

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

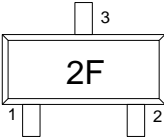
1. Features

- 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)

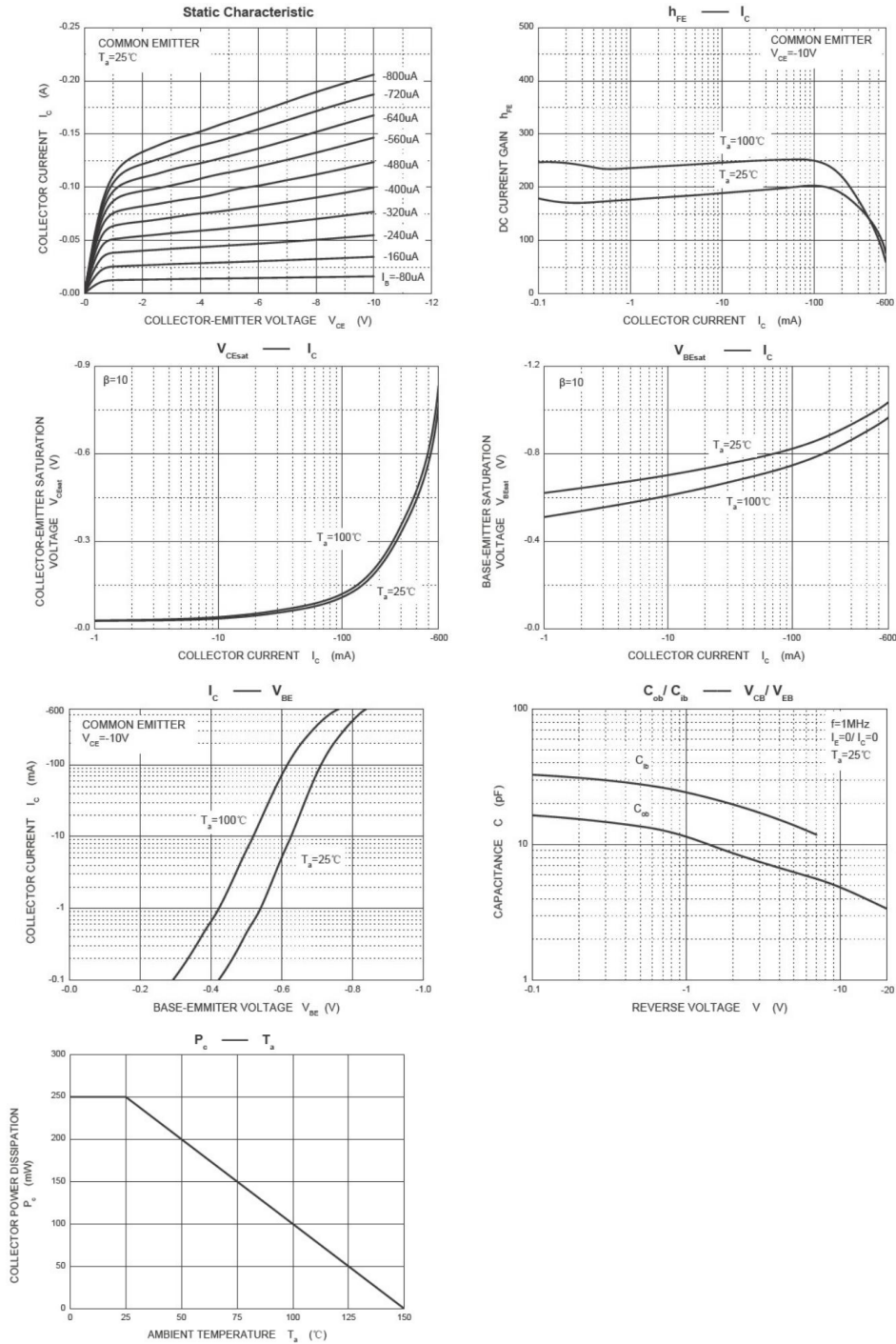
Parameters	Symbols	Test Condition	Limits			
			Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C=-100\mu A, I_E=0$	-60			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C=-1mA, I_B=0$	-60			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E=-10\mu A, I_C=0$	-5			V
Collector 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 $\leq 2.0\%$

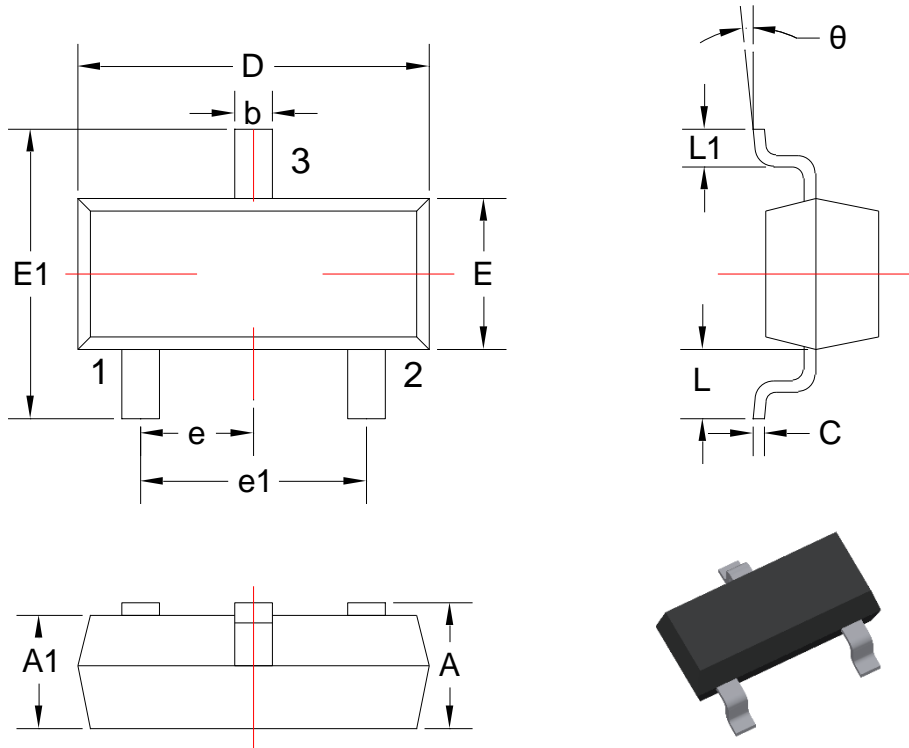
Classification of $h_{FE(1)}$

hFE	100~300	
Rank	L	H
Range	100~200	200~300

5. Typical Characteristic

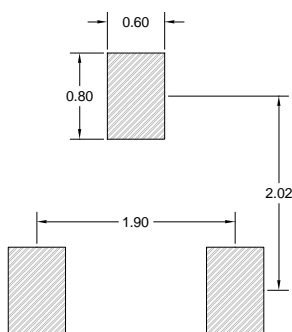


6. Dimension and Patterns (SOT-23)



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: ±0.05mm
3. The pad layout is for reference only
4. Unit: mm

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