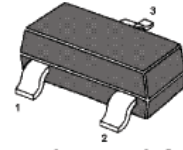


NPN Silicon High Voltage Transistors

for high voltage switching and amplifier applications.


 1. Base 2. Emitter 3. Collector
SOT-23 Plastic Package

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

Parameter	Symbol	Value	Unit	
Collector Base Voltage	MMBTA42 MMBTA43	V_{CBO}	300 200	V
Collector Emitter Voltage	MMBTA42 MMBTA43	V_{CEO}	300 200	V
Emitter Base Voltage		V_{EBO}	6	V
Collector Current		I_C	500	mA
Power Dissipation		P_{tot}	350	mW
Thermal Resistance Junction to Ambient		$R_{\theta JA}$	357	$^\circ\text{C/W}$
Junction and Storage Temperature Range		T_J, T_{stg}	- 55 to + 150	$^\circ\text{C}$

Characteristics at $T_a = 25\text{ }^\circ\text{C}$

Parameter	Symbol	Min.	Max.	Unit
DC Current Gain				
at $V_{CE} = 10\text{ V}, I_C = 1\text{ mA}$	h_{FE}	25	-	-
at $V_{CE} = 10\text{ V}, I_C = 10\text{ mA}$	h_{FE}	80	200	-
at $V_{CE} = 10\text{ V}, I_C = 30\text{ mA}$	h_{FE}	40	-	-
Collector Base Cutoff Current				
at $V_{CB} = 200\text{ V}$	MMBTA42 I_{CBO}	-	0.1	μA
at $V_{CB} = 160\text{ V}$	MMBTA43 I_{CBO}	-	0.1	μA
Emitter Base Cutoff Current				
at $V_{EB} = 6\text{ V}$	MMBTA42 I_{EBO}	-	0.1	μA
at $V_{EB} = 4\text{ V}$	MMBTA43 I_{EBO}	-	0.1	μA
Collector Base Breakdown Voltage				
at $I_C = 100\text{ }\mu\text{A}$	MMBTA42 $V_{(BR)CBO}$	300	-	V
	MMBTA43 $V_{(BR)CBO}$	200	-	V
Collector Emitter Breakdown Voltage				
at $I_C = 1\text{ mA}$	MMBTA42 $V_{(BR)CEO}$	300	-	V
	MMBTA43 $V_{(BR)CEO}$	200	-	V
Emitter Base Breakdown Voltage				
at $I_E = 100\text{ }\mu\text{A}$	$V_{(BR)EBO}$	6	-	V
Collector Emitter Saturation Voltage				
at $I_C = 20\text{ mA}, I_B = 2\text{ mA}$	$V_{CE(sat)}$	-	0.5	V
Base Emitter Saturation Voltage				
at $I_C = 20\text{ mA}, I_B = 2\text{ mA}$	$V_{BE(sat)}$	-	0.9	V
Gain Bandwidth Product				
at $V_{CE} = 20\text{ V}, I_C = 10\text{ mA}, f = 100\text{ MHz}$	f_T	50	-	MHz
Collector Output Capacitance				
at $V_{CB} = 20\text{ V}, f = 1\text{ MHz}$	MMBTA42 MMBTA43	C_{ob}	- 3 4	pF

