N-P-N SILICON PLANAR U.H.F. TRANSISTORS

BF362 BF363

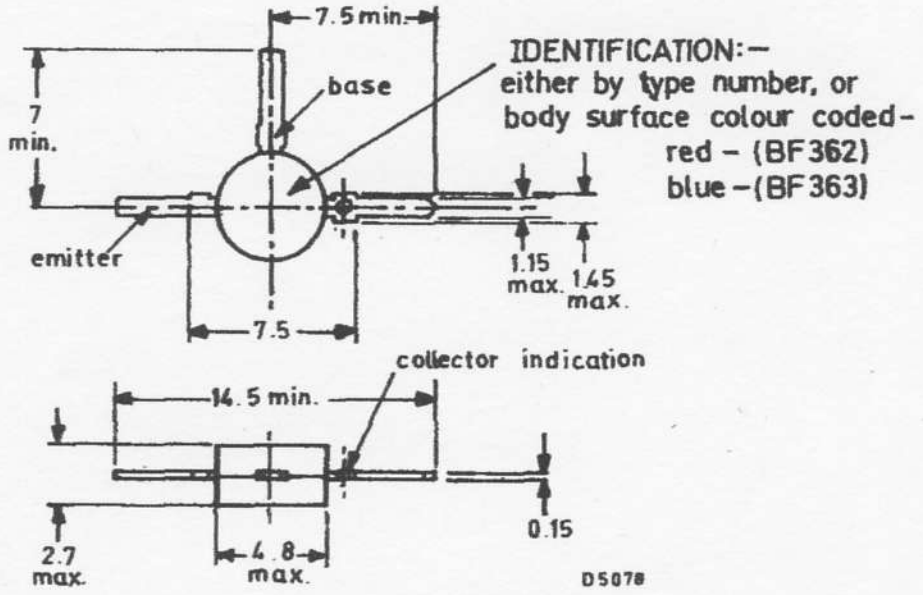
High gain n-p-n silicon planar transistors for use in the u.h.f. band. The BF362 is intended for use in the r.f. stage of television tuners and the BF363 is a self-oscillating mixer.

←

QUICK REFERENCE DATA			
V_{CBO} max.		30	V
V_{CEO} max.		20	V
I_C max.		20	mA
P_{tot} max. ($T_{amb} \leq 55^oC$)		120	mW
T_j max.		125	^oC
f_T	($I_C = 3.0mA$, $V_{CE} = 10V$, f = 100MHz)		
	BF362 typ.	800	MHz
	BF363 min.	600	MHz
	max	820	MHz
Stage gain	min. (f = 900MHz)	11	dB
Noise figure	typ. (f = 800MHz)	5.0	dB

Unless otherwise shown, data are applicable to both types

OUTLINE AND DIMENSIONS



All dimensions in mm

RATINGS

Limiting values of operation according to the absolute maximum system.

Electrical

V_{CBO} max.	30	V
V_{CEO} max.	20	V
V_{EBO} max.	3.0	V
I_C max.	20	mA
I_{CM} max.	20	mA
P_{tot} max. ($T_{amb} \leq 55^oC$)	120	mW

