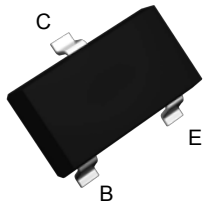
GOOD-ARK
SEMICONDUCTOR

MMBT493
NPN Transistor

Features

- Complementary Type MMBT593



SOT-23

Absolute Maximum Ratings (T_A=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	120	V
Collector-Emitter Voltage	V_{CEO}	100	V
Emitter-Base Voltage	V_{EBO}	5	V
Collector Current	I_C	1000	mA
Collector Power Dissipation	P_C	250	mW
Thermal Resistance From Junction To Ambient	$R_{\Theta JA}$	500	℃/W
Junction Temperature	T_J	150	℃
Storage Temperature	T_{STG}	-55 to+150	℃

Electrical Characteristics (T_A=25°C unless otherwise noted)

Parameter	Symbol	Test conditions	Min	Max	Unit
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=100μA, I_E=0	120	-	V
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C=10mA, I_B=0	100	-	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E=100μA, I_C=0	5	-	V
Collector Cut-off Current	I_{CBO}	V_{CB}=100V, I_E=0	-	0.1	μA
Collector Cut-off Current	I_{CES}	V_{CES}=100V, I_E=0	-	0.1	μA
Emitter Cut-off Current	I_{EBO}	V_{EB}=4V, I_C=0	-	0.1	μA
DC Current Gain	$h_{FE(1)}$ *	V_{CE}=10V, I_C=1mA	100	-	-
	$h_{FE(2)}$ *	V_{CE}=10V, I_C=250mA	100	300	-
	$h_{FE(3)}$ *	V_{CE}=10V, I_C=0.5A	60	-	-
	$h_{FE(4)}$ *	V_{CE}=10V, I_C=1A	20	-	-
Collector-Emitter Saturation Voltage	$V_{CE(sat)1}$*	I_C=500mA, I_B=50mA	-	0.3	V -
	$V_{CE(sat)2}$*	I_C=1A, I_B=100mA	-	0.6	V
Base-Emitter Saturation Voltage	$V_{BE(sat)}$*	I_C=1A, I_B=100mA	-	1.15	V
Base-Emitter Voltage	V_{BE}*	V_{CE}=10V, I_C=1A	-	1	V
Transition Frequency	f_T	V_{CE}=10V,I_C=50mA, f=100MHz	150	-	MHz
Collector Output Capacitance	C_{ob}	V_{CB}=10V, I_E=0, f=1MHz	-	10	pF

*Pulse test: pulse width ≤300μs, duty cycle≤ 2.0%.

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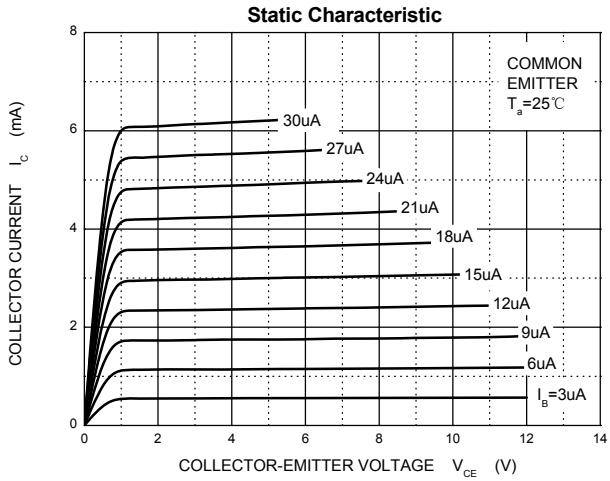
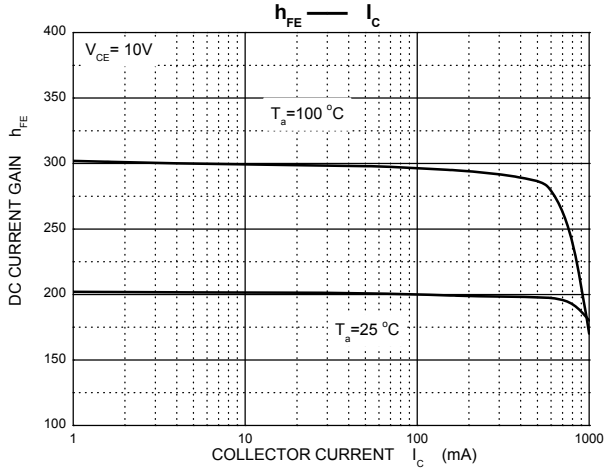
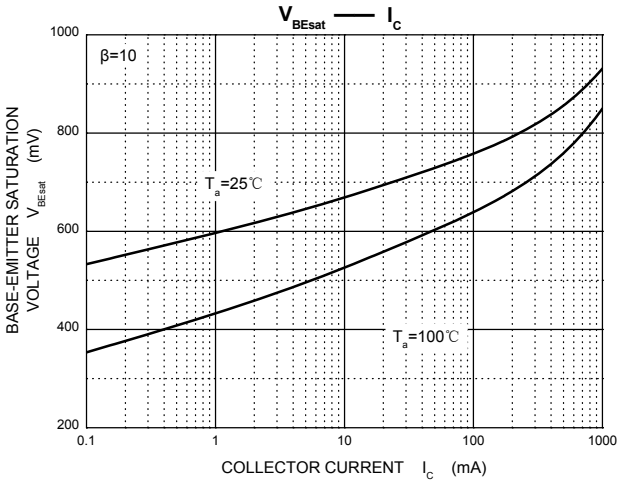
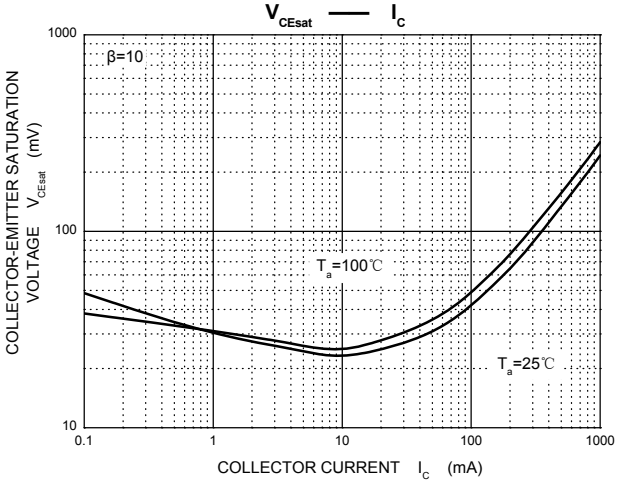
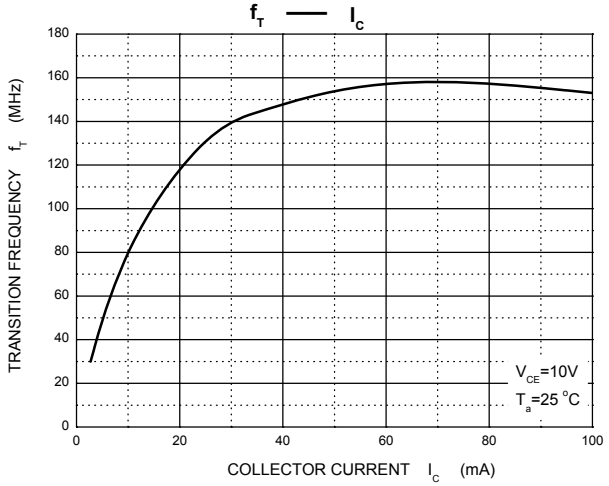
Typical Electrical Characteristic Curves

