

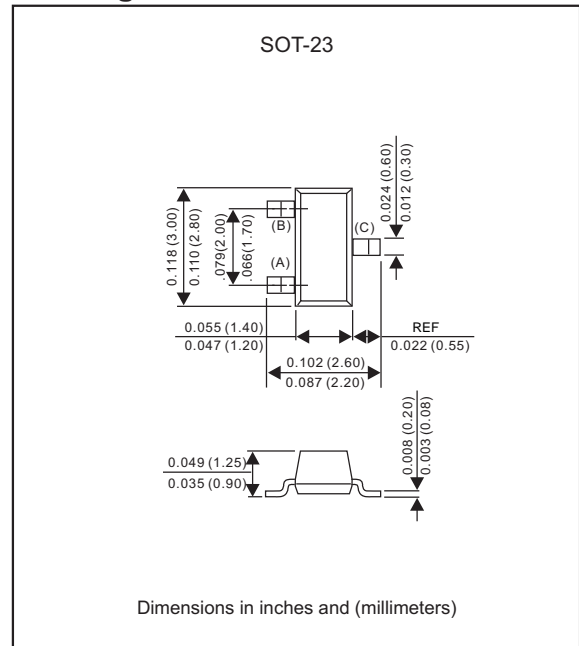
### Features

- High breakdown voltage
- Low collector-emitter saturation voltage
- High conductance
- Surface mount package
- Compliant to Halogen-free

### Mechanical data

- Epoxy:UL94-V0 rated flame retardant
- Case : SOT-23
- Terminals: Tin plated leads, solderable per J-STD-002 and JESD22-B102
- Mounting Position : Any

### Package outline



### Maximum ratings (AT $T_A=25^\circ\text{C}$ unless otherwise noted)

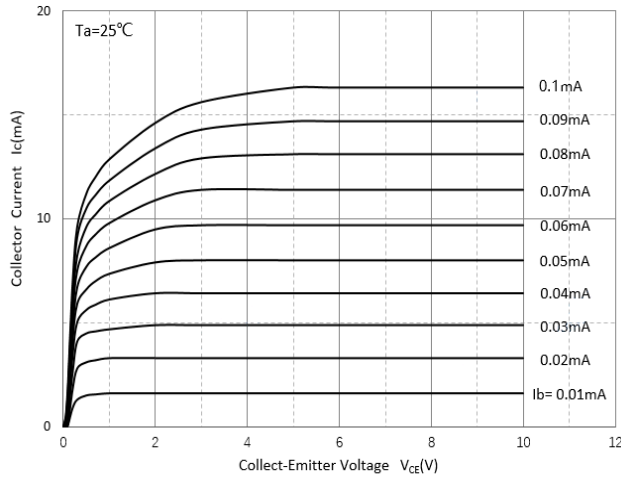
Item	Symbol	Unit	Value
Collector-Base Voltage	$V_{CBO}$	V	300
Collector-Emitter Voltage	$V_{CEO}$	V	300
Emitter-Base Voltage	$V_{EBO}$	V	5
Collector Current	$I_C$	mA	500
Collector Power Dissipation	$P_C$	mW	350
Thermal Resistance From Junction To Ambient	$R_{\theta JA}$	$^\circ\text{C}/\text{W}$	357
Operation Junction Temperature	$T_J$	$^\circ\text{C}$	150
Storage Temperature	$T_{stg}$	$^\circ\text{C}$	-55 to +150

