NEC

SILICON TRANSISTOR
2SB1578

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

The 2SB1578 features high current capacity in small dimension and is ideal for DC/DC converters and mortor drivers.

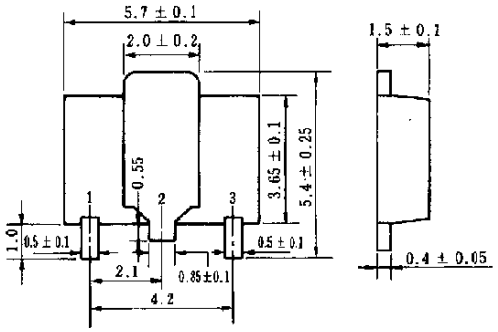
FEATURES

- New package with dimensions in between those of small signal and power signal package
- High current capacitance
- Low collector saturation voltage
- Complementary transistor with 2SD2425

QUALITY GRADES

- Standard
  Please refer to “Quality Grades on NEC Semiconductor Devices” (Document No. C11531E) published by NEC Corporation to know the specification of quality grade on the devices and its recommended applications.

PACKAGE DRAWING (UNIT: mm)



Electrode connection
1: Emitter
2: Collector
3: Base

ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

Parameter	Symbol	Conditions	Ratings	Unit
Collector to base voltage	V_{CBO}		–60	V
Collector to emitter voltage	V_{CEO}		–60	V
Emitter to base voltage	V_{EBO}		–6.0	V
Collector current (DC)	$I_{C(DC)}$		–5.0	A
Collector current (pulse)	$I_{C(pulse)}$	PW ≤ 10 ms, duty cycle ≤ 50 %	–7.0	A
Base current (DC)	$I_{B(DC)}$		–1.0	A
Total power dissipation	P_T	7.5 cm^2 × 0.7 mm ceramic board used	2.0	W
Junction temperature	T_j		150	°C
Storage temperature	T_{stg}		–55 to +150	°C

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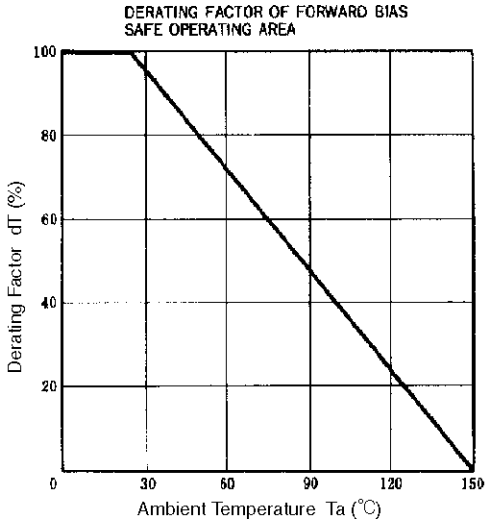
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

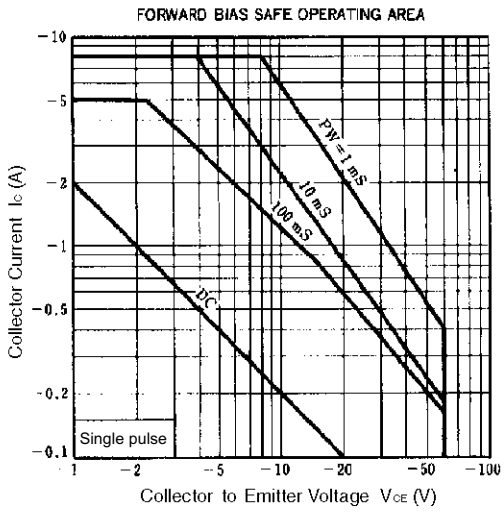
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Collector cutoff current	I_{CBO}	V_{CB} = –50 V, I_E = 0			–10	μA
Emitter cutoff current	I_{EBO}	V_{EB} = –6.0 V, I_C = 0			–10	μA
DC current gain	h_{FE1}	V_{CE} = –1.0 V, I_C = –0.1 A	60	220		–
DC current gain	h_{FE2}	V_{CE} = –1.0 V, I_C = –2.0 A	100	200	400	–
DC current gain	h_{FE3}	V_{CE} = –2.0 V, I_C = –5.0 A	50	150		–
Collector saturation voltage	$V_{CE(sat)}$	I_C = –2.0 A, I_B = –0.2 A		–180	–300	mV
Base saturation voltage	$V_{BE(sat)}$	I_C = –2.0 A, I_B = –0.2 A		–0.9	–1.2	V
Turn-on time	t_{on}	I_C = –2.0 A, V_{CC} = –10 V I_{B1} = –I_{B2} = –0.2 A R_L = 5.0 Ω		0.6		μs
Storage time	t_{stg}			0.55		μs
Fall time	t_f			0.05		μs

