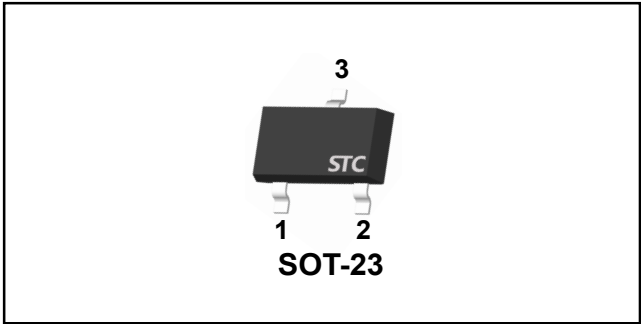


GENERAL-PURPOSE TRANSISTOR NPN Silicon

DESCRIPTION

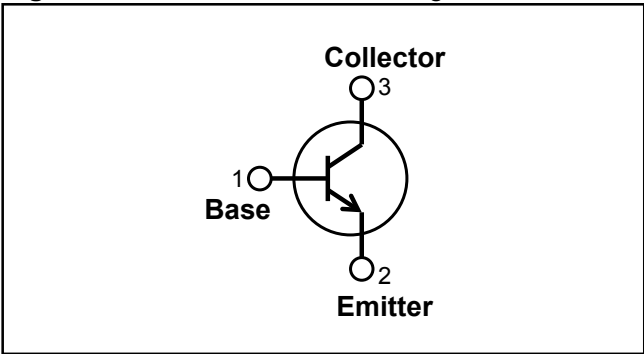
The **STComponent** S8050 is designed for a low voltage high current small signal NPN transistor. Ideal for Class B push-pull audio amplifier and general purpose applications.



FEATURES

- Collector-Emitter Voltage $V_{CE} = 25V$
- Collector Current $I_C = 800mA$
- Complementary PNP Type Available (STC S8550)

Figure 1: Internal Schematic Diagram



DEVICE SUMMARY

Ordering Code	h_{FE1} Rank ⁽¹⁾	Package Material	Package Type	Marking ⁽²⁾	Shipping
S8050-L-M	120 ~ 200	Lead Free	SOT-23	J3Y	Taping reel
S8050-H-M	200 ~ 350		SOT-23		Taping reel
S8050-J-M	300 ~ 400		SOT-23		Taping reel
S8050-L-MG	120 ~ 200	Halogen Free	SOT-23		Taping reel
S8050-H-MG	200 ~ 350		SOT-23		Taping reel
S8050-J-MG	300 ~ 400		SOT-23		Taping reel

Note 1: At $T_A = 25^{\circ}C$, $V_{CE} = 5V$, $I_C = 1mA$, pulse test: $t_P \leq 300\mu s$; duty cycle $\leq 2\%$.
Note 2: **J3Y**: Specific device code.

ABSOLUTE MAXIMUM RATINGS ⁽³⁾

T_A = 25°C, unless otherwise noted.

PARAMETER	SYMBOL	RATINGS	UNIT
Collector-Base Voltage	V _{CBO}	40	V
Collector-Emitter Voltage	V _{CEO}	25	V
Emitter-Base Voltage	V _{EBO}	5	V
Collector Current	I _C	800	mA
Collector Power Dissipation	P _C	300	mW
Maximum Junction Temperature	T _{JMAX}	150	°C
Storage Temperature	T _{stg}	-55 ~ +150	°C

Note 3: Absolute Maximum Ratings are those values beyond which the device could be permanently damaged. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

Thermal Data ⁽⁴⁾

PARAMETER	SYMBOL	RATINGS	UNIT
Thermal Resistance, Junction-to-Ambient	R _{θJA}	416	°C/W

Note 4: Device mounted on FR-4 PCB 1.6 inch × 1.6 inch × 0.06 inch.

ELECTRICAL CHARACTERISTICS

T_A = 25°C, unless otherwise noted.

