

SuperTransistor – V_{CBO} 60V, I_c 600mA SOT-23 Switching NPN Transistors

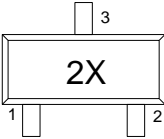
1. Features

- Power dissipation of 300mW
- 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

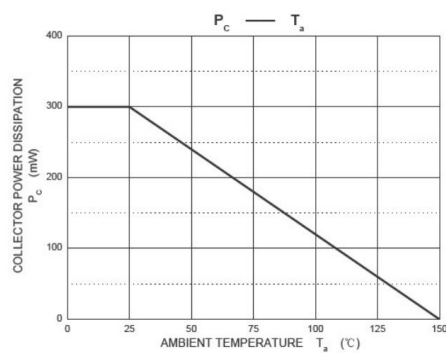
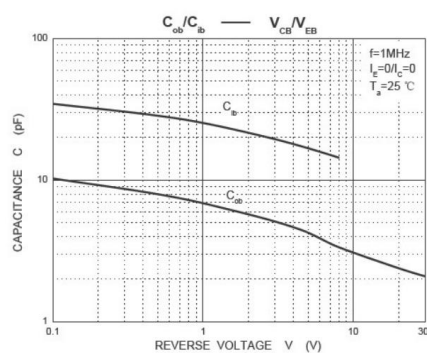
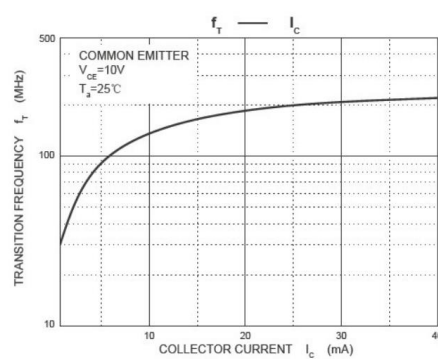
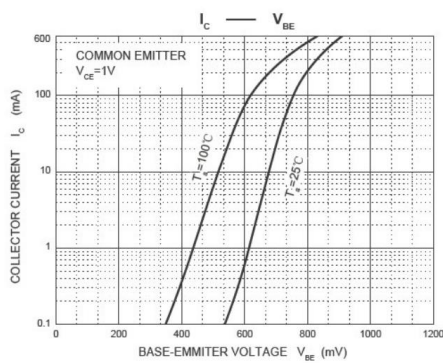
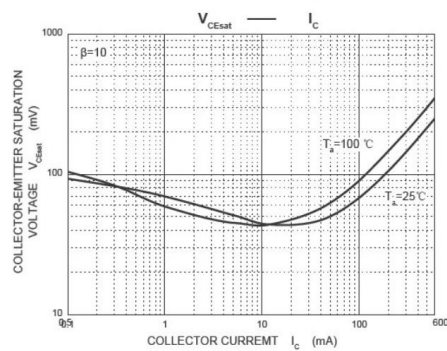
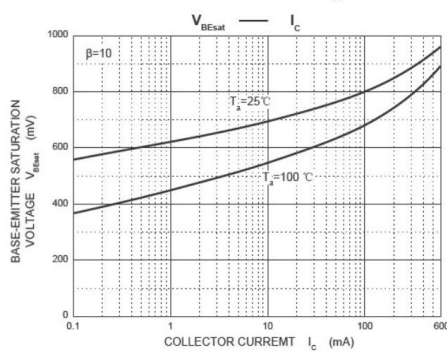
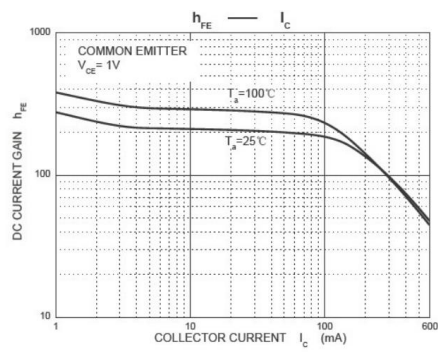
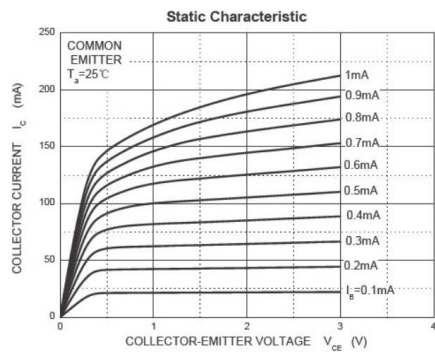
Ratings at 25 °C ambient temperature unless otherwise specified.

