

MOTOROLA 2N5836"供应商
SEMICONDUCTOR
TECHNICAL DATA

T-31-01

2N5835
2N5836
2N5837

The RF Line

NPN SILICON HIGH-FREQUENCY TRANSISTORS

... designed primarily for use in fact current-mode switching circuits in military and industrial equipment. Suitable for use in general high-frequency amplifier applications to 1.5 GHz.

- 2N5835 — 10 mAdc, 6.0 Vdc Characteristics
 $f_T = 2.5$ GHz (Min)
 $r_b'C_c = 5.0$ ps (Typ)
 $t_r = 250$ ps (Typ)
- 2N5836 — 50 mAdc, 6.0 Vdc Characteristics —
 $f_T = 2.0$ GHz (Min)
 $r_b'C_c = 6.0$ ps (Typ)
 $t_r = 320$ ps (Typ)
- 2N5837 — 100 mAdc, 3.0 Vdc Characteristics —
 $f_T = 1.7$ GHz (Min)
 $r_b'C_c = 6.0$ ps (Typ)
 $t_r = 650$ ps (Typ)
- MIL-S-19500 Processed Versions Available as MRF5836HX, MRF5836HXV

2.5 GHz @ 10 mAdc — 2N5835
2.0 GHz @ 50 mAdc — 2N5836
1.7 GHz @ 100 mAdc — 2N5837

HIGH FREQUENCY
TRANSISTORS

NPN SILICON

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*MAXIMUM RATINGS

Rating	Symbol	2N5835	2N5836	2N5837	Unit
Collector-Emitter Voltage	V_{CEO}	10	10	5.0	Vdc
Collector-Base Voltage	V_{CBO}	15	15	10	Vdc
Emitter-Base Voltage	V_{EBO}	3.5	3.5	3.5	Vdc
Collector Current — Continuous	I_C	15	200	300	mAdc
Total Device Dissipation @ $T_A = 25^{\circ}C$ Derate above $25^{\circ}C$	P_D	200 1.14	300 —	300 —	mW mW/ $^{\circ}C$
Total Device Dissipation @ $T_C = 100^{\circ}C$ Derate above $100^{\circ}C$	P_D	—	0.75 7.5	0.75 7.5	Watts mW/ $^{\circ}C$
Storage Junction Temperature Range	T_{stg}	—65 to +200			$^{\circ}C$

*Indicates JEDEC Registered Data

SEATING PLANE

STYLE 10
PIN 1 EMITTER
2 BASE
3 COLLECTOR
4 CASE

NOTE: ALL RULES AND NOTES ASSOCIATED WITH TO-72 OUTLINE SHALL APPLY

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	5.31	5.84	0.209	0.230
B	4.52	4.95	0.178	0.195
C	4.32	5.33	0.170	0.210
D	0.41	0.53	0.016	0.021
E	—	0.75	—	0.030
F	0.41	0.48	0.016	0.019
G	2.54 BSC		0.100 BSC	
H	0.91	1.17	0.036	0.046
J	0.71	1.22	0.028	0.048
K	12.70	—	0.500	—
L	6.35	—	0.250	—
M	45° BSC		45° BSC	
N	1.27 BSC		0.050 BSC	
P	—	1.27	—	0.050

CASE 20-03
TO-206AF
(TO-72)

SEATING PLANE

STYLE 1
PIN 1 EMITTER
2 BASE
3 COLLECTOR

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	5.31	5.84	0.209	0.230
B	4.52	4.95	0.178	0.195
C	1.65	2.16	0.065	0.085
D	0.406	0.533	0.016	0.021
E	—	1.02	—	0.040
F	0.305	0.483	0.012	0.019
G	2.54 BSC		0.100 BSC	
H	0.914	1.17	0.036	0.046
J	0.711	1.22	0.028	0.048
K	12.70	—	0.500	—
L	6.35	—	0.250	—
M	45° BSC		45° BSC	
N	1.27 BSC		0.050 BSC	
P	—	1.27	—	0.050

