

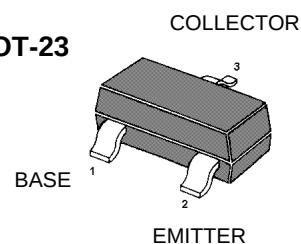
NPN Transistors

Features

Low current (max. 100 mA)

MARKING:2C

SOT-23



Absolute Maximum Ratings $T_a = 25^\circ\text{C}$

Parameter	Symbol	Rating	Unit
collector-base voltage	V_{CB0}	30	V
collector-emitter voltage	V_{CE0}	30	V
emitter-base voltage	V_{EB0}	5	V
collector current (DC)	I_C	100	mA
peak collector current	I_{CM}	200	mA
peak base current	I_{BM}	200	mA
total power dissipation $T_{amb} \leq 25^\circ\text{C}^*$	P_{tot}	250	mW
storage temperature	T_{stg}	-65 to 150	$^\circ\text{C}$
junction temperature	T_J	150	$^\circ\text{C}$
operating ambient temperature	T_{amb}	-65 to 150	$^\circ\text{C}$
thermal resistance from junction to ambient *	$R_{th(j-a)}$	500	K/W

* Transistor mounted on an FR4 printed-circuit board.

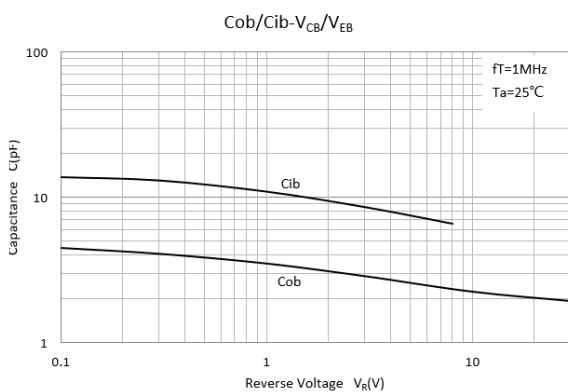
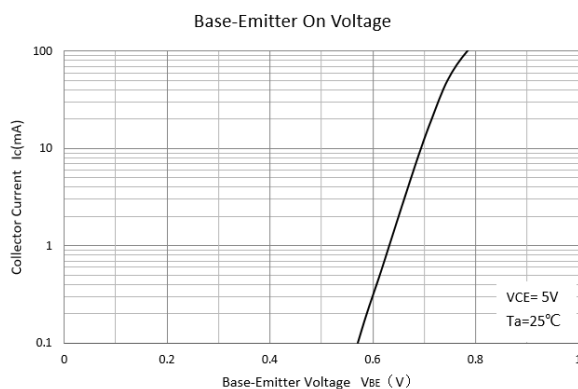
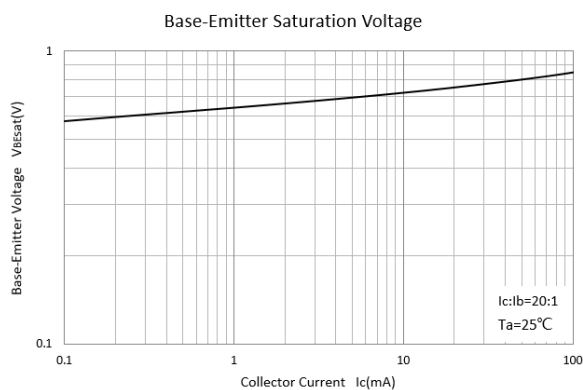
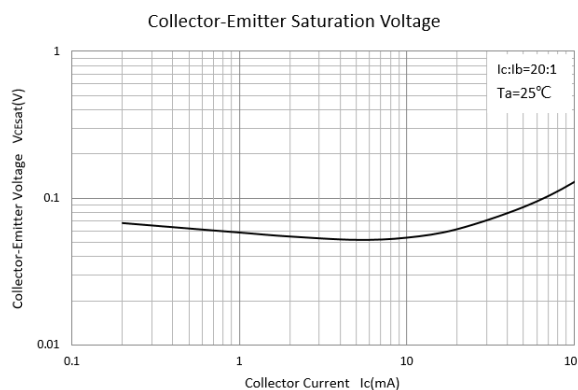
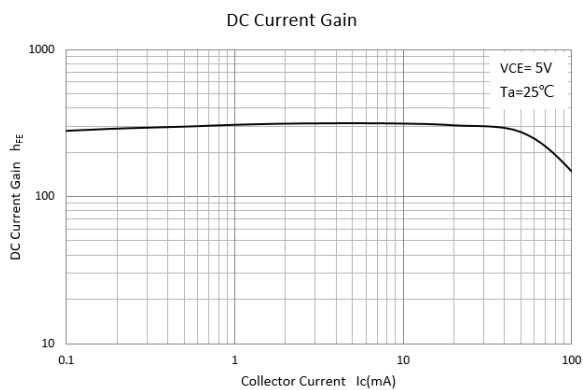
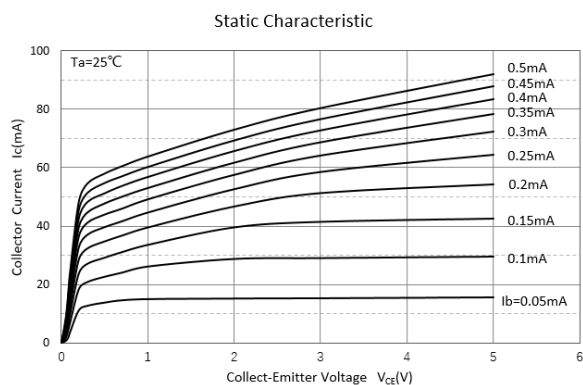
Electrical Characteristics $T_a = 25^\circ\text{C}$

