

KSP20

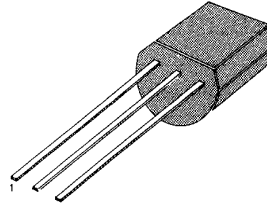
NPN EPITAXIAL SILICON TRANSISTOR

VHF TRANSISTOR

ABSOLUTE MAXIMUM RATINGS ($T_A=25^\circ\text{C}$)

Characteristic	Symbol	Rating	Unit
Collector-Base Voltage	V_{CBO}	40	V
Collector-Emitter Voltage	V_{CEO}	30	V
Emitter-Base Voltage	V_{EBO}	4.0	V
Collector Current	I_C	100	mA
Collector Dissipation ($T_A=25^\circ\text{C}$)	P_C	350	mW
Derate above 25°C		2.81	mW/ $^\circ\text{C}$
Collector Dissipation ($T_A=25^\circ\text{C}$)	P_C	1.0	W
Derate above 25°C		8.0	mW/ $^\circ\text{C}$
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55~150	$^\circ\text{C}$
Thermal Resistance, Junction to Case	$R_{th(j-c)}$	83.3	$^\circ\text{C/W}$
Thermal Resistance, Junction to Ambient	$R_{th(j-a)}$	357	$^\circ\text{C/W}$

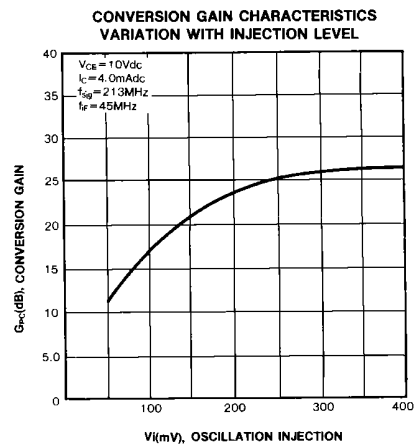
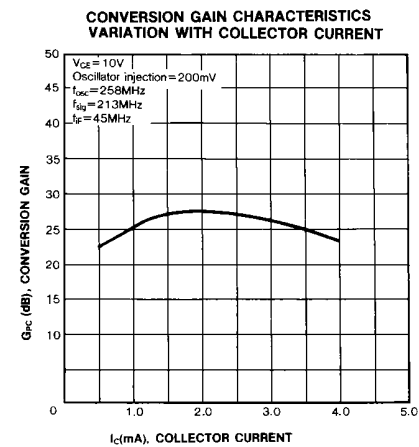
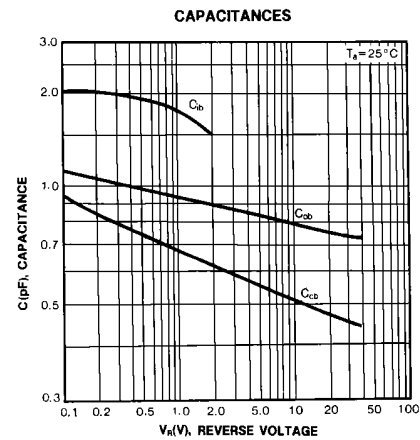
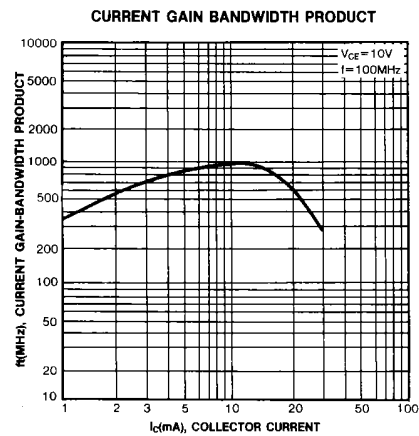
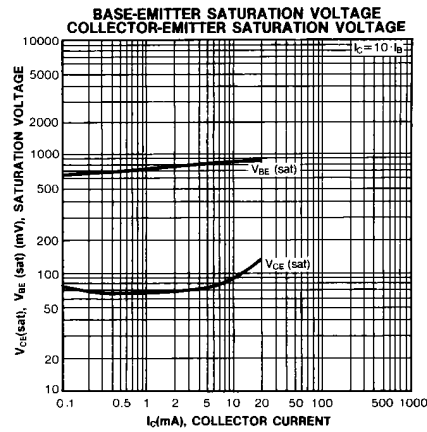
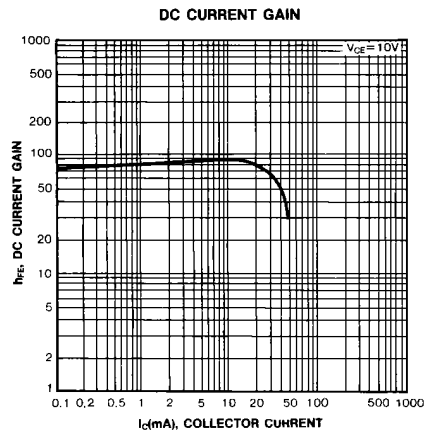
TO-92



