

**Features**

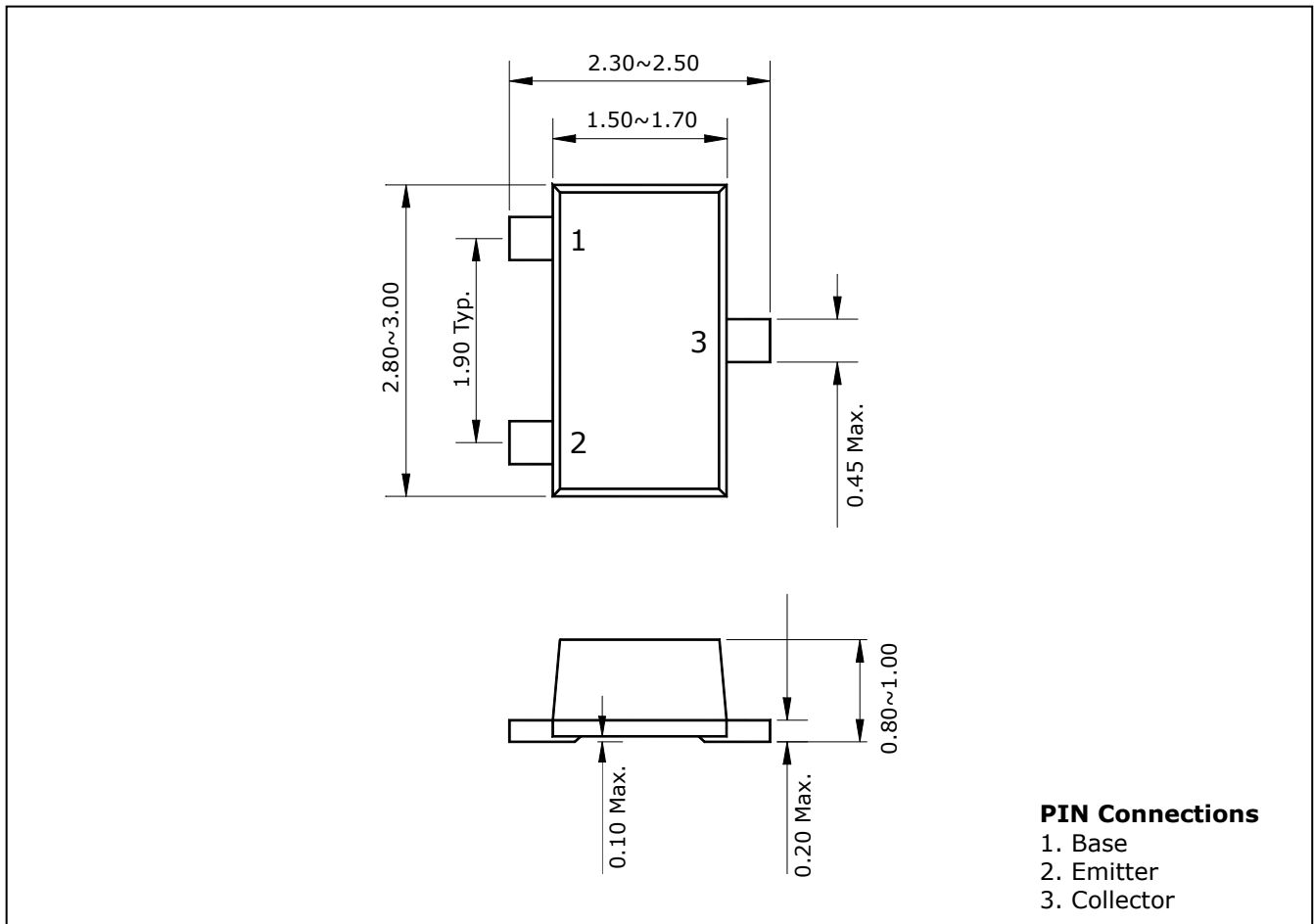
- Low saturation medium current application
- Extremely low collector saturation voltage
- Suitable for low voltage large current drivers
- High DC current gain and large current capability
- Low on resistance :  $R_{ON}=0.6\Omega(\text{Max.})$  ( $I_B=1\text{mA}$ )

