

The RF Line
PNP Silicon
High Frequency Transistors

... designed for high-frequency and medium and high resolution color video display monitors.

- Emitter Ballasting for Improved Ruggedness
- High Power Gain — $G_{U(max)} = 15.5$ dB (Typ) @ $f = 250$ MHz
- Ion Implanted
- High Collector Base Breakdown Voltage — $V_{(BR)CBO} = 100$ V (Min)
- High $f_T = 1250$ MHz (Typ)
- State-of-the-Art Technology
 - Fine Line Geometry
 - Gold Top Metallization
 - Silicon Nitride Passivation
- MIL-S-19500 Processed Versions Available as MRF545HX, MRF545HXV

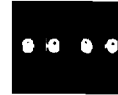
MRF545
MRFC545

$I_C = -400$ mA
HIGH FREQUENCY
HIGH VOLTAGE
TRANSISTORS
PNP SILICON

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CASE 79-04
 STYLE 1
 TO-205AD
 (TO-39)
 MRF545



CHIP
 MRFC545

MAXIMUM RATINGS

Rating	Symbol	MRFC545	MRF545	Unit
Collector-Emitter Voltage	V_{CEO}	70	70	Vdc
Collector-Base Voltage	V_{CBO}	100	100	Vdc
Emitter-Base Voltage	V_{EBO}	3	3	Vdc
Collector Current — Continuous	I_C	400	400	mA dc
Operating Junction Temperature	T_J	200	200	°C
Total Device Dissipation @ $T_C = 75$ °C Derate above 25 °C	P_D	5 $T_{Jmax} = 200$ °C	3.5 28	Watts mW/°C
Storage Temperature Range	T_{stg}	65 to +200	65 to +200	°C

MRF545, MRFC545

ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise noted.)

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage (I _C = -1 mA, I _B = 0)	V _{(BR)CEO}	70	—	—	Vdc
Collector-Base Breakdown Voltage (I _C = -0.1 mA, I _E = 0)	V _{(BR)CBO}	100	—	—	Vdc
Emitter-Base Breakdown Voltage (I _E = -0.1 mA, I _C = 0)	V _{(BR)EBO}	3	—	—	Vdc
Collector Cutoff Current (V _{CE} = -80 Vdc, V _{BE} = 0, T _C = 25°C)	I _{CES}	—	—	100	μAdc
Collector Cutoff Current (V _{CB} = -80 Vdc, I _E = 0)	I _{CBO}	—	—	20	μAdc
ON CHARACTERISTICS					
DC Current Gain (I _C = -50 mA, V _{CE} = 10 Vdc)	h _{FE}	15	—	—	—
DYNAMIC CHARACTERISTICS					
Output Capacitance (V _{CB} = 10 Vdc, I _E = 0, f = 1 MHz)	C _{ob}	—	3.2	—	pF
Junction Capacitance (V _{CB} = 10 Vdc, I _E = 0, f = 1 MHz)	C _{cb}	—	2	2.5	pF
Input Capacitance (V _{EB} = -3 Vdc, I _C = 0, f = 1 MHz)	C _{ib}	—	10	—	pF
Current Gain-Bandwidth Product (I _C = -50 mA, V _{CE} = 25 V, f = 250 MHz)	f _T	1000	1250	—	MHz
FUNCTIONAL TESTS					
Maximum Available Gain (I _C = -50 mA, V _{CE} = 25 V, f = 250 MHz)	G _{max}	—	15.5	—	dB
Insertion Gain (I _C = -50 mA, V _{CE} = 25 V, f = 250 MHz)	S ₂₁ ²	—	12.7	—	dB

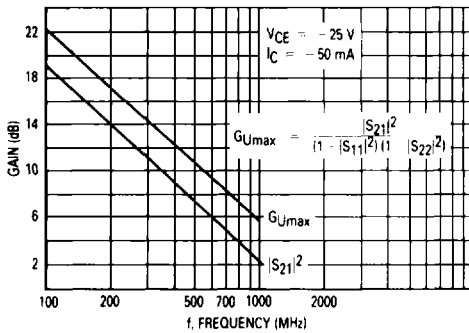


Figure 1. Power Gain versus Frequency

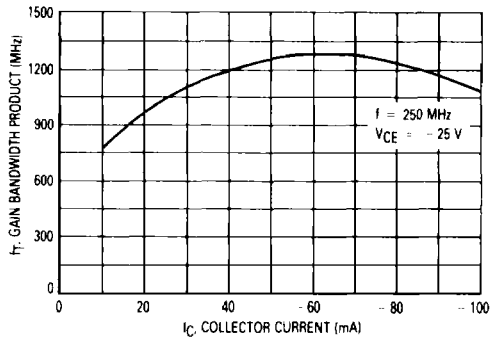


Figure 2. Gain-Bandwidth Product versus Collector Current

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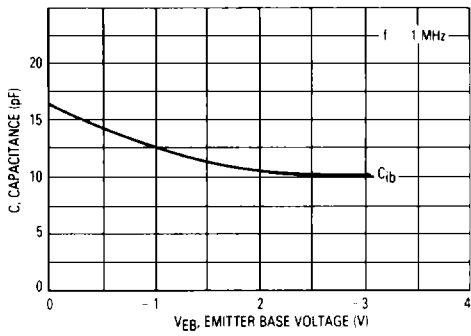