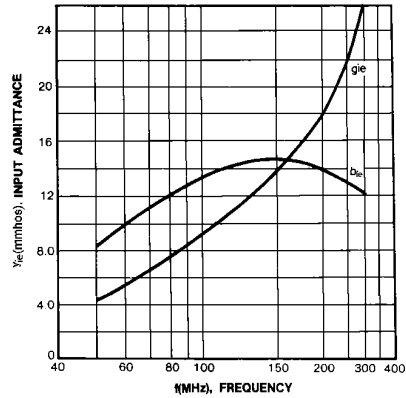
1. Base 2. Emitter 3. Collector

ELECTRICAL CHARACTERISTICS ($T_A=25^\circ\text{C}$)

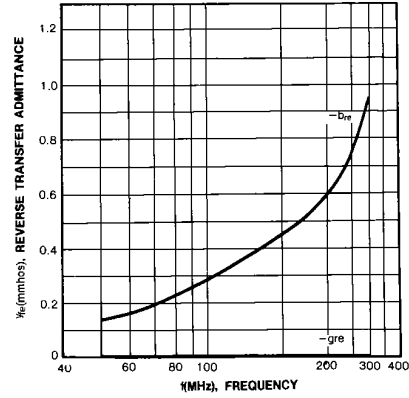
Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector-Base Breakdown Voltage	BV_{CBO}	$I_C=100\mu\text{A}$, $I_E=0$	40			V
Collector-Emitter Breakdown Voltage	BV_{CEO}	$I_C=1\text{mA}$, $I_B=0$	30			V
Emitter-Base Breakdown Voltage	BV_{EBO}	$I_E=10\mu\text{A}$, $I_C=0$	4.0			V
Collector Cut-off Current	I_{CBO}	$V_{CB}=15\text{V}$, $I_E=0$			50	nA
DC Current Gain	h_{FE}	$V_{CE}=10\text{V}$, $I_C=4\text{mA}$	25			
Current Gain Bandwidth Product	f_T	$V_{CE}=10\text{V}$, $I_C=4\text{mA}$ $f=100\text{MHz}$	400	620		MHz
Collector-Base Capacitance	C_{CB}	$V_{CB}=10\text{V}$, $I_E=0$, $f=1\text{MHz}$		0.5	0.65	pF
Collector Base Time Constant	C_{c-rbb}	$V_{CB}=10\text{V}$, $I_E=4\text{mA}$ $f=31.8\text{MHz}$		10		ps
Conversion Gain (213 to 45 MHz)	G_{CE}	$V_{CE}=10\text{V}$, $I_C=4\text{mA}$ Oscillator injection=200mV	18	23		dB



