



Power Transistors

40537
40538

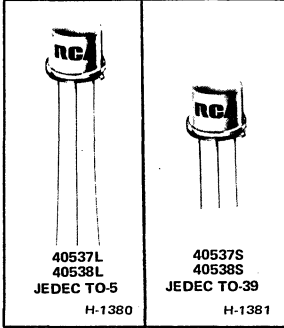
Silicon P-N-P Transistors

For Driver and Output Stages in
Audio-Amplifier Circuits

Features:

- Planar construction provides low-noise and low-leakage characteristics
- Gain bandwidth product (f_T) = 50 MHz min.
- 40538 is p-n-p complement of 40539*
- Low saturation voltage:
 $V_{CE(sat)} = -1.1$ V max. (40537)
 $= -2.0$ V max. (40538)
- High pulse beta at high collector current:
 $h_{FE} = 50$ min. at $I_C = -50$ mA (40537)
 $= 15$ min. at $I_C = -500$ mA (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-40537 and 40538 are double-diffused, epitaxial-planar, silicon p-n-p transistors. They differ in the current at which the parameters are controlled.

The 40537 is designed specifically for use as a driver in audio-amplifier circuits. The 40538 is intended as a complement to n-p-n type 40539 in complementary-symmetry output stages*.

* Data for type 40539 appear in File No. 303.

<p>MAXIMUM RATINGS, Absolute-Maximum Values:</p> <p>COLLECTOR-TO-EMITTER SUSTAINING VOLTAGE: With external base-to-emitter resistance (R_{BE}) = 500 Ω</p> <p>EMITTER-TO-BASE VOLTAGE</p> <p>COLLECTOR CURRENT</p> <p>BASE CURRENT</p> <p>TRANSISTOR DISSIPATION: At case temperatures up to 25° C</p> <p>At free-air temperatures up to 25° C</p> <p>At temperatures above 25° C</p> <p>TEMPERATURE RANGE: Storage and Operating (Junction)</p> <p>LEAD TEMPERATURE (During soldering): At distance \geq 1/32 in. (0.8 mm) from seating plane for 10 s max.</p>	<p>40537 40538</p> <p>$V_{CER(sus)}$ -55 V</p> <p>V_{EBO} -5 V</p> <p>I_C -0.7 A</p> <p>I_B -0.2 A</p> <p>P_T</p> <p>5 W</p> <p>1 W</p> <p>Derate linearly to 0 W at 200° C</p> <p>-65 to 200 °C</p> <p>230 °C</p>
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ELECTRICAL CHARACTERISTICS, At Case Temperature (T_C) = 25°C

CHARACTERISTIC	SYMBOL	TEST CONDITIONS				LIMITS				UNITS
		DC VOLTAGE (V)		DC CURRENT (mA)		TYPE 40537		TYPE 40538		
		V_{CE}	V_{EB}	I_C	I_B	MIN.	MAX.	MIN.	MAX.	
Collector Cutoff Current With external base-to-emitter resistance (R_{BE}) = 500 Ω	I_{CER}	-45				-	-10	-	-10	μA
Emitter Cutoff Current	I_{EBO}		-5	0		-	-1	-	-1	mA
DC Forward-Current Transfer Ratio	h_{FE}	-4		-50		50	300	-	-	
		-4		-500 ^a		-	-	15	90	
Collector-to-Emitter Sustaining Voltage With external base-to-emitter resistance (R_{BE}) = 500 Ω	$V_{CER(sus)}$			-100		-55	-	-55	-	V
Base-to-Emitter Voltage	V_{BE}	-4		-50		-	-1.8	-	-	V
		-4		-500		-	-	-	-2.7	V
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$			-50	-5	-	-1.1	-	-	V
				-500	-50	-	-	-	-2.0	V
Gain-Bandwidth Product	f_T	-4		-50		100 (Typ.)		100 (Typ.)		MHz
Thermal Resistance (Junction-to-Free Air)	$R_{\theta JA}$					-	175	-	175	°C/W

^aPulsed; pulse duration = 300 μs , duty factor < 2%.

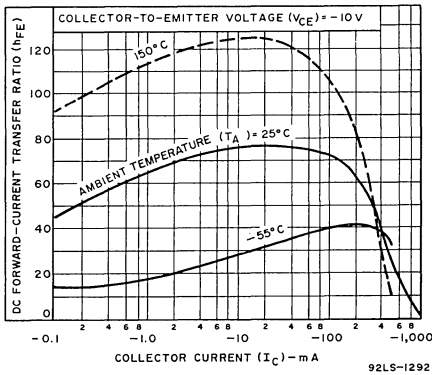


Fig.1 – Typical dc beta characteristics for both types.

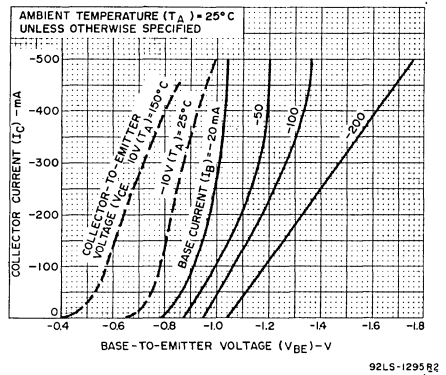


Fig.2 – Typical transfer characteristics for both types.

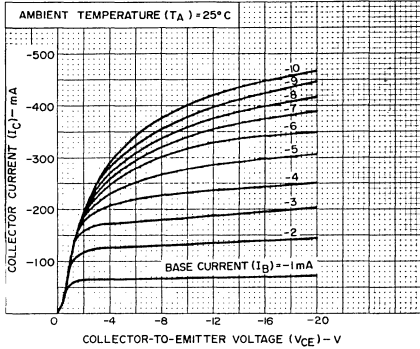


Fig.3 - Typical output characteristics for both types.

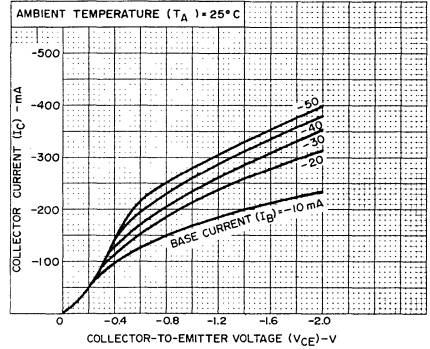


Fig.4 - Typical output characteristics for both types.

TERMINAL CONNECTIONS

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