DATA SHEET

NEC

SILICON POWER TRANSISTOR
2SD560

NPN SILICON EPITAXIAL TRANSISTOR (DARLINGTON CONNECTION) FOR LOW-FREQUENCY POWER AMPLIFIERS AND LOW-SPEED SWITCHING

The 2SD560 is a mold power transistor developed for low-frequency power amplifiers and low-speed switching. This transistor is ideal for direct driving from the IC output of devices such as pulse motor drivers and relay drivers, and PC terminals.

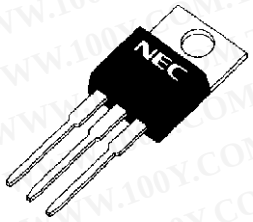
ORDERING INFORMATION

Ordering Name	Package
2SD560	TO-220AB

FEATURES

- C-to-E reverse diode inserted
- Low collector saturation voltage

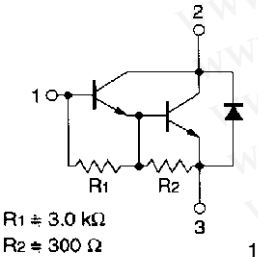
(TO-220AB)



ABSOLUTE MAXIMUM RATINGS (T_A = 25°C)

Parameter	Symbol	Conditions	Ratings	Unit
Collector to base voltage	V_{CBO}		150	V
Collector to emitter voltage	V_{CEO}		100	V
Emitter to base voltage	V_{EBO}		7.0	V
Collector current (DC)	$I_{C(DC)}$		±5.0	A
Collector current (pulse)	$I_{C(pulse)}$	PW ≤ 10 ms, duty cycle ≤ 50%	±8.0	A
Base current (DC)	$I_{B(DC)}$		0.5	A
Total power dissipation	P_T	T_C = 25°C	30	W
		T_A = 25°C	1.5	W
Junction temperature	T_j		150	°C
Storage temperature	T_{stg}		–55 to +150	°C

INTERNAL EQUIVALENT CIRCUIT



R1 ≒ 3.0 kΩ
R2 ≒ 300 Ω

1. Base
2. Collector
3. Emitter

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ELECTRICAL CHARACTERISTICS (T_A = 25°C)

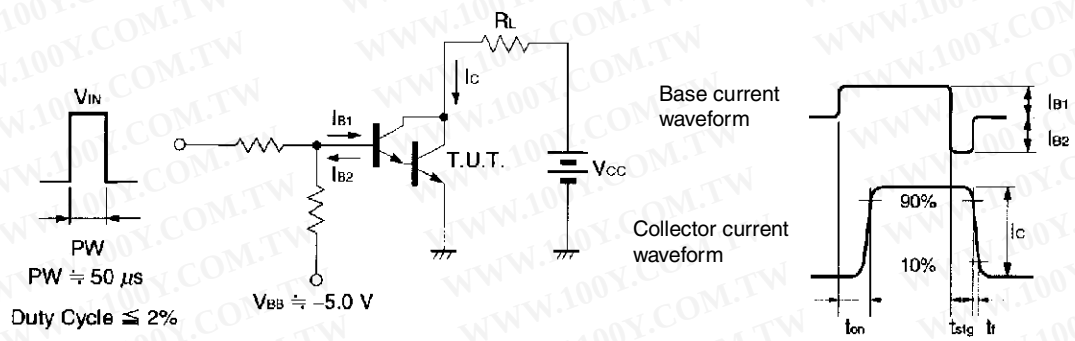
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Collector cutoff current	I_{CBO}	V_{CB} = 100 V, I_E = 0 A			1.0	μA
DC current gain	h_{FE1}	V_{CE} = 2.0 V, I_C = 3.0 A Note	2,000	6,000	15,000	
	h_{FE2}	V_{CE} = 2.0 V, I_C = 5.0 A Note	500			
Collector saturation voltage	$V_{CE(sat)}$	I_C = 3.0 A, I_B = 3.0 mA Note		0.9	1.5	V
Base saturation voltage	$V_{BE(sat)}$	I_C = 3.0 A, I_B = 3.0 mA Note		1.6	2.0	V
Turn-on time	t_{on}	I_C = 3.0 A, R_L = 16.7 Ω, I_{B1} = −I_{B2} = 3.0 mA, V_{CC} ≅ 50 V Refer to the test circuit.		1.0		μs
Storage time	t_{stg}			3.5		μs
Fall time	t_f			1.2		μs

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

h_{FE} CLASSIFICATION

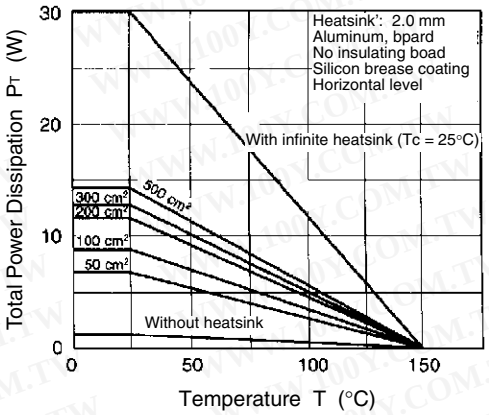
Marking	MB	LB	KB
h_{FE1}	2,000 to 5,000	3,000 to 7,000	5,000 to 15,000

