

361-975

POWER TRANSISTORS

2N3055H, 2N6253, 2N6254, 2N6371, 40251

Hometaxial-Base High-Power Silicon N-P-N Transistors

Rugged, Broadly Applicable Devices For Industrial and Commercial Use

These RCA types are silicon n-p-n transistors intended for a wide variety of high-power linear and switching applications. The hometaxial-base construction of these devices makes them highly resistant to second breakdown; for example, the 2N3055H can withstand an $I_{S/b}$ current of

1.95 amperes (min.) at a V_{CEO} of up to 60 volts. For the 2N6254, the $I_{S/b}$ rating is 1.87 amperes (min.) at V_{CEO} up to 80 volts.

All of these transistors are supplied in the JEDEC TO-3 hermetic steel package.

Features:

- 2N6254: premium type from 2N3055H family
- Maximum safe-area-of-operation curves
- Low saturation voltages
- High dissipation ratings
- Thermal-cycle rating curves

Applications:

- Series and shunt regulators
- High-fidelity amplifiers
- Power-switching circuits
- Solenoid drivers
- Low-frequency inverters

MAXIMUM RATINGS, Absolute-Maximum Values:

	2N3055H	2N6253	2N6254	2N6371	40251	
* V_{CBO}	100	55	100	50	50	V
* $V_{CER}(sus)$ $R_{BE} = 100 \Omega$	70	55	85	45	—	V
* $V_{CEO}(sus)$ $V_{CEV}(sus)$ $V_{BE} = -1.5$ V.....	60	45	80	40	40	V
* V_{EBO}	90	55	90	50	50	V
* I_C	7	5	7	5	5	A
* I_B	15	15	15	15	15	A
* P_T : $\leq 25^\circ C$	7	7	7	7	7	A
$> 25^\circ C$	115	115	150	117	117	W
* T_J, T_{stg}	Derate linearly to $200^\circ C$					$^\circ C$
* T_L : During soldering, at distances 1/32 in. (0.8 mm) from seating plane for 10 s max.....	-65 to +200					$^\circ C$
	235					$^\circ C$

* In accordance with JEDEC registration data formats JS-9 RDF-10: 2N3055H; JS-6 RDF-2; 2N6253, 2N6254, 2N6371.

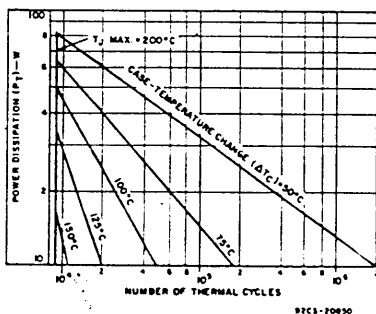


Fig. 1 - Thermal-cycling rating chart for 2N3055H, 2N6253, 2N6371.

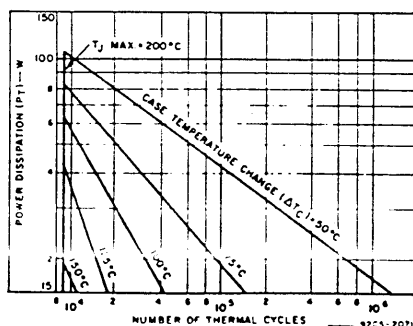


Fig. 2 - Thermal cycling rating chart for 2N6254.

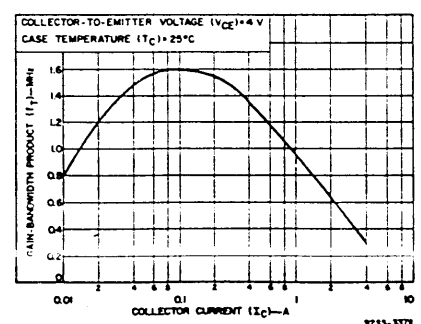


Fig. 3 - Typical gain-bandwidth product for all types.

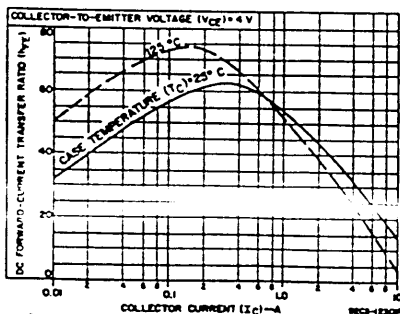


Fig. 4 - Typical dc beta characteristics for 2N3055H and 2N6371.