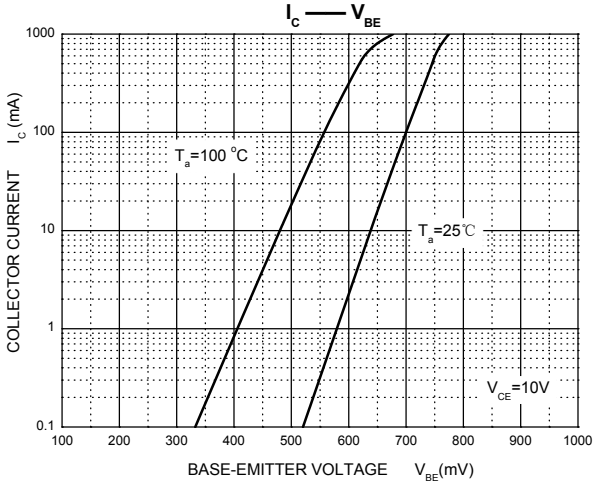




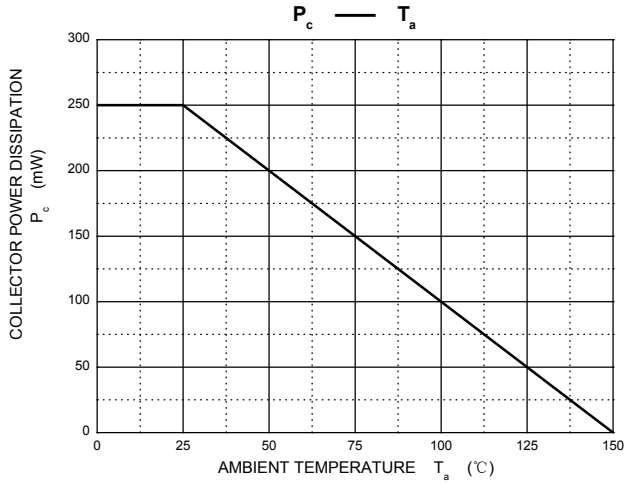




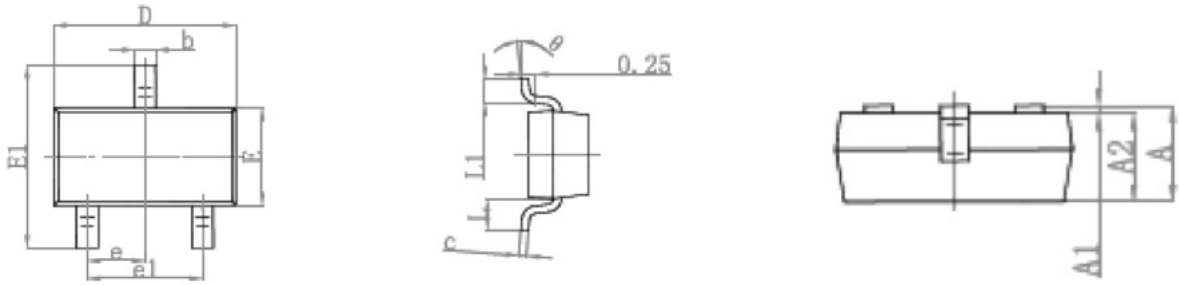




Typical Electrical Characteristic Curves

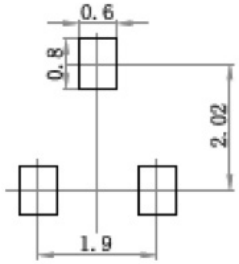


Package Outline Dimensions (SOT-23)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

Suggested Pad Layout



Note:
1.Controlling dimension:in millimeters.
2.General tolerance:± 0.05mm.
3.The pad layout is for reference purposes only.