

## SOT -23 Plastic-Encapsulate Transistors

### Features

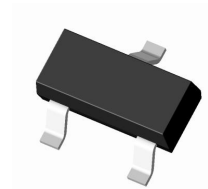
- Complementary to MMBT2222A
- 250mW; Power Dissipation of 250mW
- High Stability and High Reliability

### Mechanical Data

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



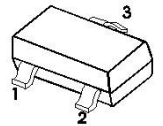
**RoHS**  
COMPLIANT



Marking: 2F

SOT-23

Pin definition



1. BASE  
2. EMITTER  
3. COLLECTOR

Maximum Ratings & Thermal Characteristics (T <sub>A</sub> =25°C unless otherwise noted)			
Parameters	Symbol	Value	Unit
Collector-Base Voltage	V <sub>CBO</sub>	-60	V
Collector-Emitter Voltage	V <sub>CEO</sub>	-60	V
Emitter -Base Voltage	V <sub>EBO</sub>	-5	V
Collector Current-Continuous	I <sub>C</sub>	-600	mA
Collector Power Dissipation	P <sub>C</sub>	250	mW
Junction Temperature	T <sub>J</sub>	150	°C
Storage Temperature	T <sub>stg</sub>	-55-+150	°C
Thermal resistance From junction to ambient	R <sub>θJA</sub>	500	°C/W

## Electrical Specifications ( $T_A=25^\circ\text{C}$ unless otherwise noted)

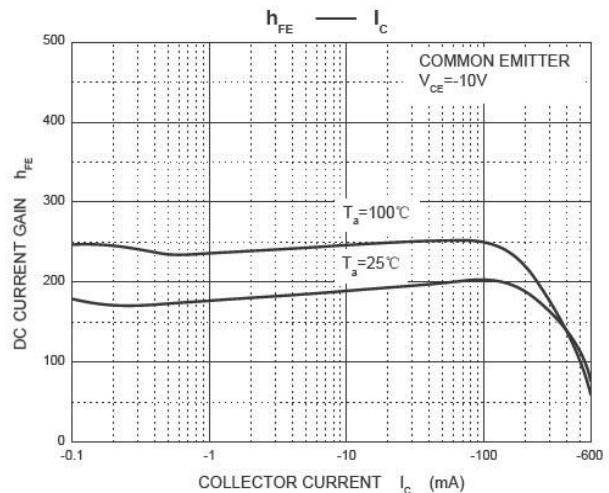
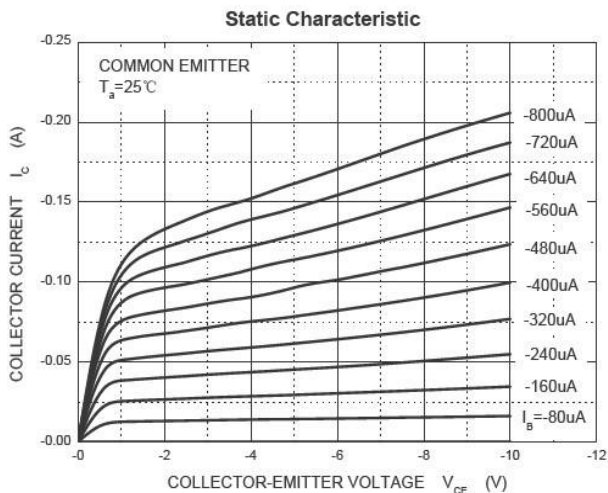
Parameter	Symbols	Test Condition	Limits		Unit
			Min	Max	
Collector -base breakdown voltage	$V_{(BR)CBO}$	$I_C=-100\mu\text{A}, I_E=0$	-60		V
Collector -emitter breakdown voltage	$V_{(BR)CEO}^*$	$I_C=-1\text{mA}, I_B=0$	-60		V
Emitter -base breakdown voltage	$V_{(BR)EBO}$	$I_E=-10\mu\text{A}, I_C=0$	-5		V
Collector cut -off current	$I_{CBO}$	$V_{CB}=-50\text{V}, I_E=0$		-20	nA
Emitter cut -off current	$I_{EBO}$	$V_{EB}=-3\text{V}, I_C=0$		-10	nA
Collector cut -off current	$I_{CEX}$	$V_{CE}=-30\text{V}, V_{BE(off)}=-0.5\text{V}$		-50	nA
DC current gain	$h_{FE(1)}^*$	$V_{CE}=-10\text{V}, I_C=-150\text{mA}$	100	300	
	$h_{FE(2)}^*$	$V_{CE}=-10\text{V}, I_C=-0.1\text{mA}$	75		
	$h_{FE(3)}^*$	$V_{CE}=-10\text{V}, I_C=-1\text{mA}$	100		
	$h_{FE(4)}^*$	$V_{CE}=-10\text{V}, I_C=-10\text{mA}$	100		
	$h_{FE(5)}^*$	$V_{CE}=-10\text{V}, I_C=-500\text{mA}$	50		
Collector -emitter saturation voltage	$V_{CE(sat)1}^*$	$I_C=-150\text{mA}, I_B=-15\text{mA}$		-0.4	V
	$V_{CE(sat)2}^*$	$I_C=-500\text{mA}, I_B=-50\text{mA}$		-1.6	V
Base -emitter saturation voltage	$V_{BE(sat)1}^*$	$I_C=-150\text{mA}, I_B=-15\text{mA}$		-1.30	V
	$V_{BE(sat)2}^*$	$I_C=-500\text{mA}, I_B=-50\text{mA}$		-2.60	V
Transition frequency	$f_T$	$V_{CE}=-20\text{V}, I_C=-50\text{mA}, f=100\text{MHz}$	200		MHz
Delay time	$t_d$	$V_{CE}=-30\text{V}, I_C=-150\text{mA}, I_{B1}=-15\text{mA}$		10	nS
Rise time	$t_r$			25	nS
Storage time	$t_s$	$V_{CE}=-6\text{V}, I_C=-150\text{mA}, I_{B1}=I_{B2}=-15\text{mA}$		225	nS
Fall time	$t_f$			60	nS