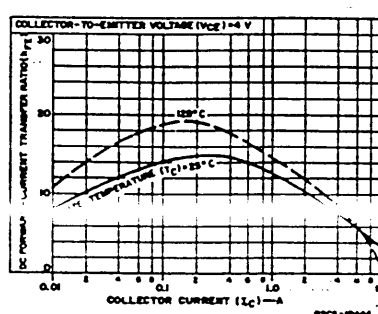


Fig. 5 - Typical dc beta characteristics for 2N6253.

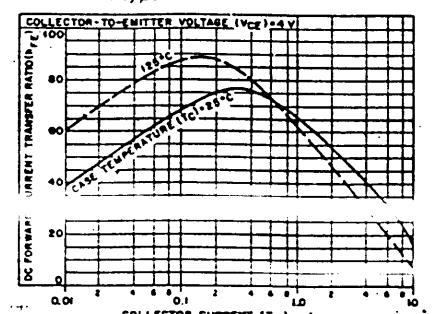
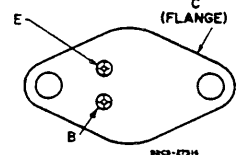


Fig. 6 - Typical dc beta characteristics for 2N6254.

TERMINAL DESIGNATIONS



JEDEC TO-3

SEMELAB LIMITED

POWER TRANSISTORS

2N3055H, 2N6253, 2N6254, 2N6371, 40251

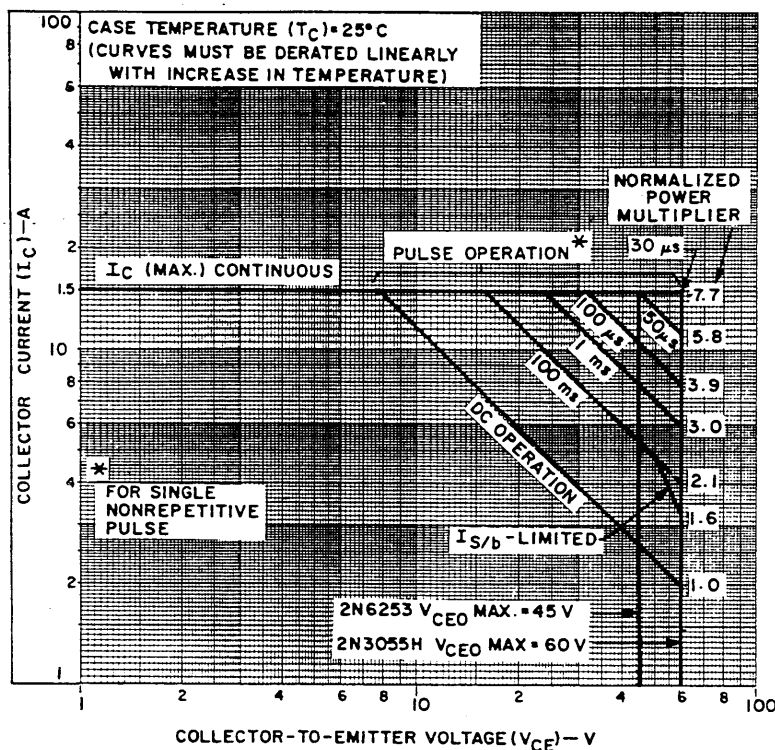


Fig. 7 - Maximum operating areas for types 2N6253 and 2N3055H.

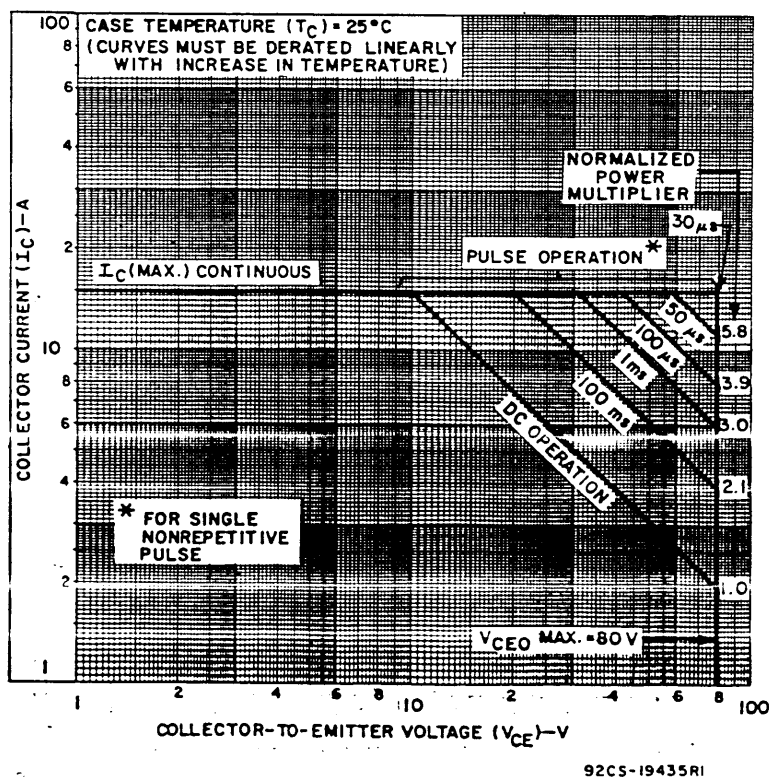


Fig. 10 - Maximum operating areas for 2N6254.

