

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:

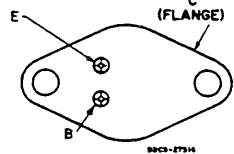
- Series and shunt regulators
- High-fidelity amplifiers
- Power-switching circuits
- Solenoid drivers
- Low-frequency inverters

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
—————Derate linearly to $200^\circ C$ —————						
* T_J, T_{stg}	————— -65 to +200 —————					$^\circ C$
* T_L : During soldering, at distances 1/32 in. (0.8 mm) from seating plane for 10 s max.....	————— 235 —————					$^\circ C$

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

TERMINAL DESIGNATIONS



JEDEC TO-3

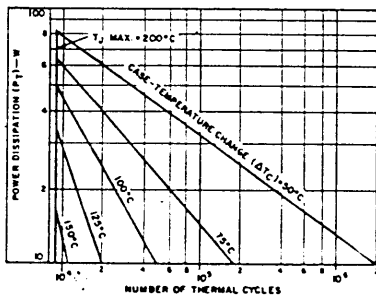


Fig. 1 - Thermal-cycling rating chart for 2N3055H, 2N6253, 2N6371.

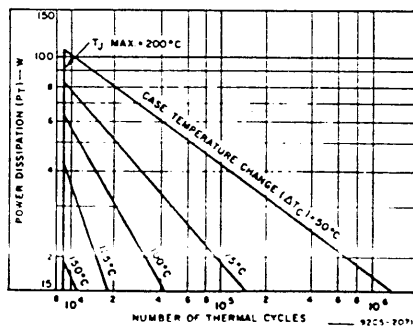


Fig. 2 - Thermal cycling rating chart for 2N6254.

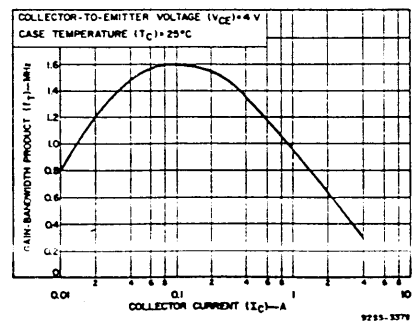


Fig. 3 - Typical gain-bandwidth product for all types.

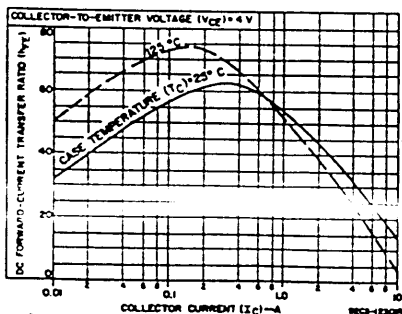


Fig. 4 - Typical dc beta characteristics for 2N3055H and 2N6371.

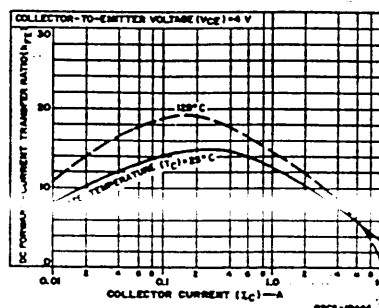


Fig. 5 - Typical dc beta characteristics for 2N6253.

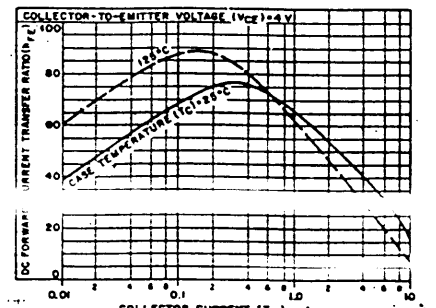


Fig. 6 - Typical dc beta characteristics for 2N6254.