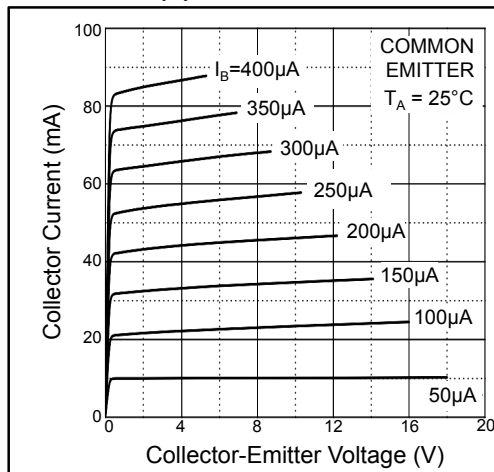
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Collector-Base Breakdown Voltage	V _{(BR)CBO}	I _C = 100μA, I _E = 0	40			V
Collector-Emitter Breakdown Voltage ⁽⁵⁾	V _{(BR)CEO}	I _C = 1mA, I _B = 0	25			V
Emitter-Base Breakdown Voltage	V _{(BR)EBO}	I _E = 100μA, I _C = 0	5			V
Collector Cut-Off Current	I _{CBO}	V _{CB} = 40V, I _E = 0			100	nA
	I _{CEO}	V _{CE} = 20V, I _B = 0			100	nA
Emitter Cut-Off Current	I _{EBO}	V _{EB} = 5V, I _C = 0			100	nA
ON CHARACTERISTICS						
DC Current Gain ⁽⁵⁾	h _{FE1}	V _{CE} = 5V, I _C = 1mA	120		400	
	h _{FE2}	V _{CE} = 1V, I _C = 50mA	120			
	h _{FE3}	V _{CE} = 1V, I _C = 500mA	50			
Collector-Emitter Saturation Voltage ⁽⁵⁾	V _{CE(sat)}	I _C = 500mA, I _B = 50mA			0.6	V
Base-Emitter Saturation Voltage	V _{BE(sat)}	I _C = 500mA, I _B = 50mA			1.2	V
SMALL SIGNAL CHARACTERISTICS						
Transition Frequency	f _T	V _{CE} = 6V, I _C = 20mA, f = 30MHz	150			MHz
Output Capacitance	C _{ob}	V _{CB} = 10V, I _E = 0, f = 1MHz		4		pF
Input Capacitance	C _{ib}	V _{EB} = 0.5V, I _C = 0, f = 1MHz		40		pF

Note 5: Pulse test: t_p ≤ 300μs; duty cycle ≤ 2%.CLASSIFICATION OF h_{FE1}

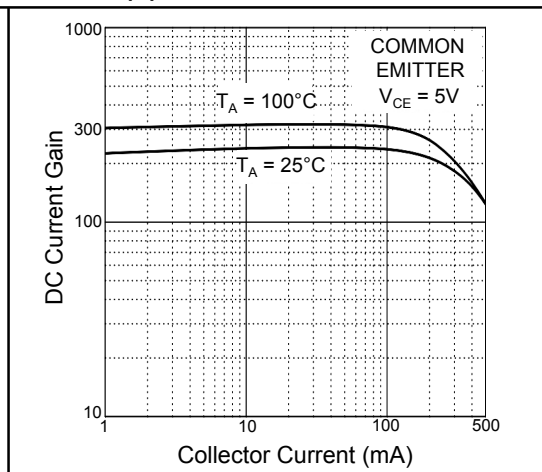
Rank	L	H	J
Range	120 ~ 200	200 ~ 350	300 ~ 400

