RCA
Solid State Division

Power Transistors

2N5262

"Modified TO-39"

H-1546

Silicon N-P-N High-Speed Switching Transistor

For Memory-Driver Service in Data-Processing Equipment and Other Critical Industrial Applications

Features:

- **Fast switching at 1A:**
  t_{on} = 30 ns max.
  t_{off} = 60 ns max.
- **High voltage ratings**
- **High power dissipation ratings**
- **High dc beta at 1A — 25 min.**
- **Low saturation voltage at 1 A:**
  0.5 V typ.
- **Maximum-area-of-operation curves for dc and pulse operation**
- **Hermetic "low-profile TO-39" package**
- **Meets MIL-S-19500 specifications**

RCA-2N5262● is a silicon n-p-n, epitaxial planar transistor with characteristics which make it exceptionally desirable for high-speed, high-voltage, high-current switching applications. In addition, the 2N5262 features very short turn-on and turn-off times and low saturation voltages. It is also controlled for freedom from second breakdown under both forward-bias and reverse-bias conditions, when operated within specified maximum ratings.

The 2N5262 meets the requirements of the basic military specification MIL-S-19500, and is hermetically sealed in a metal "low-profile JEDEC TO-39" package.

RCA-2N5262 is primarily intended for use as a driver for "2-1/2D" coincident-current and word-organized magnetic-memory systems, and in the other critical industrial applications requiring switching of large currents through inductive loads.

● Formerly RCA Dev. No. TA7238.

Maximum Ratings, *Absolute-Maximum Values*

* COLLECTOR-TO-BASE VOLTAGE	V_{CBO}	75	V
* COLLECTOR-TO-EMITTER VOLTAGE:			
With base open	V_{CEO}	50	V
With emitter-base shorted	V_{CES}	60	V
* EMITTER-TO-BASE VOLTAGE	V_{EBO}	5	V
COLLECTOR CURRENT:			
* Continuous		2	A
Instantaneous (See Fig.4)		3	A
* TRANSISTOR DISSIPATION:	P_T		
At case temperatures up to 25°C		4	W
At case temperatures above 25°C		Derate linearly 22.8 mW/°C	
At ambient temperatures up to 25°C		0.8	W
At ambient temperatures above 25°C		Derate linearly 4.57 mW/°C	
* TEMPERATURE RANGE:			
Storage and operating (Junction)		−65 to 200	°C
* LEAD TEMPERATURE (During soldering):			
At distance ≥ 1/32 in. (0.8 mm) from seating plane for 10 s max		265	°C

* In accordance with JEDEC registration data format JS-8/RDF-7.

ELECTRICAL CHARACTERISTICS, *At Ambient Temperature (T_A) = 25°C*

	CHARACTERISTIC	SYMBOL	TEST CONDITIONS					LIMITS		UNITS
			VOLTAGE V dc		CURRENT A dc			2N5262		
			V_{CE}	V_{CB}	I_C	I_E	I_B	MIN.	MAX.	
*	Collector Cutoff Current: With emitter-to-base junction shorted	I_{CES}	60					–	10	μA
	With emitter open	I_{CBO}		75				–	100	
*	Emitter-to-Base Cutoff Current (V_{EB} = 5V)	I_{EBO}						–	100	μA
*	Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$			0.01			50	–	V
*	Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$			1[a]		0.1	–	0.8	V
*	Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$			1[a]		0.1	–	1.4	V
*	DC Forward Current Transfer Ratio	h_{FE}	1 1 1		0.1[a] 0.5[a] 1[b]			35 40 25	– – –	
	Common-Emitter, Small-Signal, Short-Circuit, Forward Current Transfer Ratio (f = 100 MHz)	h_{fe}	10		0.05			2.5	–	
	Common-Base, Open-Circuit Output Capacitance (f = 1 MHz)	C_{ob}		10		0		–	15	pF
*	Switching Time: Turn-on ($t_d + t_r$)	t_{ON}			I_C 1	I_{B_1} 0.1	I_{B_2} –	–	30	ns
	Turn-off ($t_s + t_f$)	t_{OFF}			1	0.1	–0.1	–	60	

* In accordance with JEDEC registration data format JS-8/RDF-7.

[a] Pulsed: Pulse duration = 300 μs; duty factor ≤ 2%.

[b] Pulsed: Pulse duration ≤ 400 μs, duty factor ≤ 0.03.

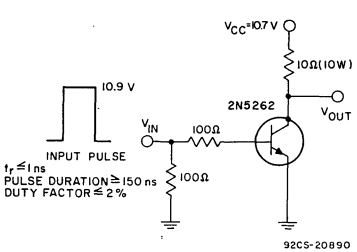

Fig.1—Circuit used to measure turn-on time.

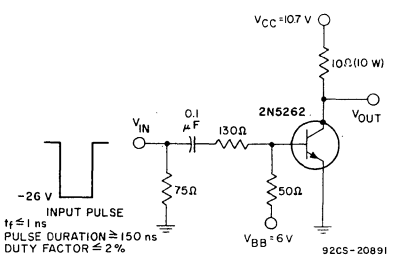

Fig.2—Circuit used to measure turn-off time.

