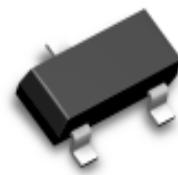
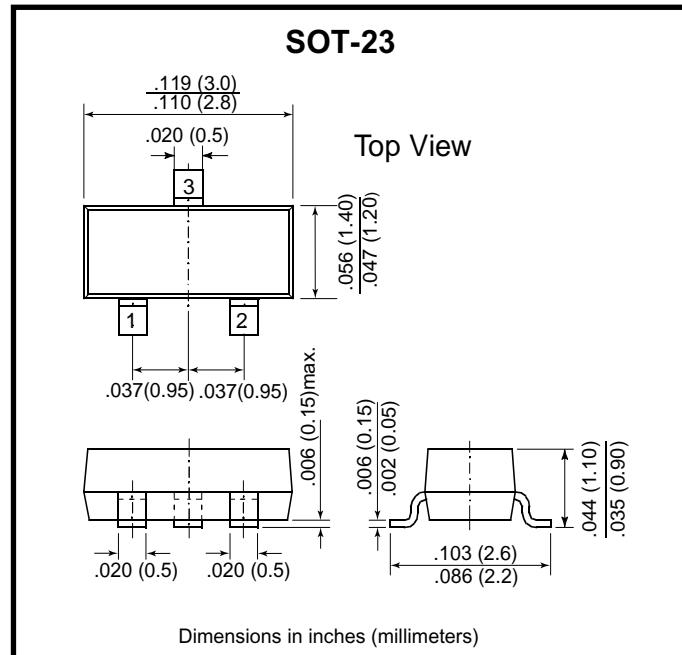
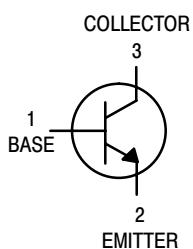


MMBTA42, MMBTA43 NPN Silicon Type



Features

This device is designed for application as a video output to drive color CRT and other high voltage applications



MAXIMUM RATINGS

Rating	Symbol	MMBTA42	MMBTA43	Unit
Collector-Emitter Voltage	V_{CEO}	300	200	Vdc
Collector-Base Voltage	V_{CBO}	300	200	Vdc
Emitter-Base Voltage	V_{EBO}	6.0	6.0	Vdc
Collector Current-Continuous	I_C	500		mAdc

THERMAL CHARACTERISTICS

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

High Voltage Transistors

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

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector–Emitter Breakdown Voltage (Note 3) ($I_C = 1.0 \text{ mA}_\text{dc}$, $I_B = 0$)	$V_{(\text{BR})\text{CEO}}$ MMBTA42 MMBTA43	300 200	— —	Vdc
Collector–Base Breakdown Voltage ($I_C = 100 \mu\text{A}_\text{dc}$, $I_E = 0$)	$V_{(\text{BR})\text{CBO}}$ MMBTA42 MMBTA43	300 200	— —	Vdc
Emitter–Base Breakdown Voltage ($I_E = 100 \mu\text{A}_\text{dc}$, $I_C = 0$)	$V_{(\text{BR})\text{EBO}}$	6.0	—	Vdc
Collector Cutoff Current ($V_{CB} = 200 \text{ Vdc}$, $I_E = 0$) ($V_{CB} = 160 \text{ Vdc}$, $I_E = 0$)	I_{CBO} MMBTA42 MMBTA43	— —	0.1 0.1	μA_dc
Emitter Cutoff Current ($V_{EB} = 6.0 \text{ Vdc}$, $I_C = 0$) ($V_{EB} = 4.0 \text{ Vdc}$, $I_C = 0$)	I_{EBO} MMBTA42 MMBTA43	— —	0.1 0.1	μA_dc

ON CHARACTERISTICS (Note 3)

DC Current Gain ($I_C = 1.0 \text{ mA}_\text{dc}$, $V_{CE} = 10 \text{ Vdc}$) ($I_C = 10 \text{ mA}_\text{dc}$, $V_{CE} = 10 \text{ Vdc}$)	Both Types Both Types	h_{FE}	25 40	— —	—
($I_C = 30 \text{ mA}_\text{dc}$, $V_{CE} = 10 \text{ Vdc}$)	MMBTA42 MMBTA43		40 40	— —	
Collector–Emitter Saturation Voltage ($I_C = 20 \text{ mA}_\text{dc}$, $I_B = 2.0 \text{ mA}_\text{dc}$)	MMBTA42 MMBTA43	$V_{CE(\text{sat})}$	— —	0.5 0.5	Vdc
Base–Emitter Saturation Voltage ($I_C = 20 \text{ mA}_\text{dc}$, $I_B = 2.0 \text{ mA}_\text{dc}$)		$V_{BE(\text{sat})}$	—	0.9	Vdc

SMALL-SIGNAL CHARACTERISTICS

Current–Gain – Bandwidth Product ($I_C = 10 \text{ mA}_\text{dc}$, $V_{CE} = 20 \text{ Vdc}$, $f = 100 \text{ MHz}$)		f_T	50	—	MHz
Collector–Base Capacitance ($V_{CB} = 20 \text{ Vdc}$, $I_E = 0$, $f = 1.0 \text{ MHz}$)	MMBTA42 MMBTA43	C_{cb}	— —	3.0 4.0	pF