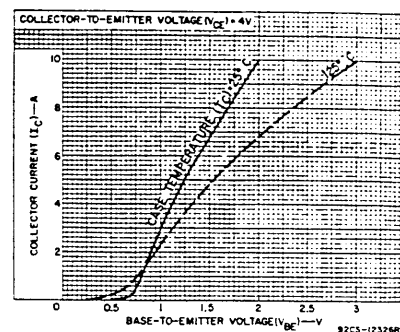


Fig. 8 - Typical transfer characteristics for 2N6254, 2N3055H, 2N6371, 40251.

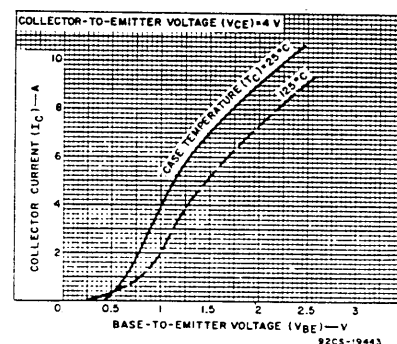


Fig. 9 - Typical transfer characteristics for 2N6253.

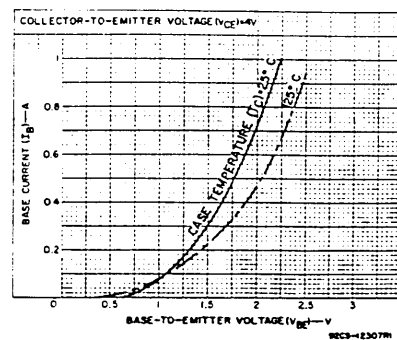


Fig. 11 - Typical input characteristics for 2N3055H, 2N6371, 40251.

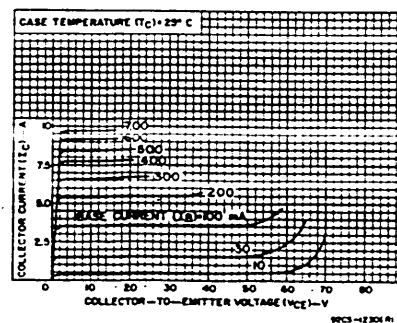


Fig. 12 - Typical output characteristics for 2N3055H, 2N6371.

2N3055H, 2N6253, 2N6254, 2N6371, 40251

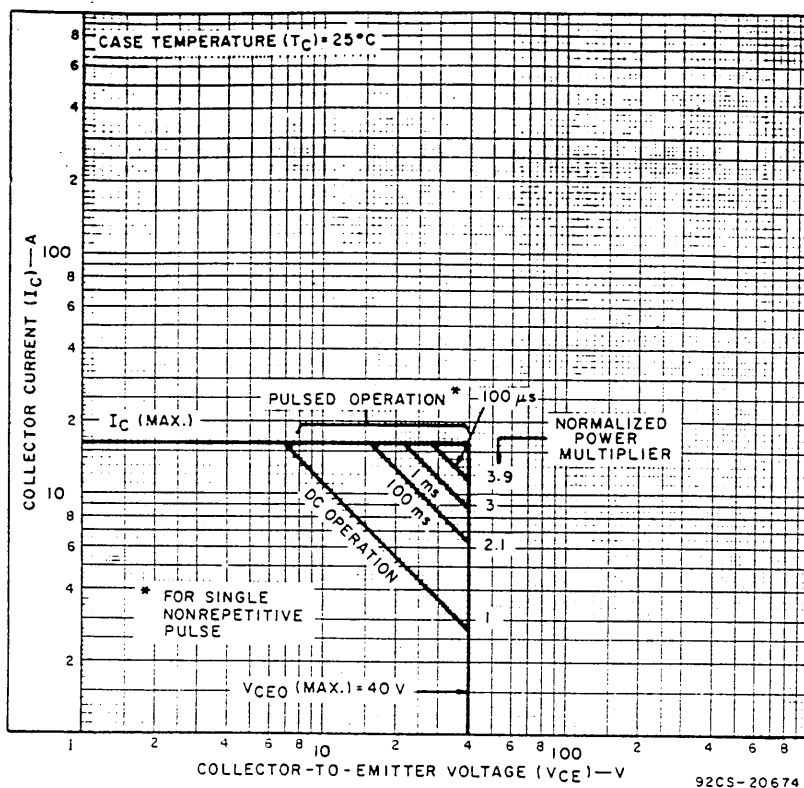


Fig. 13 - Maximum safe area of operation at case temperature of 25°C for 2N6371.