Parameters	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	60	V
Collector-Emitter Voltage	V_{CEO}	40	V
Emitter-Base Voltage	V_{EBO}	6	V
Collector Current-Continuous	I_c	600	mA
Collector Power Dissipation	P_c	300	mW
Junction Temperature	T_j	150	°C
Storage Temperature	T_{STG}	-55~150	°C
Thermal resistance From junction to ambient	$R_{\theta JA}$	417	°C/W

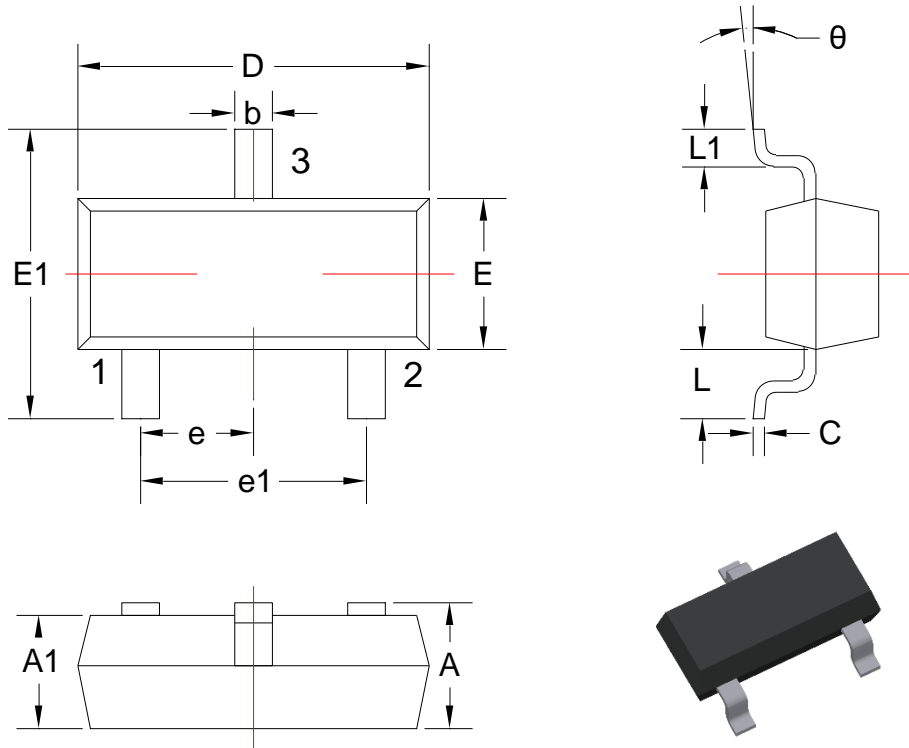
Electrical Characteristics (At $T_A = 25^\circ\text{C}$ unless otherwise specified)

Parameters	Symbols	Test Condition	Limits			
			Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C=100\mu\text{A}, I_E=0$	60			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C=1\text{mA}, I_B=0$	40			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E=100\mu\text{A}, I_C=0$	6			V
Collector cut-off current	I_{CEX}	$V_{CE}=35\text{V}, V_{EB(off)}=0.4\text{V}$			100	nA
	I_{CBO}	$V_{CB}=50\text{V}, I_E=0$			100	
Emitter cut-off current	I_{EBO}	$V_{EB}=5\text{V}, I_C=0$			100	nA
DC current gain	h_{FE1}	$V_{CE}=1\text{V}, I_C=0.1\text{mA}$	20			
	h_{FE2}	$V_{CE}=1\text{V}, I_C=1\text{mA}$	40			
	h_{FE3}	$V_{CE}=1\text{V}, I_C=10\text{mA}$	80			
	h_{FE4}	$V_{CE}=1\text{V}, I_C=150\text{mA}$	100		300	
	h_{FE5}	$V_{CE}=1\text{V}, I_C=500\text{mA}$	40			
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=150\text{mA}, I_B=15\text{mA}$			0.40	V
		$I_C=500\text{mA}, I_B=50\text{mA}$			0.75	V
Base-emitter saturation voltage	$V_{BE(sat)}$	$I_C=150\text{mA}, I_B=15\text{mA}$			0.95	V
		$I_C=500\text{mA}, I_B=50\text{mA}$			1.20	V
Transition frequency	f_T	$V_{CE}=10\text{V}, I_C=20\text{mA}, f=100\text{MHz}$	250			MHz
Delay time	t_d	$V_{CC}=30\text{V}, V_{BE(off)}=-2\text{V},$ $I_C=150\text{mA}, I_{B1}=15\text{mA}$			15	ns
Rise time	t_r				20	ns
Storage time	t_s	$V_{CC}=30\text{V}, I_C=150\text{mA},$ $I_{B1}=I_{B2}=15\text{mA}$			225	ns
Fall time	t_f				60	ns

5. Typical Characteristic

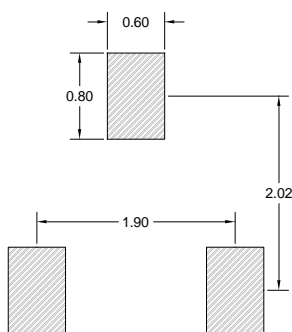


6. Dimension and Patterns (SOT-23)



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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