## Classification OF $h_{FE(2)}$

HFE	100-300	
RANK	L	H
RANGE	100-200	200-300

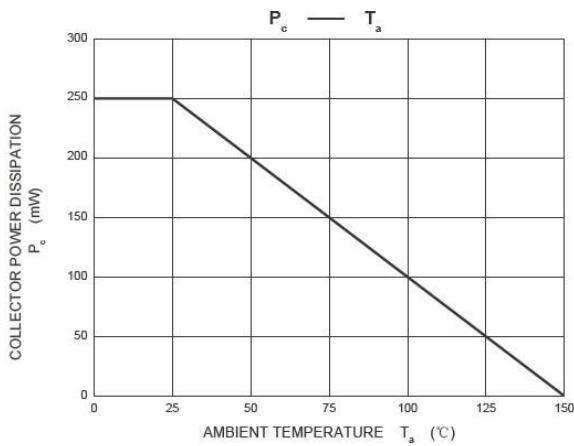
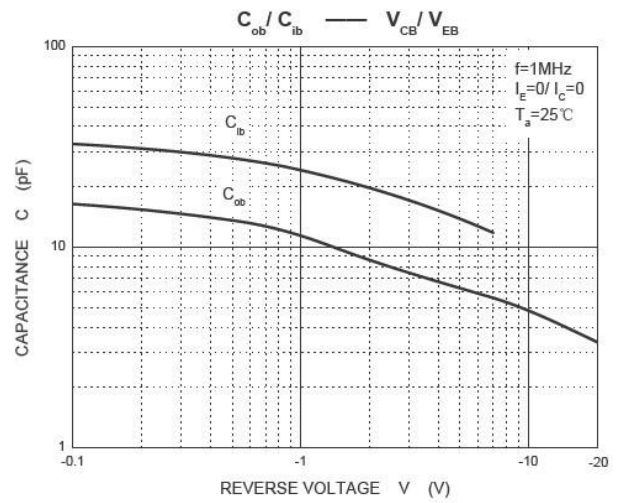
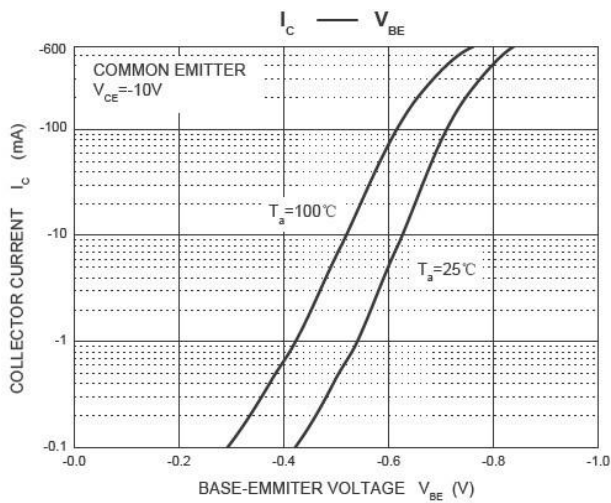
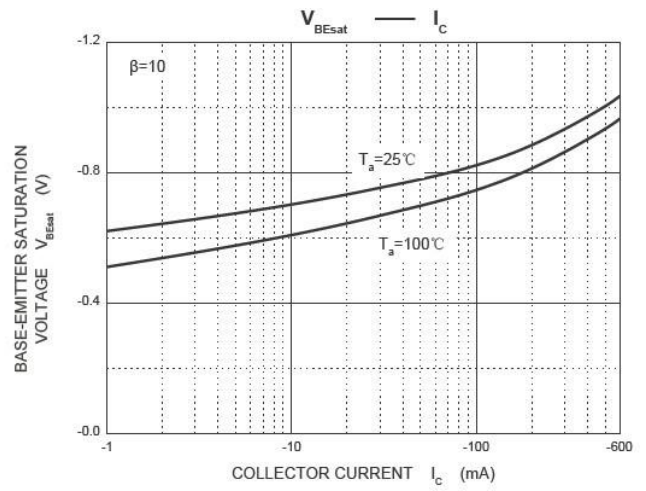
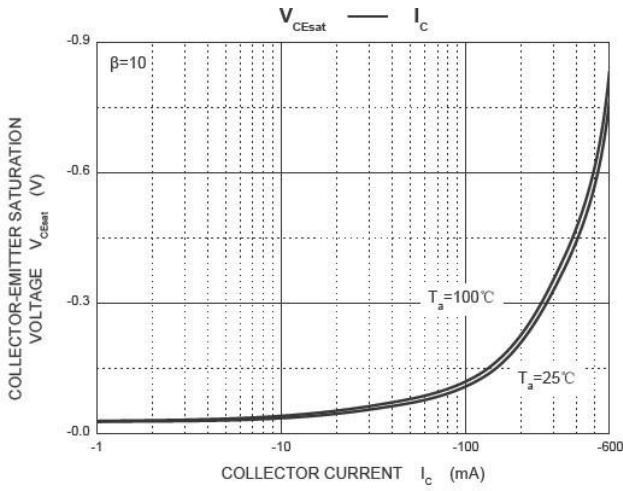
## Ratings and Characteristics Curves

