NEC

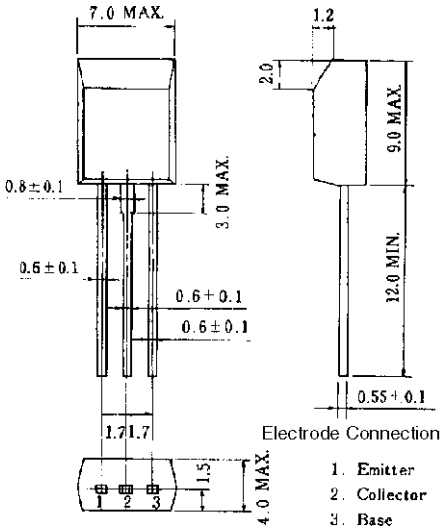
SILICON TRANSISTOR
2SC2721

NPN SILICON EPITAXIAL TRANSISTOR
FOR HIGH-FREQUENCY AMPLIFIERS AND MID-SPEED SWITCHING

FEATURES

- Complementary transistor with 2SA1154
- High P_T in small dimension and high voltage
  P_T = 1 W, V_{CEO} = 60 V

PACKAGE DRAWING (UNIT: mm)



ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

Parameter	Symbol	Ratings	Unit
Collector to base voltage	V_{CBO}	60	V
Collector to emitter voltage	V_{CEO}	60	V
Emitter to base voltage	V_{EBO}	5.0	V
Collector current (DC)	$I_{C(DC)}$	0.7	A
Collector current (pulse)	$I_{C(pulse)}$*	1.0	A
Total power dissipation	P_T	1	W
Junction temperature	T_j	150	°C
Storage temperature	T_{stg}	−55 to +150	°C

* PW ≤ 10 ms, duty cycle ≤ 50%

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Collector cutoff current	I_{CBO}	V_{CB} = 60 V, I_E = 0			100	nA
Emitter cutoff current	I_{EBO}	V_{EB} = 5.0 V, I_C = 0			100	nA
DC current gain	h_{FE1}	V_{CE} = 1.0 V, I_C = 0.1 A *	90	200	400	
DC current gain	h_{FE2}	V_{CE} = 1.0 V, I_C = 0.5 A *	50	150		
DC base voltage	V_{BE}	V_{CE} = 6.0 V, I_C = 10 mA	600	635	700	mV
Collector saturation voltage	$V_{CE(sat)}$	I_C = 0.5 A, I_B = 50 mA *		0.12	0.35	V
Base saturation voltage	$V_{BE(sat)}$	I_C = 0.5 A, I_B = 50 mA *		0.90	1.2	V
Output capacitance	C_{ob}	V_{CB} = 6.0 V, I_E = 0, f = 1.0 MHz		13		pF
Gain bandwidth product	f_T	V_{CE} = 6.0 V, I_E = −10 mA		110		MHz
Turn-on time	t_{on}	Refer to the test circuit.		60		ns
Storage temperature	t_{stg}			600		ns
Turn-off time	t_{off}			650		ns

* Pulse test PW ≤ 350 μs, duty cycle ≤ 2% per pulsed

h_{FE} CLASSIFICATION

Marking	MA	LA	KA
h_{FE1}	90 to 180	135 to 270	200 to 400

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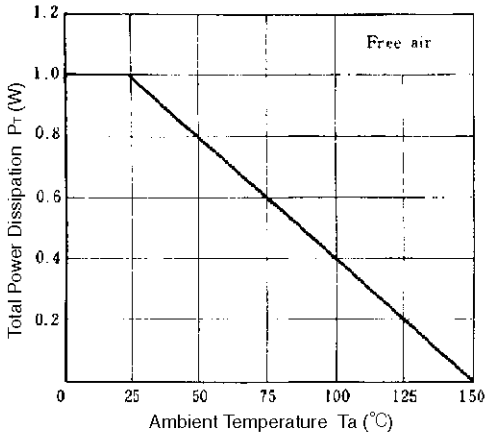
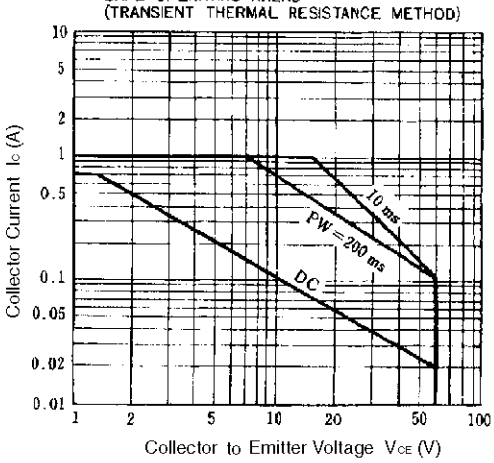
TYPICAL CHARACTERISTICS (Ta = 25°C)

