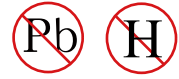




High Voltage Transistor

PNP Silicon



MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	-300	Vdc
Collector-Base Voltage	V_{CBO}	-300	Vdc
Emitter-Base Voltage	V_{EBO}	-5.0	Vdc
Collector Current — Continuous	I_C	-500	mAdc

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Total Device Dissipation FR-5 Board, (1) $T_A = 25^\circ\text{C}$	P_D	225	mW
Derate above 25°C		1.8	mW/ $^\circ\text{C}$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	556	$^\circ\text{C/W}$
Total Device Dissipation Alumina Substrate, (2) $T_A = 25^\circ\text{C}$	P_D	300	mW
Derate above 25°C		2.4	mW/ $^\circ\text{C}$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	417	$^\circ\text{C/W}$
Junction and Storage Temperature	T_J, T_{stg}	-55 to +150	$^\circ\text{C}$

DEVICE MARKING

MMBTA92 = 2D, MMBTA93 = 2E

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

Characteristic	Symbol	Min	Max	Unit
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OFF CHARACTERISTICS

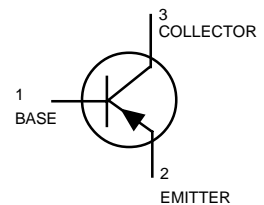
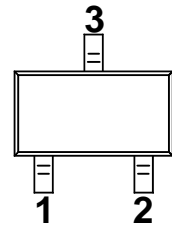
Collector-Emitter Breakdown Voltage(3) ($I_C = -1.0 \text{ mAdc}, I_E = 0$)	MMBTA92	$V_{(BR)CEO}$	-300	—	Vdc
Collector-Emitter Breakdown Voltage ($I_C = -100 \mu\text{Adc}, I_E = 0$)	MMBTA92	$V_{(BR)CBO}$	-300	—	Vdc
Emitter-Base Breakdown Voltage ($I_E = -100 \mu\text{Adc}, I_C = 0$)		$V_{(BR)EBO}$	-5.0	—	Vdc
Collector Cutoff Current ($V_{CB} = -200 \text{ Vdc}, I_E = 0$)	MMBTA92	I_{CBO}	—	-0.25	nAdc
Collector Cutoff Current ($V_{CB} = -3.0 \text{ Vdc}, I_C = 0$)		I_{EBO}	—	-0.1	μAdc

1. FR-5 = $1.0 \times 0.75 \times 0.062 \text{ in.}$

2. Alumina = $0.4 \times 0.3 \times 0.024 \text{ in.}$ 99.5% alumina.

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

SOT-23 (TO-236AB)



DEVICE CHARACTERISTICS

MMBTA92

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

Characteristic	Symbol	Min	Max	Unit
ON CHARACTERISTICS (3)				
DC Current Gain ($I_C = -1.0\text{mA}$, $V_{CE} = -10\text{V}$)	h_{FE}	25	—	—
($I_C = -10\text{mA}$, $V_{CE} = -10\text{V}$)	MMBTA92	40	—	
($I_C = -30\text{mA}$, $V_{CE} = -10\text{V}$)	MMBTA92	25	—	
Collector-Emitter Saturation Voltage ($I_C = -20\text{mA}$, $I_B = -2.0\text{mA}$)	$V_{CE(sat)}$	—	-0.5	Vdc
Base-Emitter Saturation Voltage ($I_C = -20\text{mA}$, $I_B = -2.0\text{mA}$)	$V_{BE(sat)}$	—	-0.9	Vdc
SMALL-SIGNAL CHARACTERISTICS				
Current-Gain — Bandwidth Product(3),(4) ($I_C = -10\text{mA}$, $V_{CE} = -20\text{V}$, $f = 100\text{MHz}$)	f_T	50	—	MHz
Collector – Base Capacitance ($V_{CB} = -20\text{V}$, $I_E = 0$, $f = 1.0\text{MHz}$)	C_{cb}	—	6.0	pF

