High Voltage Transistor
PNP Silicon

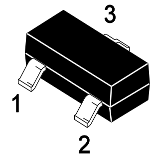
MBTA92
MBTA93
S-MBTA92
S-MBTA93

FEATURE

- High voltage.
- For Telephony or Professional communication equipment applications.
- We declare that the material of product compliance with RoHS requirements.
- S- Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable.

DEVICE MARKING AND ORDERING INFORMATION

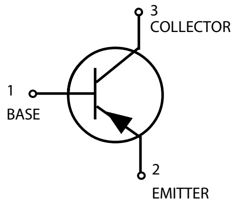
Device	Marking	Shipping
(S-)MBTA92	2D	3000/Tape&Reel
(S-)MBTA93	2E	3000/Tape&Reel



SOT23

MAXIMUM RATINGS

Rating	Symbol	Value MBTA92	Value MBTA93	Unit
Collector–Emitter Voltage	V_{CEO}	–300	–200	Vdc
Collector–Base Voltage	V_{CBO}	–300	–200	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°C	P_D	225	mW
Derate above 25°C		1.8	mW/°C
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	556	°C/W
Total Device Dissipation Alumina Substrate, (2) T_A = 25°C	P_D	300	mW
Derate above 25°C		2.4	mW/°C
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	417	°C/W
Junction and Storage Temperature	T_J , T_{stg}	–55 to +150	°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.
3. Pulse Test: Pulse Width ≤ 300 µs, Duty Cycle ≤ 2.0%.

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted.)

Characteristic		Symbol	Min	Max	Unit
OFF CHARACTERISTICS					
Collector–Emitter Breakdown Voltage(3)		$V_{(BR)CEO}$			Vdc
(I_C = –1.0 mAdc, I_B = 0)	MBTA92		–300	—	
	MBTA93		–200	—	
Collector–Emitter Breakdown Voltage		$V_{(BR)CBO}$			Vdc
(I_C = –100 µAdc, I_E = 0)	MBTA92		–300	—	
	MBTA93		–200	—	
Emitter–Base Breakdown Voltage (I_E = –100 µAdc, I_C = 0)		$V_{(BR)EBO}$	–5.0	—	Vdc
Collector Cutoff Current		I_{CBO}			µAdc
(V_{CB} = –200Vdc, I_E = 0)			—	–0.1	
(V_{CB} = –300Vdc, I_E = 0)			—	–100	
Collector Cutoff Current		I_{EBO}			
(V_{EB} = –6.0Vdc, I_C = 0)			—	–0.05	µAdc
(V_{EB} = –5.0Vdc, I_C = 0)			—	–100	µAdc

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

Characteristic		Symbol	Min	Max	Unit
ON CHARACTERISTICS (3)					
DC Current Gain		h_{FE}			—
(I_C =–1.0mAdc, V_{CE} = –10 Vdc)	Both Types		25	—	
(I_C = –10 mAdc, V_{CE} = –10Vdc)	Both Types		40	—	
(I_C = –30mAdc, V_{CE} =–10 Vdc)	MBTA92		25	—	
	MBTA93		25	—	
Collector–Emitter Saturation Voltage		$V_{CE(sat)}$			Vdc
(I_C = –20mAdc, I_B = –2.0 mAdc)	MBTA92		—	–0.5	
	MBTA93		—	–0.5	
Base–Emitter Saturation Voltage (I_C = –20mAdc, I_B = –2.0 mAdc)		$V_{BE(sat)}$	—	–0.9	Vdc
SMALL–SIGNAL CHARACTERISTICS					
Current–Gain — Bandwidth Product(3),(4) (I_C = –10mAdc, V_{CE}= –20Vdc, f = 100MHz)		f_T	50	—	MHz
Collector – Base Capacitance		C_{cb}			pF
(V_{CB} = –20 Vdc, I_E = 0, f = 1.0 MHz)	MBTA92		—	6.0	
	MBTA93		—	8.0	

