

MPS6568, A (SILICON)

thru

MPS6570, A

NPN SILICON ANNULAR TRANSISTORS

... designed for VHF-RF and video IF stages in TV receivers.

- Guaranteed Noise Figure
 $NF = 3.3 \text{ dB (Max) @ 200 MHz—MPS6568,A}$
 $6.0 \text{ dB (Max) @ 45 MHz—MPS6569,A, MPS6570,A}$
- Guaranteed AGC Characteristics
- External Shielding for Optimum RF Circuit Performance
- Complete γ -Parameter Curves at Both 45 MHz and 200 MHz
- Guaranteed Power Gain
 $G_{pe} = 20 \text{ dB (Min) @ 200 MHz—MPS6568,A}$
 $22.5 \text{ dB (Min) (Unneutralized) @ 45 MHz—MPS6529,A, MPS6570,A}$

MAXIMUM RATINGS

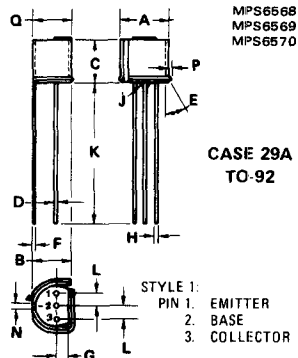
Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	20	Vdc
Collector-Base Voltage	V_{CB}	20	Vdc
Emitter-Base Voltage	V_{EB}	3.0	Vdc
Collector Current - Continuous	I_C	50	mAdc
Total Power Dissipation $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	350 2.8	mW mW/ $^\circ\text{C}$
Total Power Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	1.0 8.0	Watt mW/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-55 to +150	$^\circ\text{C}$

THERMAL CHARACTERISTICS

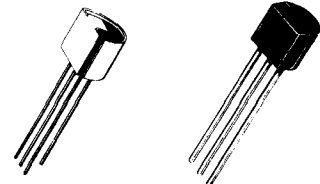
Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case (2)	$R_{\theta JC}$	125	$^\circ\text{C/W}$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	357	$^\circ\text{C/W}$

- (1) Device and shield supplied without shield being attached.
 (2) $R_{\theta JA}$ is measured with the device soldered into a typical printed circuit board.

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	5.03	5.18	0.198	0.204
B	4.01	4.27	0.158	0.168
C	4.45	4.70	0.175	0.185
D	0.254	0.381	0.010	0.015
E	30 $^\circ$ TYP		30 $^\circ$ TYP	
F	0.229	0.279	0.009	0.011
G	1.14	1.40	0.045	0.055
H	0.406	0.483	0.016	0.019
J	0.787	RAD	0.031	RAD
K	12.70	-	0.500	-
L	1.27	T.P	0.050	T.P
N	0.330	0.331	0.013	0.015
P	0.254	TYP	0.010	TYP
Q	4.01	4.27	0.158	0.168



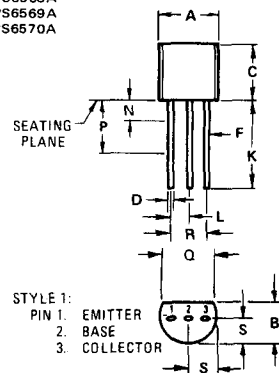
NPN SILICON VHF TRANSISTORS



TO-92 WITH SHIELD (1)
 MPS6568
 MPS6569
 MPS6570

TO-92
 MPS6568A
 MPS6569A
 MPS6570A

MPS6568A
 MPS6569A
 MPS6570A



DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	4.450	5.200	0.175	0.205
B	3.180	4.190	0.125	0.165
C	4.320	5.330	0.170	0.210
D	0.407	0.533	0.016	0.021
F	0.407	0.482	0.016	0.019
K	12.700	-	0.500	-
L	1.150	1.390	0.045	0.055
N	-	1.270	-	0.050
P	6.350	-	0.250	-
Q	3.430	-	0.135	-
R	2.410	2.670	0.095	0.105
S	2.030	2.670	0.080	0.105

CASE 29-02
 TO-92

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

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector-Emitter Breakdown Voltage ($I_C = 1.0 \text{ mAdc}$, $I_B = 0$)	BV_{CEO}	20	—	Vdc
Collector-Base Breakdown Voltage ($I_C = 100 \mu\text{Adc}$, $I_E = 0$)	BV_{CBO}	20	—	Vdc
Emitter-Base Breakdown Voltage ($I_E = 100 \mu\text{Adc}$, $I_C = 0$)	BV_{EBO}	3.0	—	Vdc
Collector Cutoff Current ($V_{CB} = 10 \text{ Vdc}$, $I_C = 0$)	I_{CBO}	—	50	nAdc

ON CHARACTERISTICS				
DC Current Gain ($I_C = 4.0 \text{ mAdc}$, $V_{CE} = 5.0 \text{ Vdc}$)	h_{FE}	20	200	—
Collector-Emitter Saturation Voltage ($I_C = 10 \text{ mAdc}$, $I_B = 5.0 \text{ mAdc}$)	$V_{CE(sat)}$	0.1	0.3	Vdc
Base-Emitter Saturation Voltage ($I_C = 10 \text{ mAdc}$, $I_B = 5.0 \text{ mAdc}$)	$V_{BE(sat)}$	—	0.96	Vdc