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

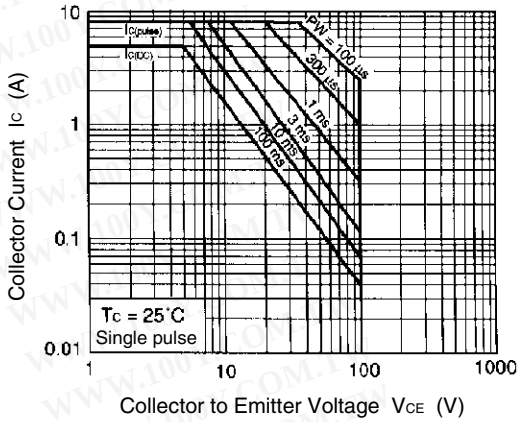


TYPICAL CHARACTERISTICS (T_A = 25°C)

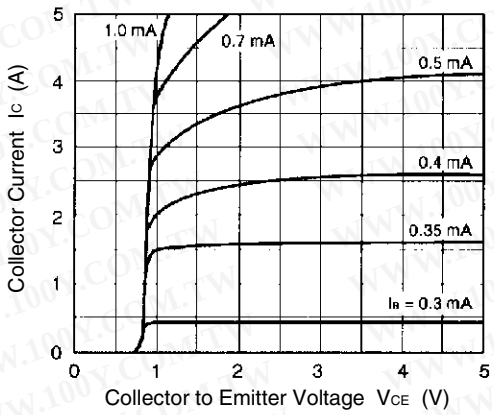
TOTAL POWER DISSIPATION vs. TEMPERATURE



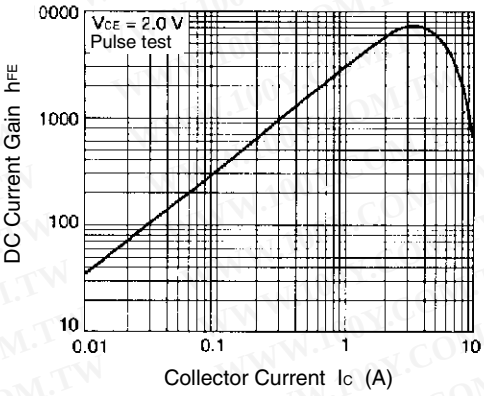
FORWARD BIAS SAFE OPERATING AREA



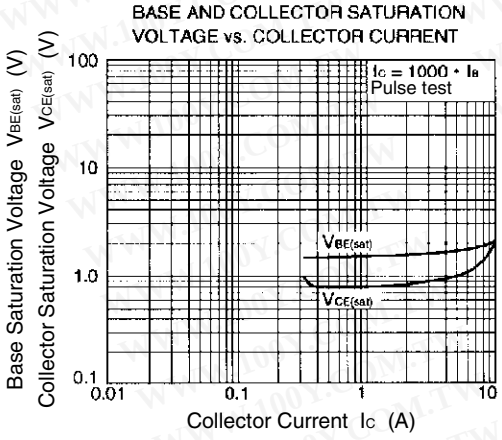
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



DC CURRENT GAIN vs. COLLECTOR CURRENT

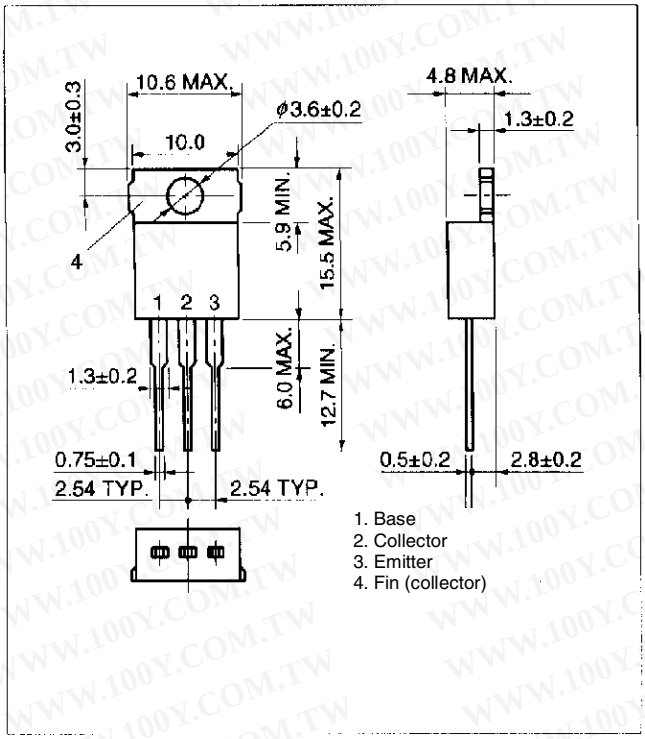


BASE AND COLLECTOR SATURATION VOLTAGE vs. COLLECTOR CURRENT



PACKAGE DRAWING (UNIT: mm)

TO-220AB (MP-25)



[MEMO]

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