

Descriptions

- General small signal application
- Switching application

Features

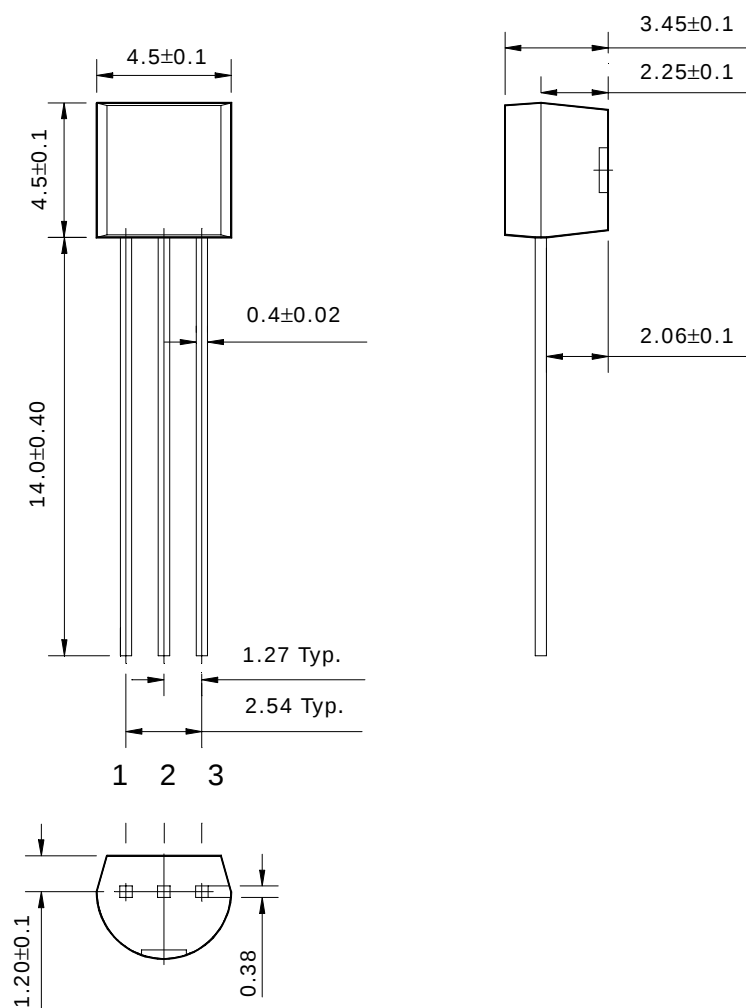
- Low collector saturation voltage
- Collector output capacitance
- Complementary pair with 2N3906

Ordering Information

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

Outline Dimensions

unit : mm



PIN Connections

1. Emitter
2. Base
3. Collector

Absolute maximum ratings $T_a=25^{\circ}\text{C}$

Characteristic	Symbol	Ratings	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 dissipation	P_C	625	mW
Junction temperature	T_j	150	$^{\circ}\text{C}$
Storage temperature range	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}	$I_C=10\mu\text{A}$, $I_E=0$	60	-	-	V
Collector-Emitter breakdown voltage	BV_{CEO}	$I_C=1\text{mA}$, $I_B=0$	40	-	-	V
Emitter-Base breakdown voltage	BV_{EBO}	$I_E=10\mu\text{A}$, $I_C=0$	6	-	-	V
Collector cut-off current	I_{CEX}	$V_{CE}=30\text{V}$, $V_{EB}=3\text{V}$	-	-	50	nA
DC current gain	h_{FE}	$V_{CE}=1\text{V}$, $I_C=10\text{mA}$	100	-	300	-
Collector-Emitter saturation voltage	$V_{CE(sat)}$	$I_C=50\text{mA}$, $I_B=5\text{mA}$	-	-	0.3	V
Transition frequency	f_T	$V_{CE}=20\text{V}$, $I_C=10\text{mA}$, $f=100\text{MHz}$	300	-	-	MHz
Collector output capacitance	C_{ob}	$V_{CB}=5\text{V}$, $I_E=0$, $f=1\text{MHz}$	-	-	4	pF
Delay time	t_d	$V_{CC}=3V_{dc}$, $V_{BE(off)}=0.5V_{dc}$, $I_C=10\text{mA}_{dc}$, $I_{B1}=1\text{mA}_{dc}$	-	-	35	ns
Rise time	t_r		-	-	35	ns
Storage time	t_s		-	-	200	ns
Fall Time	t_f		-	-	50	ns

