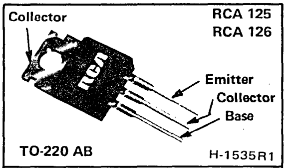
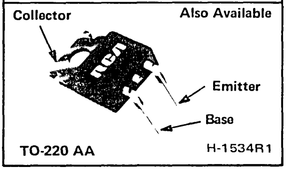
RCA
Solid State
Division

Power Transistors

RCA125 RCA126





8-Ampere P-N-P Darlington Power Transistors

60 and 80 Volts, 60 Watts
Gain of 1000 at 3 A
Gain of 500 at 0.5 A

Features:

- Operates from IC without predriver
- Low leakage at high temperature
- High reverse second-breakdown capability

Applications:

- Power switching
- Audio amplifiers
- Hammer drivers
- Series and shunt regulators

The RCA125 and RCA126 are monolithic p-n-p silicon Darlington transistors designed for low- and medium-frequency power applications. The high gain of these devices makes it possible for them to be driven directly from integrated circuits.

These devices are supplied in the JEDEC TO-220 AB straight-lead version of the VERSAWATT package. Optional lead configurations are available upon request. For information, contact your nearest RCA Sales Office.

RCA125 and RCA126 are p-n-p complements of the RCA 120 and RCA121 described in File No. 840.

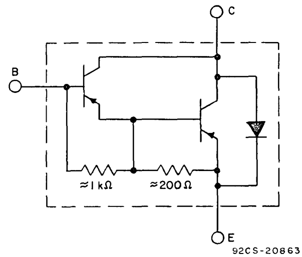


Fig. 1—Schematic diagram for all types.

MAXIMUM RATINGS, *Absolute-Maximum Values:*

		RCA125	RCA126	
COLLECTOR-TO-BASE VOLTAGE	V_{CBO}	−60	−80	V
COLLECTOR-TO-EMITTER VOLTAGE:				
With base open	V_{CEO}	−60	−80	V
EMITTER-TO-BASE VOLTAGE	V_{EBO}	−5	−5	V
CONTINUOUS COLLECTOR CURRENT	I_C	−8	−8	A
PEAK COLLECTOR CURRENT	I_{CM}	−15	−15	A
CONTINUOUS BASE CURRENT	I_B	−0.25	−0.25	A
TRANSISTOR DISSIPATION:	P_T			
At case temperatures up to 25°C		60	60	W
At case temperatures above 25°C		See Fig. 5		
TEMPERATURE RANGE:				
Storage & Operating (Junction)		−65 to 150		°C
LEAD TEMPERATURE (During Soldering):				
At distance 1/8 in. (3.17 mm) from case for 10 s max.		235		°C

ELECTRICAL CHARACTERISTICS, *At Case Temperature (T_C) = 25°C*

CHARACTERISTIC	SYMBOL	TEST CONDITIONS				LIMITS				UNITS
		VOLTAGE V dc		CURRENT A dc		RCA125		RCA126		
		V_{CE}	V_{EB}	I_C	I_B	MIN.	MAX.	MIN.	MAX.	
Collector-Cutoff Current: With base open	I_{CEO}	−30 −40			0 0	– –	−0.5 –	– –	– −0.5	
Emitter-Cutoff Current	I_{EBO}		−5	0		–	−10	–	−10	mA
Collector-to-Emitter Voltage: With base open	V_{CEO}			−0.03[a]	0	−60	–	−80	–	V
DC Forward-Current Transfer Ratio	h_{FE}	−3 −3		−0.5[a] −3[a]		500 1000	– –	500 1000	– –	
Base-to-Emitter Voltage	V_{BE}	−3		−3[a]		–	−2.5	–	−2.5	V
Collector-to-Emitter Saturation Voltage	$V_{CE}(sat)$			−3[a] −5[a]	−0.012 −0.02	– –	−2 −4	– –	−2 −4	V
Common-Emitter-Small-Signal, Forward-Current Transfer Ratio: f = 1 kHz	h_{fe}	−5		−1		1000	–	1000	–	
Magnitude of Common-Emitter, Small-Signal, Forward-Current Transfer Ratio: f = 1 MHz	$\|h_{fe}\|$	−5		−1		20	–	20	–	
Forward-Bias Second-Breakdown Collector Current: 1-s nonrepetitive pulse	$I_{S/G}$	−20				−3	–	−3	–	A
Saturated Switching Time[b] (V_{CC} = −20 V; R_L = 20 Ω; I_{B1} = I_{B2}): Turn-on time, $t_d + t_r$	t_{ON}			−3	−0.012	1 (typ.)		1 (typ.)		μs
Turn-off time, $t_s + t_f$	t_{OFF}			−3	0.012	3 (typ.)		3 (typ.)		μs
Thermal Resistance: Junction-to-Case	$R_{\phi JC}$					–	2.1	–	2.1	°C/W

