SEMELAB LIMITED

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.

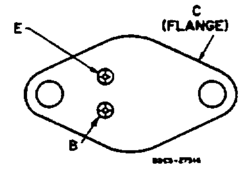
Features:

- 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

TERMINAL DESIGNATIONS



JEDEC TO-3

MAXIMUM RATINGS, *Absolute-Maximum Values:*

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

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

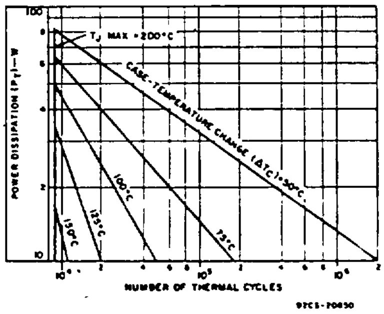


Fig. 1 - Thermal-cycling rating chart for 2N3055H, 2N6253, 2N6371.

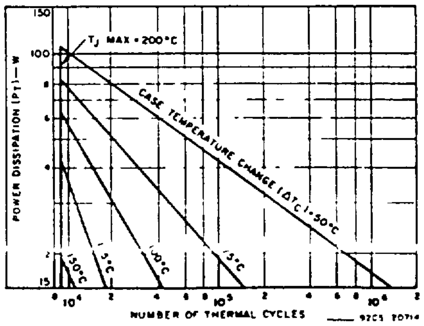


Fig. 2 - Thermal cycling rating chart for 2N6254.

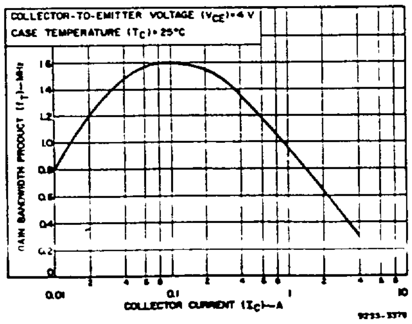


Fig. 3 - Typical gain-bandwidth product for all types

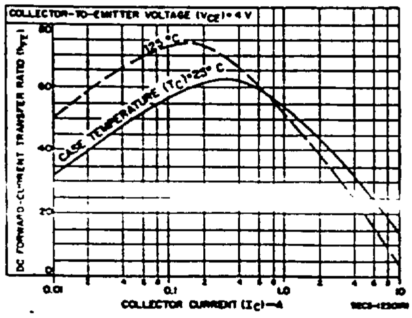


Fig 4 - Typical dc beta characteristics for 2N3055H and 2N6371

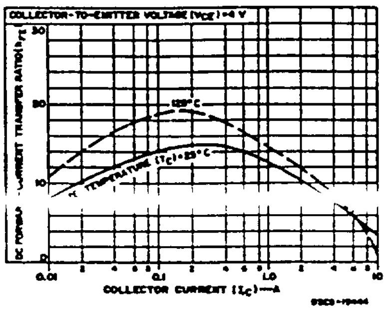


Fig 5 - Typical dc beta characteristics for 2N6253.

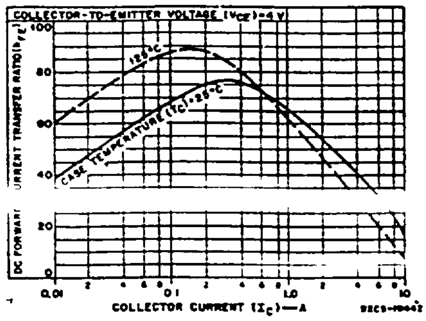


Fig. 6 - Typical dc beta characteristics for 2N6254.

