

# SILICON POWER TRANSISTOR 2SB601

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

#### **FEATURES**

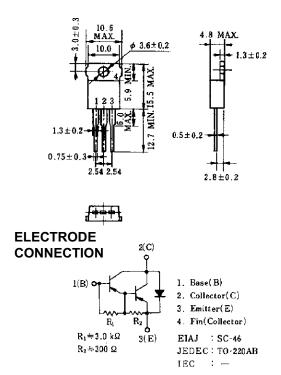
- High-DC current gain due to Darlington connection
- · Low collector saturation voltage
- · Low collector cutoff current
- Ideal for use in direct drive from IC output for magnet drivers such as treminal equipment or cash registers

#### ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

Parameter	Symbol	Ratings	Unit
Collector to base voltage	V <sub>СВО</sub>	-100	V
Collector to emitter voltage	VCEO	-100	V
Emitter to base voltage	V <sub>EBO</sub>	-7.0	V
Collector current	Ic(DC)	∓5.0	Α
Collector current	IC(pulse)*	∓8.0	Α
Base current	I <sub>B(DC)</sub>	-0.5	Α
Total power dissipation	P⊤ (Ta = 25°C)	1.5	W
Total power dissipation	P⊤ (Tc = 25°C)	30	W
Junction temperature	Tj	150	°C
Storage temperature	T <sub>stg</sub>	-55 to +150	°C

<sup>\*</sup> PW  $\leq$  10 ms, duty cycle  $\leq$  50%

#### PACKAGE DRAWING (UNIT: mm)



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#### **ELECTRICAL CHARACTERISTICS (Ta = 25°C)**

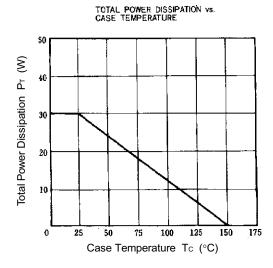
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Collector to emitter voltage	VCEO(SUS)	$I_C = -3 A$ , $I_{B1} = -3 mA$ , $L = 1 mH$	-100			V
Collector to emitter voltage	VCEX(SUS)1	$I_{C} = -3 \text{ A}, I_{B1} = -I_{B2} = -3 \text{ mA},$ $V_{BE(OFF)} = 5.0 \text{ V}, L = 180 \ \mu\text{H}, clamped$				V
Collector to emitter voltage	VCEX(SUS)2	Ic = -6 A, I <sub>B1</sub> = -12 mA, I <sub>B2</sub> = 3 mA, V <sub>BE(OFF)</sub> = 5.0 V, L = 180 $\mu$ H, clamped	-100			V
Collector cutoff current	Ісво	VcB = -100 V, IE = 0			-10	μΑ
Collector cutoff current	ICER	$V_{CE} = -100 \text{ V}, \text{ R}_{BE} = 51 \Omega, \text{ Ta} = 125^{\circ}\text{C}$			-1.0	mA
Collector cutoff current	ICEX1	$V_{CE} = -100 \text{ V}, V_{BE(OFF)} = 1.5 \text{ V}$			-10	μΑ
Collector cutoff current	ICEX2	$V_{CE} = -100 \text{ V}, V_{BE(OFF)} = 1.5 \text{ V},$ $Ta = 125^{\circ}C$			-1.0	mA
Emitter cutoff current	Ієво	V <sub>EB</sub> = -5.0 V, I <sub>C</sub> = 0			-3.0	mA
DC current gain	h <sub>FE1</sub> *	Vce = -2.0 V, Ic = -3.0 A	2,000		15,000	
DC current gain	h <sub>FE2</sub> *	$V_{CE} = -2.0 \text{ V}, I_{C} = -5.0 \text{ A}$	500			
Collector saturation voltage	V <sub>CE(sat)</sub> *	$I_C = -3.0 \text{ A}, I_B = -3.0 \text{ mA}$			-1.5	V
Base saturation voltage	V <sub>BE(sat)</sub> *	$Ic = -3.0 \text{ A}, I_B = -3.0 \text{ mA}$			-2.0	V
Turn-on time	ton	Ic = $-3.0$ A, R <sub>L</sub> = 17 $\Omega$ ,		0.5		μs
Storage time	tstg	$I_{B1} = -I_{B2} = -3.0 \text{ mA}, \text{ V}_{CC} \cong -50 \text{ V}$ Refer to the test circuit.		1.0		μs
Fall time	t <sub>f</sub>	Tiolor to the test enount.		1.0		μs

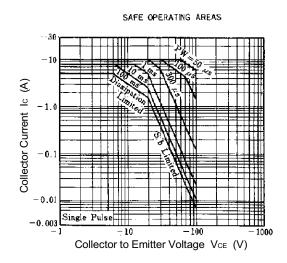
<sup>\*</sup> Pulse test PW  $\leq$  350  $\mu$ s, duty cycle  $\leq$  2%

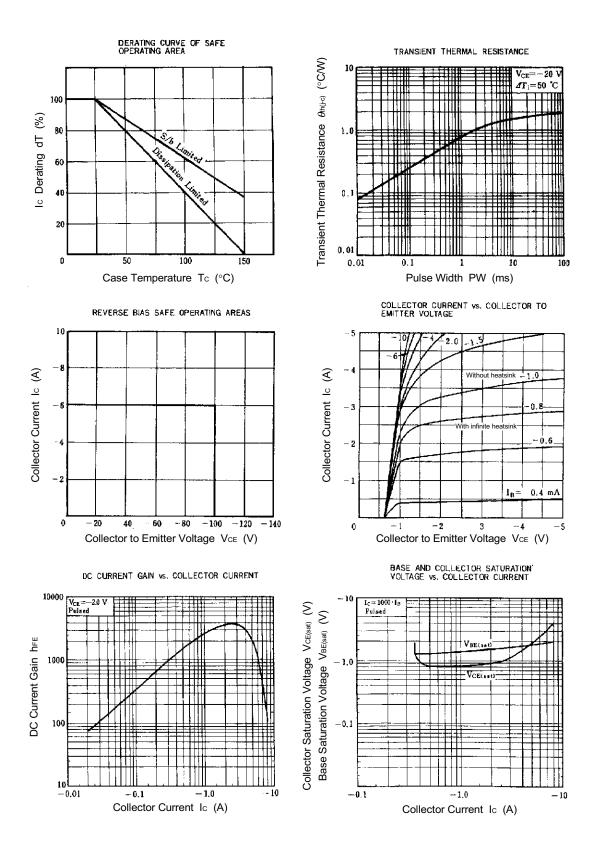
#### **hfe CLASSIFICATION**

Marking	М	L	K
h <sub>FE1</sub>	2,000 to 5,000	3,000 to 7,000	5,000 to 15,000

### TYPICAL CHARACTERISTICS (Ta = 25°C)



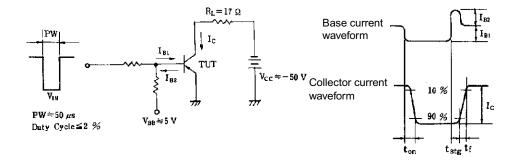




3



## SWITCHING TIME (ton, tstg, tf) TEST CIRCUIT



[MEMO]

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