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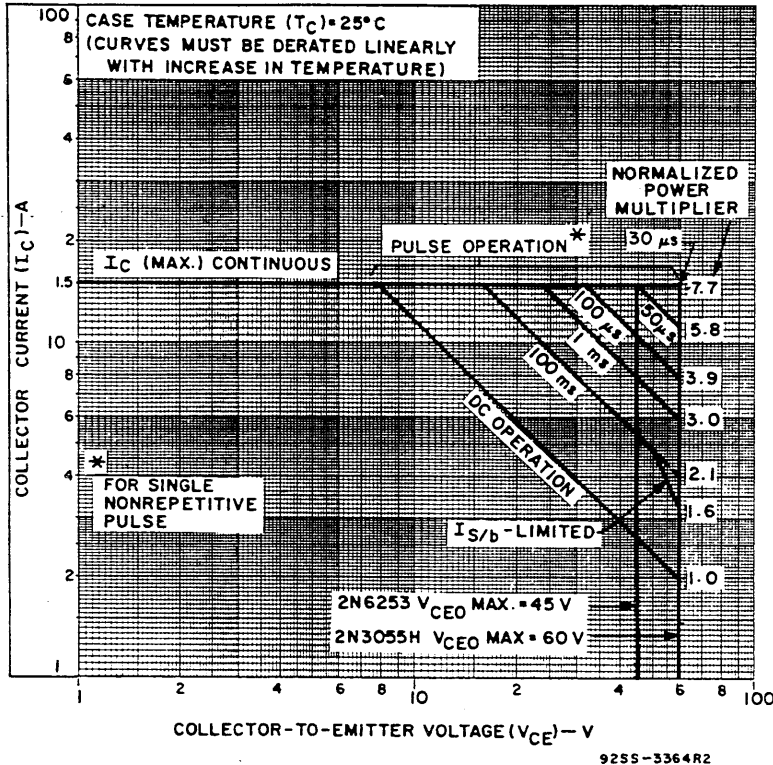


Fig. 7 - Maximum operating areas for types 2N6253 and 2N3055H.

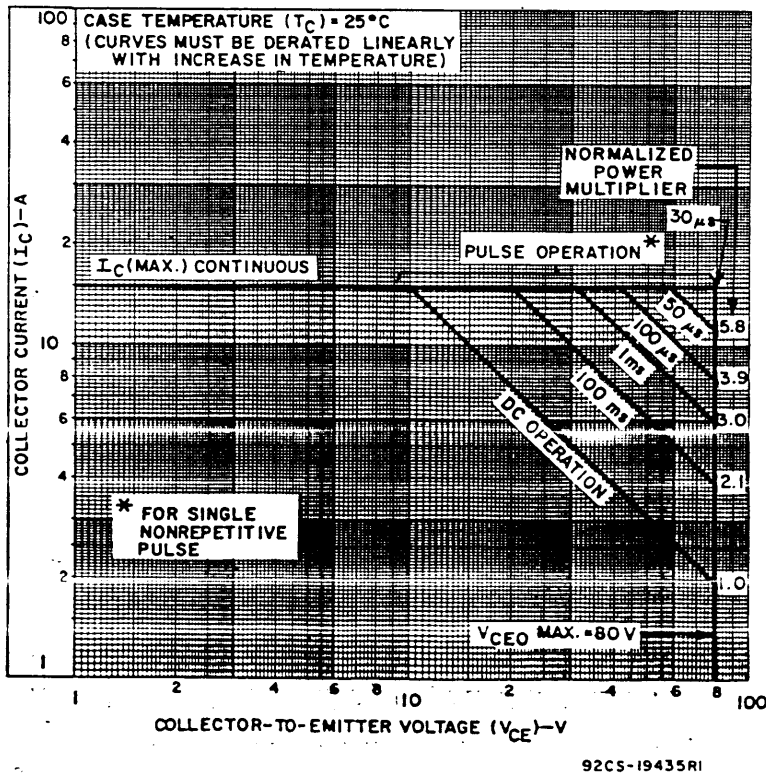


Fig. 10 - Maximum operating areas for 2N6254.