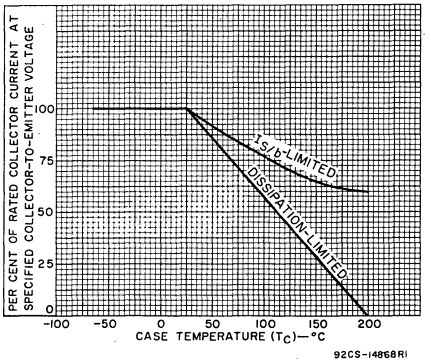

Fig.3—Derating curves.

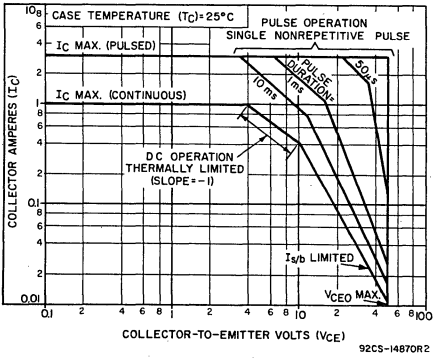

Fig.4—Safe area of operation.

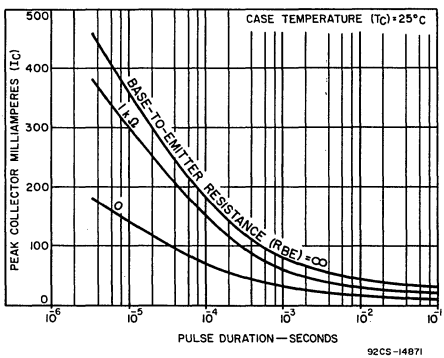

Fig.5—Typical second-breakdown characteristics.

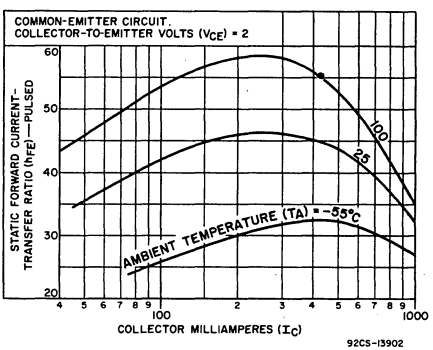

Fig.6—Typical dc beta characteristics.

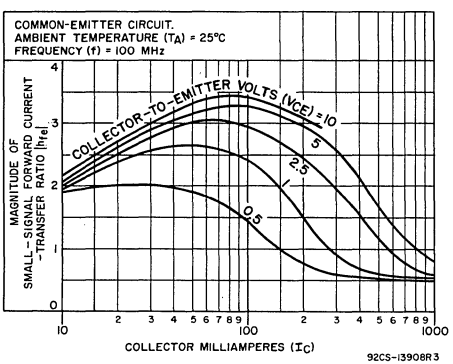

Fig.7—Typical small-signal beta characteristics.

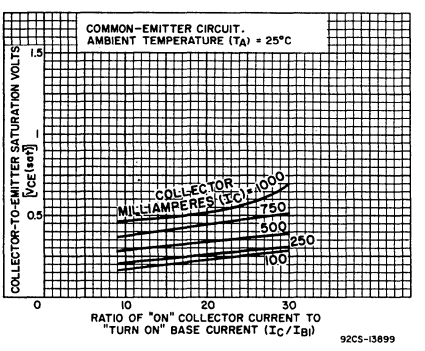

Fig.8—Typical saturation-voltage characteristics.

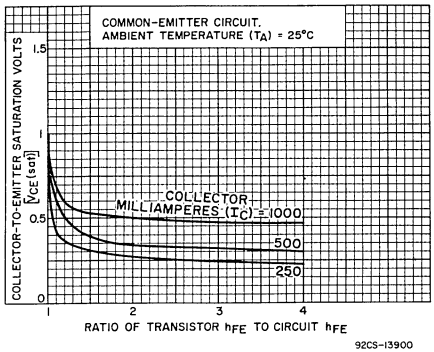

Fig.9—Typical characteristics of saturation voltage vs. ratio of transistor beta to circuit beta.

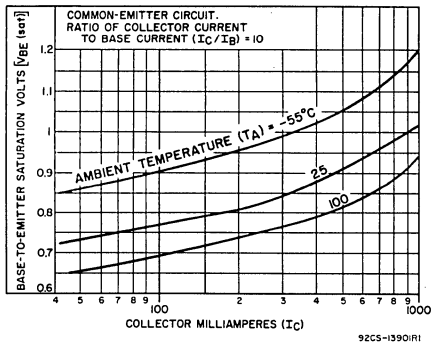

Fig.10—Typical base-to-emitter saturation voltage vs. collector current.

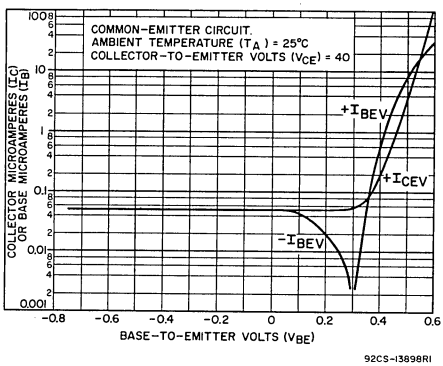

Fig.11—Typical transfer characteristics.

