NEC

SILICON POWER TRANSISTOR
2SA1129

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

The 2SA1129 is a mold power transistor developed for mid-speed switching, and is ideal for use as a ramp driver.

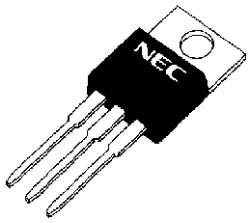
ORDERING INFORMATION

Part No.	Package
2SA1129	TO-220AB

FEATURES

- Large current capacity with small package: $I_{C(DC)}$ = –7.0 A
- Low collector saturation voltage:
  $V_{CE(sat)}$ = –0.3 V MAX. @I_C = –3.0 A, I_B = –0.1 A
- Complementary transistor: 2SC2654

(TO-220AB)



ABSOLUTE MAXIMUM RATINGS (T_A = 25°C)

Parameter	Symbol	Conditions	Ratings	Unit
Collector to base voltage	V_{CBO}		–30	V
Collector to emitter voltage	V_{CEO}		–30	V
Emitter to base voltage	V_{EBO}		–7.0	V
Collector current (DC)	$I_{C(DC)}$		–7.0	A
Collector current (pulse)	$I_{C(pulse)}$	PW ≤ 300 μs, duty cycle ≤ 10%	–15	A
Base current (DC)	$I_{B(DC)}$		–3.5	A
Total power dissipation	P_T	T_C = 25°C	40	W
		T_A = 25°C	1.5	W
Junction temperature	T_j		150	°C
Storage temperature	T_{stg}		–55 to +150	°C

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Document No. D14856EJ2V0DS00 (2nd edition)
Date Published April 2002 N CP(K)
Printed in Japan

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ELECTRICAL CHARACTERISTICS (T_A = 25°C)

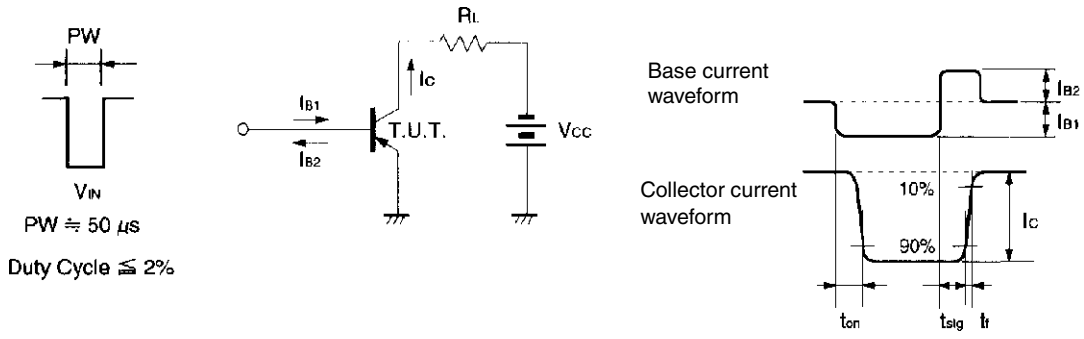
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Collector cutoff current	I_{CBO}	V_{CB} = –30 V, I_E = 0 A			–10	μA
Emitter cutoff current	I_{EBO}	V_{EB} = –5.0 V, I_C = 0 A			–10	μA
DC current gain	h_{FE1}	V_{CE} = –1.0 V, I_C = –3.0 A[Note]	40		200	
DC current gain	h_{FE2}	V_{CE} = –1.0 V, I_C = –5.0 A[Note]	20			
Collector saturation voltage	$V_{CE(sat)1}$	I_C = –3.0 A, I_B = –0.1 A[Note]			–0.3	V
Collector saturation voltage	$V_{CE(sat)2}$	I_C = –5.0 A, I_B = –0.5 A[Note]			–0.6	V
Base saturation voltage	$V_{BE(sat)1}$	I_C = –3.0 A, I_B = –0.1 A[Note]			–1.5	V
Base saturation voltage	$V_{BE(sat)2}$	I_C = –5.0 A, I_B = –0.5 A[Note]			–2.0	V
Turn-on time	t_{on}	I_C = –5.0 A, R_L = 4.0 Ω, I_{B1} = –I_{B2} = –0.5 A, V_{CC} ≅ –20 V PW = 50 μs, duty cycle = 2%			1.0	μs
Storage time	t_{stg}				2.5	μs
Fall time	t_f				1.0	μs

