

V_{CBO} -60V, I_C -600mA SOT-23 Plastic-Encapsulate PNP Transistors

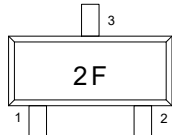
1. Features

- Complementary to MMBT2222A
- Power dissipation of 250mW
- High stability and high reliability

2. Mechanical Data

- SOT-23 Small Outline Plastic Package
- Epoxy UL: 94V-0
- Mounting Position: Any

3. Pin configuration

Pin	Function	Outline
1	Base	
2	Emitter	
3	Collector	

4. Specification

Absolute Maximum Rating & Thermal Characteristics

Ratings at 25 °C ambient temperature unless otherwise specified.

Parameters	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	-60	V
Collector-Emitter Voltage	V_{CEO}	-60	V
Emitter-Base Voltage	V_{EBO}	-5	V
Collector Current-Continuous	I_C	-600	mA
Collector Power Dissipation	P_C	250	mW
Junction Temperature	T_j	150	°C
Storage Temperature	T_{STG}	-55~150	°C
Thermal resistance from junction to ambient	$R_{\theta JA}$	500	°C/W

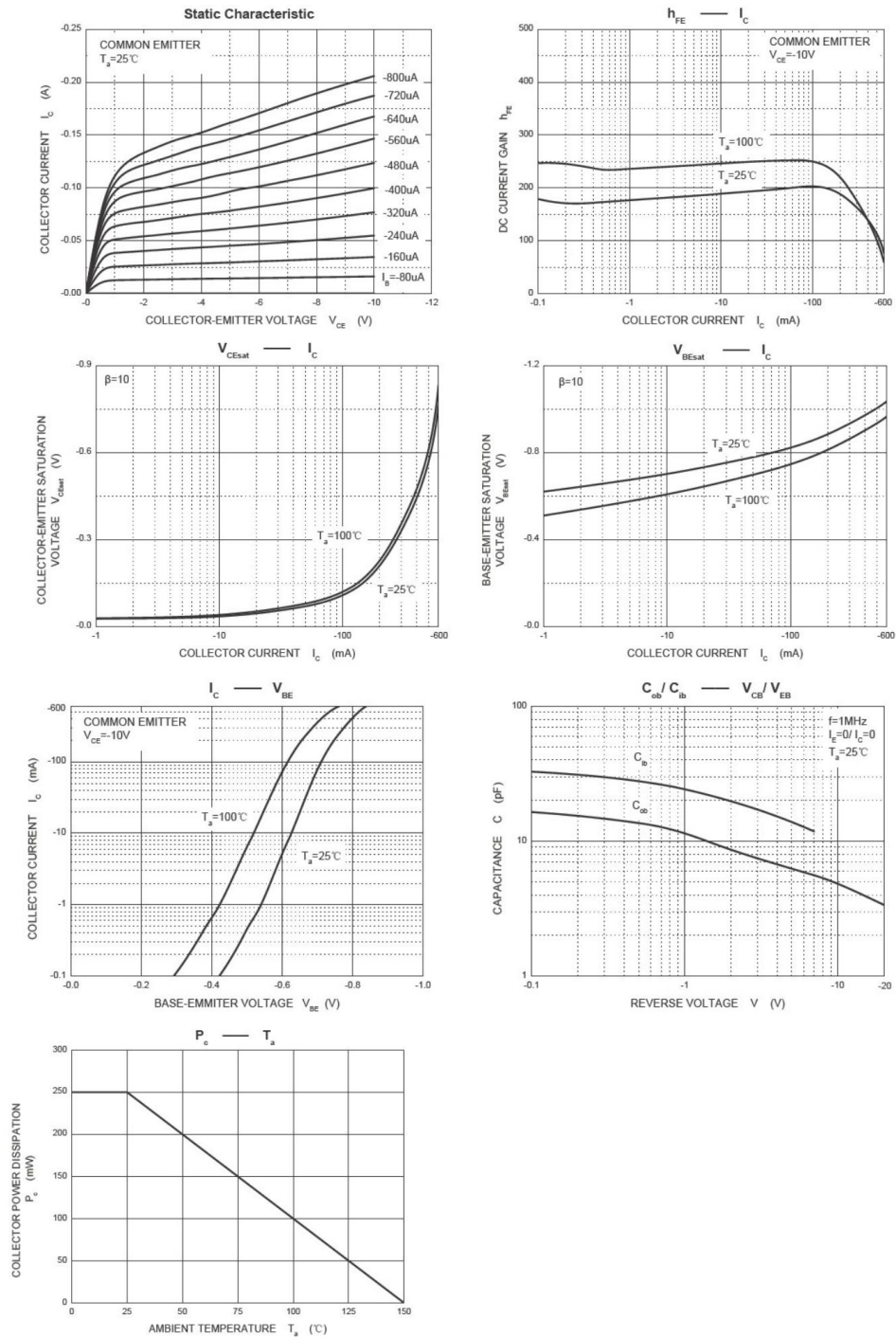
Electrical Characteristics(At TA = 25°C unless otherwise specified)

