MPSH20 NPN EPITAXIAL SILICON TRANSISTOR

VHF TRANSISTOR

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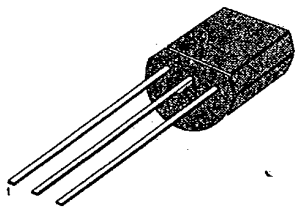

1. Base 2. Emitter 3. Collector

ABSOLUTE MAXIMUM RATINGS (T_a=25°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°C)	P_C	350	mW
Derate above 25°C		2.81	mW/°C
Collector Dissipation (T_C=25°C)	P_C	1.0	W
Derate above 25°C		8.0	mW/°C
Junction Temperature	Tj	150	°C
Storage Temperature	Tstg	−55~150	°C
Thermal Resistance, Junction to Case	Rth(j-c)	83.3	°C/W
Thermal Resistance, Junction to Ambient	Rth(j-a)	357	°C/W

ELECTRICAL CHARACTERISTICS (T_a=25°C)

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

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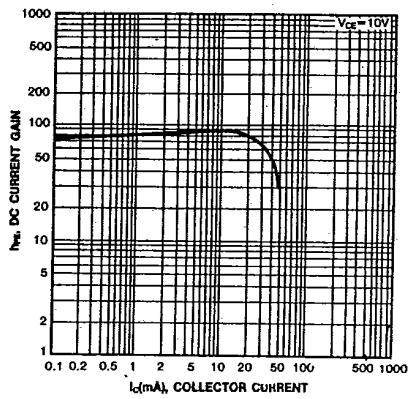
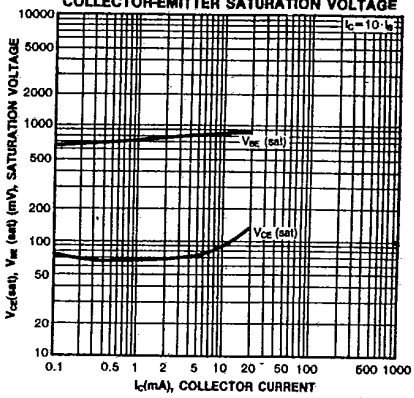
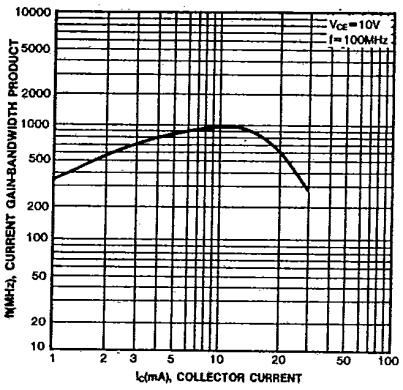
DC CURRENT GAIN