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

Rating and Characteristic Curves (MMBTA42, MMBTA43)

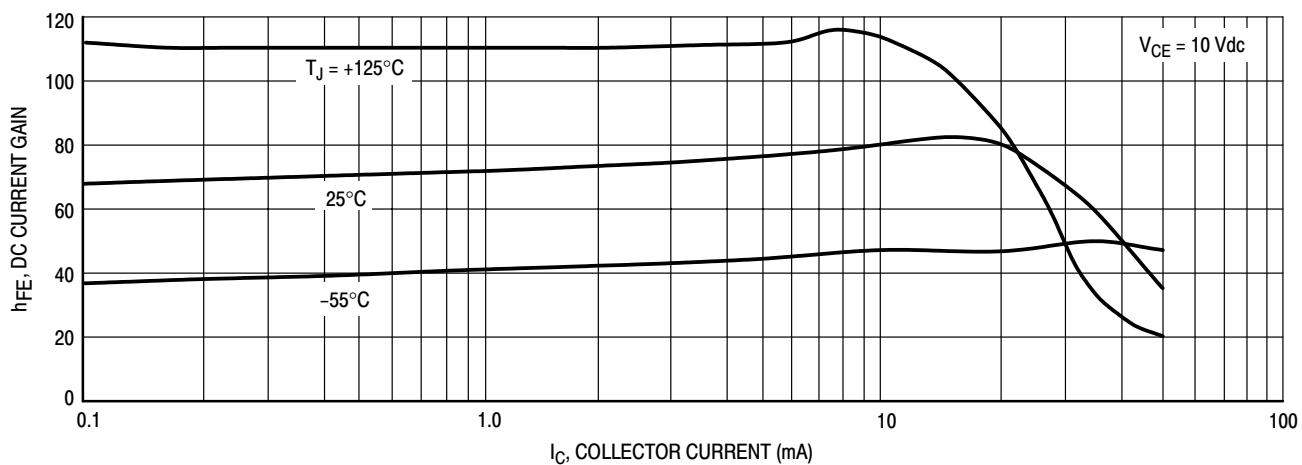


Figure 1. DC Current Gain

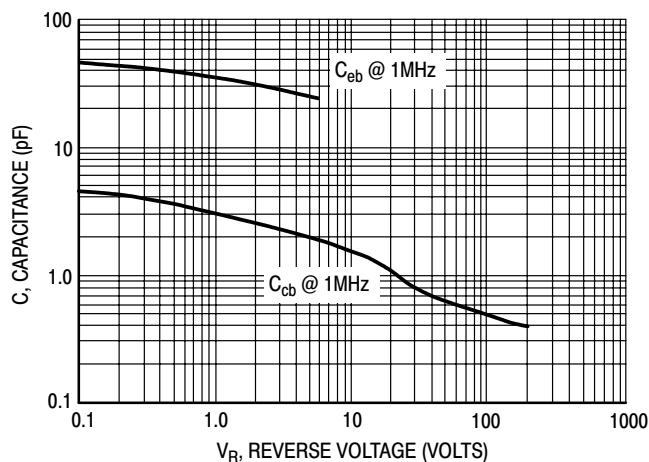


Figure 2. Capacitance

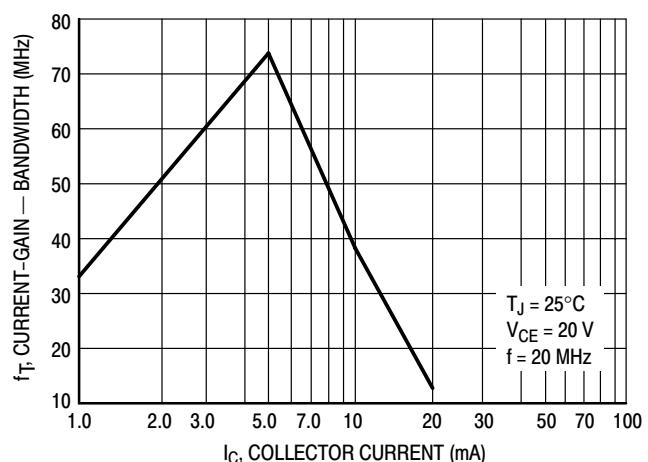


Figure 3. Current–Gain – Bandwidth

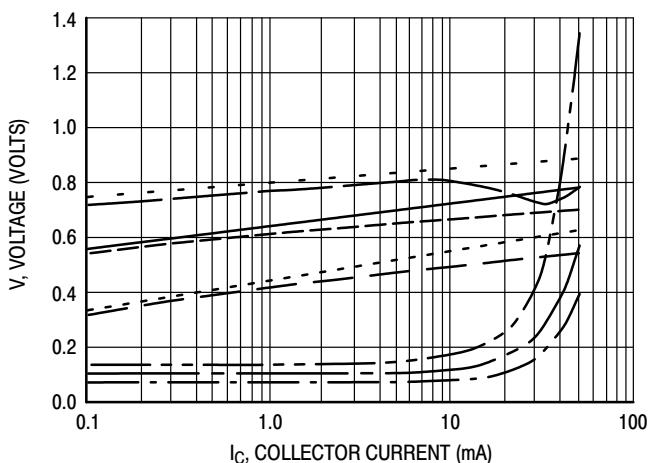


Figure 4. "ON" Voltages