[a]Pulsed: Pulse duration = 300 μs, duty factor ⩽2%   [b]See Figs. 9, 10, and 11

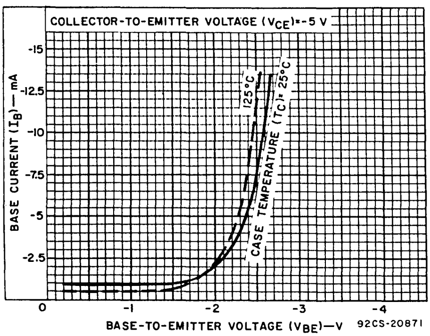


Fig. 2—Typical input characteristics for both types.

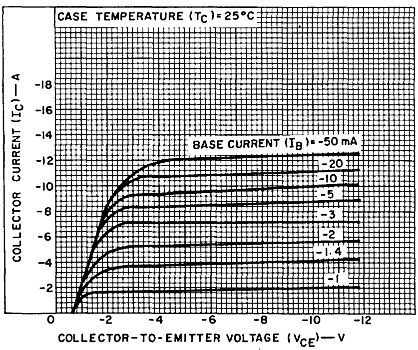


Fig. 3—Typical output characteristics for both types.

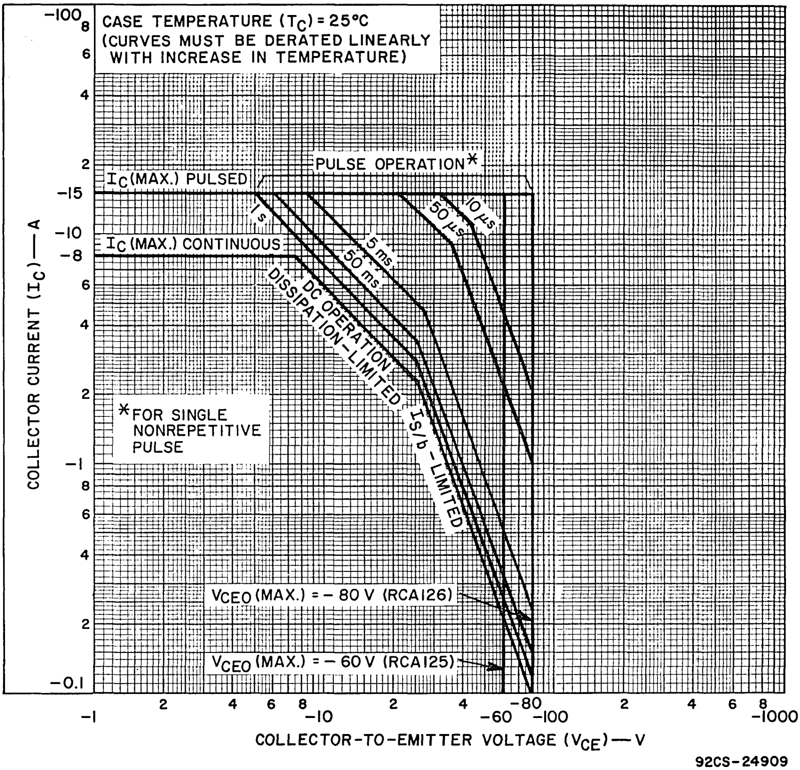


Fig. 4—Maximum operating areas for both types.

