Elektronische Bauelemente

2SD1994A

NPN

General Purpose Transistor

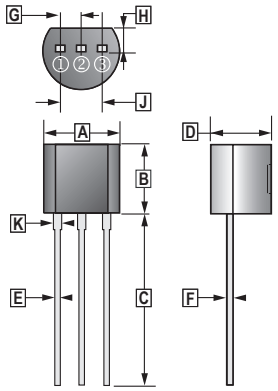
RoHS Compliant Product

A suffix of "-C" specifies halogen and lead free

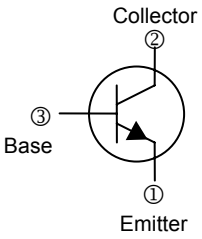
FEATURES

- Low collector-emitter saturation voltage $V_{CE(sat)}$
- Allowing supply with the radial taping

TO-92



①Emitter
②Collector
③Base



REF.	Millimeter	
	Min.	Max.
A	4.40	4.70
B	4.30	4.70
C	12.70	-
D	3.30	3.81
E	0.36	0.56
F	0.36	0.51
G	1.27 TYP.	
H	1.10	-
J	2.42	2.66
K	0.36	0.76

ABSOLUTE MAXIMUM RATINGS (T_a = 25°C unless otherwise specified)

Parameter	Symbol	Ratings	Unit
Collector - Base Voltage	V_{CBO}	60	V
Collector - Emitter Voltage	V_{CEO}	50	V
Emitter - Base Voltage	V_{EBO}	5	V
Collector Current	I_C	1	A
Total Power Dissipation	P_C	1	W
Junction, Storage Temperature	T_J, T_{STG}	+150, -55 ~ +150	°C

ELECTRICAL CHARACTERISTICS (T_a = 25°C unless otherwise specified)

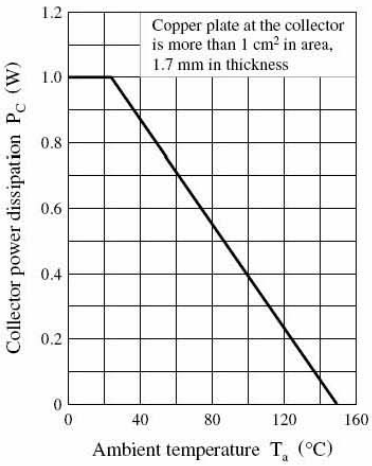
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Collector - Base Breakdown Voltage	$V_{(BR)CBO}$	60	-	-	V	I_C = 10 μA, I_E = 0
Collector - Emitter Breakdown Voltage	$V_{(BR)CEO}$	50	-	-	V	I_C = 2 mA, I_B = 0
Emitter - Base Breakdown Voltage	$V_{(BR)EBO}$	5	-	-	V	I_E = 10 μA, I_C = 0
Collector Cut - Off Current	I_{CBO}	-	-	0.1	μA	V_{CB} = 20V, I_E = 0
Emitter Cut - Off Current	I_{EBO}	-	-	0.1	μA	V_{EB} = 5V, I_C = 0
DC Current Gain	$h_{FE(1)}$	85	-	340		V_{CE} = 10V, I_C = 500 mA
	$h_{FE(2)}$	50	-	-		V_{CE} = 5V, I_C = 1 A
Collector - Emitter Saturation Voltage	$V_{CE(sat)}$	-	-	0.4	V	I_C = 500mA, I_B = 50 mA
Base - Emitter Saturation Voltage	$V_{BE(sat)}$	-	-	1.2	V	I_C = 500mA, I_B = 50 mA
Transition Frequency	f_T	-	200	-	MHz	V_{CE} = 10V, I_B = 50 mA, f = 200MHz
Collector Output Capacitance	Cob	-	-	20	pF	V_{CB} = 10V, I_E = 0, f = 1MHz

CLASSIFICATION OF $h_{FE(1)}$

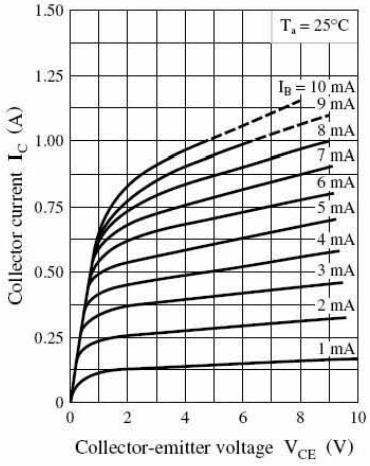
Rank	Q	R	S
Range	85 - 170	120 - 240	170 - 340