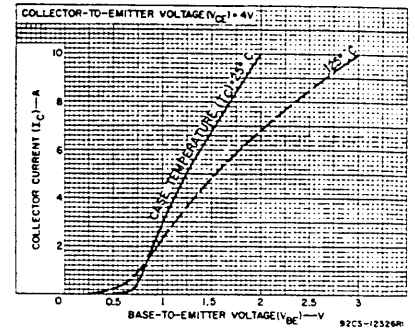


Fig. 8 - Typical transfer characteristics for 2N6254, 2N3055H, 2N6371, 40251.

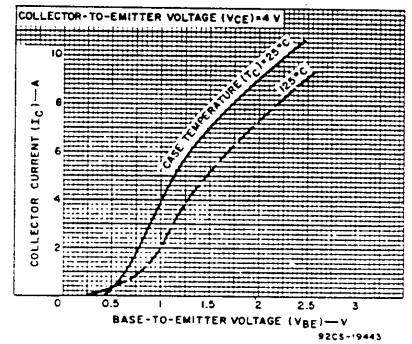


Fig. 9 - Typical transfer characteristics for 2N6253.

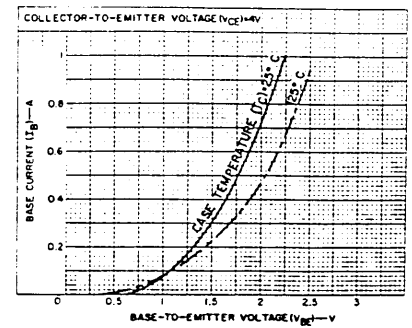


Fig. 11 - Typical input characteristics for 2N3055H, 2N6371, 40251.

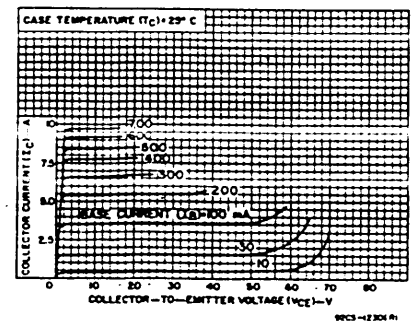


Fig. 12 - Typical output characteristics for 2N3055H, 2N6371.

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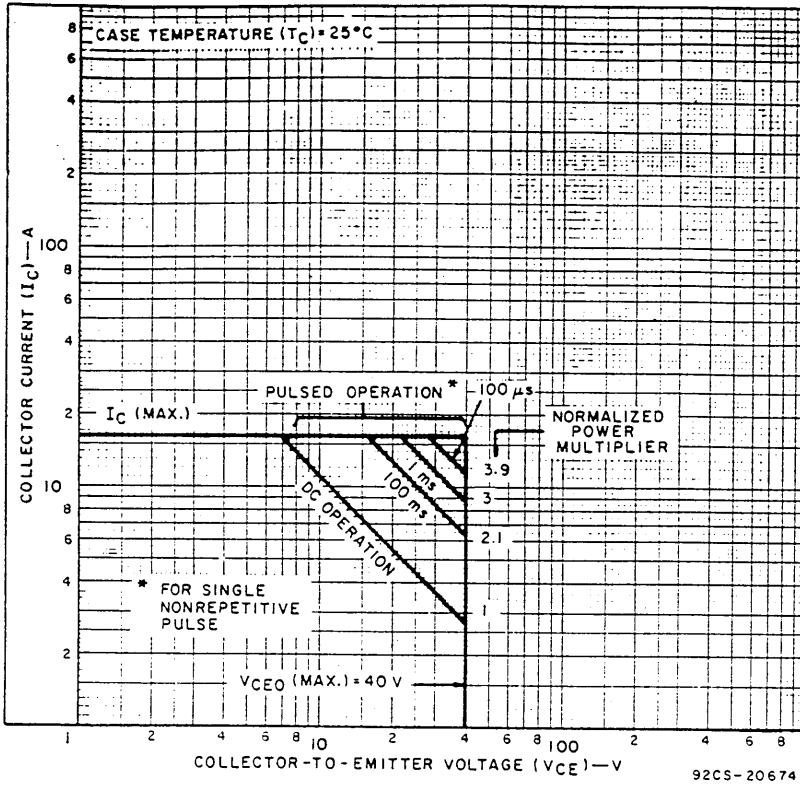


Fig. 13 - Maximum safe area of operation at case temperature of 25°C for 2N6371.

