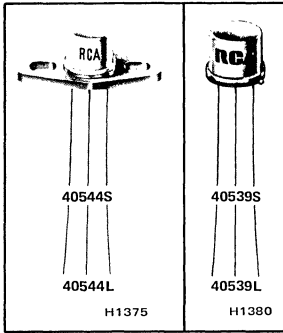




Power Transistors

40539

40544



Medium-Power Silicon N-P-N Planar Transistors

For Driver and Output Stages in Audio-Amplifier Circuits

Features:

- Low leakage current
- Low saturation voltage:
 $V_{CE(sat)} = 1.0 \text{ V Max. (40544)}$
 $= 2.0 \text{ V Max. (40539)}$
- 40539 is n-p-n complement of 40538*

These devices are available with either 1½-inch leads (TO-5 package) or ½-inch leads (TO-39 package). The longer-lead versions are specified by suffix "L" after the type number; the shorter-lead versions are specified by suffix "S" after the type number.

RCA-40539 and 40544 are silicon n-p-n planar transistors. Type 40539 employs the JEDEC TO-39 (40539S) or TO-5 (40539L) package; type 40544 is supplied with a factory-attached, diamond-shaped mounting flange.

The 40539 is intended as a complement to p-n-p type 40538 in complementary-symmetry output stages. The 40544 was designed specifically as a driver in audio-amplifier circuits.

* Data for type 40538 appears in File No. 302.

MAXIMUM RATINGS, Absolute-Maximum Values:

	40539	40544	
COLLECTOR-TO-EMITTER SUSTAINING VOLTAGE:			
With external base-to-emitter resistance			
$(R_{BE}) = 100 \Omega$	$V_{CER(sus)}$	50	V
$(R_{BE}) = 500 \Omega$	$V_{CER(sus)}$	—	V
EMITTER-TO-BASE VOLTAGE	V_{EBO}	5	V
COLLECTOR CURRENT	I_C	0.7	A
TRANSISTOR DISSIPATION:	P_T		
At case temperatures up to 25° C	5	7	W
At free-air temperatures up to 25° C	1	—	W
At temperatures above 25° C	Derate linearly to 0 W at 200°C		
TEMPERATURE RANGE:			
Storage and operating (Junction)	← -65 to + 200 →		°C
LEAD TEMPERATURE (During soldering):			
At distance $\geq 1/32$ in. (0.8 mm) from seating plane for 10 s max.	← 255 →		°C

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

Characteristic	Symbol	TEST CONDITIONS				LIMITS				Units
		DC Voltage (V)		DC Current (mA)		Type 40539		Type 40544		
		V_{CE}	V_{EB}	I_C	I_B	Min.	Max.	Min.	Max.	
Collector-Cutoff Current With external base-to-emitter resistance (R_{BE}) = 100 Ω = 500 Ω	I_{CER}	40 45				- -	- 10	- -	10 -	μA
Emitter-Cutoff Current	I_{EBO}		5	0		-	1.0	-	1.0	mA
DC Forward-Current Transfer Ratio	h_{FE}		4 4	500 50		15 -	90 -	- 35	- 200	
Collector-to-Emmitter Sustaining Voltage With external base-to-emitter resistance (R_{BE}) = 100 Ω = 500 Ω	$V_{CER(sus)}$			100 100		- 55	- -	50 -	- -	V
Base-to-Emmitter Voltage	V_{BE}	4 4		500 50		- -	2.7 -	- -	- 1.7	V
Collector-to-Emmitter Saturation Voltage	$V_{CE(sat)}$			500 150	50 15	- -	2.0 -	- -	- 1.0	V
Gain-Bandwidth Product	f_T		4	50		100 (Typ.)	100 (Typ.)			MHz
Thermal Resistance (Junction-to-Case)	θ_{J-C}					-	35	-	25	°C/W

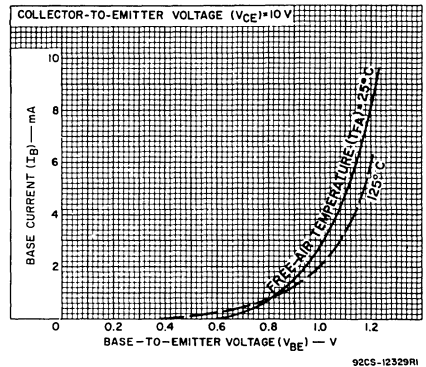
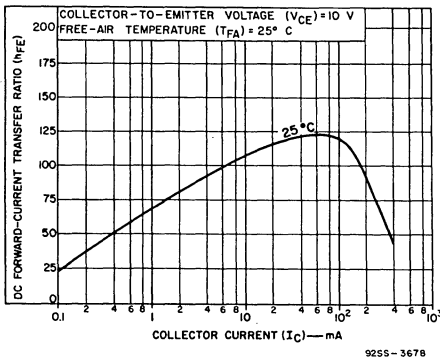


Fig. 1 — Typical dc-beta characteristics for both types.

Fig. 2 — Typical input characteristics for both types.

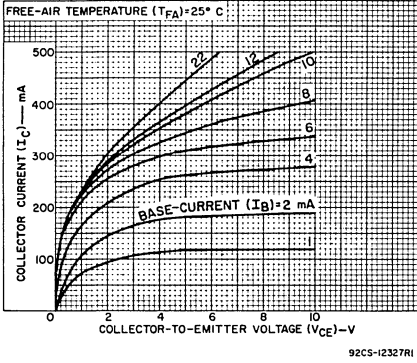


Fig.3 – Typical output characteristics for all types.

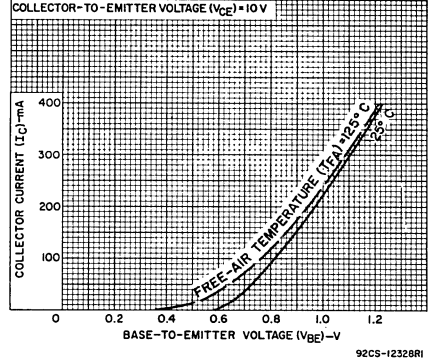


Fig.4 – Typical transfer characteristics for all types.

**TERMINAL CONNECTIONS
FOR 40539**

- Lead 1 – Emitter
- Lead 2 – Base
- Case, Lead 3 – Collector

**TERMINAL CONNECTIONS
FOR 40544**

- Lead 1 – Emitter
- Lead 2 – Base
- Flange, Lead 3 – Collector