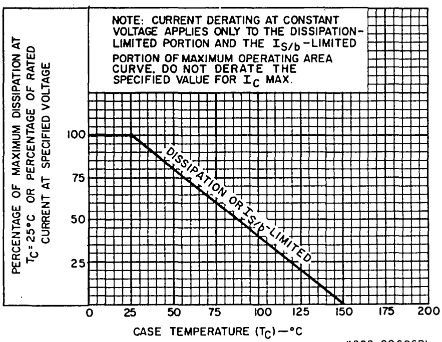


Fig. 5—Dissipation derating curve for both types.

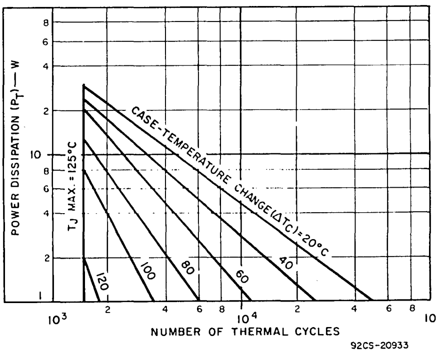


Fig. 6—Thermal-cycling rating chart for both types.

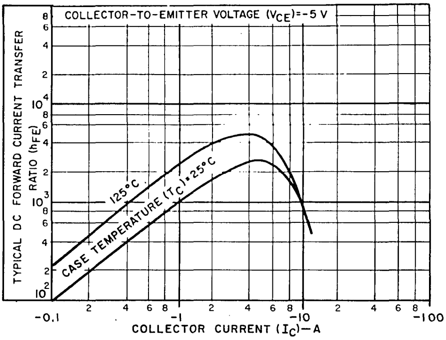


Fig. 7—Typical dc beta characteristics for both types.

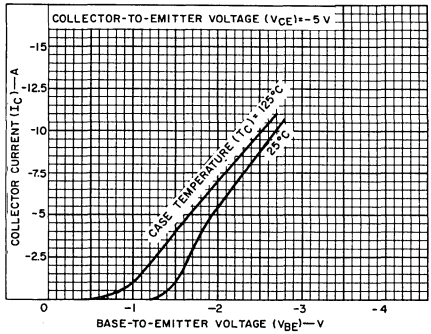


Fig. 8—Typical transfer characteristics for both types.

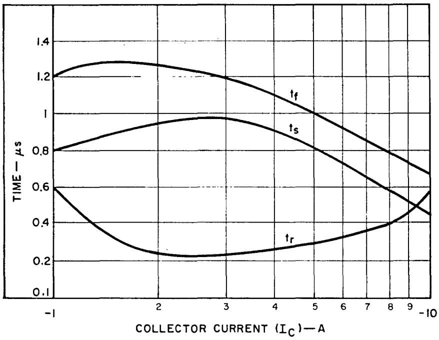


Fig. 9—Typical saturated switching-time characteristics for both types.

TERMINAL CONNECTIONS
JEDEC TO-220 AB

Lead No.1 — Base
Lead No.2 — Collector
Lead No.3 — Emitter
Mounting Flange — Collector

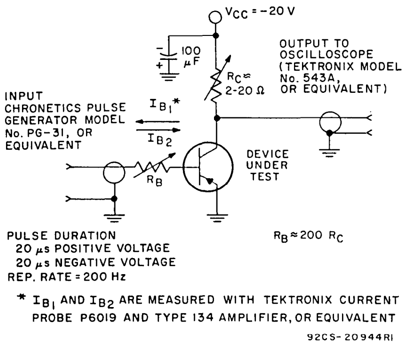


Fig. 10—Circuit used to measure saturated switching times.

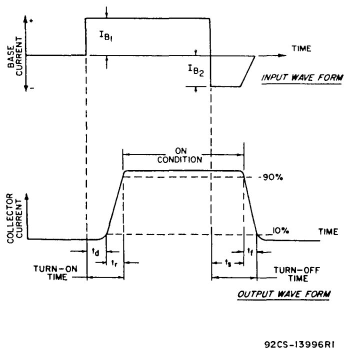


Fig. 11—Phase relationship between input current and output current showing reference points for specification of switching times (test circuit shown in Fig. 10).