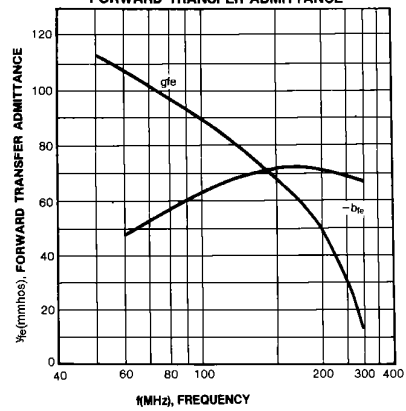
COMMON-EMITTER y PARAMETERS
($I_C = 4.0\text{mA}$, $V_{CE} = 10\text{V}$, $T_A = 25^\circ\text{C}$)
INPUT ADMITTANCE



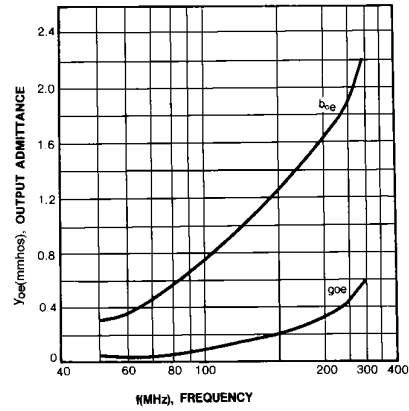
COMMON-EMITTER y PARAMETERS
($I_C = 4.0\text{mA}$, $V_{CE} = 10\text{V}$, $T_A = 25^\circ\text{C}$)
REVERSE TRANSFER ADMITTANCE



COMMON-EMITTER y PARAMETERS
($I_C = 4.0\text{mA}$, $V_{CE} = 10\text{V}$, $T_A = 25^\circ\text{C}$)
FORWARD TRANSFER ADMITTANCE



COMMON-EMITTER y PARAMETERS
($I_C = 4.0\text{mA}$, $V_{CE} = 10\text{V}$, $T_A = 25^\circ\text{C}$)
OUTPUT ADMITTANCE



TRADEMARKS

The following are registered and unregistered trademarks Fairchild Semiconductor owns or is authorized to use and is not intended to be an exhaustive list of all such trademarks.

ACEx™
CoolFET™
CROSSVOLT™
E²CMOS™
FACT™
FACT Quiet Series™
FAST®
FASTr™
GTO™
HiSeC™

ISOPLANAR™
MICROWIRE™
POP™
PowerTrench™
QS™
Quiet Series™
SuperSOT™-3
SuperSOT™-6
SuperSOT™-8
TinyLogic™

UHC™
VCX™

DISCLAIMER

FAIRCHILD SEMICONDUCTOR RESERVES THE RIGHT TO MAKE CHANGES WITHOUT FURTHER NOTICE TO ANY PRODUCTS HEREIN TO IMPROVE RELIABILITY, FUNCTION OR DESIGN. FAIRCHILD DOES NOT ASSUME ANY LIABILITY ARISING OUT OF THE APPLICATION OR USE OF ANY PRODUCT OR CIRCUIT DESCRIBED HEREIN; NEITHER DOES IT CONVEY ANY LICENSE UNDER ITS PATENT RIGHTS, NOR THE RIGHTS OF OTHERS.

LIFE SUPPORT POLICY

FAIRCHILD'S PRODUCTS ARE NOT AUTHORIZED FOR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS WITHOUT THE EXPRESS WRITTEN APPROVAL OF FAIRCHILD SEMICONDUCTOR CORPORATION. As used herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, or (c) whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in significant injury to the user.
2. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

PRODUCT STATUS DEFINITIONS

Definition of Terms

Datasheet Identification	Product Status	Definition
Advance Information	Formative or In Design	This datasheet contains the design specifications for product development. Specifications may change in any manner without notice.
Preliminary	First Production	This datasheet contains preliminary data, and supplementary data will be published at a later date. Fairchild Semiconductor reserves the right to make changes at any time without notice in order to improve design.
No Identification Needed	Full Production	This datasheet contains final specifications. Fairchild Semiconductor reserves the right to make changes at any time without notice in order to improve design.
Obsolete	Not In Production	This datasheet contains specifications on a product that has been discontinued by Fairchild semiconductor. The datasheet is printed for reference information only.