

SOT-23 Plastic-Encapsulate Transistors

MMBTA42LT1

TRANSISTOR (NPN)

SOT-23



- 1. BASE
- 2. EMITTER
- 3. COLLECTOR

FEATURES

Power dissipation

$P_{CM} : 0.35 \text{ W (} T_{amb}=25^{\circ}\text{C)}$

MAXIMUM RATINGS* $T_A=25^{\circ}\text{C}$ unless otherwise noted

Symbol	Parameter	Value	Units
V_{CBO}	Collector-Base Voltage	310	V
V_{CEO}	Collector-Emitter Voltage	305	V
V_{EBO}	Emitter-Base Voltage	5	V
I_C	Collector Current -Continuous	500	mA
T_J, T_{stg}	Junction and Storage Temperature	-55-150	$^{\circ}\text{C}$
$R_{\theta JA}$	Thermal Resistance, junction to Ambient	200	$^{\circ}\text{C/mW}$
$R_{\theta JC}$	Thermal Resistance, unction to Case	83.3	$^{\circ}\text{C/mW}$

ELECTRICAL CHARACTERISTICS ($T_{amb}=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Test conditions	MIN	MAX	UNIT
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C=100\mu\text{A}, I_E=0$	310		V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C=1 \text{ mA}, I_B=0$	305		V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E=100\mu\text{A}, I_C=0$	5		V
Collector cut-off current	I_{CBO}	$V_{CB}=200\text{V}, I_E=0$		0.25	μA
Emitter cut-off current	I_{EBO}	$V_{EB}=5\text{V}, I_C=0$		0.1	μA
DC current gain	$H_{FE(1)}$	$V_{CE}=10\text{V}, I_C=1\text{mA}$	60		
	$H_{FE(2)}$	$V_{CE}=10\text{V}, I_C=10\text{mA}$	100	200	
	$H_{FE(3)}$	$V_{CE}=10\text{V}, I_C=30\text{mA}$	60		
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=20 \text{ mA}, I_B=2\text{mA}$		0.2	V
Base-emitter saturation voltage	$V_{BE(sat)}$	$I_C=20 \text{ mA}, I_B=2\text{mA}$		0.9	V
Transition frequency	f_T	$V_{CE}=20\text{V}, I_C=10\text{mA}$ $f=30\text{MHz}$	50		MHz

DEVICE MARKING

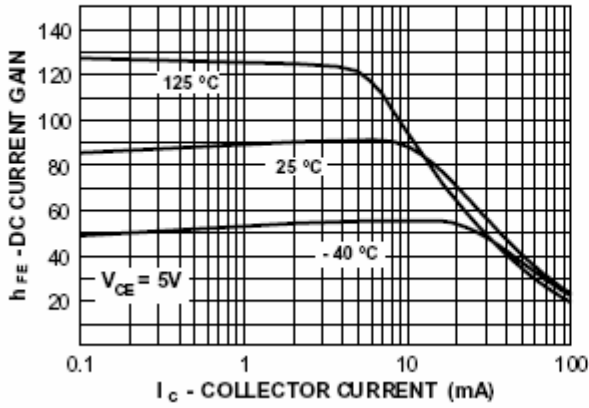
MMBTA42LT1=1D



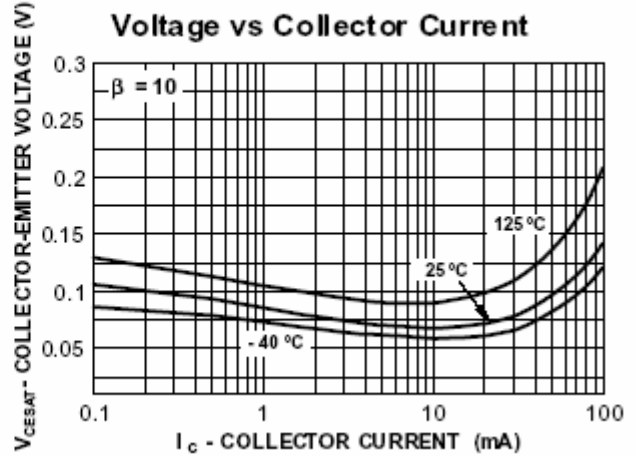
Typical Characteristics Typical Characteristics