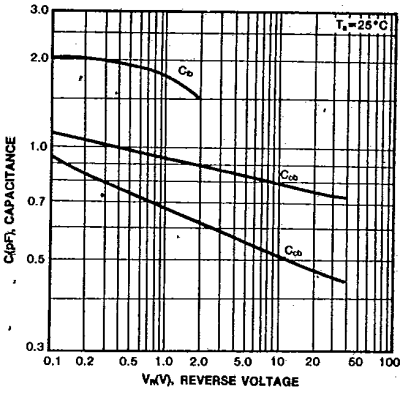
BASE-EMITTER SATURATION VOLTAGE
COLLECTOR-EMITTER SATURATION VOLTAGE



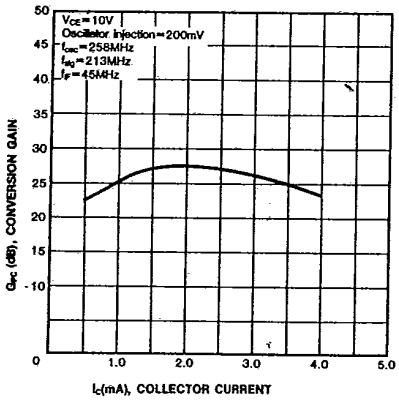
CURRENT GAIN BANDWIDTH PRODUCT



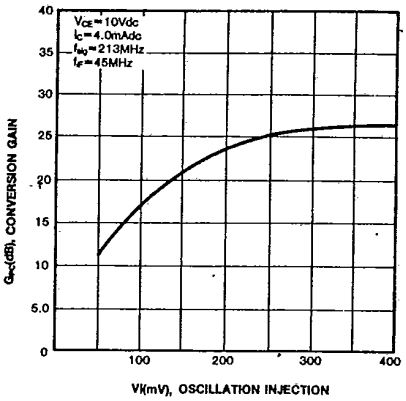
CAPACITANCES



CONVERSION GAIN CHARACTERISTICS
VARIATION WITH COLLECTOR CURRENT



CONVERSION GAIN CHARACTERISTICS
VARIATION WITH INJECTION LEVEL



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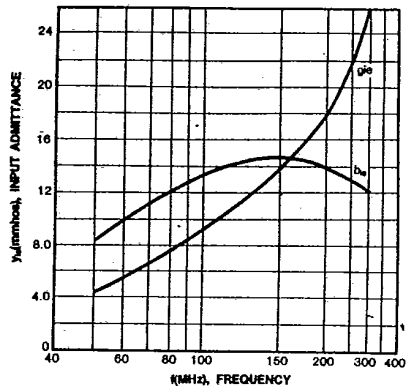
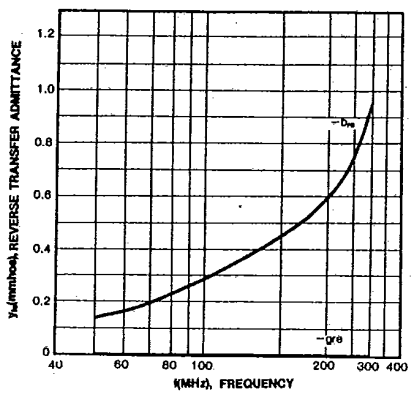
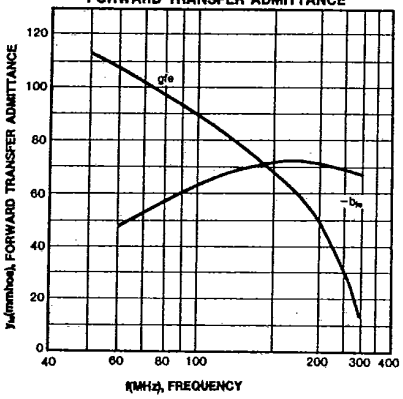
COMMON-EMITTER y PARAMETERS
(I_C = 4.0mA, V_{CE} = 10V, T_a = 25°C)
INPUT ADMITTANCE



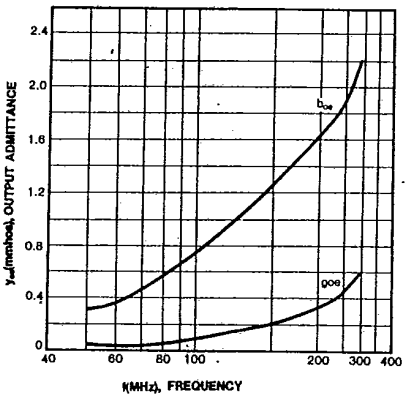
COMMON-EMITTER y PARAMETERS
(I_C = 4.0mA, V_{CE} = 10V, T_a = 25°C)
REVERSE TRANSFER ADMITTANCE



COMMON-EMITTER y PARAMETERS
(I_C = 4.0mA, V_{CE} = 10V, T_a = 25°C)
FORWARD TRANSFER ADMITTANCE



COMMON-EMITTER y PARAMETERS
(I_C = 4.0mA, V_{CE} = 10V, T_a = 25°C)