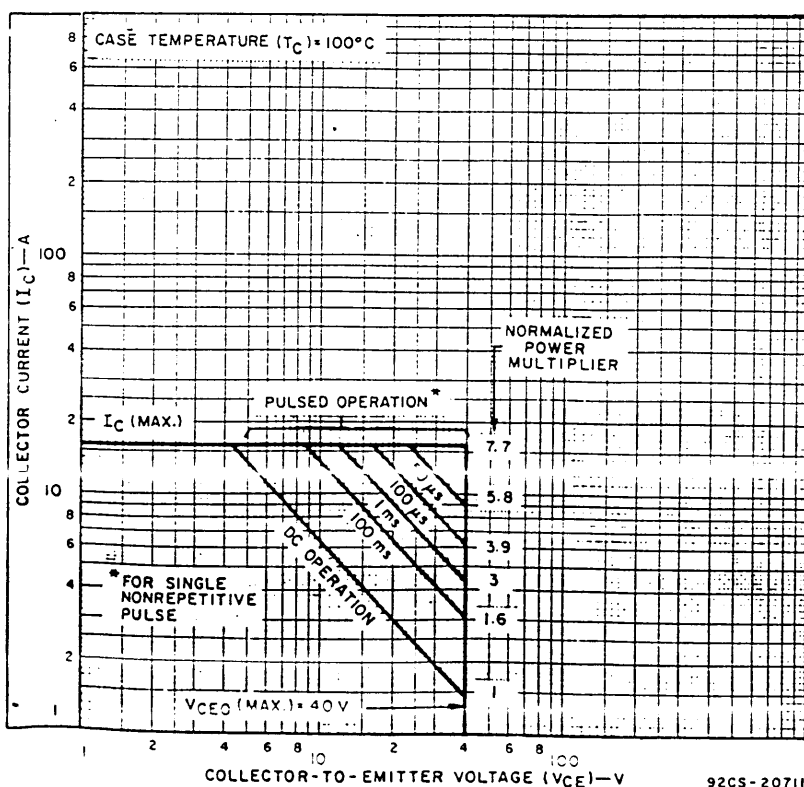


Fig. 16 - Maximum safe area of operation at case temperature of 100°C for 2N6371.

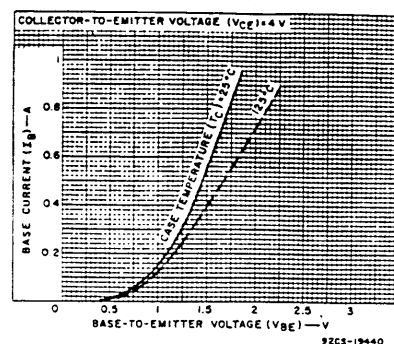


Fig. 14 - Typical input characteristics for 2N6253.

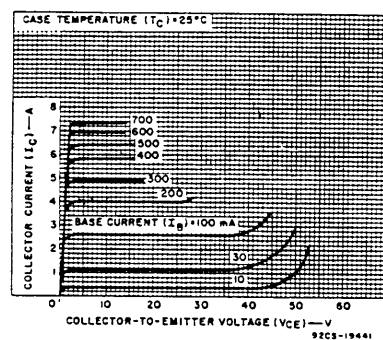


Fig. 15 - Typical output characteristics for 2N6253.

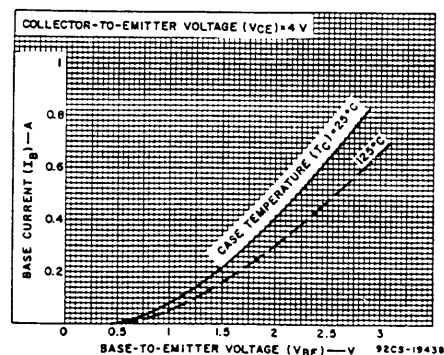


Fig. 17 - Typical input characteristics for 2N6254.

