

**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.

**FEATURES**

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

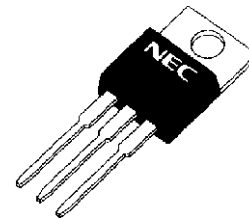
**ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub> = 25°C)**

Parameter	Symbol	Conditions	Ratings	Unit
Collector to base voltage	V <sub>CB0</sub>		150	V
Collector to emitter voltage	V <sub>CE0</sub>		100	V
Emitter to base voltage	V <sub>EB0</sub>		7.0	V
Collector current (DC)	I <sub>C(DC)</sub>		±5.0	A
Collector current (pulse)	I <sub>C(pulse)</sub>	PW ≤ 10 ms, duty cycle ≤ 50%	±8.0	A
Base current (DC)	I <sub>B(DC)</sub>		0.5	A
Total power dissipation	P <sub>T</sub>	T <sub>C</sub> = 25°C	30	W
		T <sub>A</sub> = 25°C	1.5	W
Junction temperature	T <sub>j</sub>		150	°C
Storage temperature	T <sub>stg</sub>		-55 to +150	°C

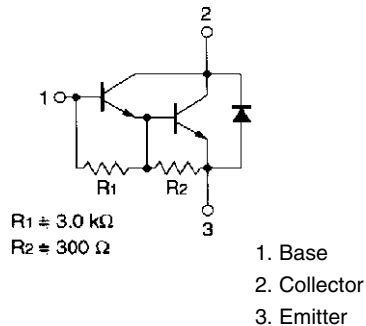
**ORDERING INFORMATION**

Ordering Name	Package
2SD560	TO-220AB

(TO-220AB)



**INTERNAL EQUIVALENT CIRCUIT**



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Not all devices/types available in every country. Please check with local NEC representative for availability and additional information.

**ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°C)**

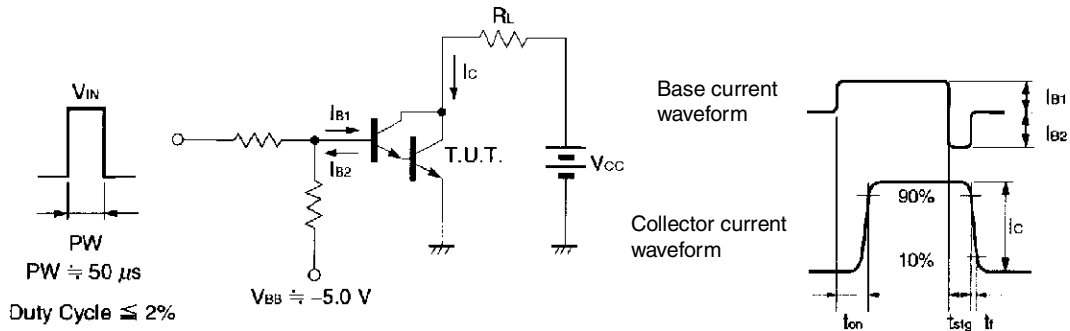
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit	
Collector cutoff current	I <sub>CBO</sub>	V <sub>CB</sub> = 100 V, I <sub>E</sub> = 0 A			1.0	μA	
DC current gain	h <sub>FE1</sub>	V <sub>CE</sub> = 2.0 V, I <sub>C</sub> = 3.0 A <sup>Note</sup>	2,000	6,000	15,000		
	h <sub>FE2</sub>	V <sub>CE</sub> = 2.0 V, I <sub>C</sub> = 5.0 A <sup>Note</sup>	500				
Collector saturation voltage	V <sub>CE(sat)</sub>	I <sub>C</sub> = 3.0 A, I <sub>B</sub> = 3.0 mA <sup>Note</sup>		0.9	1.5	V	
Base saturation voltage	V <sub>BE(sat)</sub>	I <sub>C</sub> = 3.0 A, I <sub>B</sub> = 3.0 mA <sup>Note</sup>		1.6	2.0	V	
Turn-on time	t <sub>on</sub>	I <sub>C</sub> = 3.0 A, R <sub>L</sub> = 16.7 Ω, I <sub>B1</sub> = -I <sub>B2</sub> = 3.0 mA, V <sub>CC</sub> ≅ 50 V Refer to the test circuit.		1.0		μs	
Storage time	t <sub>stg</sub>				3.5		μs
Fall time	t <sub>f</sub>				1.2		μs

