

**Descriptions**

- General small signal application
- Switching application

**Features**

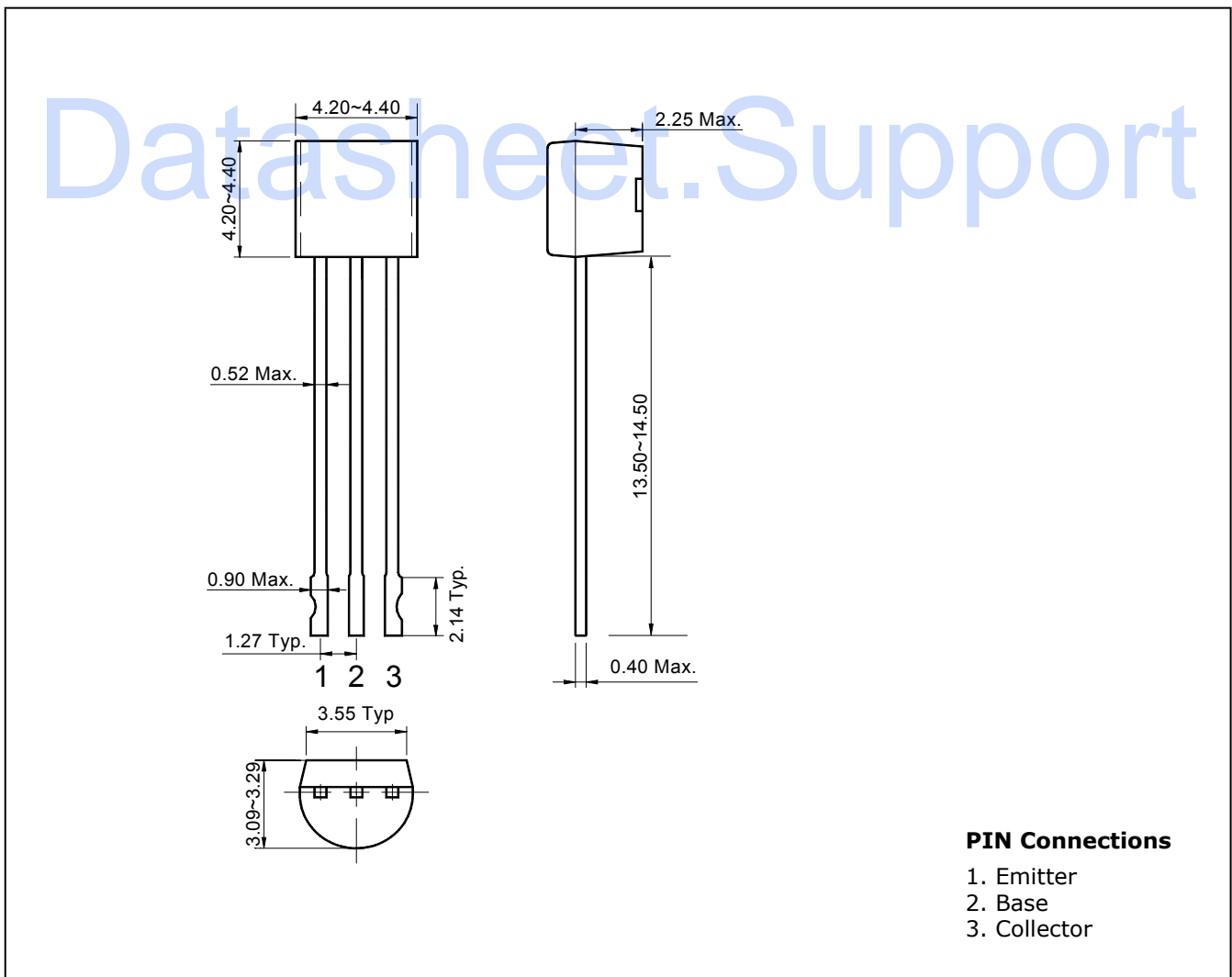
- Low collector saturation voltage :  $V_{CE(sat)}=0.3V(MAX.) @ I_C=50mA, I_B=5mA$
- Low collector output capacitance :  $C_{ob} = 3pF(Typ.) @ V_{CB}=5V, I_E=0, f=1MHz$
- Complementary pair with STA3906A

**Ordering Information**

Type NO.	Marking	Package Code
2N3904N	2N3904	TO-92N

**Outline Dimensions**

**unit : mm**



**Absolute Maximum Ratings**

(Ta=25°C)

Characteristic	Symbol	Rating	Unit
Collector-base voltage	$V_{CBO}$	60	V
Collector-emitter voltage	$V_{CEO}$	40	V
Emitter-base voltage	$V_{EBO}$	6	V
Collector current	$I_C$	200	mA
Collector power dissipation	$P_C$	400	mW
Junction temperature	$T_J$	150	°C
Storage temperature range	$T_{stg}$	-55~150	°C

**Electrical Characteristics**

(Ta=25°C)

