MMBTA42

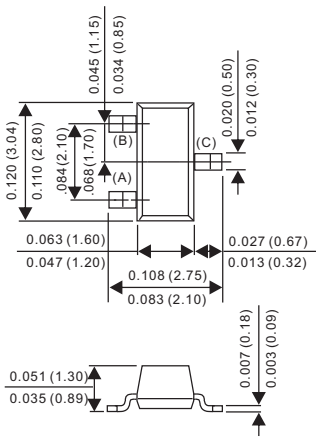
High Voltage NPN Transistor

Features

- High voltage
- For telephony or professional communication equipment applications
- Lead-free parts for green partner, exceeds environmental standards of MIL-STD-19500 /228
- Suffix "-H" indicates Halogen-free part, ex. MMBTA42-H

Package outline

SOT-23



Dimensions in inches and (millimeters)

Mechanical data

- Epoxy:UL94-V0 rated flame retardant
- Case : Molded plastic, SOT-23
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026
- Mounting Position : Any
- Weight : Approximated 0.008 gram

Maximum ratings (AT T_A=25°C unless otherwise noted)

PARAMETER	SYMBOL	Value	UNIT
Collector-base voltage	V_{CBO}	300	Vdc
Collector-emitter voltage	V_{CEO}	300	Vdc
Emitter-base voltage	V_{EBO}	6.0	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 (1)	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(2)	Junction to ambient	$R_{\theta JA}$	417	°C/W
Operating junction temperature range		T_J	-55 to +150	°C
Storage temperature range		T_{STG}	-55 to +150	°C

1. FR-5 = 1.0 X 0.75 X0.062 in.
2. Alumina = 0.4 X 0.3 X 0.024 in. 99.5% alumina.

Electrical characteristics (AT T_A=25°C unless otherwise noted)

Off characteristics

PARAMETER	CONDITIONS	SYMBOL	Min.	Max.	UNIT
Collector-base breakdown voltage	I_C = 100μAdc, I_E = 0	$V_{(BR)CBO}$	300		Vdc
Collector-emitter breakdown voltage(3)	I_C= 1.0mAdc, I_B = 0	$V_{(BR)CEO}$	300		Vdc
Emitter-base breakdown voltage	I_E = 100μAdc, I_C = 0	$V_{(BR)EBO}$	6.0		Vdc
Emitter cutoff current	V_{EB} = 6.0Vdc, I_C = 0	I_{EBO}		0.1	μAdc
Collector cutoff current	V_{CB} = 200Vdc, I_E = 0	I_{CBO}		0.1	μAdc

On characteristics(3)

PARAMETER	CONDITIONS	SYMBOL	Min.	Max.	UNIT
DC current gain Both types Both types MMBTA42	 I_C = 1.0mAdc, V_{CE} =10Vdc I_C= 10mAdc, V_{CE} = 10Vdc	h_{FE}	 25 40 40		
Collector-emitter saturation voltage	I_C = 20mAdc, I_B = 2.0mAdc	$V_{CE(sat)}$		0.5	Vdc
Base-emitter saturation voltage	I_C = 20mAdc, I_B = 2.0mAdc	$V_{BE(sat)}$		0.9	Vdc

Small signal characteristics

PARAMETER	CONDITIONS	SYMBOL	Min.	Max.	UNIT
Current gain bandwidth product	I_C = 10mA, V_{CE} = 20Vdc, f=100MHz	f_T	50		MHz
Collector−base capacitance	I_E = 0, V_{CB} = 20Vdc, f=1.0MHz	C_{cb}		3.0	pF

3. Pulse test: pulse width ≤300μs, duty cycle ≤2.0%

Rating and characteristic curves (MMBTA42)