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

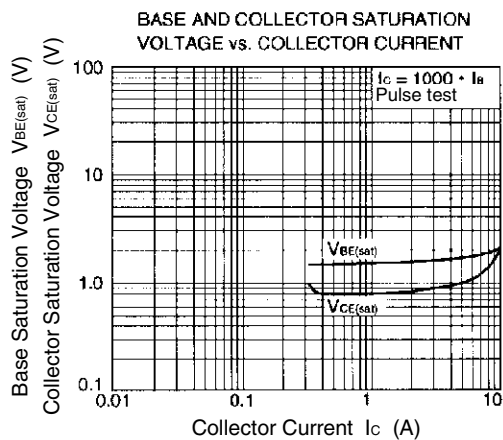
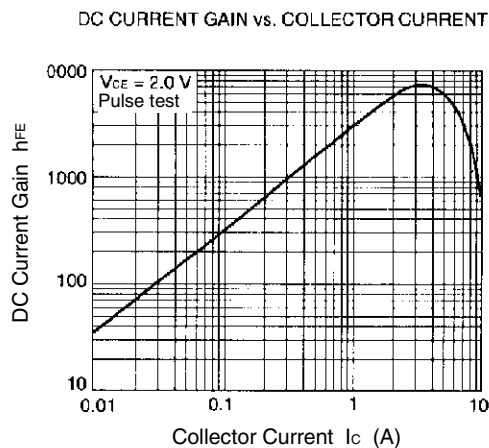
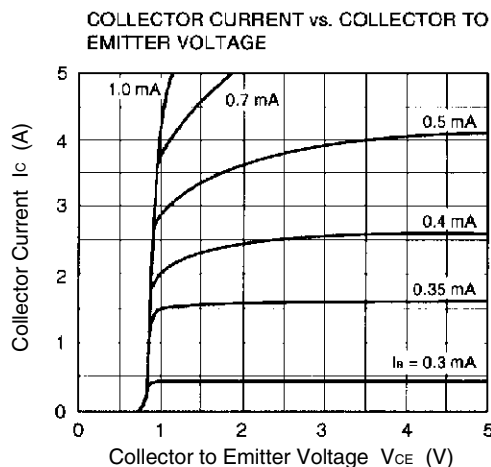
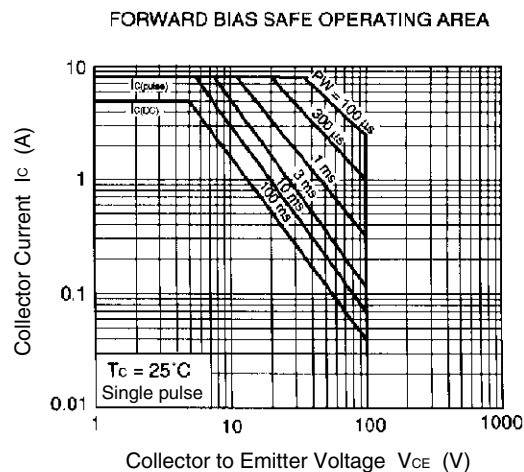
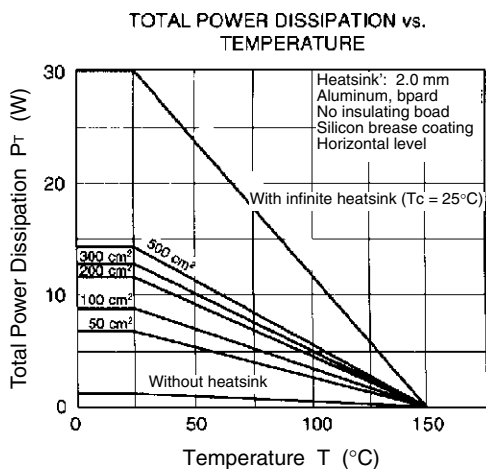
**h<sub>FE</sub> CLASSIFICATION**

Marking	MB	LB	KB
h <sub>FE1</sub>	2,000 to 5,000	3,000 to 7,000	5,000 to 15,000

**SWITCHING TIME (t<sub>on</sub>, t<sub>stg</sub>, t<sub>f</sub>) TEST CIRCUIT**

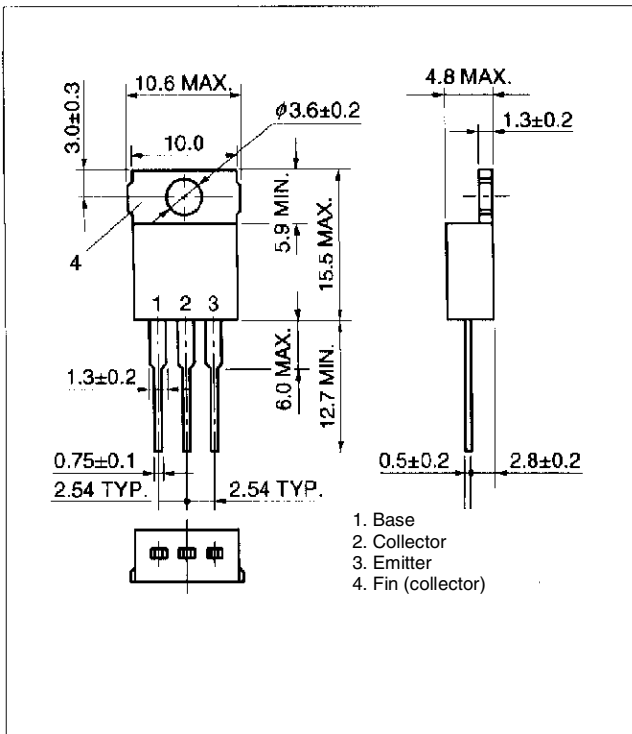


TYPICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ )



PACKAGE DRAWING (UNIT: mm)

TO-220AB (MP-25)



[MEMO]

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