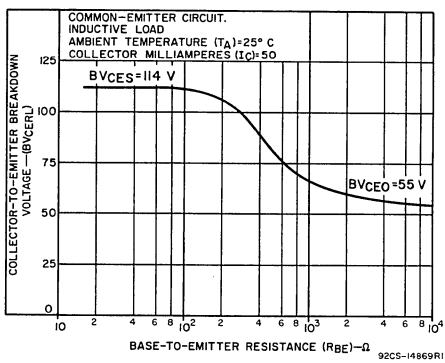

Fig.12—Typical collector-to-emitter breakdown voltage vs. resistance.

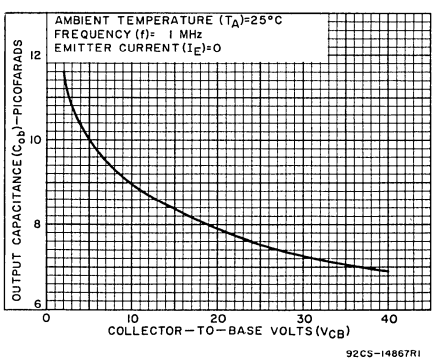

Fig.13—Typical output capacitance vs. collector-to-base voltage.

TERMINAL CONNECTIONS

LEAD 1—EMITTER

LEAD 2—BASE

LEAD 3—COLLECTOR, CASE

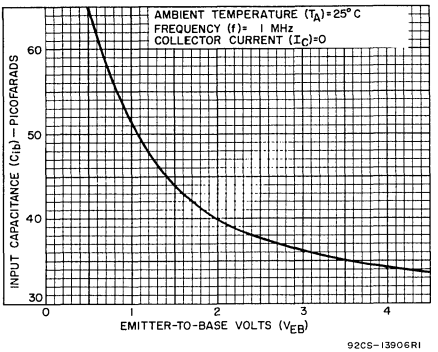

Fig.14—Typical input capacitance vs. emitter-to-base voltage.

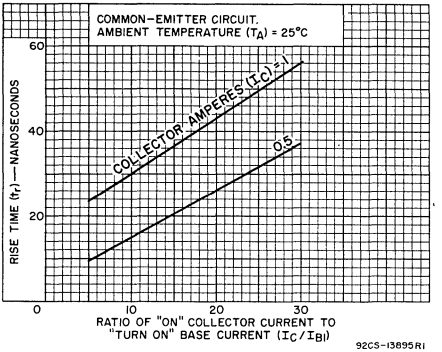

Fig.15—Typical rise-time characteristics.

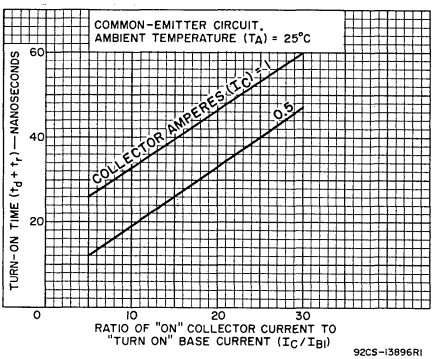

Fig.16—Typical turn-on time characteristics.

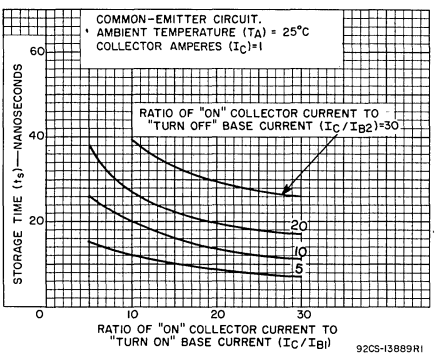

Fig.17—Typical storage time characteristics.

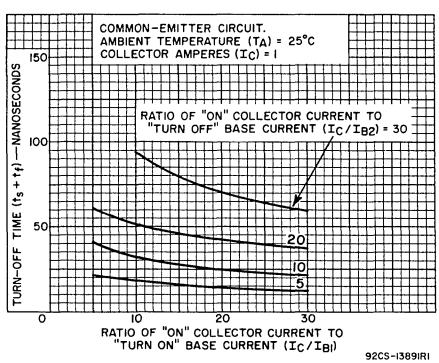

Fig.18—Typical turn-off time characteristics.

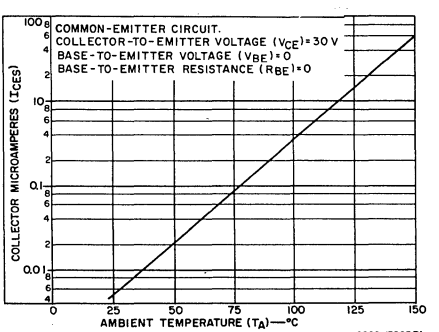

Fig.19—Typical collector cutoff current as a function of temperature.