3. Pulse Test: Pulse Width ≤ 300 µs, Duty Cycle ≤ 2.0%.

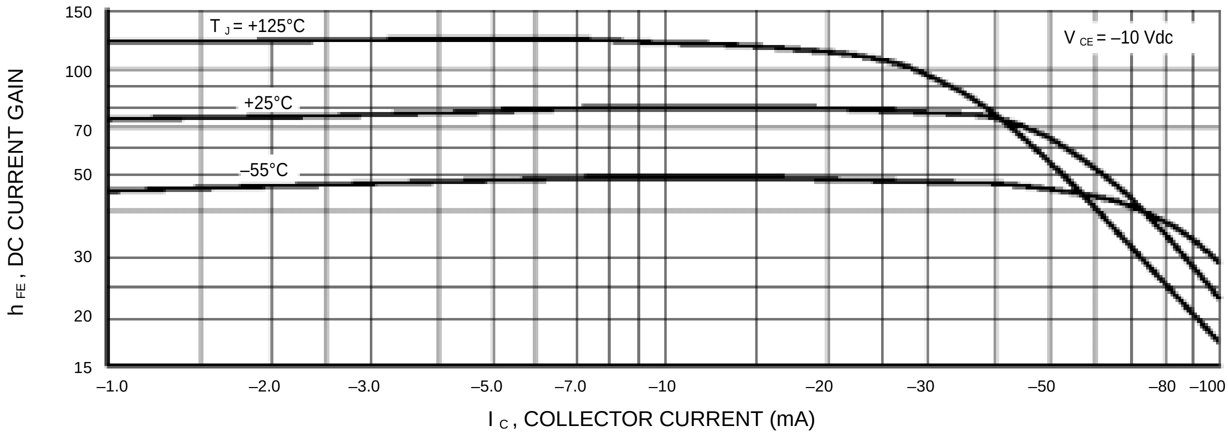


Figure 1. DC Current Gain

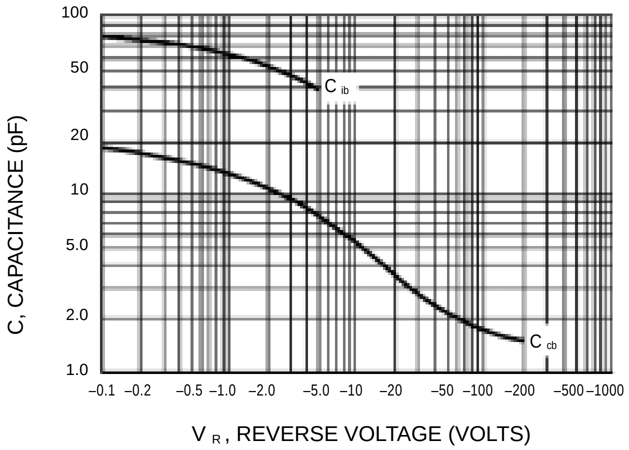


Figure 2. Capacitances

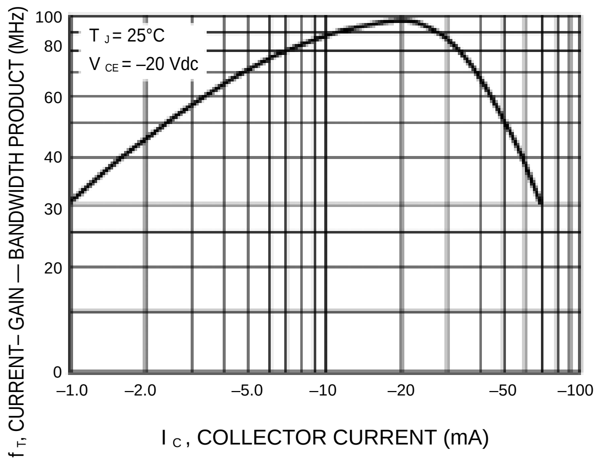


Figure 3. Current–Gain — Bandwidth Product

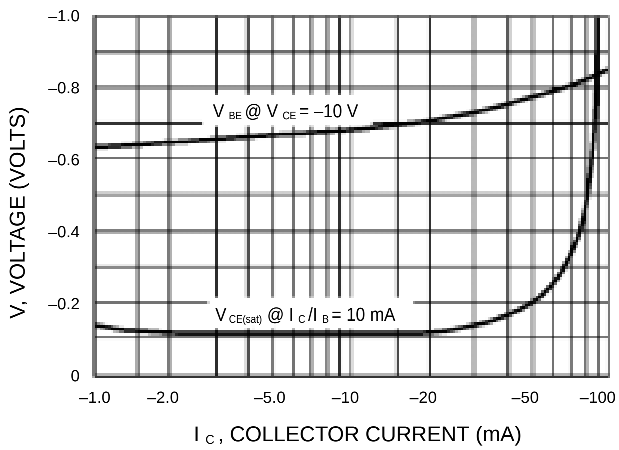
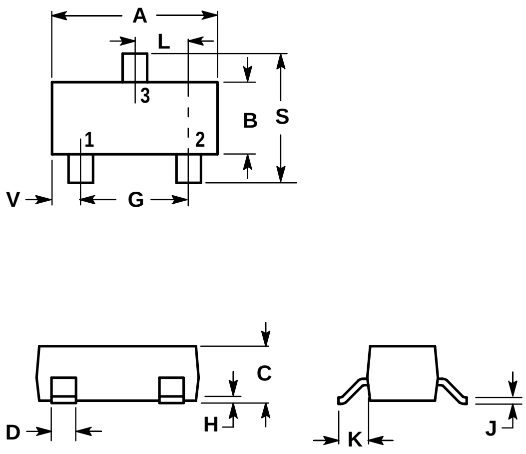


Figure 4. "On" Voltages

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
G	0.0701	0.0807	1.78	2.04
H	0.0005	0.0040	0.013	0.100
J	0.0034	0.0070	0.085	0.177
K	0.0140	0.0285	0.35	0.69
L	0.0350	0.0401	0.89	1.02
S	0.0830	0.1039	2.10	2.64
V	0.0177	0.0236	0.45	0.60