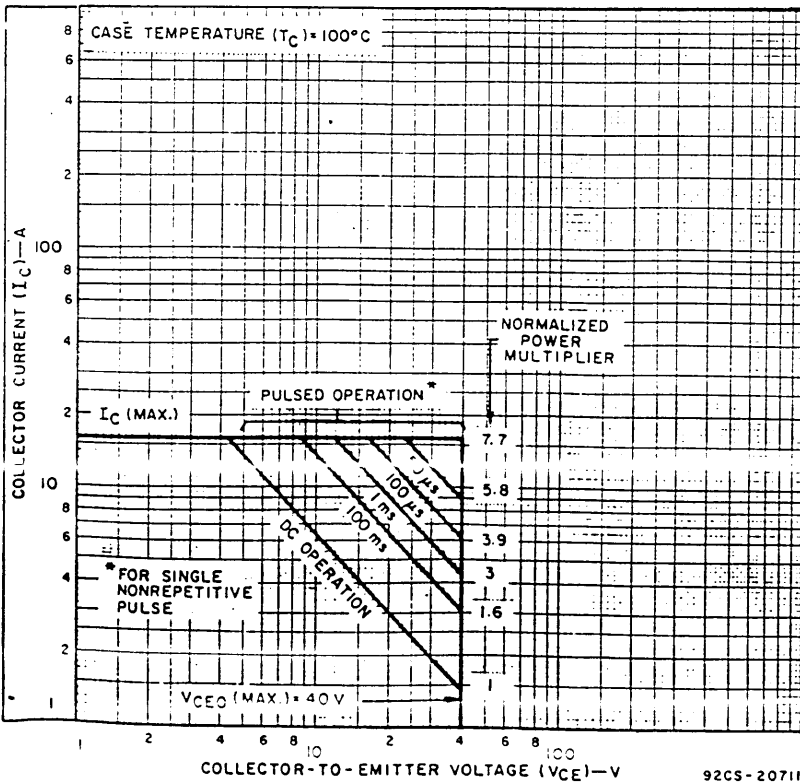


Fig. 16 - Maximum safe area of operation at case temperature of 100°C for 2N6371.

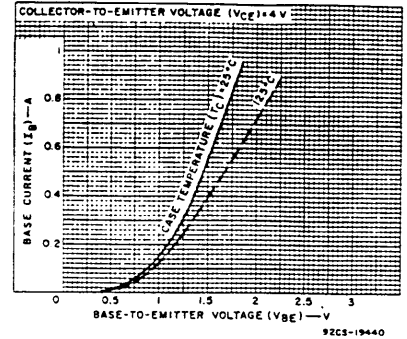


Fig. 14 - Typical input characteristics for 2N6253.

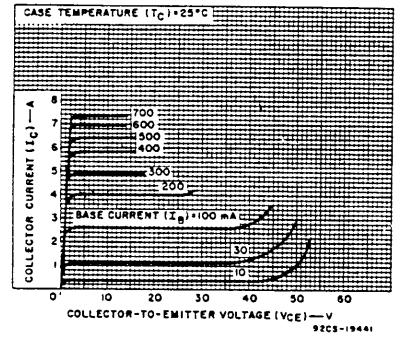


Fig. 15 - Typical output characteristics for 2N6253.

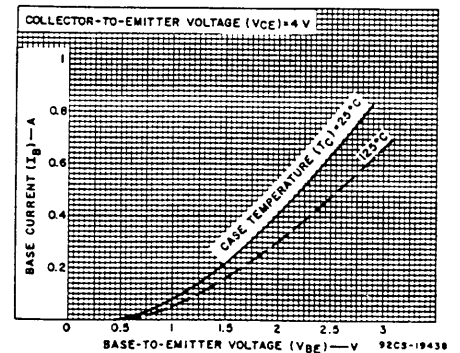


Fig. 17 - Typical input characteristics for 2N6254.