CASE 26-03
TO-206AB
(TO-46)

46E D

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ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

ON CHARACTERISTICS

DYNAMIC CHARACTERISTICS

SWITCHING CHARACTERISTICS ②

* Indicates JEDEC Registered Data

① f_T is defined as the frequency at which $|h_{fe}|$ extrapolates to unity

② Typical values shown in addition to JEDEC Registered Data

FIGURE 1 – SWITCHING TIME TEST CIRCUIT



2N5835, 2N5836, 2N5837

MOTOROLA SC (X57) RF (F)

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FIGURE 2 - SWITCHING TIME

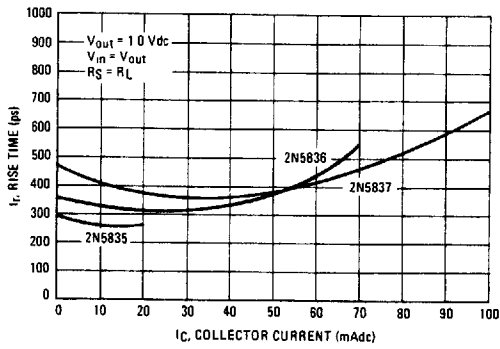


FIGURE 3 - CURRENT-GAIN-BANDWIDTH PRODUCT

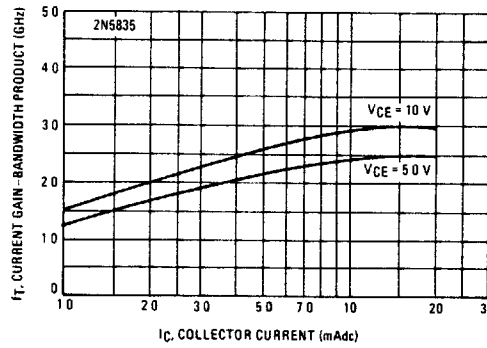


FIGURE 4 - CURRENT-GAIN-BANDWIDTH PRODUCT

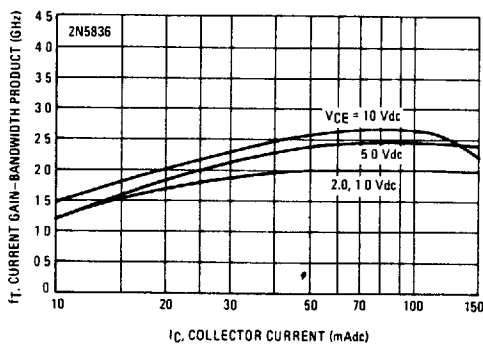


FIGURE 5 - CURRENT-GAIN-BANDWIDTH PRODUCT

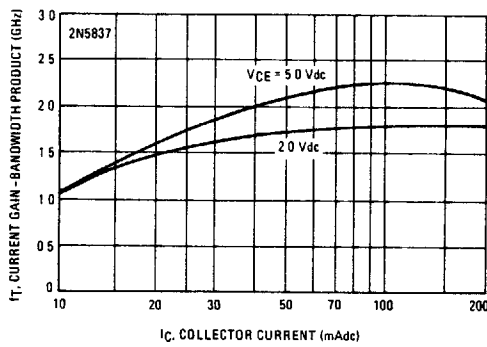


FIGURE 6 - COLLECTOR-BASE TIME CONSTANT

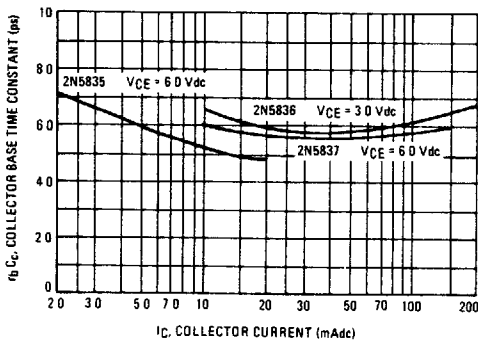
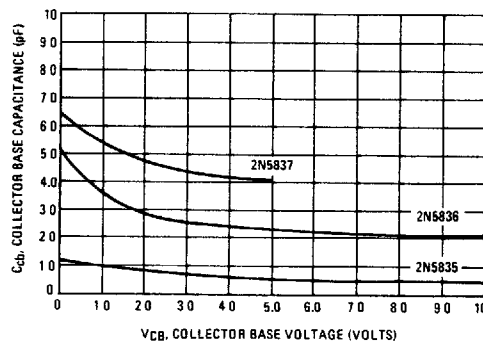
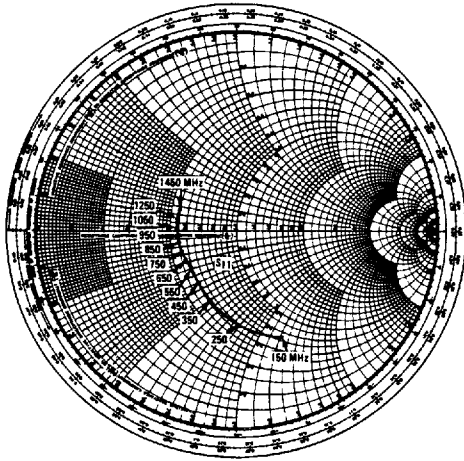
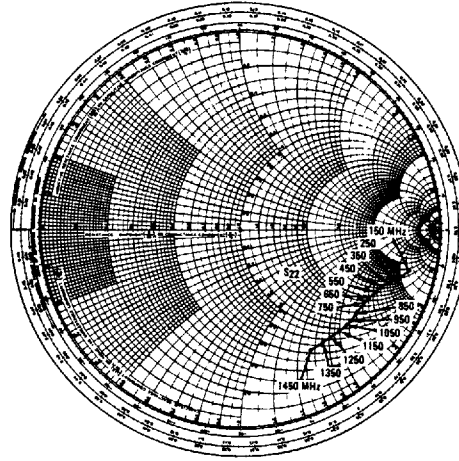
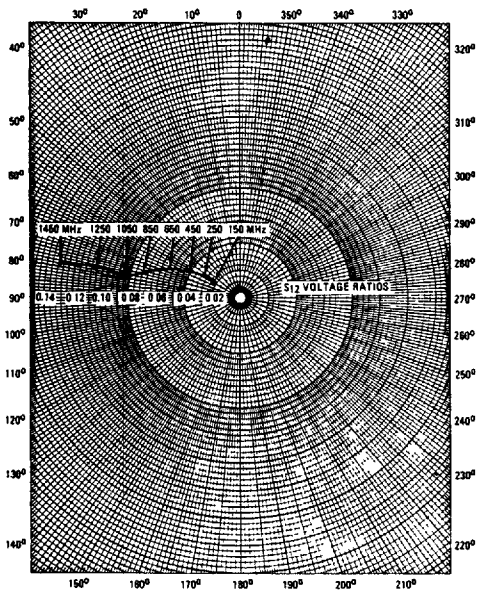
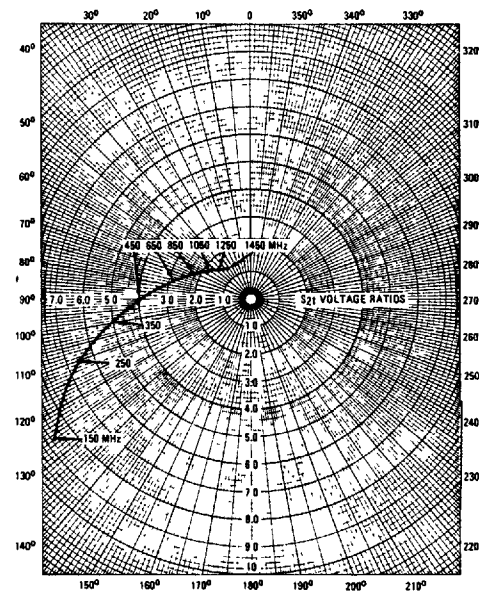


