

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

FEATURES

- Large current capacitance in small dimension: $I_{C(DC)} = 7\text{ A}$
- Low collector saturation voltage:
 $V_{CE(sat)} = 0.3\text{ V MAX.}$ ($I_C = 3.0\text{ A}$)
- Ideal for use in a lamp driver
- Complementary transistor: 2SA1129

ABSOLUTE MAXIMUM RATINGS ($T_a = 25^\circ\text{C}$)

Parameter	Symbol	Ratings	Unit
Collector to base voltage	V_{CBO}	100	V
Collector to emitter voltage	V_{CEO}	40	V
Emitter to base voltage	V_{EBO}	7.0	V
Collector current (DC)	$I_{C(DC)}$	7.0	A
Collector current (pulse)	$I_{C(pulse)}^*$	15	A
Base current (DC)	$I_{B(DC)}$	3.5	A
Total power dissipation	$P_T (T_c = 25^\circ\text{C})$	40	W
Total power dissipation	$P_T (T_a = 25^\circ\text{C})$	1.5	W
Junction temperature	T_j	150	$^\circ\text{C}$
Storage temperature	T_{stg}	-55 to +150	$^\circ\text{C}$

* $PW \leq 300\ \mu\text{s}$, duty cycle $\leq 10\%$

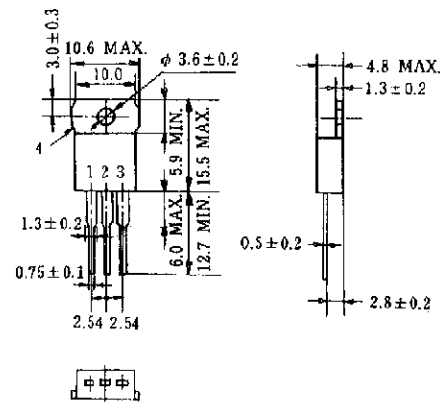
ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Collector cutoff current	I_{CBO}	$V_{CB} = 40\text{ V}, I_E = 0$			10	μA
Emitter cutoff current	I_{EBO}	$V_{EB} = 5.0\text{ V}, I_C = 0$			10	μA
DC current gain	h_{FE1}	$V_{CE} = 1.0\text{ V}, I_C = 3\text{ A}^*$	40		320	
DC current gain	h_{FE2}	$V_{CE} = 1.0\text{ V}, I_C = 5\text{ A}^*$	20			
Collector saturation voltage	$V_{CE(sat)1}$	$I_C = 3.0\text{ A}, I_B = 0.1\text{ A}^*$			0.3	V
Base saturation voltage	$V_{BE(sat)1}$	$I_C = 3.0\text{ A}, I_B = 0.1\text{ A}^*$			1.5	V
Collector saturation voltage	$V_{CE(sat)2}$	$I_C = 5.0\text{ A}, I_B = 0.5\text{ A}^*$			0.6	V
Base saturation voltage	$V_{BE(sat)2}$	$I_C = 5.0\text{ A}, I_B = 0.5\text{ A}^*$			2.0	V
Turn-on time	t_{on}	$I_C = 5.0\text{ A}, I_{B1} = -I_{B2} = 0.5\text{ A}$			1.0	μs
Storage time	t_{stg}	$R_L = 4.0\ \Omega, V_{CC} \cong 20\text{ V}$			2.5	μs
Fall time	t_f	$PW \cong 50\ \mu\text{s}, \text{duty cycle} \leq 2\%$			1.0	μs

* Pulse test $PW \leq 350\ \mu\text{s}$, duty cycle $\leq 2\%$

h_{FE1} classification M: 40 to 80, L: 60 to 120, K: 100 to 200, J: 160 to 320

PACKAGE DRAWING (UNIT: mm)