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Collector-emitter breakdown voltage	$BV_{CEO}$	$I_C=1mA, I_B=0$	40	-	-	V
Collector cut-off current	$I_{CEX}$	$V_{CE}=30V, V_{EB}=3V$	-	-	50	nA
DC current gain	$h_{FE}$	$V_{CE}=1V, I_C=10mA$	100	-	300	-
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=50mA, I_B=5mA$	-	-	0.3	V
Base-emitter voltage	$V_{BE}$	$V_{CE}=1V, I_C=10mA$	-	0.75	1.0	V
Transition frequency	$f_T$	$V_{CE}=20V, I_C=10mA$	-	300	-	MHz
Collector output capacitance	$C_{ob}$	$V_{CB}=5V, I_E=0, f=1MHz$	-	3	-	pF
Turn on delay time	$t_d$	$V_{CC}=3V, V_{BE(off)}=0.5V,$ $I_C=10mA, I_{B1}=1mA$	-	-	35	ns
Rise time	$t_r$		-	-	35	ns
Storage time	$t_{stg}$	$V_{CC}=3V, I_C=10mA,$ $I_{B1}=I_{B2}=1mA$	-	-	200	ns
Fall Time	$t_f$		-	-	50	ns

## Electrical Characteristic Curves

Fig. 1  $P_C - T_a$

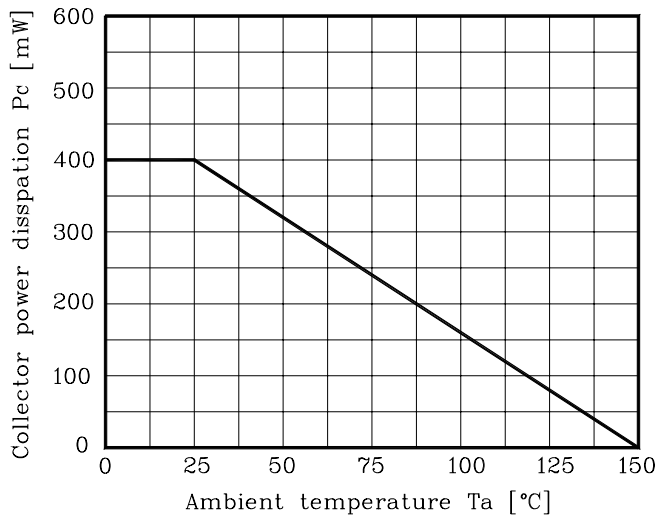


Fig. 2  $h_{FE} - I_C$

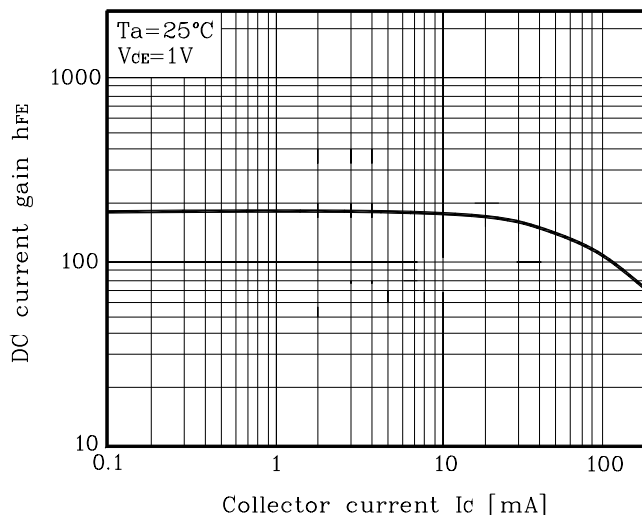
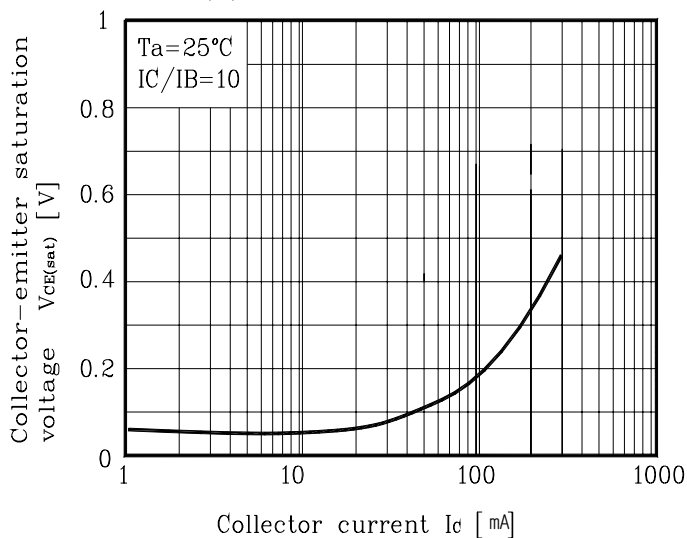


Fig. 3  $V_{CE(sat)} - I_C$



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