Figure 3. Input Capacitance versus Voltage

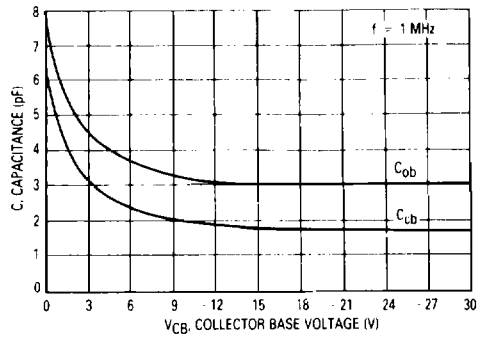


Figure 4. Junction Capacitance versus Voltage

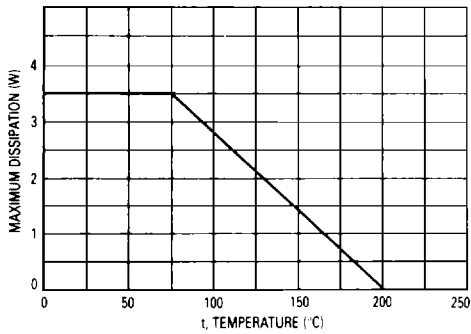


Figure 5. Dissipation versus Temperature

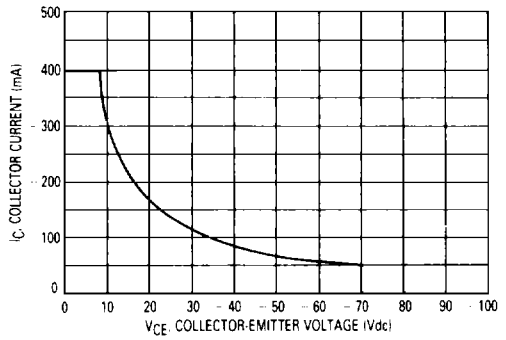


Figure 6. Safe Operating Area

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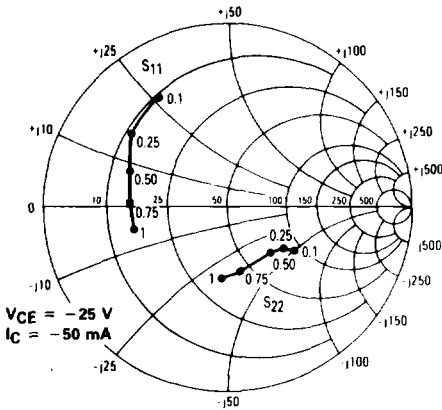


Figure 7. Input/Output Reflection Coefficient versus Frequency (GHz)

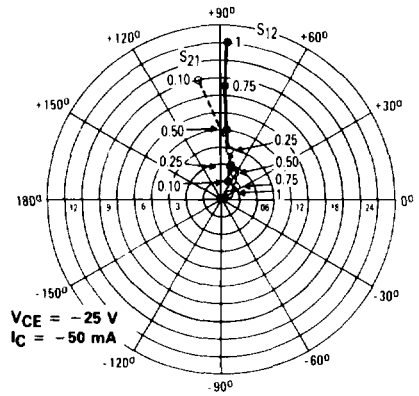


Figure 8. Forward/Reverse Transmission Coefficients versus Frequency

COMMON EMITTER S-PARAMETERS

VCE (Volts)	IC (mA)	f (MHz)	S11		S21		S12		S22	
			S11	∠φ	S21	∠φ	S12	∠φ	S22	∠φ
-10	25	100	0.60	-161	8.7	101	0.03	57	0.47	-34
		250	0.61	-180	3.6	81	0.06	74	0.42	-39
		500	0.66	163	1.9	62	0.12	88	0.38	-56
		750	0.72	154	1.3	50	0.19	91	0.40	-87
		1000	0.75	143	1.0	41	0.29	89	0.46	102
	-50	100	0.61	-169	8.8	99	0.03	64	0.43	36
		250	0.62	177	3.7	80	0.06	79	0.38	40
		500	0.66	161	1.9	63	0.13	88	0.35	56
		750	0.72	153	1.3	50	0.20	89	0.36	86
		1000	0.74	142	1.0	41	0.29	87	0.42	-102
	100	100	0.67	-178	5.6	94	0.03	68	0.40	26
		250	0.70	170	2.3	74	0.07	81	0.36	-37
		500	0.71	155	1.2	54	0.16	89	0.39	-61
		750	0.76	142	0.9	42	0.27	87	0.40	-92
		1000	0.82	128	0.7	37	0.39	81	0.43	-117
-25	-25	100	0.55	-155	9.9	102	0.03	58	0.49	32
		250	0.57	-176	4.2	82	0.06	72	0.43	36
		500	0.61	165	2.1	64	0.11	87	0.38	50
		750	0.68	156	1.4	51	0.18	90	0.41	79
		1000	0.70	144	1.1	43	0.27	89	0.45	96
	50	100	0.53	-162	10.6	101	0.03	62	0.44	35
		250	0.55	-180	4.4	82	0.06	75	0.39	-38
		500	0.59	162	2.3	65	0.12	85	0.34	50
		750	0.65	154	1.5	51	0.19	88	0.36	-78
		1000	0.67	143	1.2	43	0.27	86	0.40	-95
	100	100	0.48	-169	9.3	98	0.03	68	0.43	-27
		250	0.53	174	3.9	79	0.07	79	0.37	-33
		500	0.54	159	2.1	61	0.15	85	0.40	-52
		750	0.60	146	1.5	47	0.24	85	0.39	-77
		1000	0.65	132	1.1	37	0.34	81	0.41	-99