Temperature

T_j max.	125	^oC

THERMAL CHARACTERISTIC

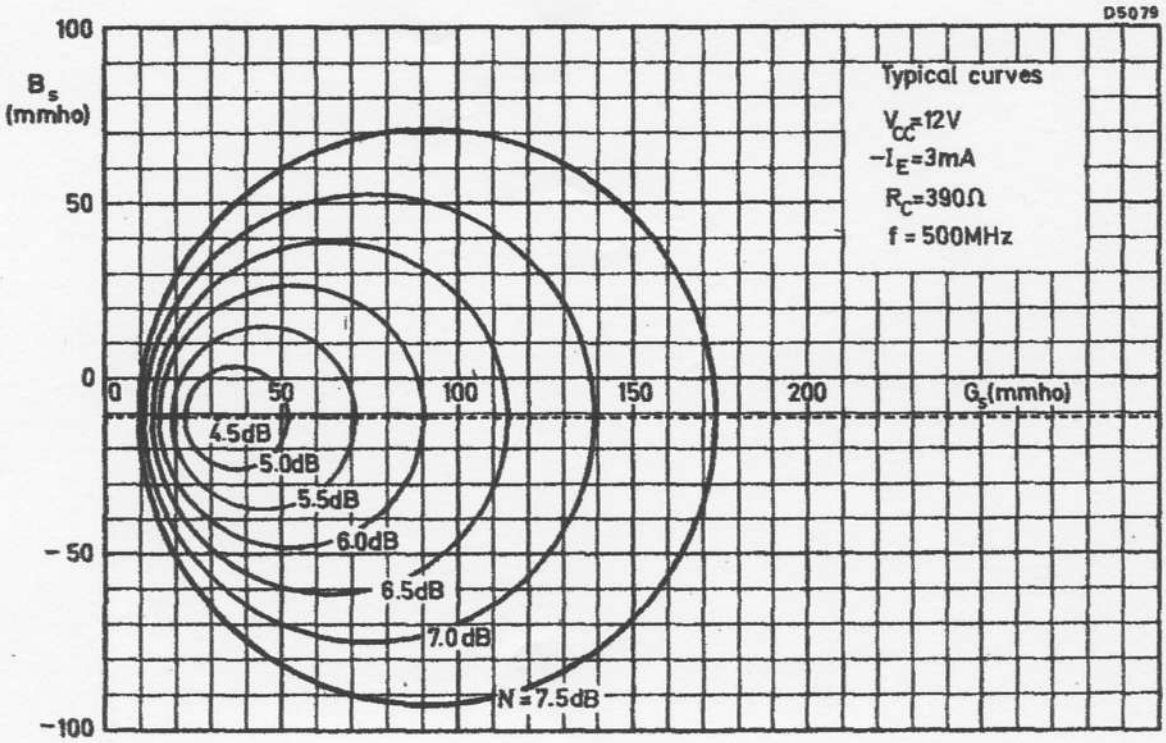
$R_{th(j\text{-}amb)}$	0.58	$^oC/mW$

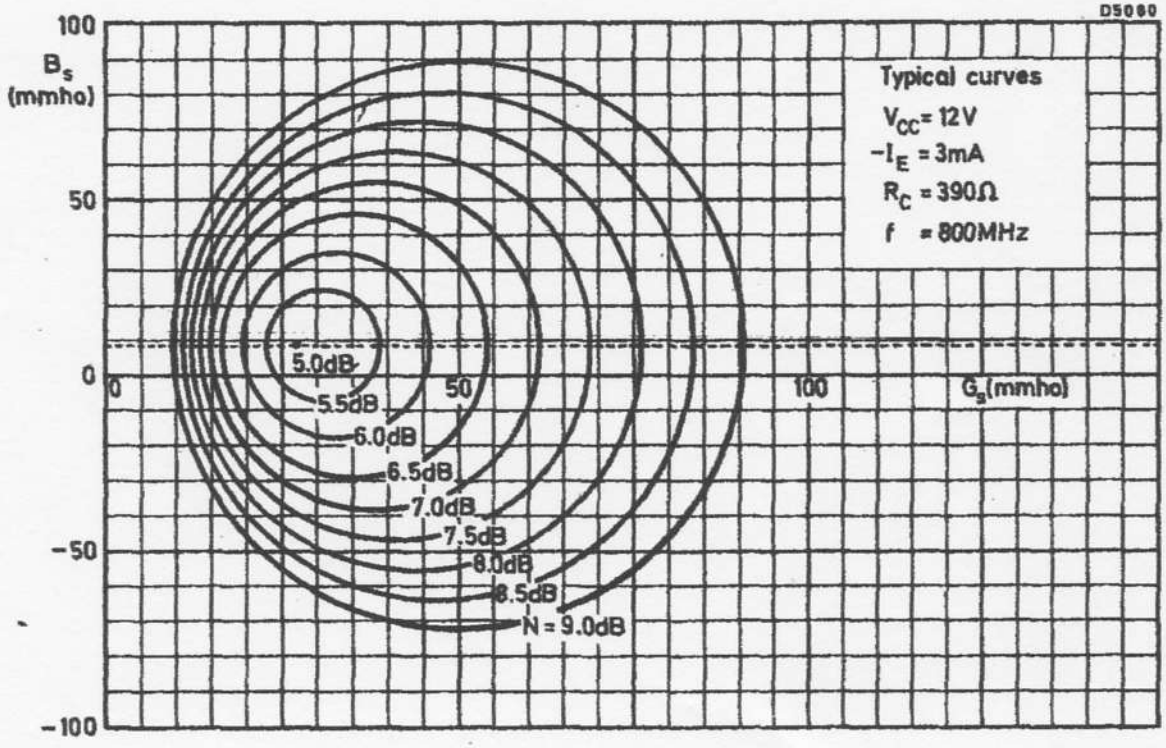
ELECTRICAL CHARACTERISTICS (T_{amb}=25^{o}C unless otherwise stated)