h_{FE} CLASSIFICATION

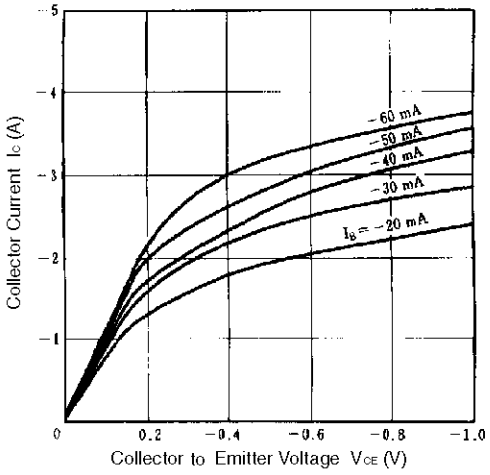
Marking	GB1	GB2	GB3
h_{FE2}	100 to 200	160 to 320	200 to 400

TYPICAL CHARACTERISTICS (Ta = 25°C)

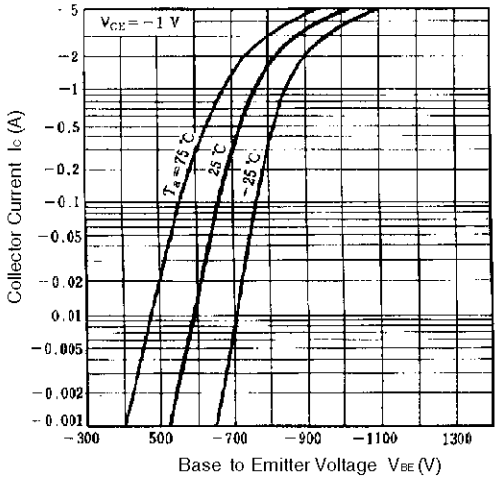




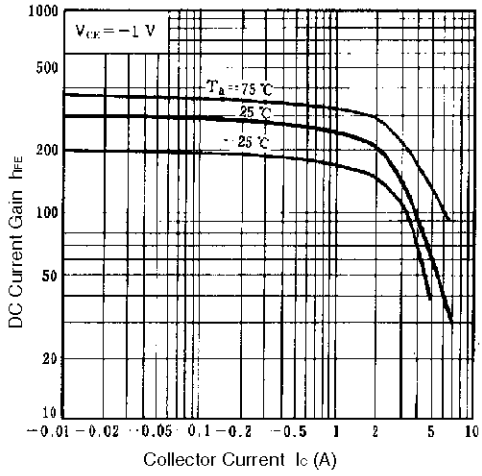
COLLECTOR CURRENT vs.
COLLECTOR TO EMITTER VOLTAGE



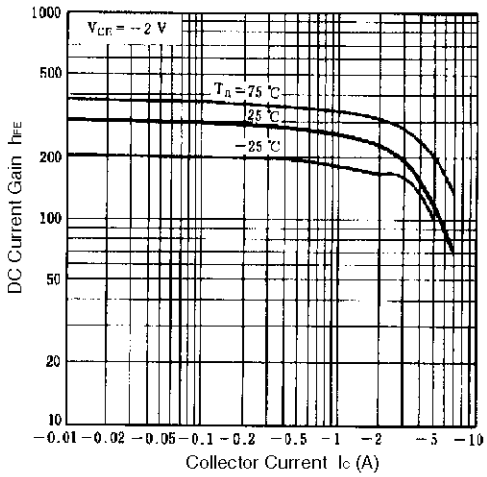
COLLECTOR CURRENT vs.
BASE TO EMITTER VOLTAGE