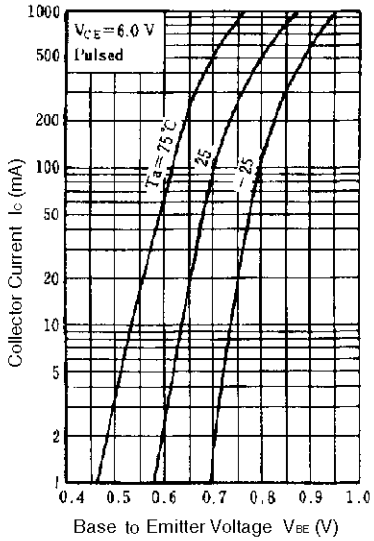
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE



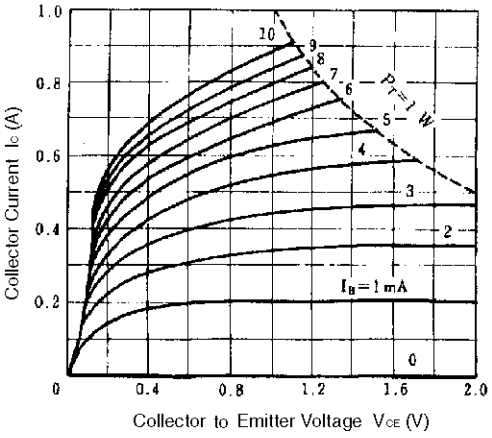
SAFE OPERATING AREAS (TRANSIENT THERMAL RESISTANCE METHOD)



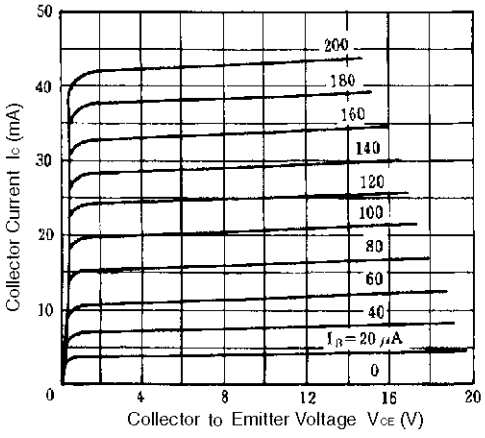
COLLECTOR CURRENT vs. BASE TO EMITTER VOLTAGE



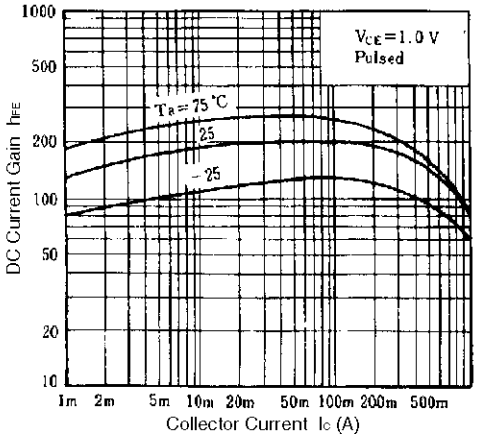
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



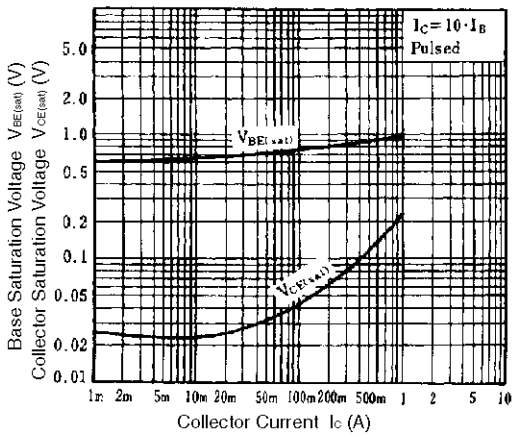
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