MPSH24 NPN EPITAXIAL SILICON TRANSISTOR

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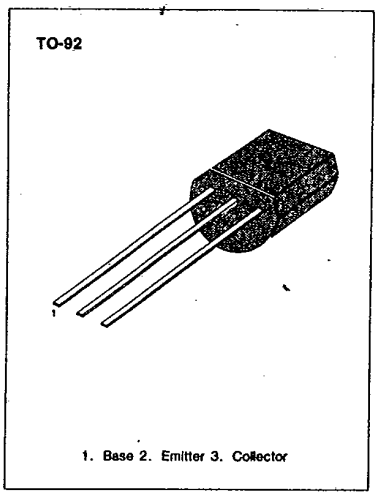
VHF TRANSISTOR



1. Base 2. Emitter 3. Collector

ABSOLUTE MAXIMUM RATINGS (T_a=25°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°C)	P_C	350	mW
Derate above 25°C		2.8	mW/°C
Junction Temperature	Tj	135	°C
Storage Temperature	Tstg	−55~135	°C
Thermal Resistance, Junction to Ambient	Rth(j-a)	357	°C/W

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ELECTRICAL CHARACTERISTICS (T_a=25°C)

Characteristic	Symbol	Test Condition	Min	Typ	Max	Unit
Collector-Base Breakdown Voltage	BV_{CBO}	I_C=100μA, I_E=0	40			V
Collector-Emitter Breakdown Voltage	BV_{CEO}	I_C=1mA, I_B=0	30			V
Emitter-Base Breakdown Voltage	BV_{EBO}	I_E=10μA, I_C=0	4.0			V
Collector Cutoff Current	I_{CBO}	V_{CB}=15V, I_E=0			50	nA
DC Current Gain	h_{FE}	V_{CE}=10V, I_C=8mA	30			
Current Gain Bandwidth Product	f_T	V_{CE}=10V, I_C=8mA f=100MHz	400	620		MHz
Collector-Base Capacitance	Ccb	V_{CB}=10V, I_E=0, f=1MHz		0.25	0.36	pF
Conversion Gain (213 to 45 MHz)	G_{CE}	V_{CC}=20V, I_C=8mA Oscillator injection=150mV	19	24		dB
Conversion Gain (60 to 45 MHz)	G_{CE}	V_{CC}=20V, I_C=8mA Oscillator injection=150mV	24	29		dB

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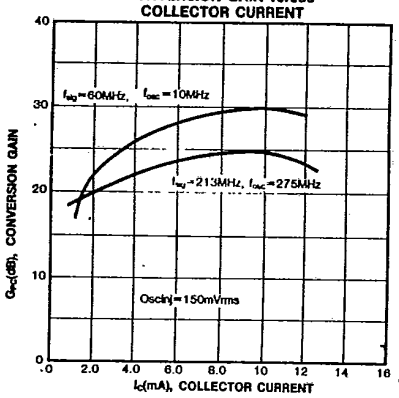
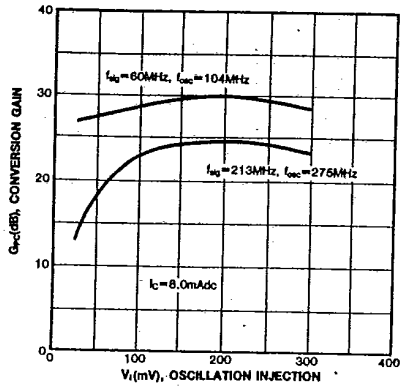
CONVERSION GAIN CHARACTERISTICS
(V_{CC}=20V, R_S=R_L=50Ω, f_{IF}=44MHz, B.W=6MHz)