FIGURE 7 - COLLECTOR-BASE CAPACITANCE



2N5835, 2N5836, 2N5837

MOTOROLA 2N5835 (S) (R F) 46E D 6367254 0094098 3 MOT6

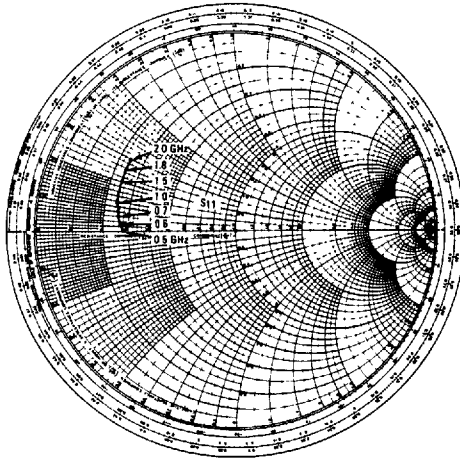
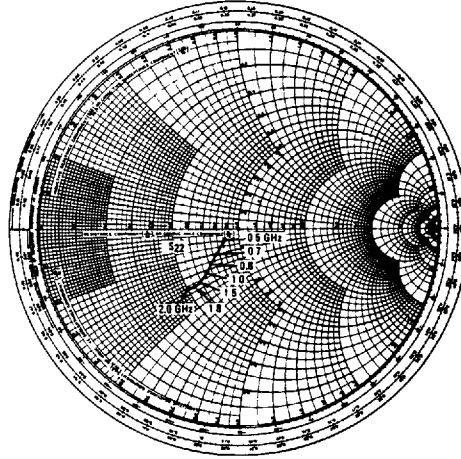
2N5835 SCATTERING PARAMETERS
($I_C = 5.0$ mAdc, $V_{CE} = 6.0$ Vdc, $Z_G = Z_L = 50$ Ohms)FIGURE 8 — S_{11} , INPUT REFLECTION COEFFICIENTFIGURE 9 — S_{22} , OUTPUT REFLECTION COEFFICIENTFIGURE 10 — S_{12} , REVERSE TRANSMISSION COEFFICIENTFIGURE 11 — S_{21} , FORWARD TRANSMISSION COEFFICIENT

2N5835, 2N5836, 2N5837

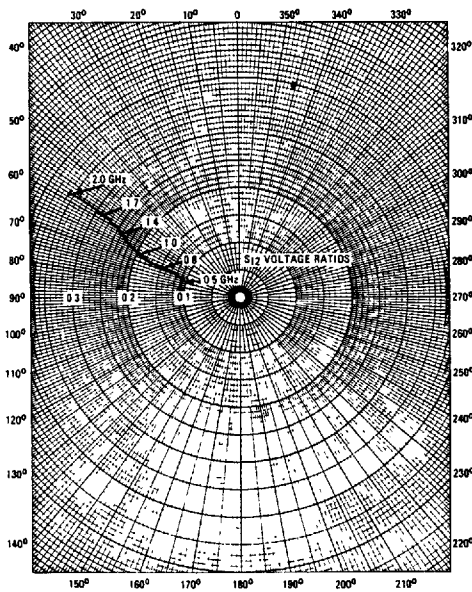
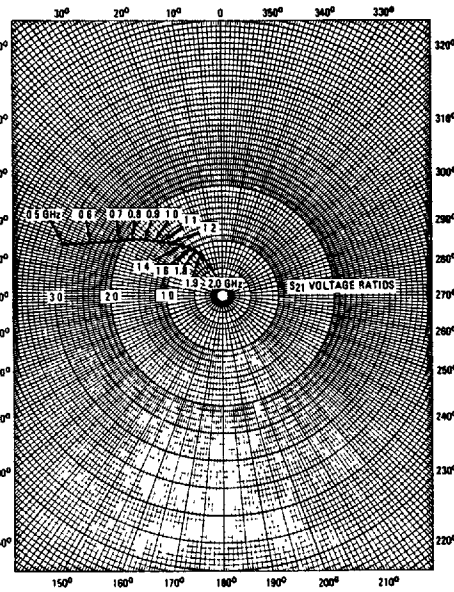
MOTOROLA SC (X) DTS/R F) 46E D ■ 6367254 0094099 5 ■ MOT6
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2N5836 SCATTERING PARAMETERS