Electrical Characteristic Curves

Fig. 1 P_C - T_a

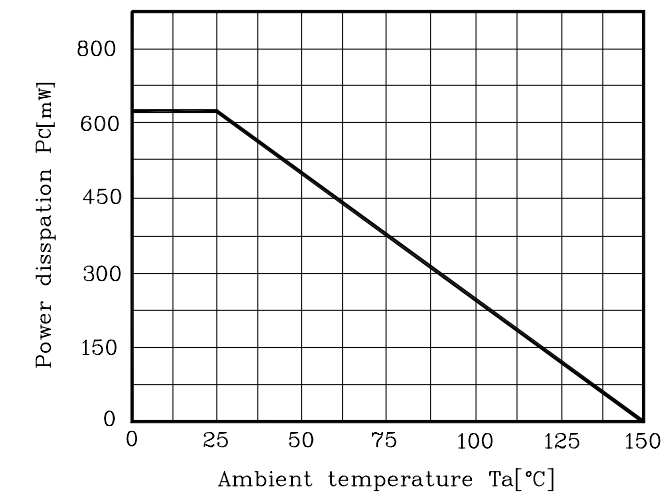


Fig. 2 h_{FE} - I_C

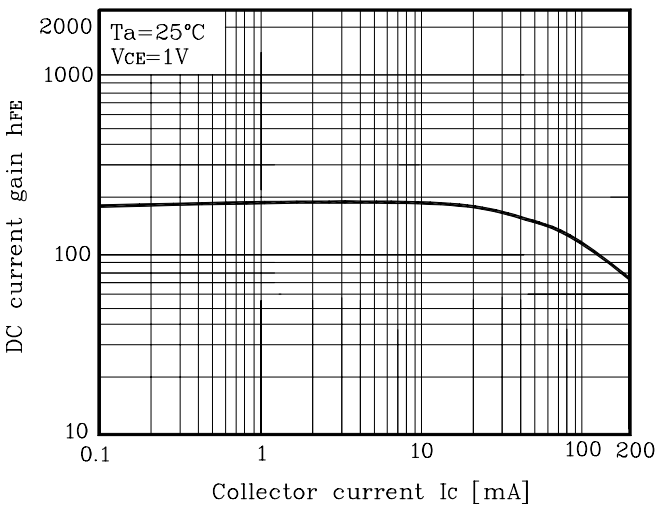
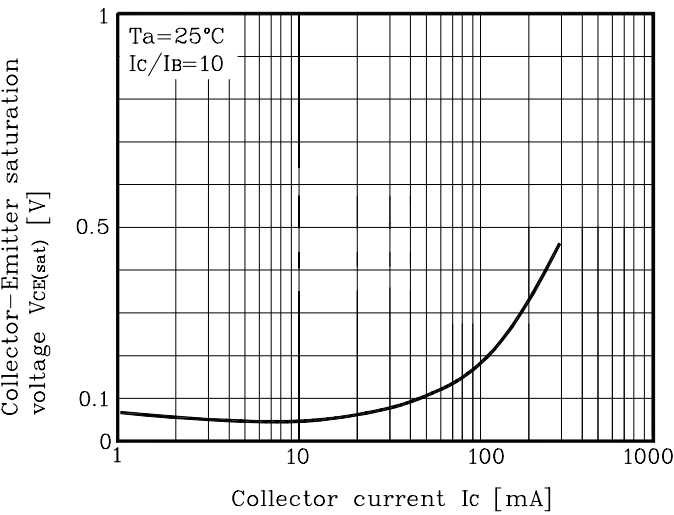


Fig. 3 $V_{CE(sat)}$ - I_C



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Datasheets for electronics components.