Parameter	Symbol	Testconditons	Min	Typ	Max	Unit
collector cut-off current	I_{CBO}	$I_E = 0; V_{CB} = 30\text{ V}$			15	nA
		$I_E = 0; V_{CB} = 30\text{ V}; T_J = 150^\circ\text{C}$			5	μA
emitter cut-off current	I_{EBO}	$I_C = 0; V_{EB} = 5\text{ V}$			100	nA
DC current gain	h_{FE}	$I_C = 10\text{ }\mu\text{A}; V_{CE} = 5\text{ V};$		450		
DC current gain		$I_C = 2\text{ mA}; V_{CE} = 5\text{ V};$	420	520	800	
collector-emitter saturation voltage	V_{CEsat}	$I_C = 10\text{ mA}; I_B = 0.5\text{ mA}$		90	250	mV
		$I_C = 100\text{ mA}; I_B = 5\text{ mA}$		200	600	mV
base-emitter saturation voltage	V_{BEsat}	$I_C = 10\text{ mA}; I_B = 0.5\text{ mA}; ^*1$		700		mV
		$I_C = 100\text{ mA}; I_B = 5\text{ mA}; ^*1$		900		mV
base-emitter voltage	V_{BE}	$I_C = 2\text{ mA}; V_{CE} = 5\text{ V}; ^*2$	580	660	700	mV
		$I_C = 10\text{ mA}; V_{CE} = 5\text{ V}; ^*2$			770	mV
collector capacitance	C_c	$I_E = I_C = 0; V_{CB} = 10\text{ V}; f = 1\text{ MHz}$		2.5		pF
emitter capacitance	C_e	$I_C = I_E = 0; V_{EB} = 500\text{ mV}; f = 1\text{ MHz}$		11		pF
transition frequency	f_T	$I_C = 10\text{ mA}; V_{CE} = 5\text{ V}; f = 100\text{ MHz}$	100			MHz
noise figure	F	$I_C = 200\text{ }\mu\text{A}; V_{CE} = 5\text{ V}; R_s = 2\text{ k}\Omega, f = 10\text{ Hz to }15.7\text{ kHz}$			4	dB
		$I_C = 200\text{ }\mu\text{A}; V_{CE} = 5\text{ V}; R_s = 2\text{ k}\Omega, f = 1\text{ kHz}; B = 200\text{ Hz}$			4	dB

*1 V_{BEsat} decreases by about 1.7 mV/K with increasing temperature.

*2 V_{BE} decreases by about 2 mV/K with increasing temperature.

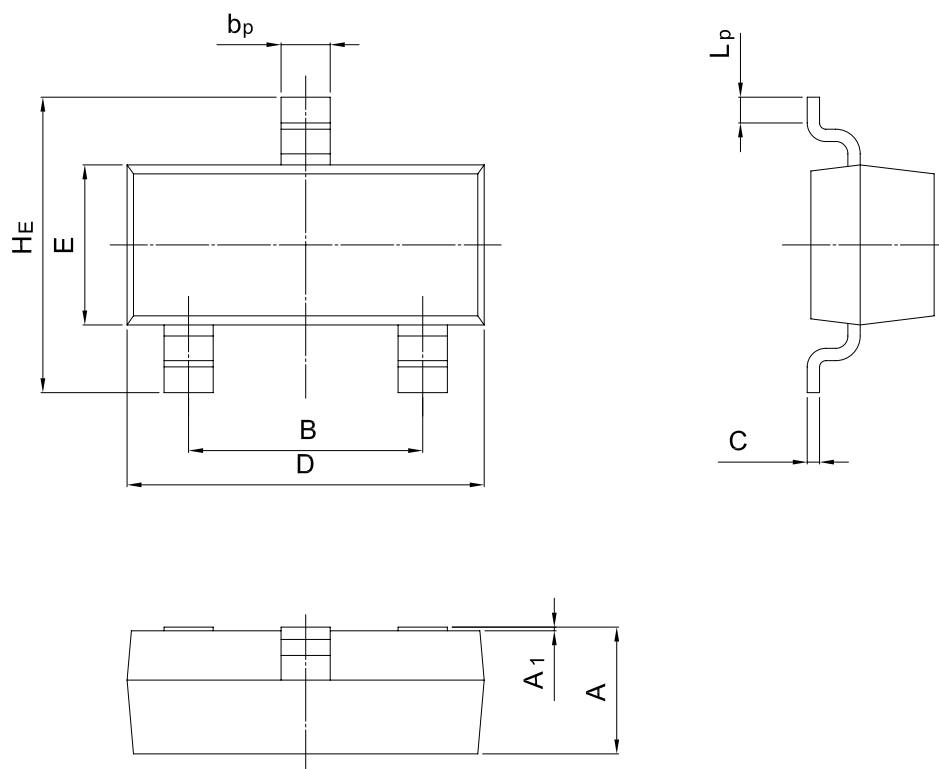
Characteristics(Typical)



PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT-23



UNIT	A	B	b _p	C	D	E	H _E	A ₁	L _p
mm	1.40 0.95	2.04 1.78	0.50 0.35	0.19 0.08	3.10 2.70	1.65 1.20	3.00 2.20	0.100 0.013	0.50 0.20