**Ordering Information**

Type NO.	Marking	Package Code
STD123SF	123	SOT-23F

**Outline Dimensions**

unit : mm



## Absolute maximum ratings

(Ta=25°C)

Characteristic	Symbol	Ratings	Unit
Collector-Base voltage	$V_{CBO}$	20	V
Collector-Emitter voltage	$V_{CEO}$	15	V
Emitter-Base voltage	$V_{EBO}$	6.5	V
Collector current	$I_C$	1	A
Collector dissipation	$P_C^*$	350	mW
Junction temperature	$T_j$	150	°C
Storage temperature	$T_{stg}$	-55~150	°C

\* : Package mounted on 99.5% alumina 10×8×0.1mm

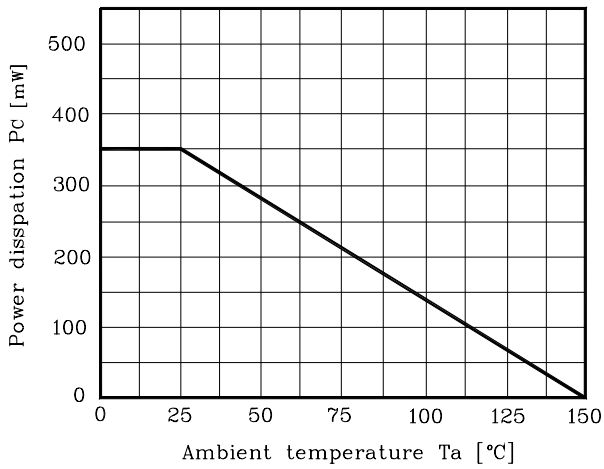
## Electrical Characteristics

(Ta=25°C)

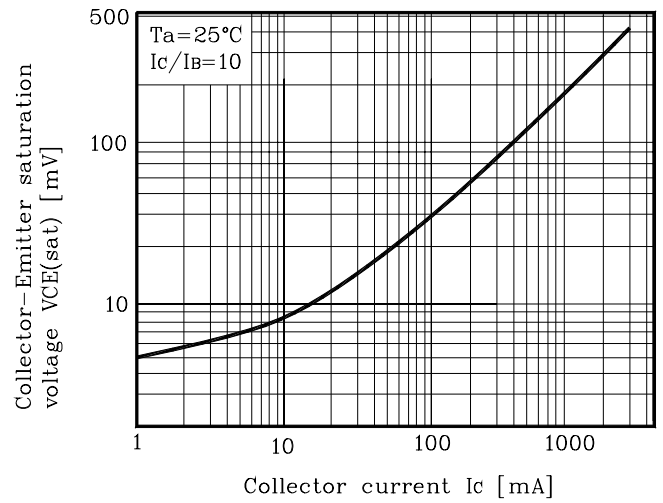
Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Collector-Base breakdown voltage	$BV_{CBO}$	$I_C=50\mu A, I_E=0$	20	-	-	V
Collector-Emitter breakdown voltage	$BV_{CEO}$	$I_C=1mA, I_B=0$	15	-	-	V
Emitter-Base breakdown voltage	$BV_{EBO}$	$I_E=50\mu A, I_C=0$	6.5	-	-	V
Collector cut-off current	$I_{CBO}$	$V_{CB}=20V, I_E=0$	-	-	0.1	$\mu A$
Emitter cut-off current	$I_{EBO}$	$V_{EB}=6V, I_C=0$	-	-	0.1	$\mu A$
DC current gain	$h_{FE}$	$V_{CE}=1V, I_C=100mA$	150	-	-	-
Collector-Emitter saturation voltage	$V_{CE(sat)}$	$I_C=500mA, I_B=50mA$	-	0.1	0.3	V
Transistor frequency	$f_T$	$V_{CE}=5V, I_C=50mA$	-	260	-	MHz
Collector output capacitance	$C_{ob}$	$V_{CB}=10V, I_E=0, f=1MHz$	-	5	-	pF
On resistance	$R_{ON}$	$f=1KHz, I_B=1mA, V_{IN}=0.3V$	-	0.6	-	$\Omega$