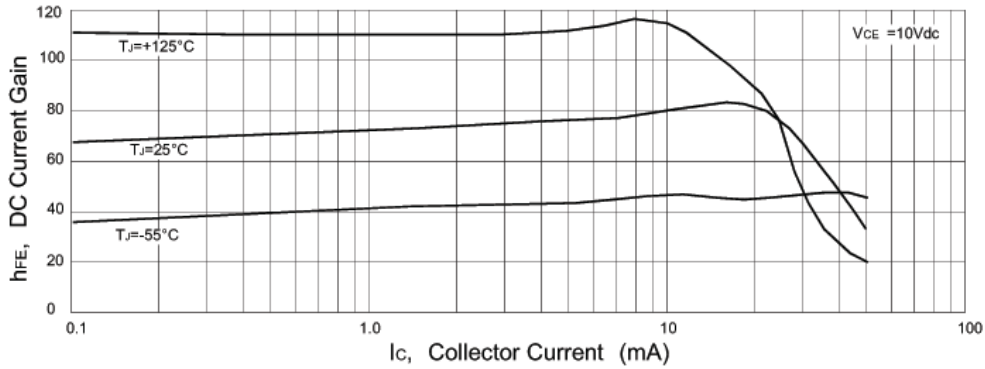


Figure 1. DC Current Gain

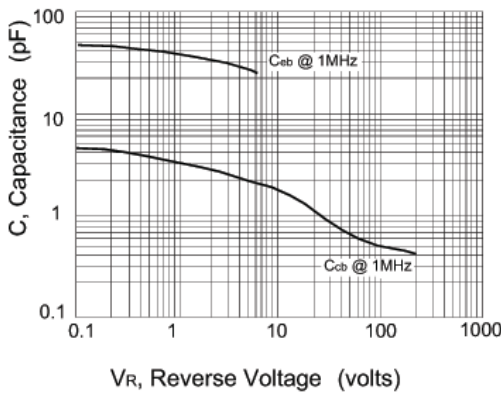


Figure 2. Capacitance

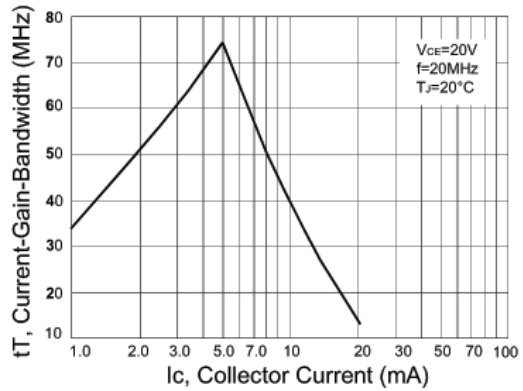


Figure 3. Current-Gain-Bandwidth

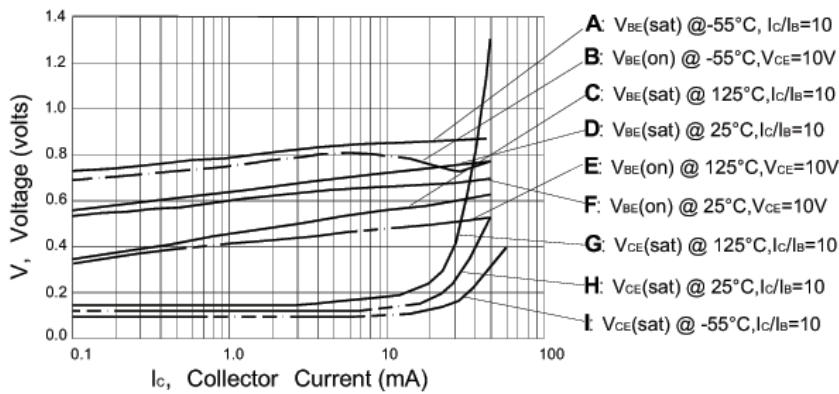


Figure 4. "on" Voltages

- A: $V_{BE(sat)}$ @ $-55^{\circ}C, I_c/I_b=10$
- B: $V_{BE(on)}$ @ $-55^{\circ}C, V_{CE}=10V$
- C: $V_{BE(sat)}$ @ $125^{\circ}C, I_c/I_b=10$
- D: $V_{BE(sat)}$ @ $25^{\circ}C, I_c/I_b=10$
- E: $V_{BE(on)}$ @ $125^{\circ}C, V_{CE}=10V$
- F: $V_{BE(on)}$ @ $25^{\circ}C, V_{CE}=10V$
- G: $V_{CE(sat)}$ @ $125^{\circ}C, I_c/I_b=10$
- H: $V_{CE(sat)}$ @ $25^{\circ}C, I_c/I_b=10$
- I: $V_{CE(sat)}$ @ $-55^{\circ}C, I_c/I_b=10$