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

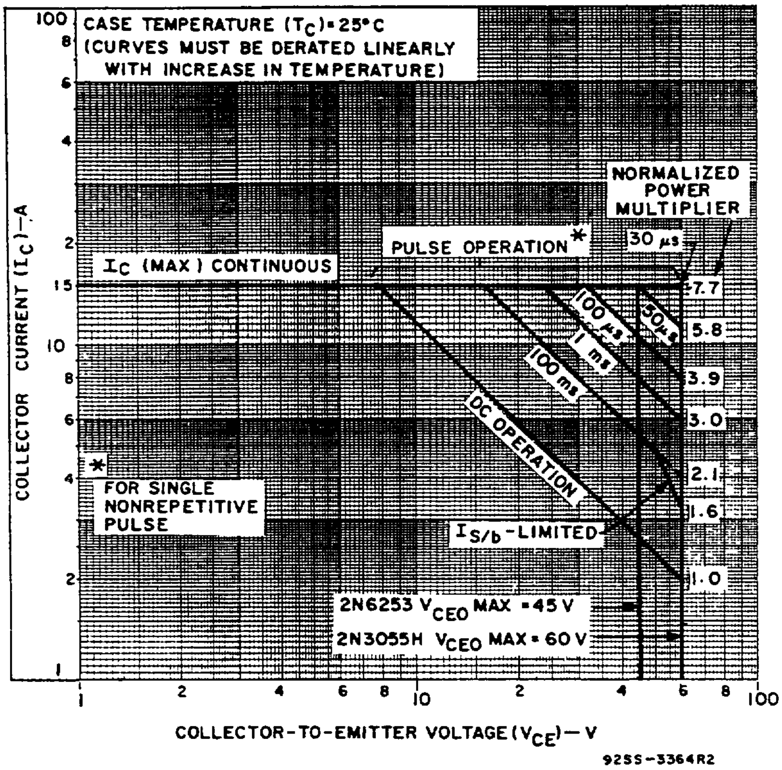


Fig 7 - Maximum operating areas for types 2N6253 and 2N3055H

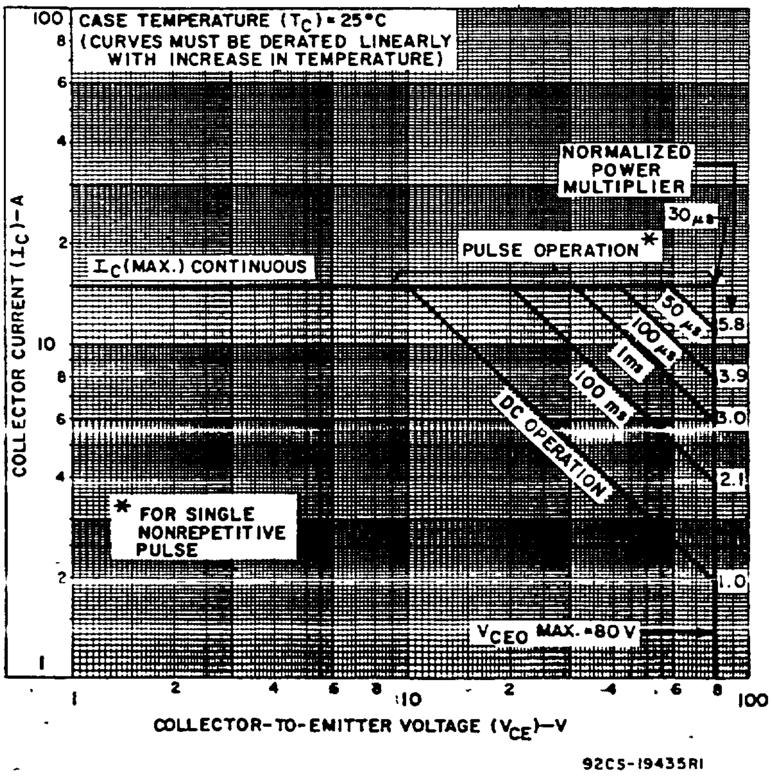


Fig 10 - Maximum operating areas for 2N6254.

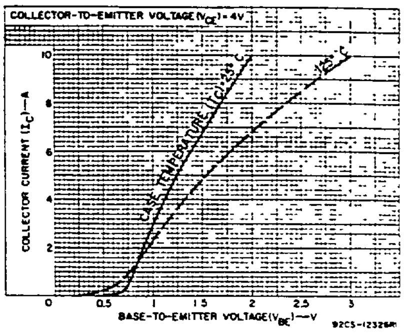


Fig. 8 - Typical transfer characteristics for 2N6254, 2N3055H, 2N6371, 40251.

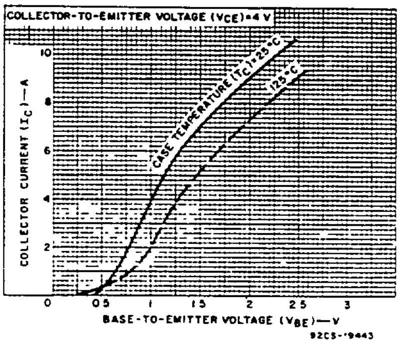


Fig. 9 - Typical transfer characteristics for 2N6253

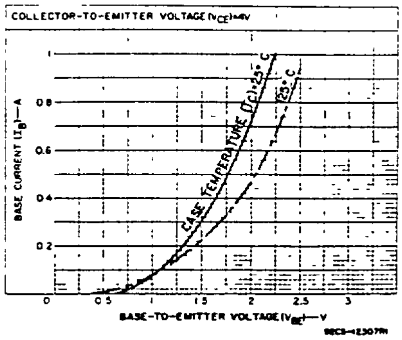


Fig 11 - Typical input characteristics for 2N3055H, 2N6371, 40251.