## Electrical Characteristic Curves

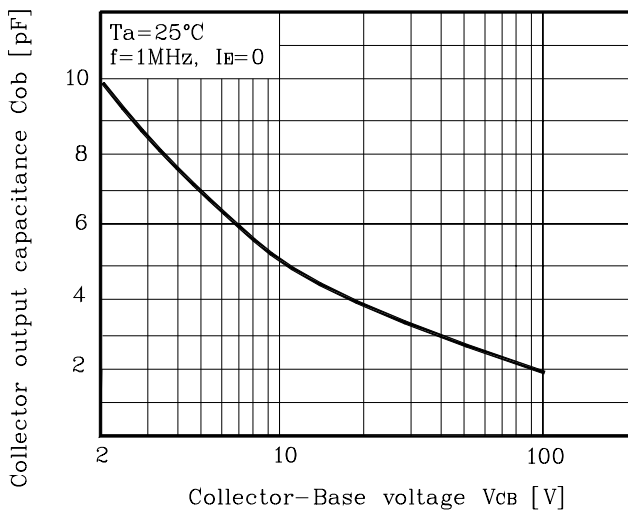
**Fig. 1**  $P_C - T_a$



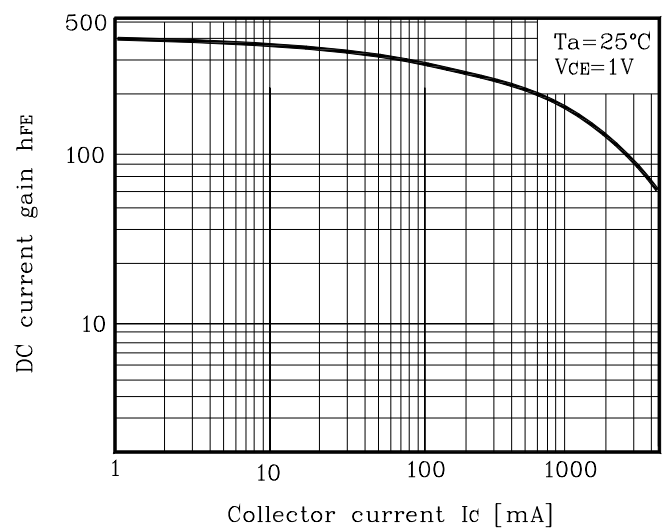
**Fig. 2**  $V_{CE(sat)} - I_C$



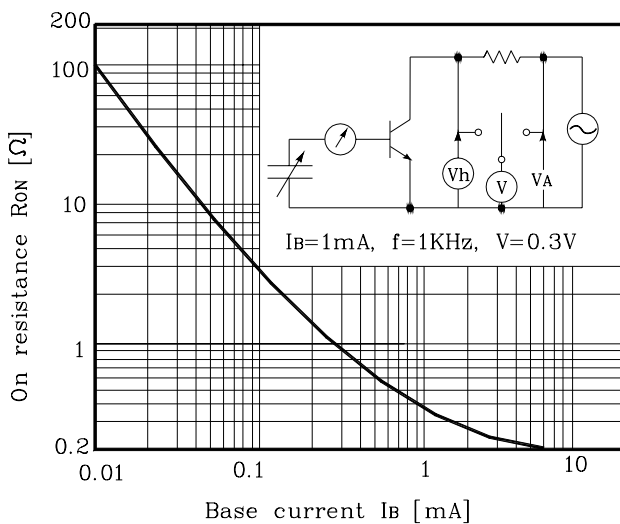
**Fig. 2**  $C_{ob} - V_{CB}$



**Fig. 4**  $h_{FE} - I_C$



**Fig. 5**  $R_{ON} - I_B$



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