

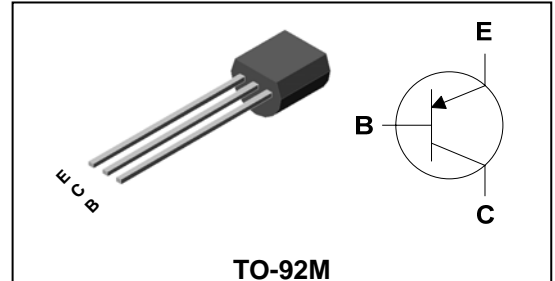
## Description

- General small signal amplifier

## Features

- Low collector saturation voltage :  
 $V_{CE(sat)} = -0.3V(\text{Max.})$
- Low output capacitance :  $C_{ob} = 4pF(\text{Typ.})$
- Complementary pair with 2SC5343M

## PIN Connection



## Ordering Information

Type NO.	Marking	Package Code
2SA1980M	1980	TO-92M

## Absolute maximum ratings

 $T_a = 25^\circ\text{C}$ 

Characteristic	Symbol	Ratings	Unit
Collector-Base voltage	$V_{CBO}$	-50	V
Collector-Emitter voltage	$V_{CEO}$	-50	V
Emitter-Base voltage	$V_{EBO}$	-5	V
Collector current	$I_C$	-150	mA
Collector dissipation	$P_C$	400	mW
Junction temperature	$T_j$	150	$^\circ\text{C}$
Storage temperature	$T_{stg}$	-55 ~ 150	$^\circ\text{C}$

## Electrical Characteristics

 $T_a = 25^\circ\text{C}$ 

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Collector-Base breakdown voltage	$BV_{CBO}$	$I_C = -100\mu\text{A}, I_E = 0$	-50	-	-	V
Collector-Emitter breakdown voltage	$BV_{CEO}$	$I_C = -1\text{mA}, I_B = 0$	-50	-	-	V
Emitter-Base breakdown voltage	$BV_{EBO}$	$I_E = -10\mu\text{A}, I_C = 0$	-5	-	-	V
Collector cut-off current	$I_{CBO}$	$V_{CB} = -50\text{V}, I_E = 0$	-	-	-0.1	$\mu\text{A}$
Emitter cut-off current	$I_{EBO}$	$V_{EB} = -5\text{V}, I_C = 0$	-	-	-0.1	$\mu\text{A}$
DC current gain	$h_{FE}^*$	$V_{CE} = -6\text{V}, I_C = -2\text{mA}$	70	-	700	-
Collector-Emitter saturation voltage	$V_{CE(sat)}$	$I_C = -100\text{mA}, I_B = -10\text{mA}$	-	-	-0.3	V
Transition frequency	$f_T$	$V_{CE} = -10\text{V}, I_C = -1\text{mA}$	80	-	-	MHz
Collector output capacitance	$C_{ob}$	$V_{CB} = -10\text{V}, I_E = 0, f = 1\text{MHz}$	-	4	7	pF
Noise figure	NF	$V_{CE} = -6\text{V}, I_C = -0.1\text{mA}$ $f = 1\text{KHz}, R_g = 10\text{K}\Omega$	-	-	10	dB