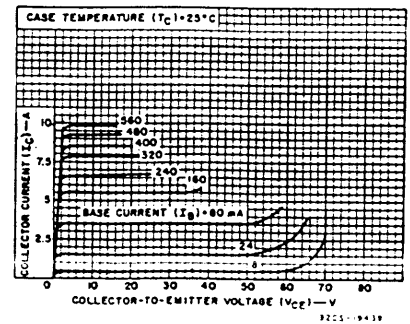


Fig. 18 - Typical output characteristics for 2N6254.

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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		MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.		MIN.	MAX.
I_{CEO}	25		0		-	-	-	1.5	-	-	-	1.5	-	-	mA
	30		0		-	0.7	-	-	-	-	-	-	-	-	
	60		0		-	-	-	-	-	1	-	-	-	-	
I_{CEX}	40	-1.5			-	-	-	-	-	-	-	-	-	2	mA
	45	-1.5			-	-	-	-	-	-	2	-	-	-	
	55	-1.5			-	-	-	2	-	-	-	-	-	-	
	100	-1.5			-	5	-	-	-	0.5	-	-	-	-	
$T_C = 150^\circ\text{C}$	40	-1.5			-	-	-	-	-	-	10	-	10	mA	
	50	-1.5			-	-	-	10	-	-	-	-	-		
	100	-1.5			-	30	-	-	-	5	-	-	-		
I_{EBO}		-5			-	-	-	10	-	-	-	-	-	mA	
		-7			-	5	-	-	-	0.5	-	-	-		
$V_{(BR)CBO}$			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	
$V_{CE0(sus)}$			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		3 ^a		-	-	20	70 ^b	-	-	-	-	-	V	
	4		4 ^a		20	70	-	-	-	-	-	-	-		
	2		5 ^a		-	-	-	-	20	70	-	-	-		
	4		8 ^a		-	-	-	-	-	-	15	60	15		60
	4		10 ^a		5	-	-	-	-	-	-	-	-		-
	4		15 ^a		-	-	3	-	5	-	-	-	-		-
	4		16 ^a		-	-	-	-	-	-	4	-	-		-
V_{BE}	4		3 ^a		-	-	-	1.7	-	-	-	-	-	V	
	4		4 ^a		-	1.8	-	-	-	-	-	-	-		
	2		5 ^a		-	-	-	-	-	1.5	-	-	-		
	4		8 ^a		-	-	-	-	-	-	-	-	2.2		
	4		16 ^a		-	-	-	-	-	-	4	-	-		
$V_{CE(sat)}$			3 ^a	0.3 ^a	-	-	-	1	-	-	-	-	-	V	
			4 ^a	0.4 ^a	-	1.1	-	-	-	-	-	-	-		
			5 ^a	0.5 ^a	-	-	-	-	-	0.5	-	-	-		
			8 ^a	0.8 ^a	-	-	-	-	-	-	-	1.5	-		1.5
			10 ^a	3.3 ^a	-	8	-	-	-	-	-	-	-		-
			15 ^a	3 ^a	-	-	-	-	-	4	-	-	-		-
			16 ^a	5 ^a	-	-	-	4	-	-	-	-	-		-
h_{fe} $f = 1 \text{ kHz}$	4		1		15	120	10	-	10	-	10	-	-	kHz	
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				-	-	-	-	-	-	-	-	3	A	
	40				2.9	-	-	-	-	-	2.9	-	-		
	45				-	-	2.55	-	-	-	-	-	-		
	60				1.95	-	-	-	-	-	-	-	-		
θ_{JC}					-	1.5	-	1.5	-	1.17	-	1.5	-	C/W	

* In accordance with JEDEC registration data formats JS-9 RDF-10: 2N3055H; JS-6 RDF-2: 2N6253, 2N6254, 2N6371
^a pulse duration = 300 μs , duty factor = 1.8%.