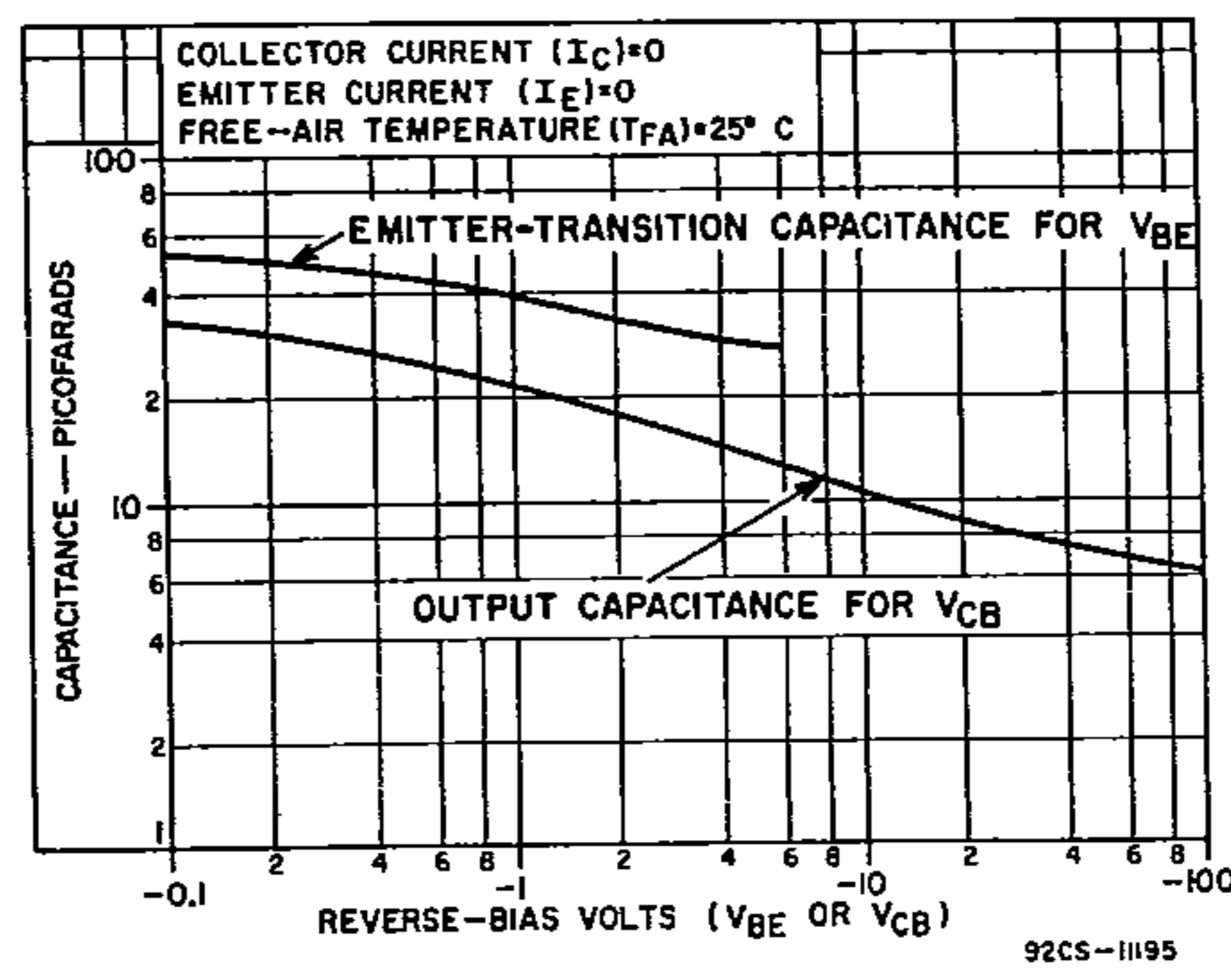


Fig. 7 — Typical emitter-transition-capacitance and output-capacitance characteristics.

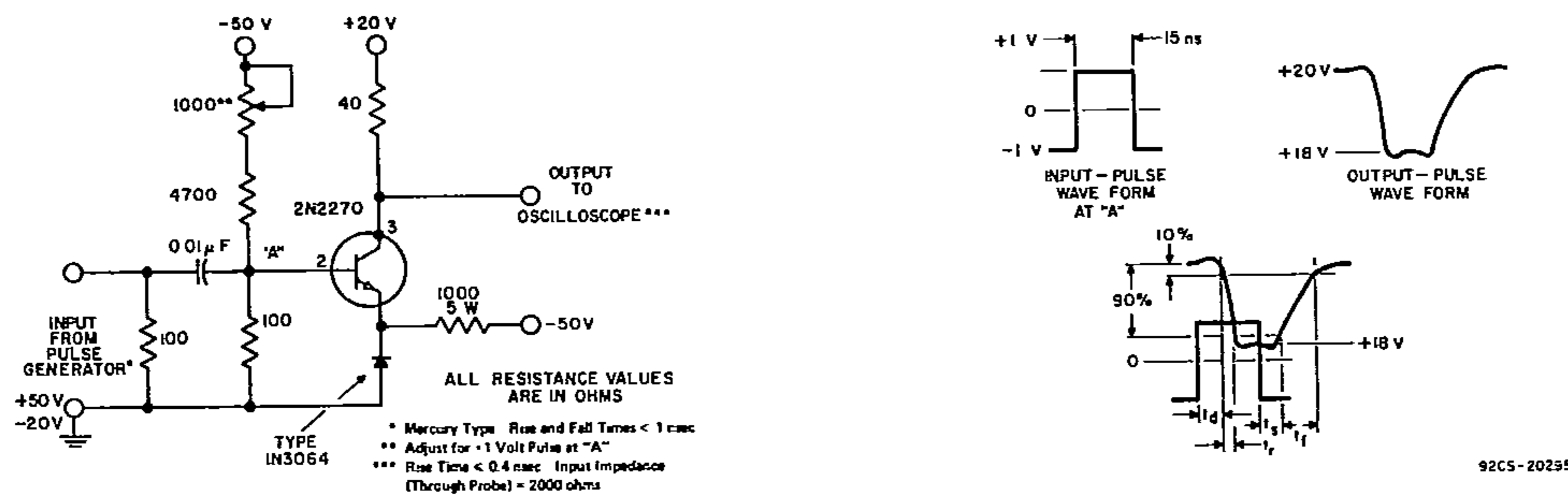


Fig. 8 — Test circuit for measurement of saturated switching time and associated waveforms.