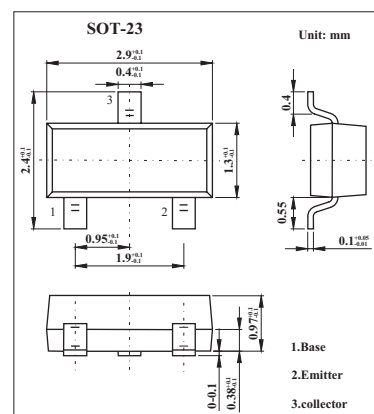


High Voltage Transistors

MMBTA93

■ Features

- PNP Silicon

■ Absolute Maximum Ratings $T_a = 25^\circ\text{C}$

Parameter	Symbol	Rating	Unit
Collector-emitter voltage	V_{CEO}	-200	V
Collector-base voltage	V_{CBO}	-200	V
Emitter-base voltage	V_{EBO}	-5	V
Collector current-continuous	I_C	-500	mA
Total device dissipation FR-5 board *1	P_D		
@ $T_A = 25^\circ\text{C}$		225	mW
Derate above 25°C		1.8	mW/ $^\circ\text{C}$
Thermal resistance, junction-to-ambient	$R_{\theta JA}$	556	$^\circ\text{C}/\text{W}$
Total device dissipation alumina substrate *2	P_D		
@ $T_A = 25^\circ\text{C}$		300	mW
derate above 25°C		2.4	mW/ $^\circ\text{C}$
Thermal resistance, junction-to-ambient	$R_{\theta JA}$	417	$^\circ\text{C}/\text{W}$
Junction and storage temperature	T_J, T_{stg}	-55 to +150	$^\circ\text{C}$

* 1. FR-5 = 1.0 X 0.75 X 0.062 in.

* 2. Alumina = 0.4 X 0.3 X 0.024 in. 99.5% alumina.

MMBTA93■ Electrical Characteristics $T_a = 25^\circ\text{C}$

Parameter	Symbol	Testconditions	Min	Typ	Max	Unit
Collector-emitter breakdown voltage *	$V_{(BR)CEO}$	$I_C = -1.0\text{ mA}, I_B = 0$	-200			V
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C = -100\text{ }\mu\text{A}, I_E = 0$	-200			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E = -100\text{ }\mu\text{A}, I_C = 0$	-5			V
Collector cutoff current	I_{CBO}	$V_{CB} = -160\text{ V}, I_E = 0$			-0.25	μA
Emitter cutoff current	I_{EBO}	$V_{EB} = -3.0\text{ V}, I_C = 0$			-0.1	μA
DC current gain *	h_{FE}	$I_C = -1.0\text{ mA}, V_{CE} = -10\text{ V}$	25			
		$I_C = -10\text{ mA}, V_{CE} = -10\text{ V}$	40			
		$I_C = -30\text{ mA}, V_{CE} = -10\text{ V}$	25			
Collector-emitter saturation voltage *	$V_{CE(sat)}$	$I_C = -20\text{ mA}, I_B = -2.0\text{ mA}$			-0.5	V
Base-emitter saturation voltage *	$V_{BE(sat)}$	$I_C = -20\text{ mA}, I_B = -2.0\text{ mA}$			-0.9	V
Current-gain - bandwidth product	f_T	$I_C = -10\text{ mA}, V_{CE} = -20\text{ V}, f = 100\text{ MHz}$	50			MHz
Collector-base capacitance	C_{cb}	$V_{CB} = -20\text{ V}, I_E = 0, f = 1.0\text{ MHz}$			8	pF

* Pulse Test: Pulse Width $\leq 300\text{ }\mu\text{s}$, Duty Cycle $\leq 2.0\%$.

■ Marking

Marking	2E
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