Parameters	Symbols	Test Condition	Limits			
			Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C=-100\mu A, I_E=0$	-60			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C=-1mA, I_B=0$	-60			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E=-10\mu A, I_C=0$	-5			V
Collector cut-off current	I_{CEX}	$V_{CE}=-30V, V_{EB(off)}=-0.5V$			-50	nA
	I_{CBO}	$V_{CB}=-50V, I_E=0$			-20	
Emitter cut-off current	I_{EBO}	$V_{EB}=-3V, I_C=0$			-10	nA
DC current gain	h_{FE1}	$V_{CE}=-10V, I_C=-0.1mA$	75			
	h_{FE2}	$V_{CE}=-10V, I_C=-1mA$	100			
	h_{FE3}	$V_{CE}=-10V, I_C=-10mA$	100			
	h_{FE4}	$V_{CE}=-10V, I_C=-150mA$	100		300	
	h_{FE5}	$V_{CE}=-10V, I_C=-500mA$	50			
Collector-emitter saturation voltage	$V_{CE(sat)}^*$	$I_C=-150mA, I_B=-15mA$			-0.40	V
		$I_C=-500mA, I_B=-50mA$			-1.60	V
Base -emitter saturation voltage	$V_{BE(sat)}^*$	$I_C=-150mA, I_B=-15mA$			-1.30	V
		$I_C=-500mA, I_B=-50mA$			-2.60	V
Transition frequency	f_T	$V_{CE}=-20V, I_C=-50mA, f=100MHz$	200			MHz
Delay time	t_d	$V_{CE}=-30V, I_C=-150mA,$ $I_{B1}=-15mA$			10	ns
Rise time	t_r				25	ns
Storage time	t_s	$V_{CE}=-6V, I_C=-150mA,$ $I_{B1}=I_{B2}=-15mA$			225	ns
Fall time	t_f				60	ns

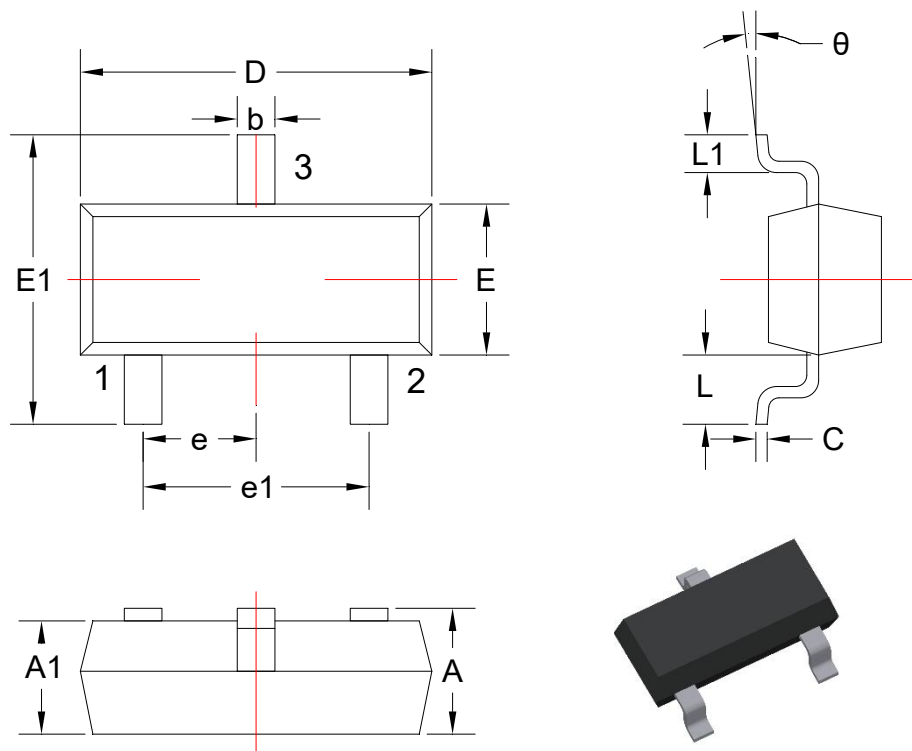
*Pulse test: pulse width $\leq 300\mu s$, duty cycle $\leq 2.0\%$ Classification of $h_{FE(1)}$

h_{FE}	100~300	
Rank	L	H
Range	100~200	200~300

5. Typical Characteristic

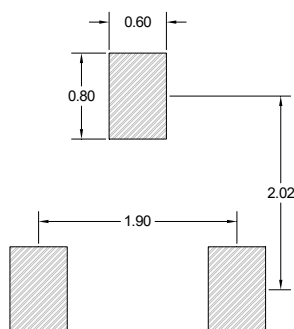


6. Dimension and Patterns (SOT-23)



Units: mm

Symbol	Dimensions		Symbol	Dimensions	
	Min.	Max.		Min.	Max.
A	0.900	1.150	E1	2.250	2.550
A1	0.900	1.050	e	0.950TYP	
b	0.300	0.500	e1	1.800	2.000
c	0.080	0.150	L	0.550REF	
D	2.800	3.00	L1	0.300	0.500
E	1.200	1.400	θ	0°	8°



Note:

1. Controlling dimension: in millimeters
2. General tolerance: $\pm 0.05\text{mm}$
3. The pad layout is for reference only
4. Unit: mm

Notice

1. All product, product specifications and data are subject to change without notice to improve reliability, function or design or otherwise. The right to explain is owned by CCX electronics company.
2. Confirm that operation temperature is within the specified range described in the product specification.

Avoid applying power exceeding normal rated power; exceeding the power rating under steady-state loading condition may negatively affect product performance and reliability.
3. CCX shall not be in any way responsible or liable for failure induced under deviant condition from what is defined in this document.