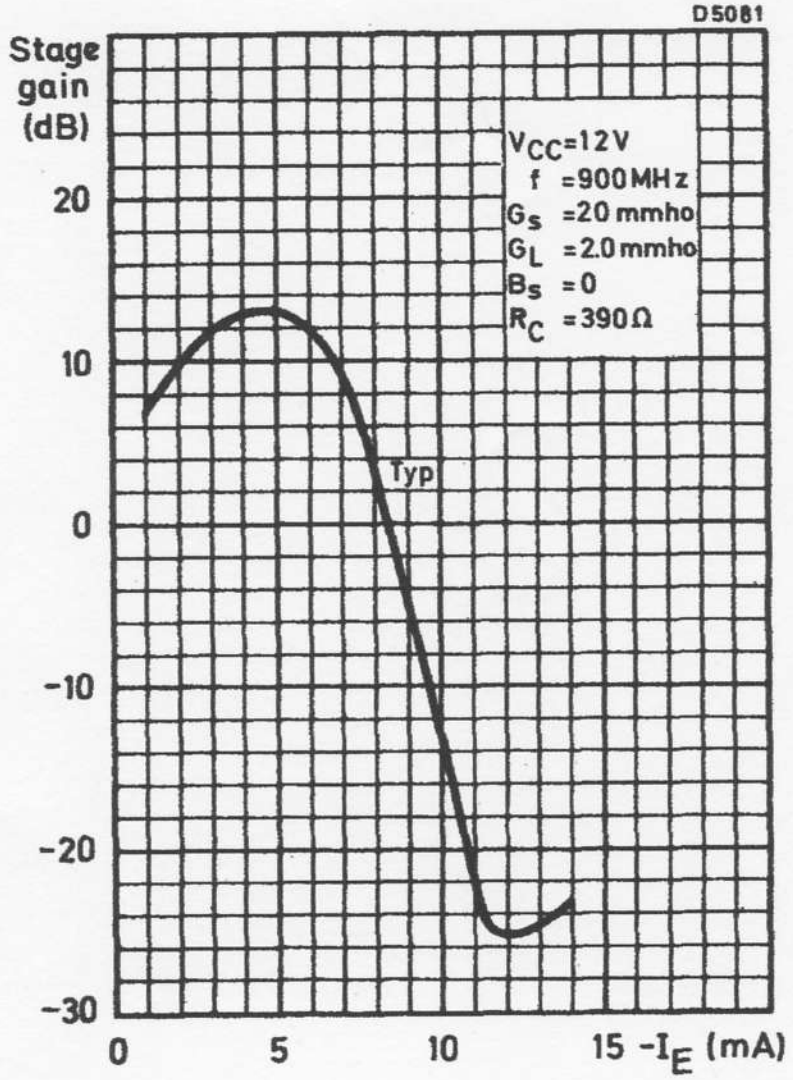
			Min.	Typ.	Max.	
I_B	Base current					
	$-I_E$ = 3.0mA, V_{CB} = 10V		-	60	150	μA
	$-I_E$ = 12mA, V_{CB} = 7.0V		-	0.3	1.0	mA
$-V_{EB}$	Emitter-base voltage					
	$-I_E$ = 3.0mA, V_{CB} = 10V		-	0.75	-	V
	$-I_E$ = 12mA, V_{CB} = 7.0V		-	0.8	-	V
f_T	Transition frequency					
	I_C = 3.0mA, V_{CE} = 10V, f = 100MHz	BF362	-	800	-	MHz
		BF363	600	-	820	MHz
$-C_{re}$	Feedback capacitance					
	I_C = 1.0mA, V_{CE} = 10V, f = 10.7MHz		-	0.25	-	pF
N	Noise figure					
	$-I_E$ = 3.0mA, V_{CC} = 12V, f = 800MHz					
	G_s = 27mmho, B_s = 9mmho, R_C = 390Ω		-	5.0	-	dB
	$-I_E$ = 3.0mA, V_{CC} = 12V, f = 500MHz					
	G_s = 26mmho, B_s = -11mmho, R_C = 390Ω		-	4.5	-	dB
Stage gain						
	$-I_E$ = 3mA, V_{CC} = 12V, f = 900MHz					
	G_s = 20mmho, G_L = 2.0mmho, B_s = 0					
	B_L = tuned, R_C = 390Ω		11	12	-	dB