MMBTA42LT1

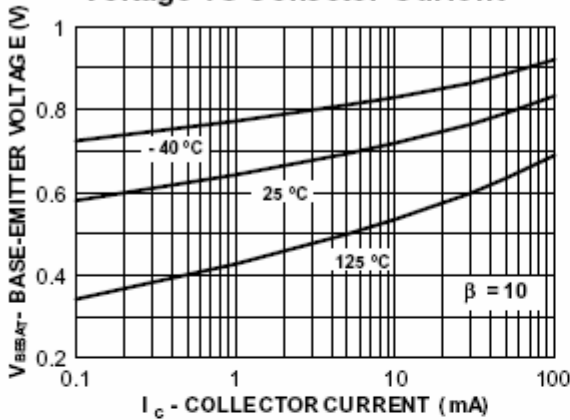
DC Current Gain vs Collector Current



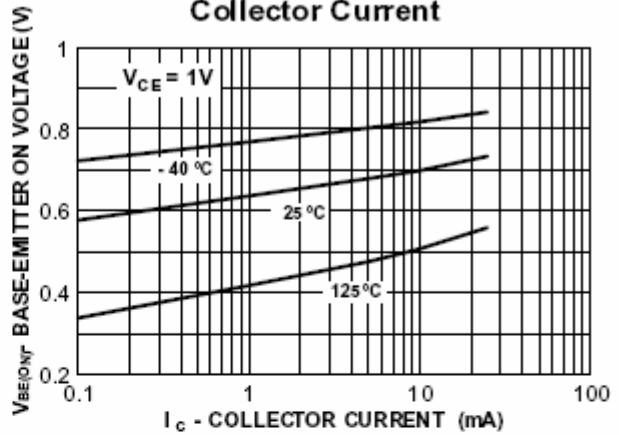
Collector-Emitter Saturation Voltage vs Collector Current



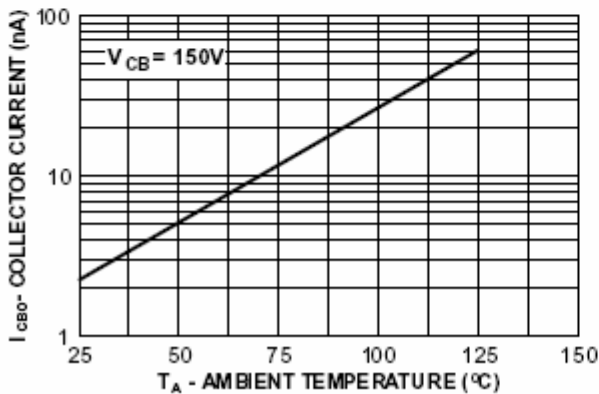
Base-Emitter Saturation Voltage vs Collector Current



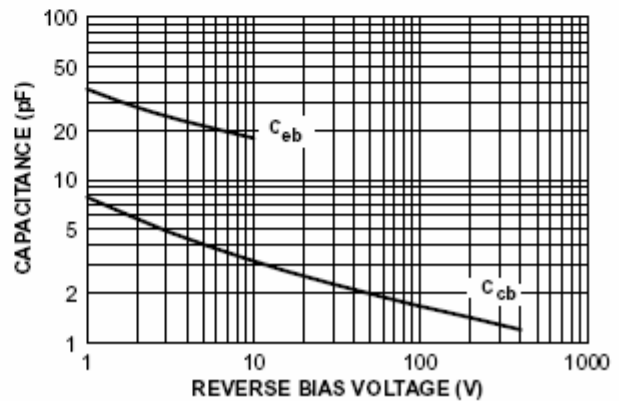
Base-Emitter ON Voltage vs Collector Current



Collector-Cutoff Current vs Ambient Temperature



Collector-Base and Emitter-Base Capacitance vs Reverse Bias Voltage





Power Dissipation vs Ambient Temperature