CONVERSION GAIN versus COLLECTOR CURRENT

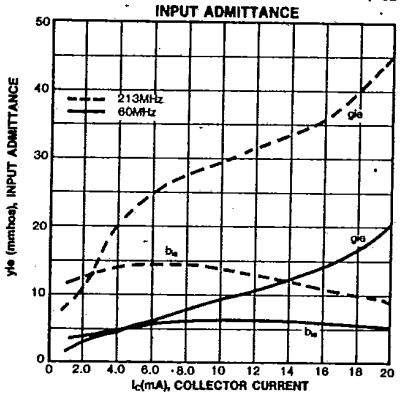


CONVERSION GAIN versus INJECTION LEVEL

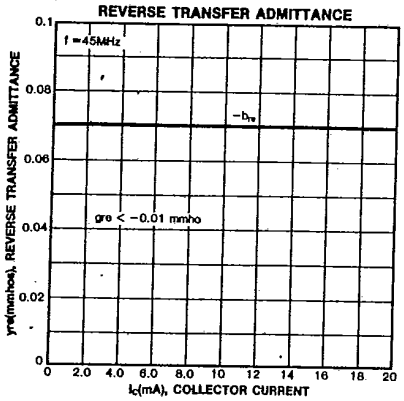


COMMON-BASE y PARAMETERS
(V_{CE}=15V, T_a=25°C)

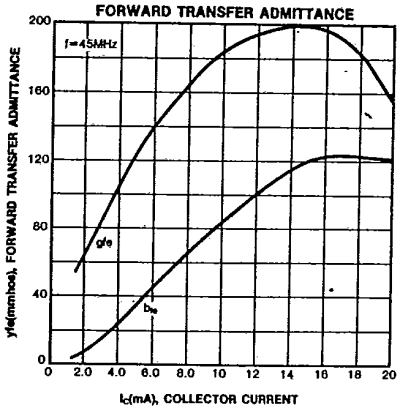
INPUT ADMITTANCE



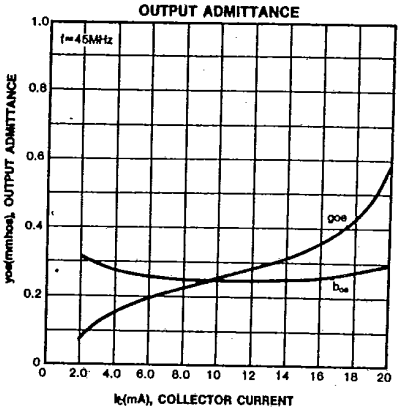
REVERSE TRANSFER ADMITTANCE



FORWARD TRANSFER ADMITTANCE



OUTPUT ADMITTANCE



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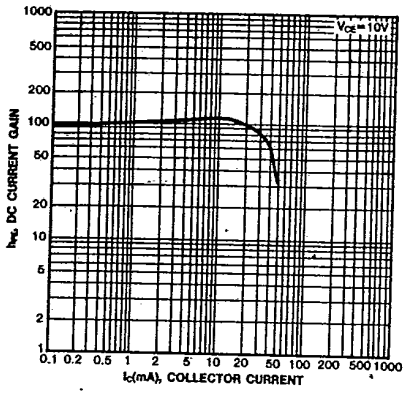
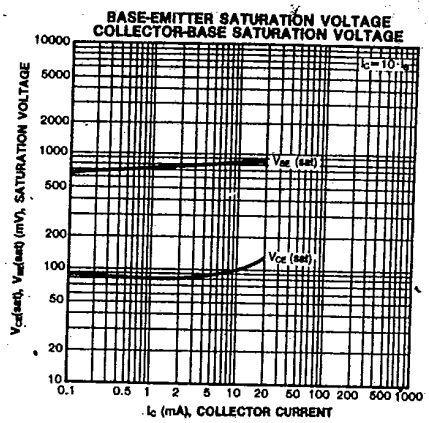
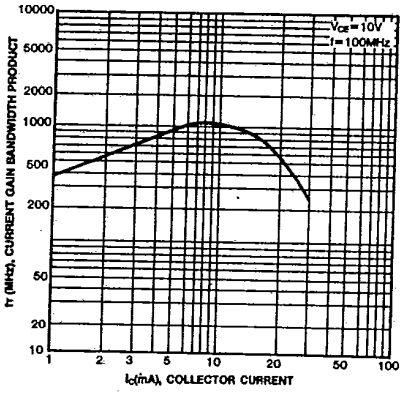
DC CURRENT GAIN



BASE-EMITTER SATURATION VOLTAGE
COLLECTOR-BASE SATURATION VOLTAGE



CURRENT GAIN BANDWIDTH PRODUCT



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