### Electrical characteristics (AT $T_A=25^\circ\text{C}$ unless otherwise noted)

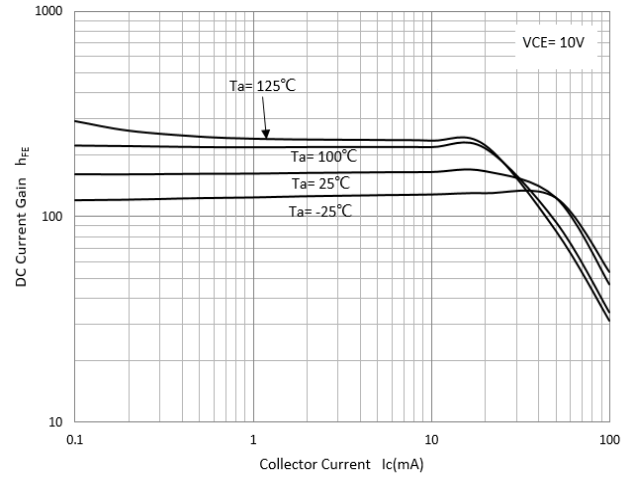
Item	Symbol	Unit	Conditions	Min	Typ	Max
Collector-base breakdown voltage	$V_{CBO}$	V	$I_C=100\mu\text{A}, I_E=0$	300		
Collector-emitter breakdown voltage	$V_{CEO}$	V	$I_C=1\text{mA}, I_B=0$	300		
Emitter-base breakdown voltage	$V_{EBO}$	V	$I_E=100\mu\text{A}, I_C=0$	5		
Collector-base cut-off current	$I_{CBO}$	$\mu\text{A}$	$V_{CB}=200\text{V}, I_E=0$			0.5
Emitter-base cut-off current	$I_{EBO}$	$\mu\text{A}$	$V_{EB}=5\text{V}, I_C=0$			0.5
DC current gain	$h_{FE(1)}$		$V_{CE}=10\text{V}, I_C=1\text{mA}$	25		
	$h_{FE(2)}$		$V_{CE}=10\text{V}, I_C=10\text{mA}$	40		300
	$h_{FE(3)}$		$V_{CE}=10\text{V}, I_C=30\text{mA}$	40		
Collector-emitter saturation voltage	$V_{CE(sat)}$	V	$I_C=20\text{mA}, I_B=2\text{mA}$			0.5
Base-emitter saturation voltage	$V_{BE(sat)}$	V	$I_C=20\text{mA}, I_B=2\text{mA}$			1.0
Transition frequency	$f_T$	MHz	$V_{CE}=20\text{V}, I_C=10\text{mA}, f=30\text{MHz}$	50		