( $T_A = 25^\circ\text{C}$  unless otherwise noted)



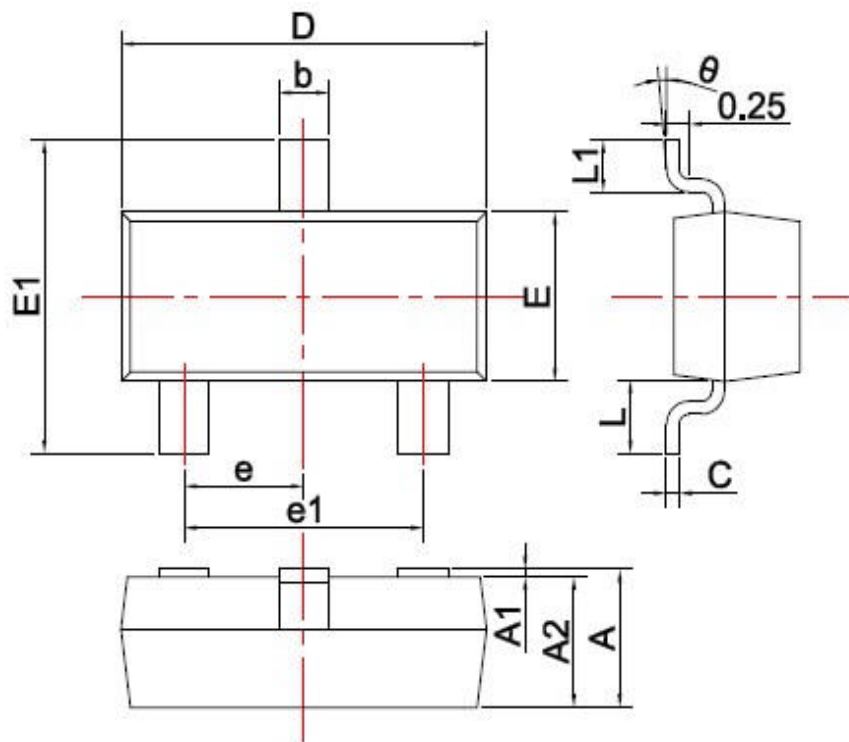
## Ratings and Characteristics Curves

( $T_A = 25^\circ\text{C}$  unless otherwise noted)



## Package Outline Dimensions

millimeters



SYMBOL	DIMENSIONS	
	MIN.	MAX.
A	0.900	1.150
A1	0.000	0.100
A2	0.900	1.050
b	0.300	0.500
c	0.080	0.150
D	2.800	3.000
E	1.200	1.400
E1	2.250	2.550
e	0.950TYP	
e1	1.800	2.000
L	0.550REF	
L1	0.300	0.500
θ	0°	8°

## Revision History

Document Version	Date of release	Description of changes
Rev.A	2019.10.31	First issue

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