($I_C = 100 \text{ mA dc}$, $V_{CE} = 10 \text{ V dc}$, $Z_G = Z_L = 50 \text{ Ohms}$)

FIGURE 12 – S_{11} , INPUT REFLECTION COEFFICIENTFIGURE 13 – S_{22} , OUTPUT REFLECTION COEFFICIENT

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FIGURE 14 – S_{12} , REVERSE TRANSMISSION COEFFICIENTFIGURE 15 – S_{21} , FORWARD TRANSMISSION COEFFICIENT

2N5835, 2N5836, 2N5837

MOTOROLA SC (XSTRS/R F)

46E D

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6367254

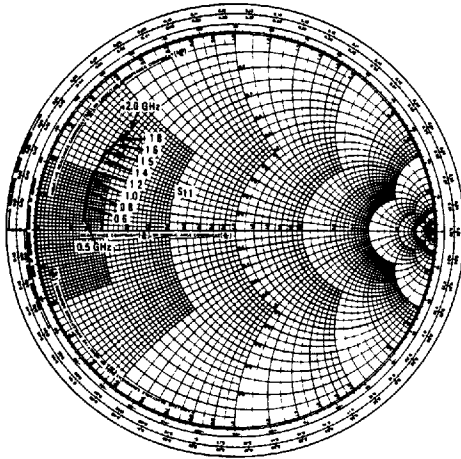
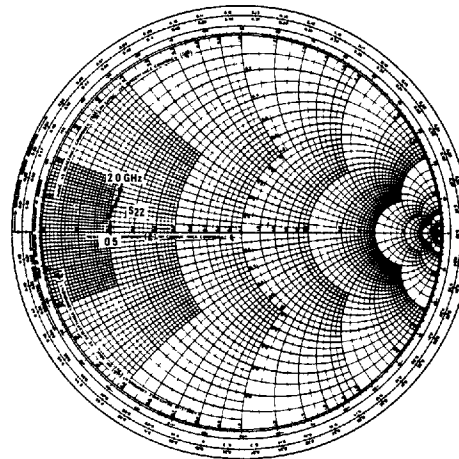
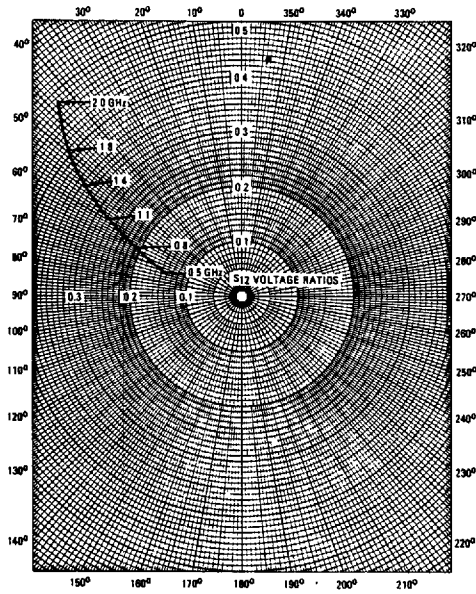
0094100

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2N5837 SCATTERING PARAMETERS

(I_C = 100 mA dc, V_{CE} = 3.0 V dc, Z_G = Z_L = 50 Ohms)FIGURE 16 – S₁₁, INPUT REFLECTION COEFFICIENTFIGURE 17 – S₂₂, OUTPUT REFLECTION COEFFICIENTFIGURE 18 – S₁₂, REVERSE TRANSMISSION COEFFICIENTFIGURE 19 – S₂₁, FORWARD TRANSMISSION COEFFICIENT