## Typical characteristics

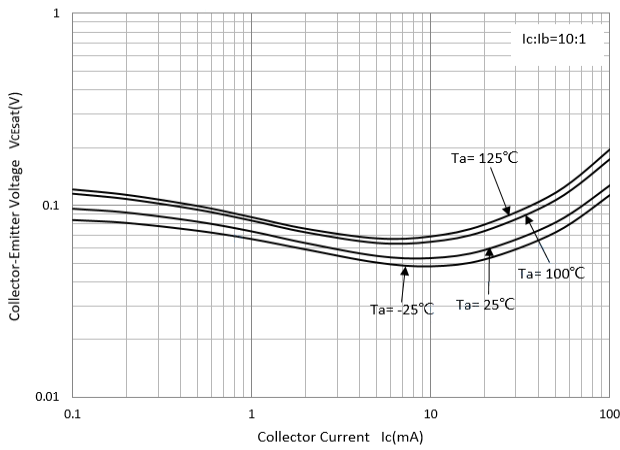
Static Characteristic



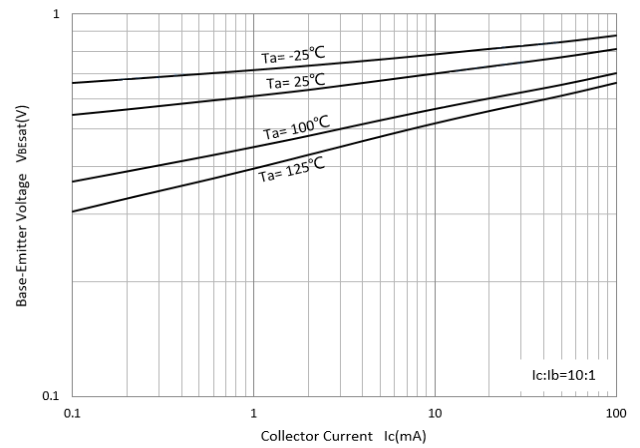
DC Current Gain



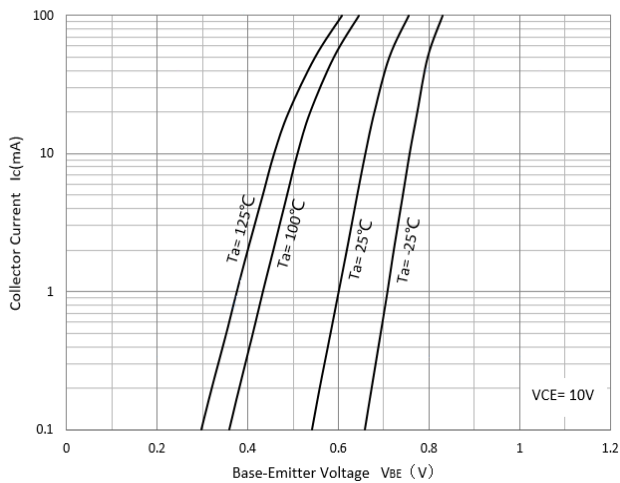
Collector-Emittor Saturation Voltage



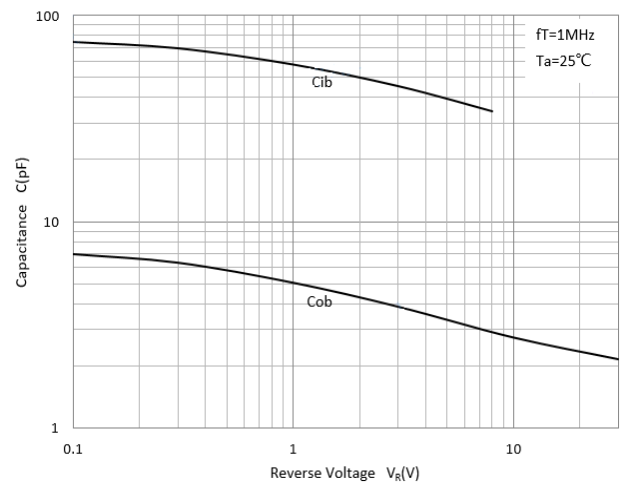
Base-Emittor Saturation Voltage



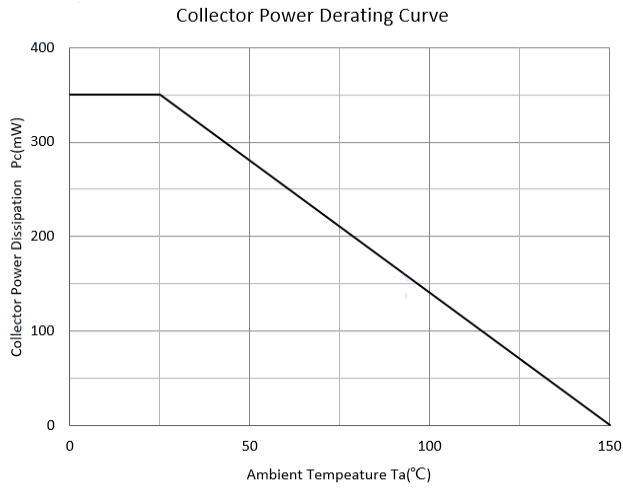
Base-Emittor On Voltage



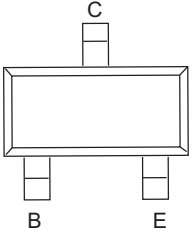
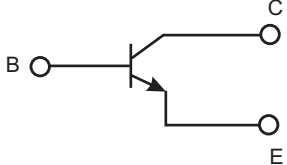
$C_{ob}/C_{ib}-V_{CB}/V_{EB}$



## Typical characteristics



### Pinning information

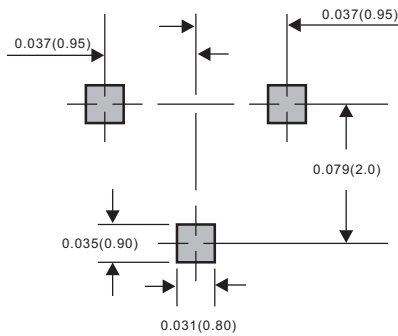
Pin	Simplified outline	Symbol
PinB Base PinC Collector PinE Emitter		

### Marking

Type number	Marking code
MMBTA42	1D

### Suggested solder pad layout

#### SOT-23



Dimensions in inches and (millimeters)