\*:  $h_{FE}$  rank / O : 70~140, Y : 120~240, G : 200~400, L : 300~700

Electrical Characteristic Curves

Fig. 1  $P_C$ - $T_a$

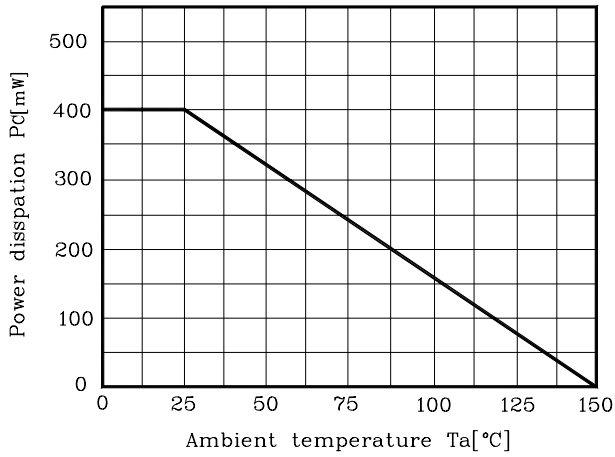


Fig. 2  $I_C$ - $V_{BE}$

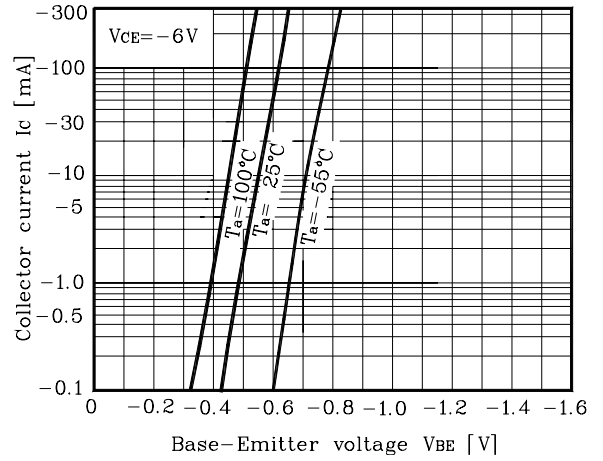


Fig. 3  $I_C$ - $V_{CE}$

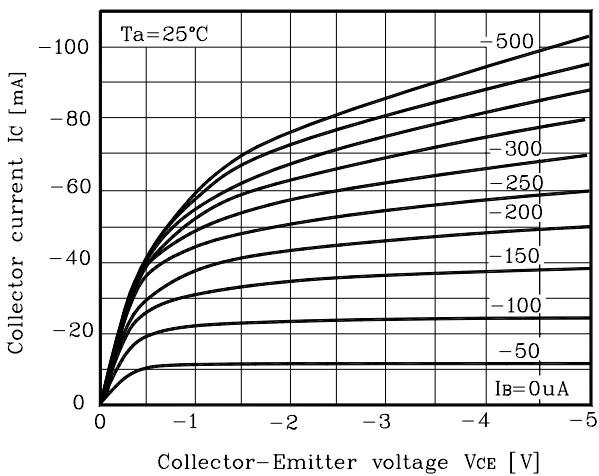


Fig. 4  $h_{FE}$ - $I_C$

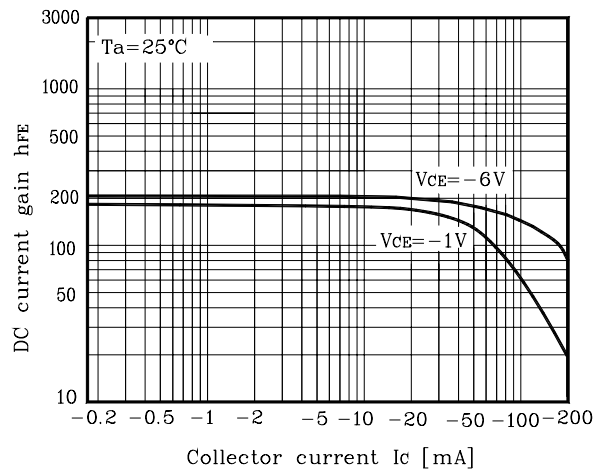
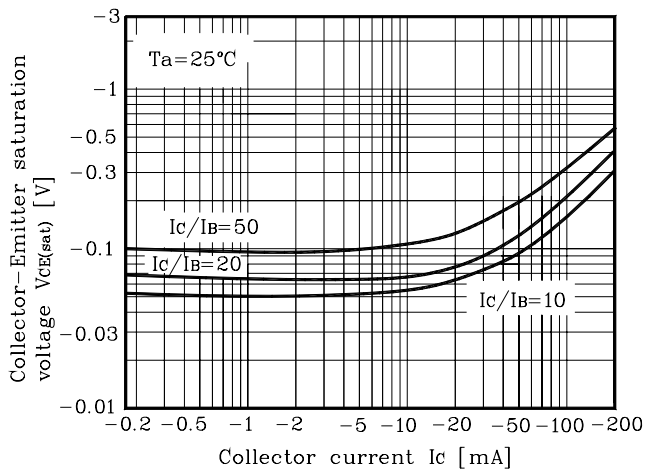
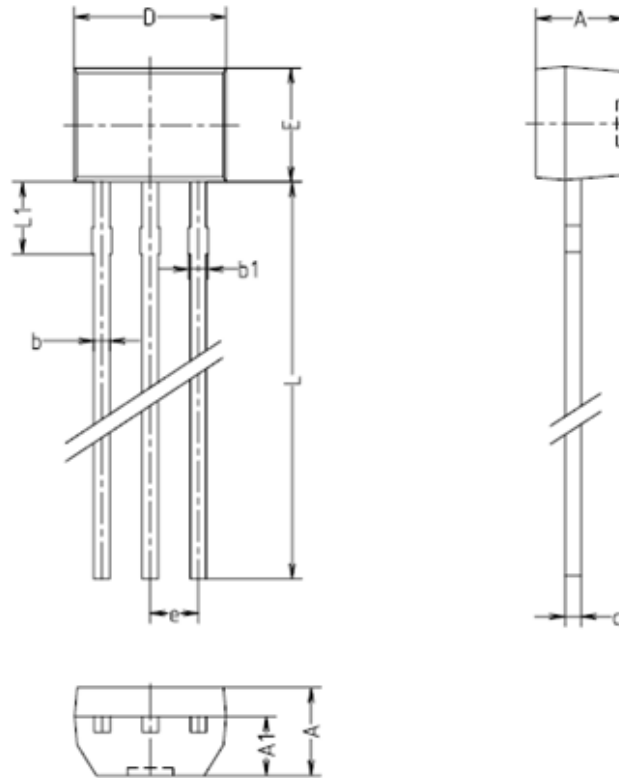


Fig. 5  $V_{CE(sat)}$ - $I_C$



Outline Dimension



SYMBOL	TO-92M		
	MINIMUM	NOMINAL	MAXIMUM
A	2.25	2.30	2.35
A1	1.50	1.55	1.60
b	0.40	0.42	0.44
b1	0.40	-	0.50
c	0.40	0.42	0.44
D	3.93	4.00	4.07
E	2.93	3.00	3.07
e	1.17	1.27	1.37
L	14.30	14.50	14.70
L1	2.05	2.15	2.25

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