ELECTRICAL CHARACTERISTICS (contd.)

		Min.	Typ.	Max.	
	y-parameters $-I_E$ = 3.0mA, V_{CB} = 10V, f = 500MHz				
g_{ib}	Input conductance	-	18	-	mmho
$-b_{ib}$	Input susceptance	-	34	-	mmho
$\|y_{rb}\|$	Feedback admittance	-	500	-	μmho
ϕ_{rb}	Phase angle of feedback admittance	-	270	-	degrees
$\|y_{fb}\|$	Transfer admittance	-	45	-	mmho
ϕ_{fb}	Phase angle of transfer admittance	-	80	-	degrees
g_{ob}	Output conductance	-	0.6	-	mmho
C_{ob}	Output capacitance	-	0.5	-	pF
	y-parameters $-I_E$ = 3.0mA, V_{CB} = 10V, f = 900MHz				
g_{ib}	Input conductance	-	8.0	-	mmho
$-b_{ib}$	Input susceptance	-	30	-	mmho
$\|y_{rb}\|$	Feedback admittance	-	900	-	μmho
ϕ_{rb}	Phase angle of feedback admittance	-	270	-	degrees
$\|y_{fb}\|$	Transfer admittance	-	25	-	mmho
ϕ_{fb}	Phase angle of transfer admittance	-	40	-	degrees
g_{ob}	Output conductance	-	1.9	-	mmho ←
C_{ob}	Output capacitance	-	0.6	-	pF


D5079
100
B_s (mmho)
50
0
−50
−100
0
50
100
150
200
G_s(mmho)
Typical curves
V_{CC}=12V
$-I_E$=3mA
R_C=390Ω
f = 500MHz
4.5dB
5.0dB
5.5dB
6.0dB
6.5dB
7.0dB
N = 7.5dB


D5080
100
B_s (mmho)
50
0
−50
−100
0
50
100
G_s(mmho)
Typical curves
V_{CC}= 12V
$-I_E$ = 3mA
R_C = 390Ω
f = 800MHz
5.0dB
5.5dB
6.0dB
6.5dB
7.0dB
7.5dB
8.0dB
8.5dB
N = 9.0dB


D5081
Stage gain (dB)
20
10
0
-10
-20
-30
0
5
10
15
-I_E (mA)
V_{CC}=12V
f =900MHz
G_S =20 mmho
G_L =2.0 mmho
B_S =0
R_C =390Ω
Typ