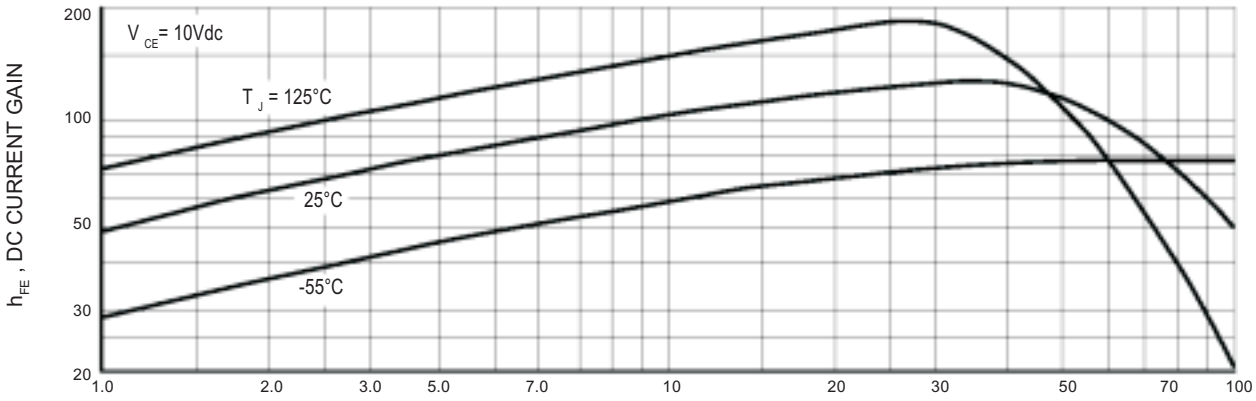


Figure 1. DC Current Gain

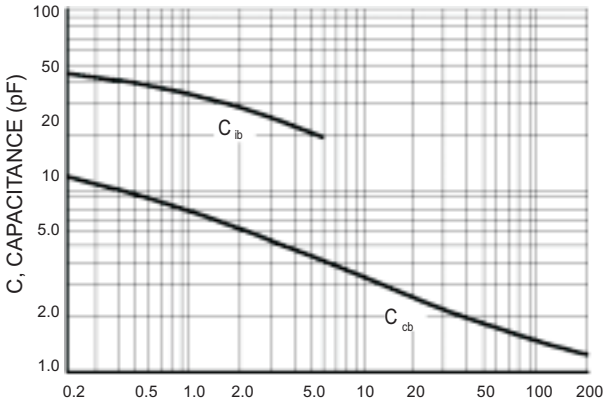


Figure 2. Capacitance

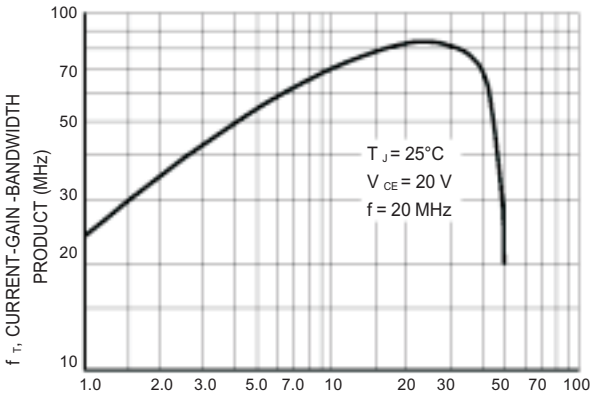


Figure 3. Current-Gain-Bandwidth Product

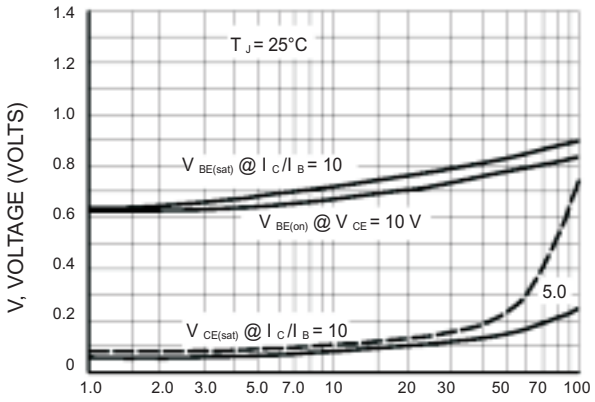
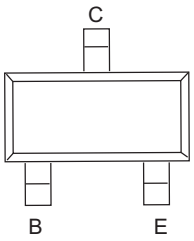
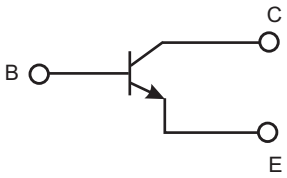


Figure 4. "on" Voltages

MMBTA42

High Voltage NPN Transistor

Pinning information

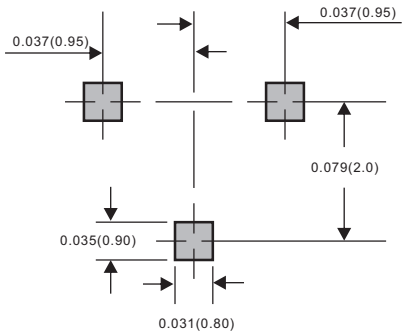
Pin	Simplified outline	Symbol
PinB Base PinC Collector PinE Emitter		

Marking

Type number	Marking code
MMBTA42	1D / M1E

Suggested solder pad layout

SOT-23



Dimensions in inches and (millimeters)

Reel packing

PACKAGE	REEL SIZE	REEL (pcs)	COMPONENT SPACING (m/m)	BOX (pcs)	INNER BOX (m/m)	REEL DIA, (m/m)	CARTON SIZE (m/m)	CARTON (pcs)	APPROX. GROSS WEIGHT (kg)
SOT-23	7"	3,000	4.0	30,000	183*123*183	178	382*257*387	240,000	11.6