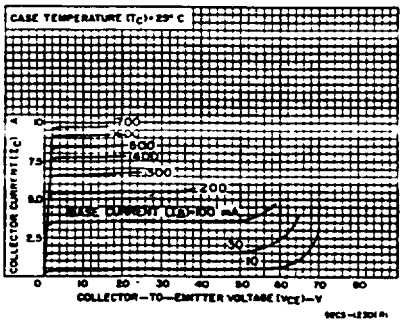


Fig. 12 - Typical output characteristics for 2N3055H, 2N6371

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

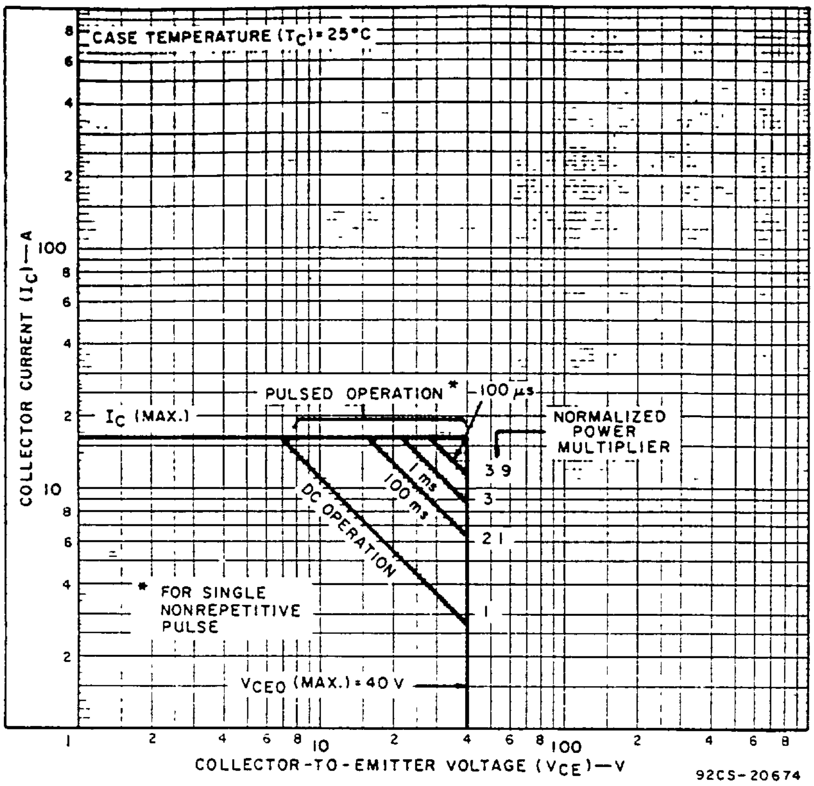


Fig. 13 - Maximum safe area of operation at case temperature of 25°C for 2N6371.

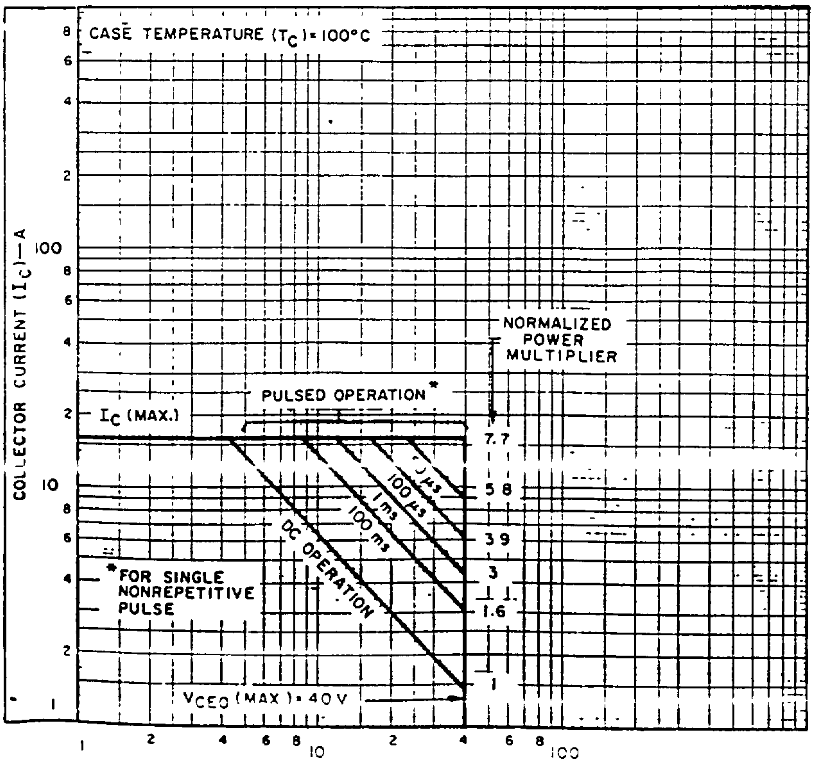


Fig. 16 - Maximum safe area of operation at case temperature of 100°C for 2N6371.