Electrode Connection

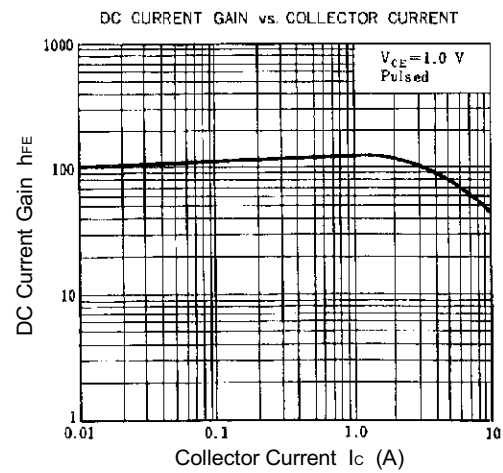
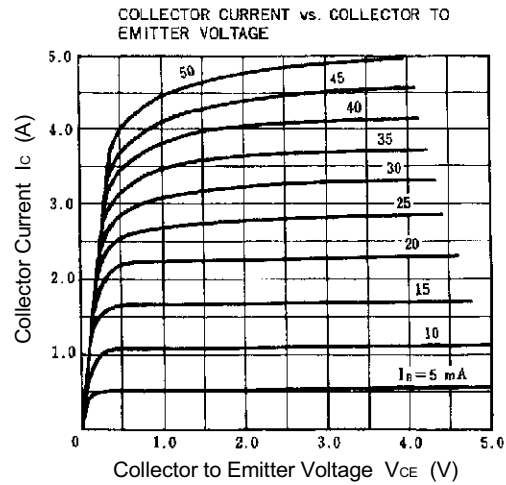
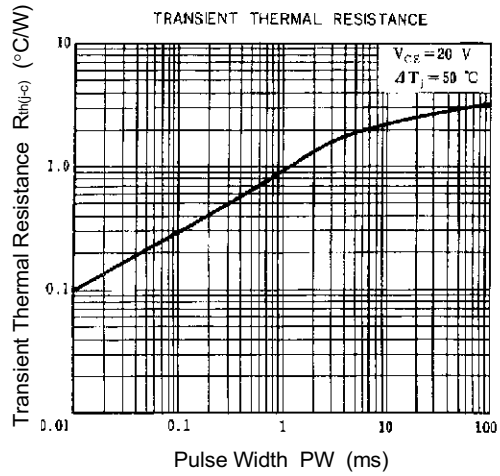
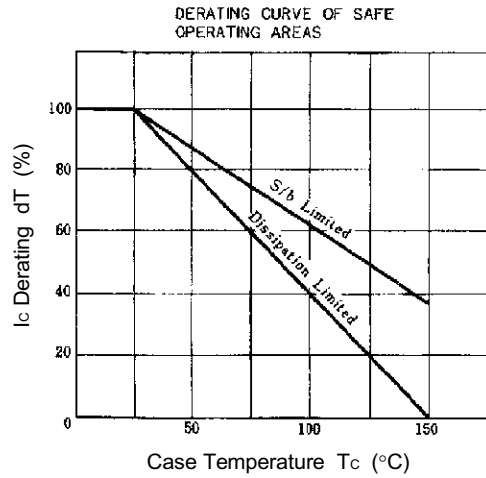
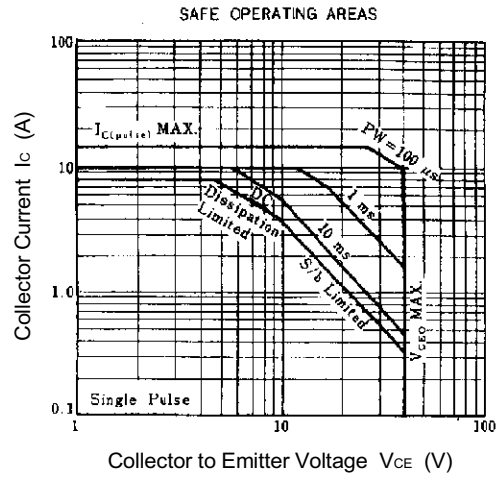
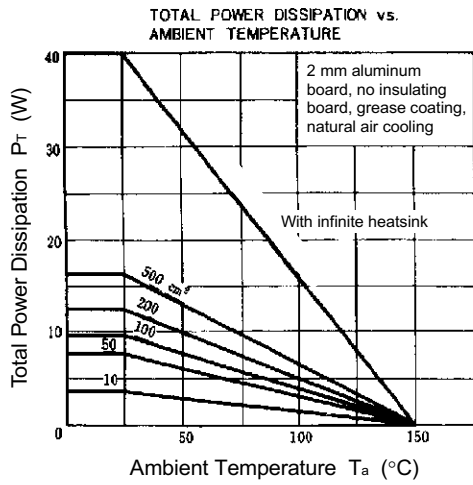
1. Base (B)
2. Collector (C)
3. Emitter (E)
4. Fin (Collector)

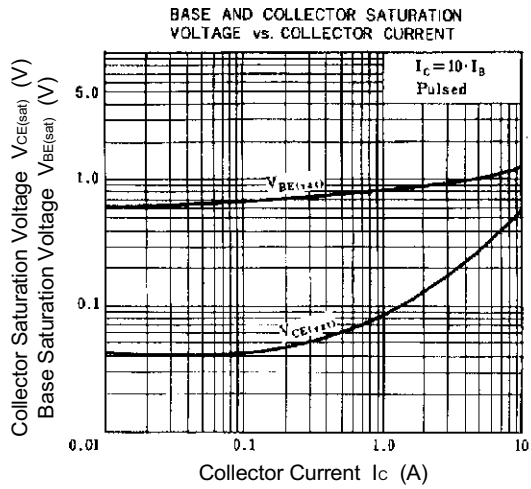
EAJ : SC-46

JEDEC : TO-220AB

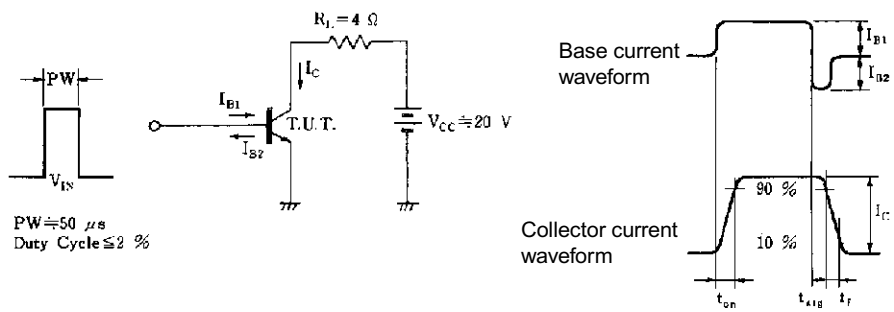
IEC : —

TYPICAL CHARACTERISTICS (Ta = 25°C)





SWITCHING TIME (t_{on} , t_{stg} , t_f) TEST CIRCUIT



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