Note Pulse test PW ≤ 350 μs, duty cycle ≤ 2%

h_{FE} CLASSIFICATION

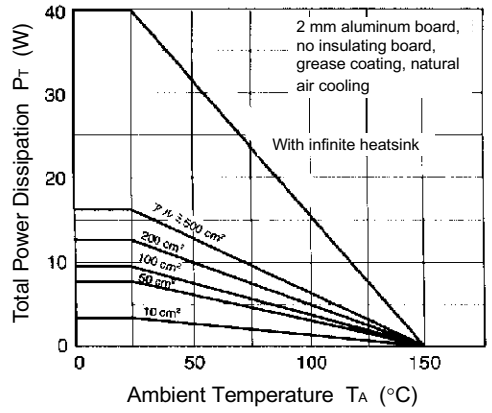
Marking	M	L	K
h_{FE1}	40 to 80	60 to 120	100 to 200

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

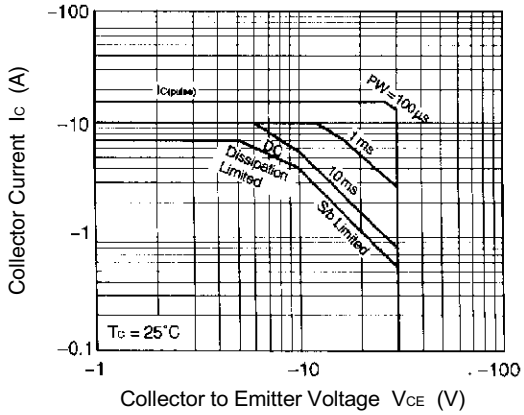


TYPICAL CHARACTERISTICS (T_A = 25°C)

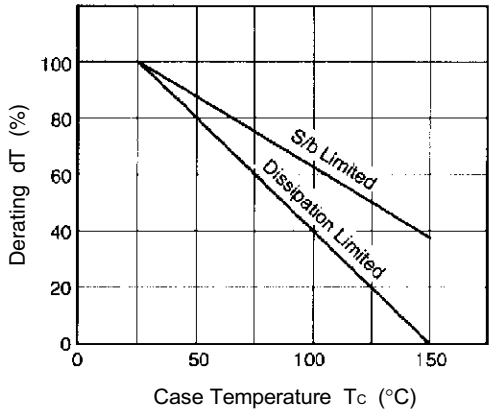
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE