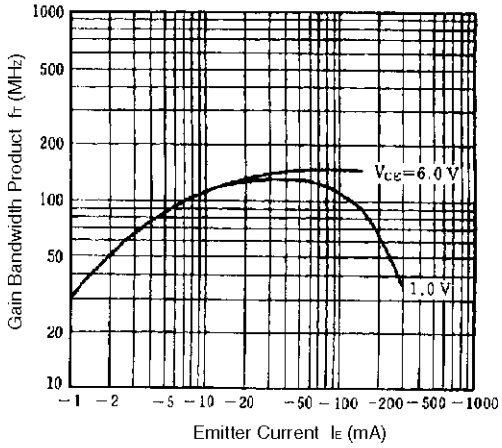
DC CURRENT GAIN vs. COLLECTOR CURRENT



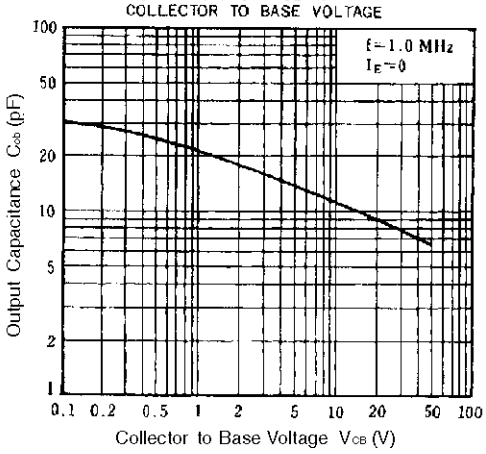
BASE AND COLLECTOR SATURATION VOLTAGE vs. COLLECTOR CURRENT



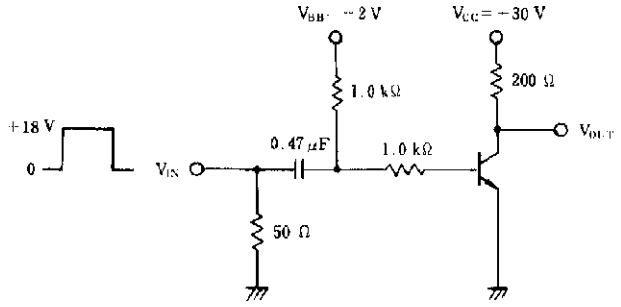
GAIN BANDWIDTH PRODUCT vs. EMITTER CURRENT



OUTPUT CAPACITANCE vs. COLLECTOR TO BASE VOLTAGE

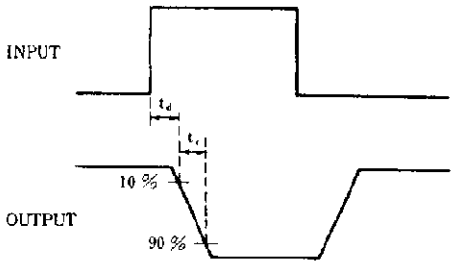


SWITCHING TIME TEST CIRCUIT



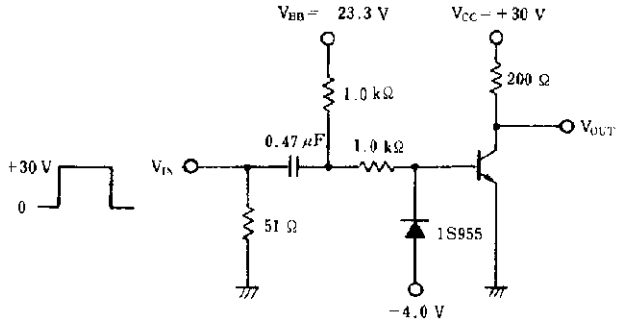
t_r < 2.0 ns
PW = 1.0 μs
DC = 2 %

t_{on} Switching Circuit



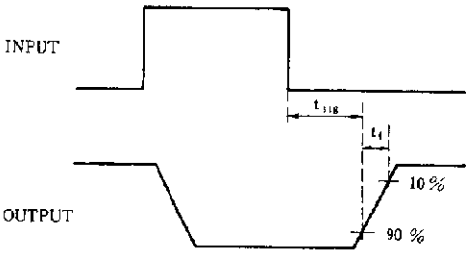
$t_{on} = t_d + t_r$

VOLTAGE WAVEFORMS



$t_r \leqslant 2.0$ ns
PW = 1.0 μs
DC = 2 %

t_{off} Switching Circuit



$t_{off} = t_{stg} + t_f$

VOLTAGE WAVEFORMS

[MEMO]

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