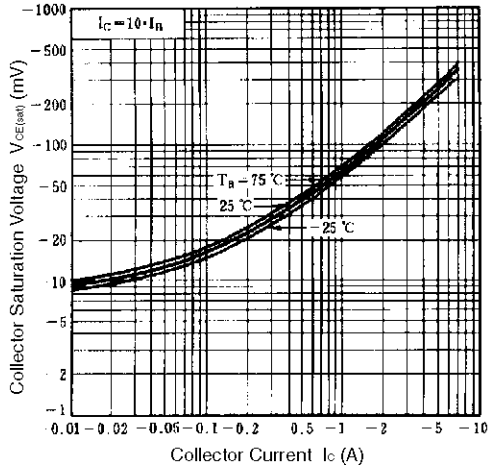
DC CURRENT GAIN vs.
COLLECTOR CURRENT



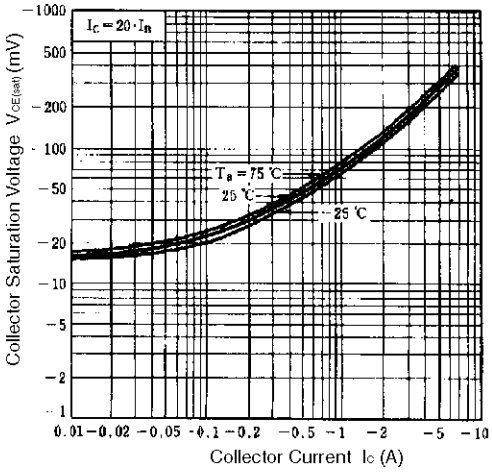
DC CURRENT GAIN vs.
COLLECTOR CURRENT



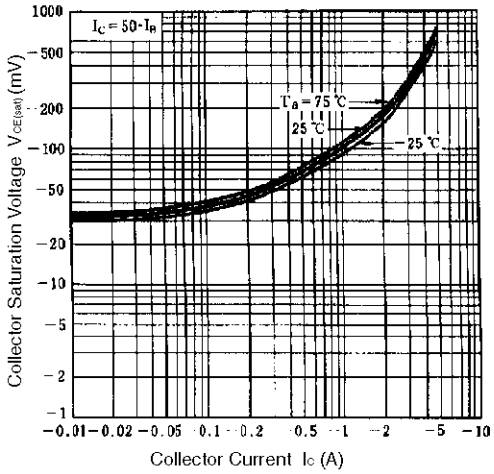
COLLECTOR SATURATION VOLTAGE vs.
COLLECTOR CURRENT



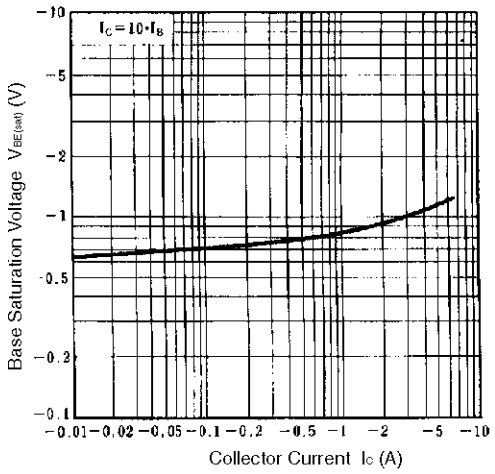
COLLECTOR SATURATION VOLTAGE vs.
COLLECTOR CURRENT



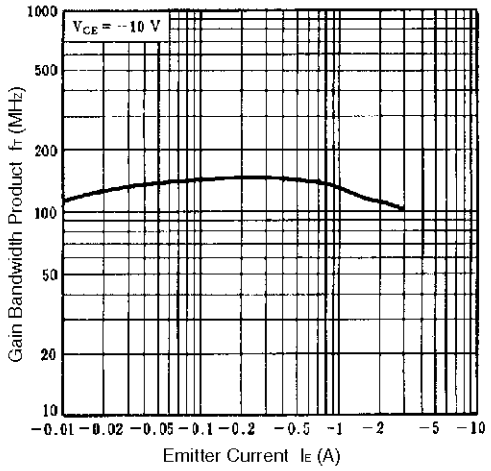
COLLECTOR SATURATION VOLTAGE vs.
COLLECTOR CURRENT



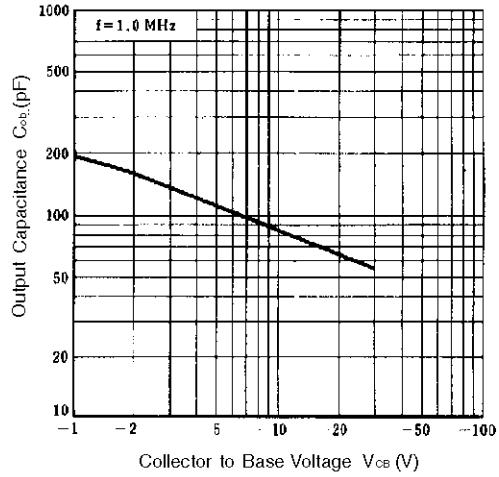
BASE SATURATION VOLTAGE vs.
COLLECTOR CURRENT



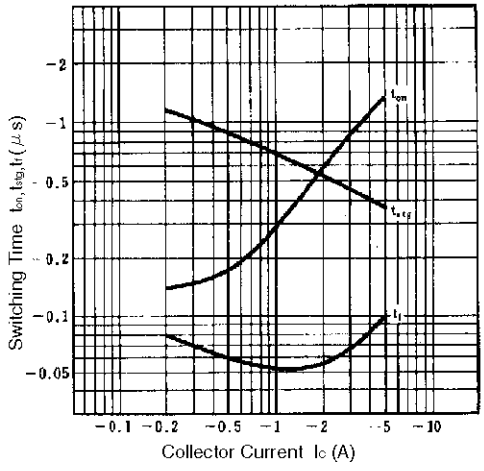
GAIN BANDWIDTH PRODUCT vs.
EMITTER CURRENT



OUTPUT CAPACITANCE vs.
REVERSE VOLTAGE



SWITCHING CHARACTERISTICS



[MEMO]

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