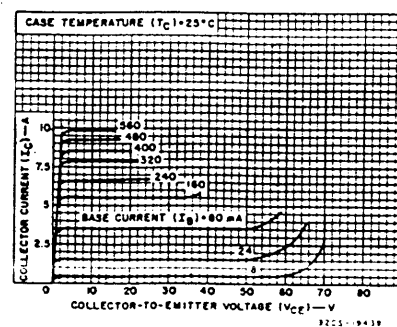


Fig. 18 - Typical output characteristics for 2N6254.

SEMELAB LIMITED

2N3055H, 2N6253, 2N6254, 2N6371, 40251

ELECTRICAL CHARACTERISTICS, $T_C = 25^\circ\text{C}$ Unless Otherwise Specified.

CHARACTERISTIC	TEST CONDITIONS				LIMITS										UNITS
	VOLTAGE		CURRENT		2N3055H		2N6253		2N6254		2N6371		40251		
	V dc		A dc												
	VCE	VBE	IC	IB	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	
I_{CEO}	25 30 60			0 0 0	— — —	— 0.7 —	— — —	1.5 — —	— — —	— — 1	— — —	1.5 — —	— — —	— — —	mA
I_{CEX}	40 45 55 100	-1.5 -1.5 -1.5 -1.5			— — — —	— — — 5	— — — —	— — 2 —	— — — —	— — — 0.5	— — — —	— 2 — —	— — — —	2 — — —	mA
$T_C = 150^{\circ}\text{C}$	40 50 100	-1.5 -1.5 -1.5			— — —	— — 30	— — —	— 10 —	— — —	— — 5	— — —	10 — —	— — —	10 — —	
I_{EBO}		-5 -7			— —	— 5	— —	10 —	— —	— 0.5	— —	— —	— —	— —	mA
$V_{(BR)CBO}$			0.1		—	—	—	—	—	—	—	—	50	—	V
$V_{(BR)CEV}$		-1.5	0.1		—	—	—	—	—	—	—	—	50	—	V
$V_{(BR)EBO}$ $I_E = 0.01\text{ mA}$			0		—	—	—	—	—	—	—	—	5	—	V
$V_{CEO(sus)}$			0.2 ^a	0	60	—	45	—	80	—	40	—	40	—	V
$V_{CER(sus)}$ $R_{BE} = 100\ \Omega$			0.2 ^a		70	—	55	—	85	—	45	—	—	—	
$V_{CEV(sus)}$		-1.5	0.1 ^a		90	—	55	—	90	—	50	—	—	—	
h_{FE}	4 4 2 4 4 4 4		3 ^a 4 ^a 5 ^a 8 ^a 10 ^a 15 ^a 16 ^a		— 20 — — 5 — —	— 70 — — — — —	20 — — — — 3	70 ^b — — — — — —	— — — 20 — 5	— — 70 — — — —	— — — — 15 — 4	— — — — 60 — —	— — — — 15 — —	— — — — 60 — —	
V_{BE}	4 4 2 4 4		3 ^a 4 ^a 5 ^a 8 ^a 16 ^a		— — — — —	— 1.8 — — —	— — — — —	1.7 — — — —	— — — 1.5 —	— — — — —	— — — — 4	— — — — —	— — — — —	— — — 2.2 —	V
$V_{CE(sat)}$			3 ^a 4 ^a 5 ^a 8 ^a 10 ^a 15 ^a 16 ^a	0.3 ^a 0.4 ^a 0.5 ^a 0.8 ^a 3.3 ^a 3 ^a 5 ^a 4 ^a	— — — — 8 — — —	— 1.1 — — — — — —	— — — — — — 4 —	— — — — — — — —	— — 0.5 — — 4 — —	— — — — — — — —	— — — 1.5 — — — 4	— — — — — — — —	— — — — 1.5 — — —	V	
h_{fe} $f = 1\text{ kHz}$	4		1		15	120	10	—	10	—	10	—	—	—	
f_T			1		800	—	—	—	—	—	800	—	—	—	kHz
$ h_{fe} $ $f = 0.4\text{ MHz}$	4		1		—	—	2	—	2	—	2	—	—	—	
f_{hfe}	4		1		10	—	10	—	10	—	—	—	—	—	kHz
S/b $t_p = 1\text{ s}$ nonrep.	39 40 45 60 80				— 2.9 — 1.95 —	— — — — —	— — 2.55 — —	— — — — —	— — — — 1.87	— — — — —	— — — — —	— — 2.9 — —	— — — — —	3 — — — —	A
θ_{JA}					—	1.5	—	1.5	—	1.17	—	1.5	—	1.5	C/W

^a In accordance with JEDEC registration data formats JS-9 RDF-10: 2N3055H; JS-6 RDF-2: 2N6253, 2N6254, 2N6371

^b Pulse, pulse duration = 300 μs , duty factor = 1.8%.