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

DEVICE CHARACTERISTICS

MMBTA92

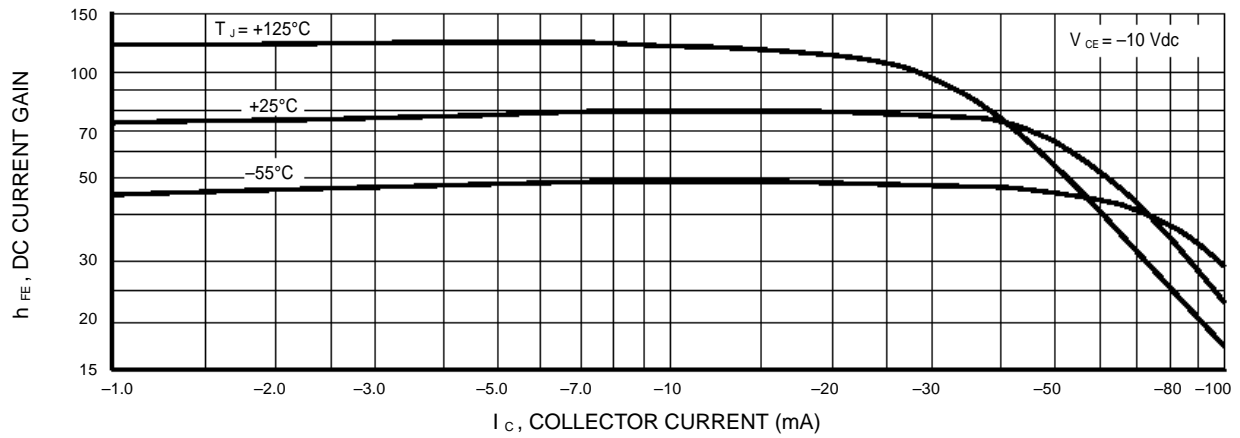


Figure 1. DC Current Gain

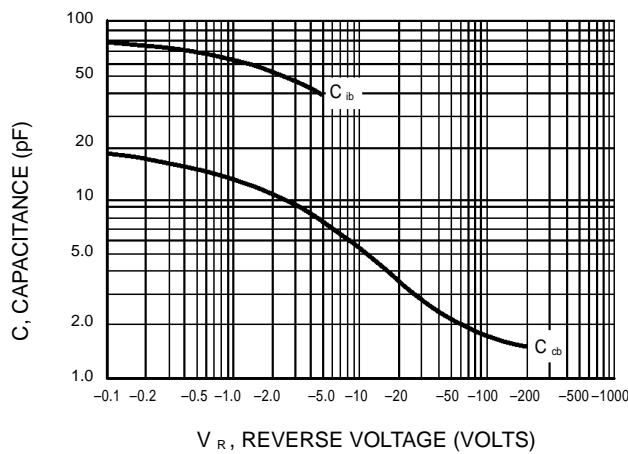


Figure 2. Capacitances

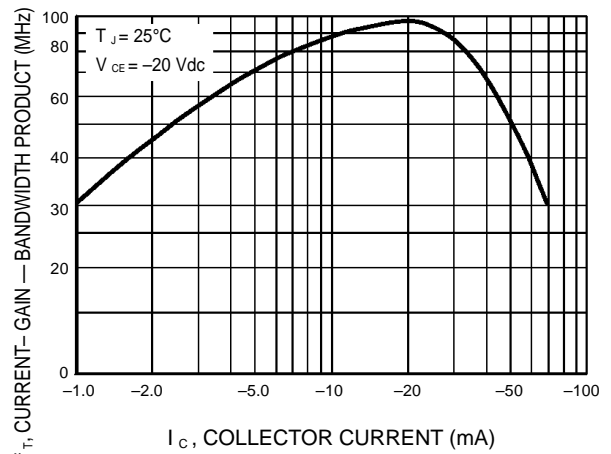


Figure 3. Current-Gain — Bandwidth Product

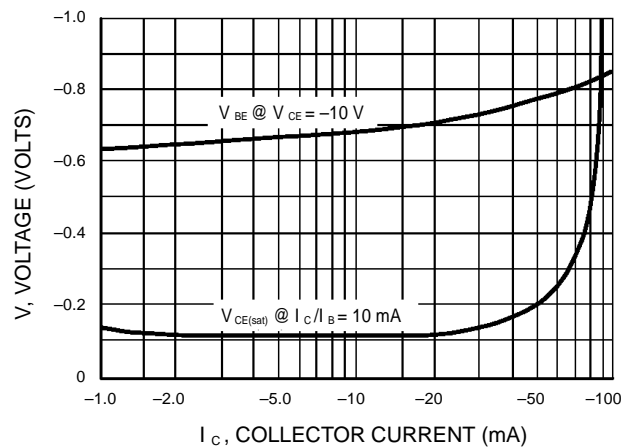


Figure 4. "On" Voltages

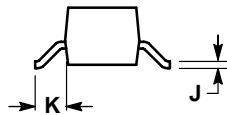
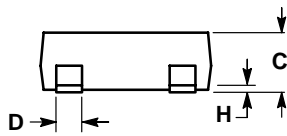
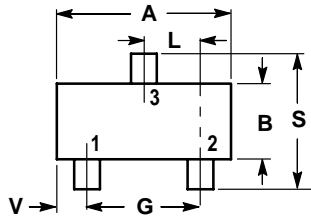
PACKAGE OUTLINE & DIMENSIONS

MMBTA92

SOT-23

NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982
2. CONTROLLING DIMENSION: INCH.



DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.1102	0.1197	2.80	3.04
B	0.0472	0.0551	1.20	1.40
C	0.0350	0.0440	0.89	1.11
D	0.0150	0.0200	0.37	0.50
E	0.0701	0.0807	1.78	2.04
F	0.0005	0.0040	0.013	0.100
G	0.0034	0.0070	0.085	0.177
H	0.0140	0.0285	0.35	0.69
I	0.0350	0.0401	0.89	1.02
J	0.0830	0.1039	2.10	2.64
K	0.0177	0.0236	0.45	0.60