ELECTRICAL CHARACTERISTICS CURVES

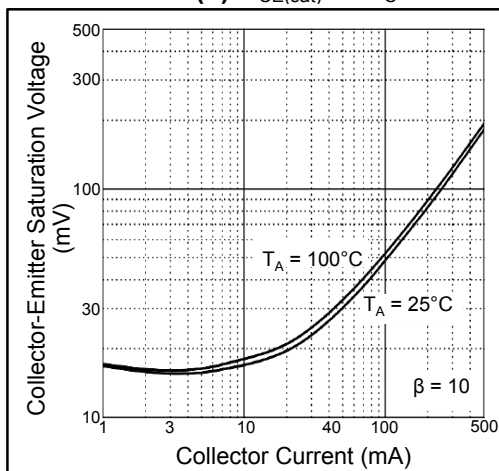
(1) Static Characteristic



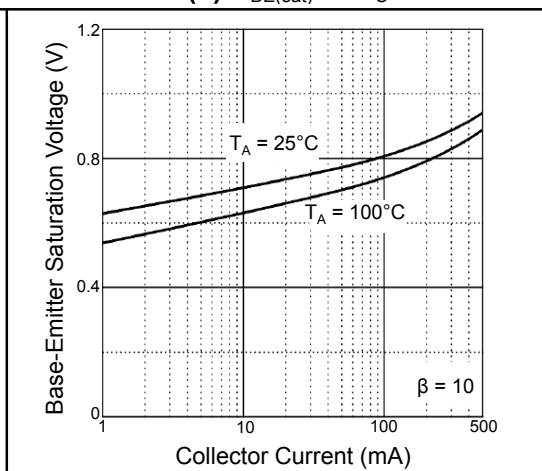
(2) DC Current Gain vs. I_C



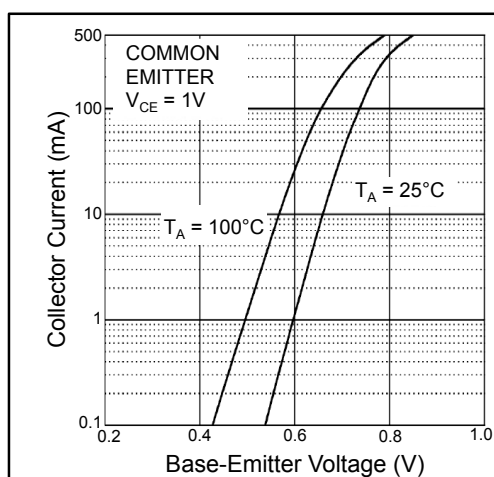
(3) $V_{CE(sat)}$ vs. I_C



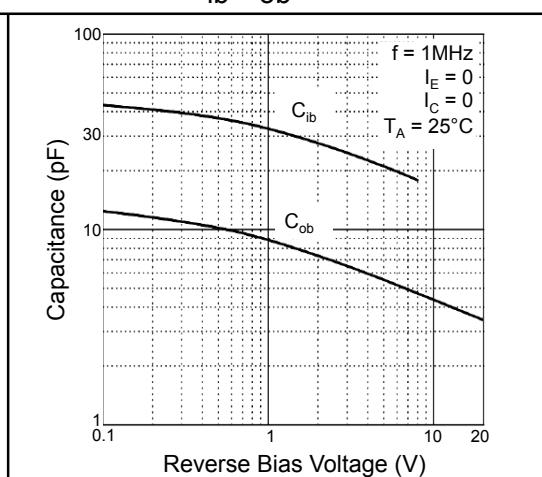
(4) $V_{BE(sat)}$ vs. I_C



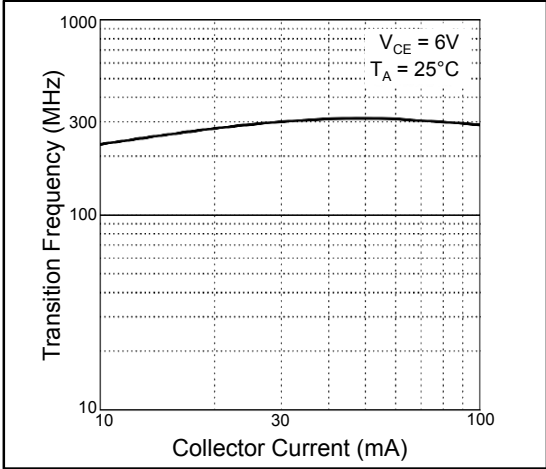
(5) I_C vs. V_{BE}



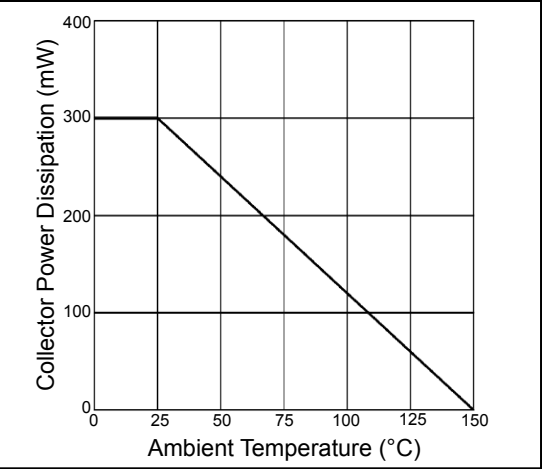
(6) C_{ib}/C_{ob} vs. V_{EB}/V_{CB}



(7) Transition Frequency Characteristic



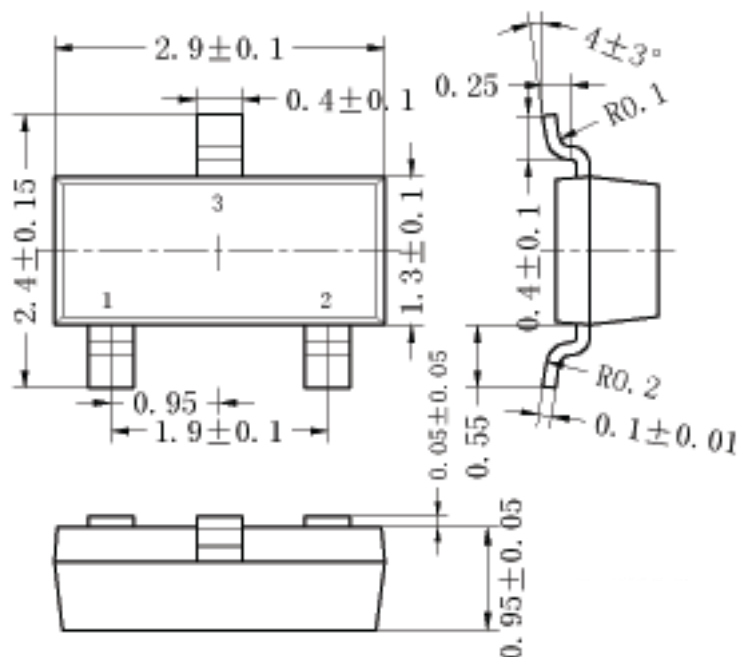
(8) P_C vs. T_A



PACKAGE DIMENSION

SOT-23

Unit: Millimeters



NOTICE

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