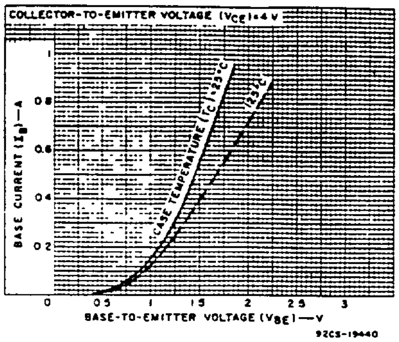


Fig. 14 - Typical input characteristics for 2N6253.

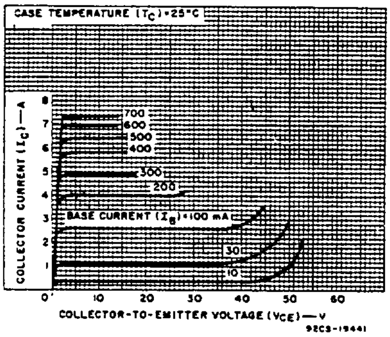


Fig. 15 - Typical output characteristics for 2N6253.

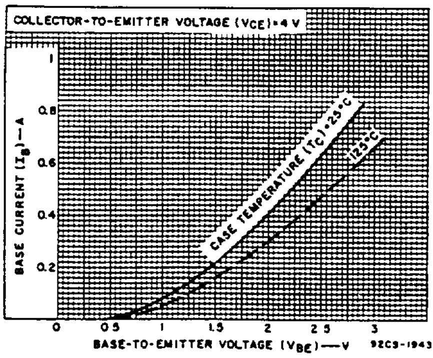


Fig. 17 - Typical input characteristics for 2N6254.

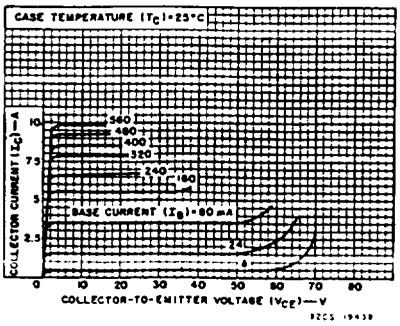


Fig. 18 - Typical output characteristics for 2N6254.

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

ELECTRICAL CHARACTERISTICS, $T_C = 25°C$ *Unless Otherwise Specified.*

CHARACTERISTIC	TEST CONDITIONS				LIMITS										UNITS
	VOLTAGE V dc		CURRENT A dc		2N3055H		2N6253		2N6254		2N6371		40251		
	V_{CE}	V_{BE}	I_C	I_B	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	–	–	–	–	
• $T_C = 150°C$	40	–1 5			–	–	–	–	–	–	–	10	–	10	
	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
$V_{(BR)EBO}$ $I_E = 0\ 01$ 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		3^a		–	–	20	70	–	–	–	–	–	–	
	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	–	–	–	–	
			15^a	5^a	–	–	–	4	–	–	–	–	–	–	
			16^a	4^a	–	–	–	–	–	–	–	4	–	–	
• h_{fe} $f = 1$ kHz	4		1		15	120	10	–	10	–	10	–	–	–	
f_T			1		800	–	–	–	–	–	800	–	–	–	kHz
• $\|h_{fe}\|$ $f = 0\ 4$ MHz	4		1		–	–	2	–	2	–	2	–	–	–	
• f_{hfe}	4		1		10	–	10	–	10	–	–	–	–	–	kHz
$I_{S/b}$ $t_p = 1$ s nonrep.	39				–	–	–	–	–	–	–	–	3	–	A
	40				2.9	–	–	–	–	–	2.9	–	–	–	
	45				–	–	2 55	–	–	–	–	–	–	–	
	60				1 95	–	–	–	–	–	–	–	–	–	
	80				–	–	–	–	1 87	–	–	–	–	–	
$R_{\theta JC}$					–	1 5	–	1 5	–	1 17	–	1 5	–	1.5	°C/W

• In accordance with JEDEC registration data formats JS 9 RDF 10 2N3055H JS-6 RDF 2 2N6253 2N6254 2N6371

Pulsed Pulse duration ≤300 µs, duty factor = 1.8%