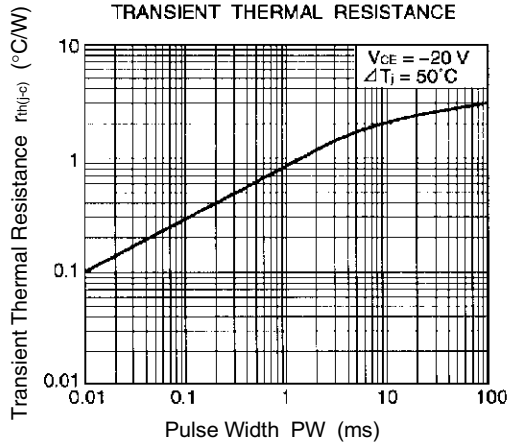
FORWARD BIAS SAFE OPERATING AREA



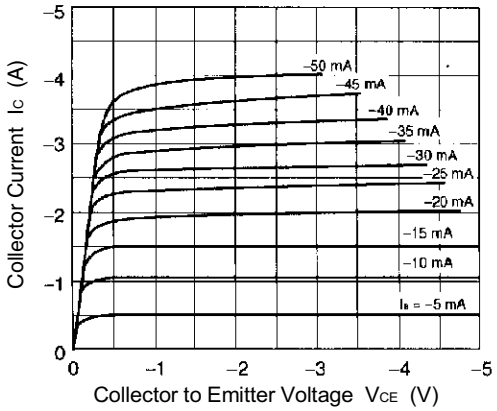
DERATING CURVE OF SAFE OPERATING AREA



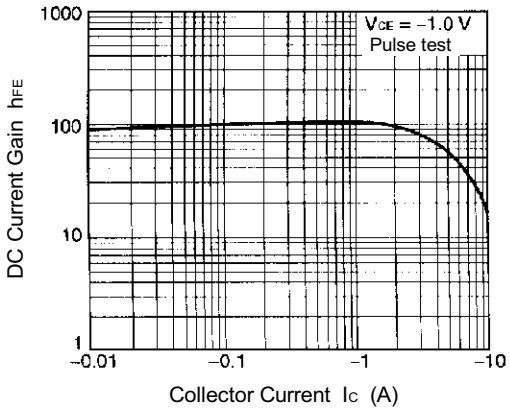
TRANSIENT THERMAL RESISTANCE



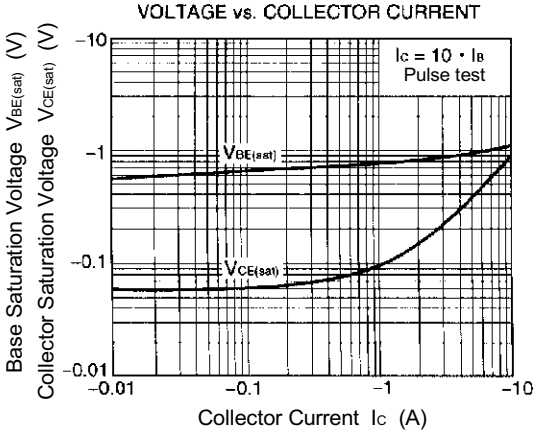
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



DC CURRENT GAIN vs. COLLECTOR CURRENT

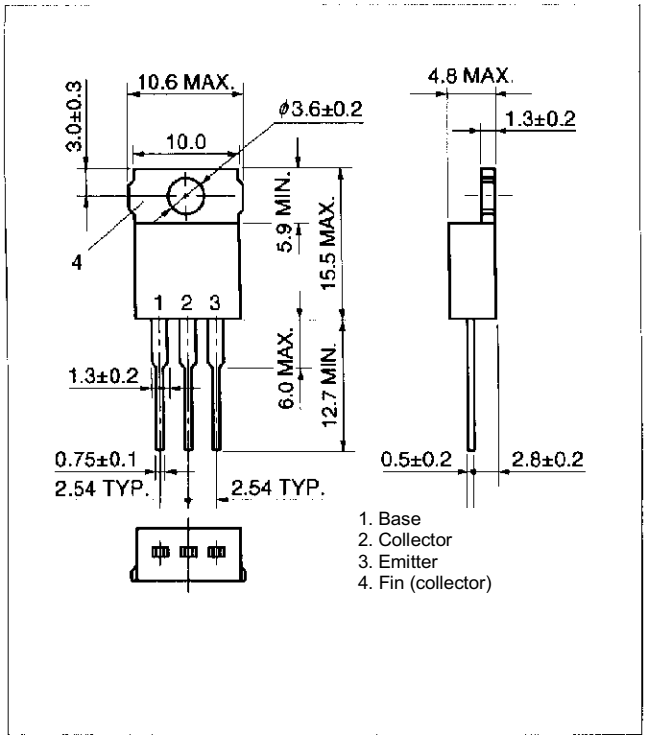


COLLECTOR AND BASE SATURATION VOLTAGE vs. COLLECTOR CURRENT



PACKAGE DRAWING (UNIT: mm)

TO-220AB (MP-25)



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