CHARACTERISTIC CURVES

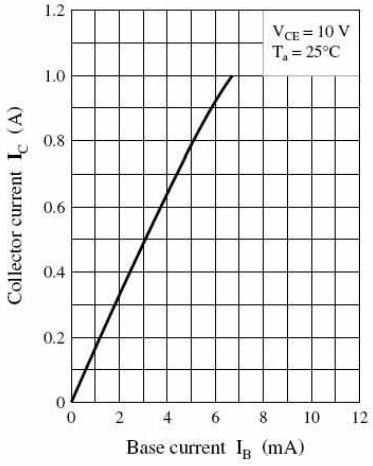
P_C — T_a



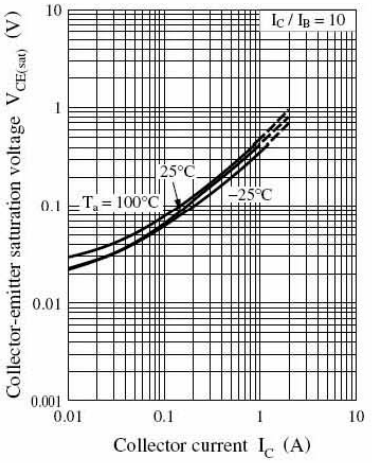
I_C — V_{CE}



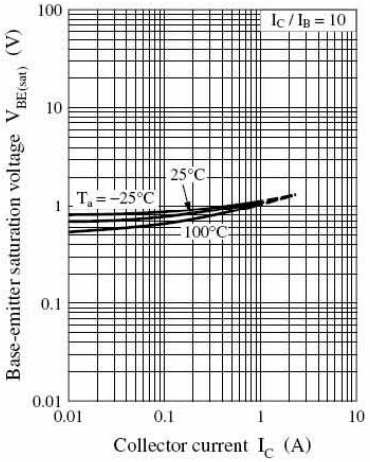
I_C — I_B



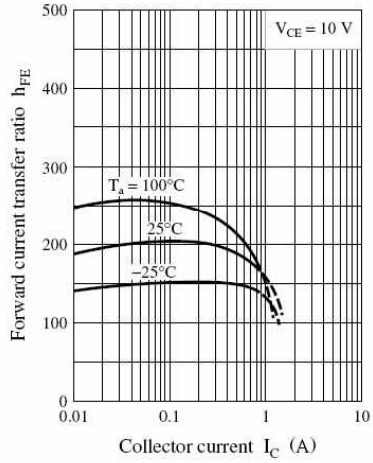
$V_{CE(sat)}$ — I_C



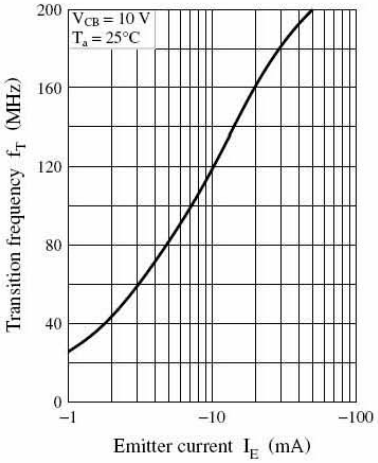
$V_{BE(sat)}$ — I_C



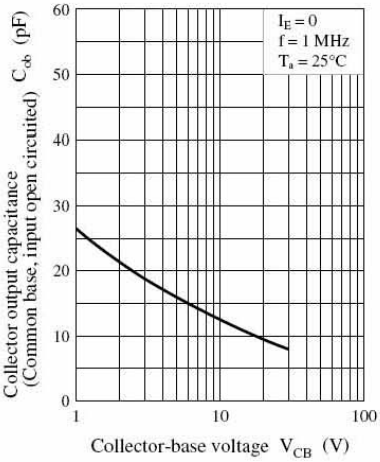
h_{FE} — I_C



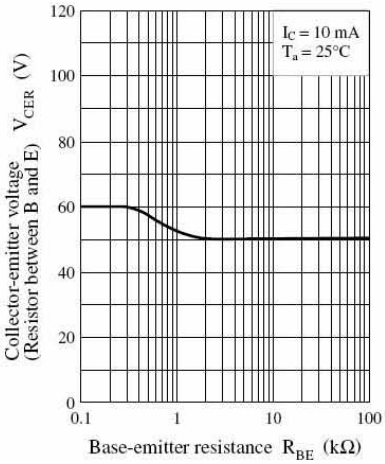
f_T — I_E



C_{ob} — V_{CB}



V_{CER} — R_{BE}



CHARACTERISTIC CURVES (cont'd)