SMALL-SIGNAL CHARACTERISTICS				
Current-Gain-Bandwidth Product ($I_C = 4.0 \text{ mAdc}$, $V_{CE} = 10 \text{ Vdc}$, $f = 100 \text{ MHz}$) MPS6568A MPS6569A, MPS6570A	f_T	375 300	800 800	MHz
Collector-Base Capacitance ($V_{CB} = 10 \text{ Vdc}$, $I_E = 0$, $f = 1.0 \text{ MHz}$, emitter guarded, with shield) MPS6568/6570 ($V_{CB} = 10 \text{ Vdc}$, $I_E = 0$, $f = 1.0 \text{ MHz}$, emitter guarded) MPS6568A/6570A	C_{cb}	0.25 —	0.5 0.65	pF
Noise Figure ($V_{AGC} = 1.4 \text{ Vdc}$, $R_S = 50 \text{ ohms}$, $f = 200 \text{ MHz}$, Figure 9) MPS6568,A ($V_{AGC} = 2.75 \text{ Vdc}$, $R_S = 50 \text{ ohms}$, $f = 45 \text{ MHz}$, Figure 10) MPS6569A, MPS6570A	NF	— —	3.3 6.0	dB

FUNCTIONAL TEST				
Power Gain ($V_{AGC} = 1.4 \text{ Vdc}$, $R_S = 50 \text{ ohms}$, $f = 200 \text{ MHz}$, Figure 9) MPS6568,A ($V_{AGC} = 2.75 \text{ Vdc}$, $R_S = 50 \text{ ohms}$, $f = 45 \text{ MHz}$, Figure 10) MPS6569,A, MPS6570,A	G_{pe}	20 22.5	27 28.5	dB
Forward AGC Voltage (Gain Reduction = 30 dB, $R_S = 50 \text{ ohms}$, $f = 200 \text{ MHz}$, Figure 9) MPS6568,A (Gain Reduction = 30 dB, $R_S = 50 \text{ ohms}$, $f = 45 \text{ MHz}$, Figure 10) MPS6569,A MPS6570,A	V_{AGC}	4.0 4.4 5.2	5.0 5.4 6.2	Vdc

AGC CHARACTERISTICS

$V_{CC} = 12 \text{ Vdc}$, $R_S = 50 \text{ OHMS}$. SEE FIGURES 9 AND 10

— $f = 45 \text{ MHz}$ - - - $f = 200 \text{ MHz}$

FIGURE 1 — POWER GAIN

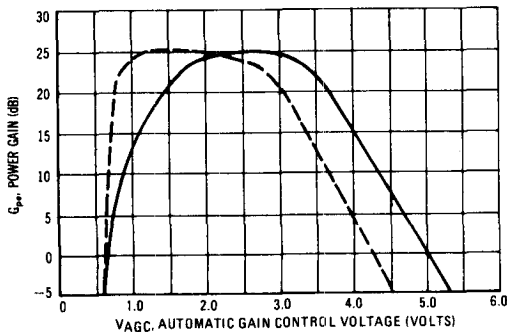
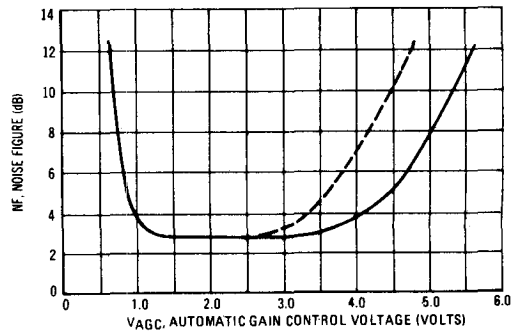


FIGURE 2 — NOISE FIGURE



COMMON-EMITTER y PARAMETERS

$V_{CE} = 12 \text{ Vdc}$, $T_A = 25^\circ\text{C}$

FIGURE 3 — INPUT ADMITTANCE

— $f = 45 \text{ MHz}$ - - - $f = 200 \text{ MHz}$

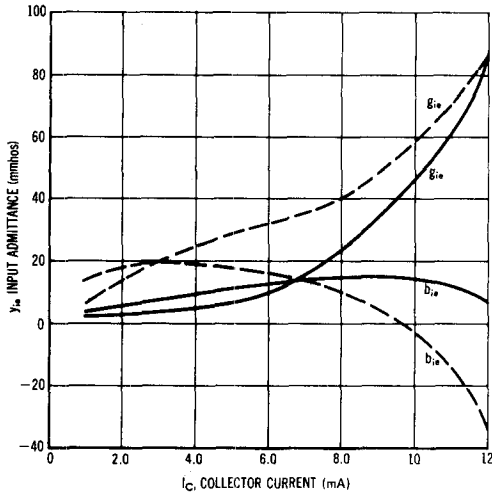


FIGURE 4 — REVERSE TRANSFER ADMITTANCE

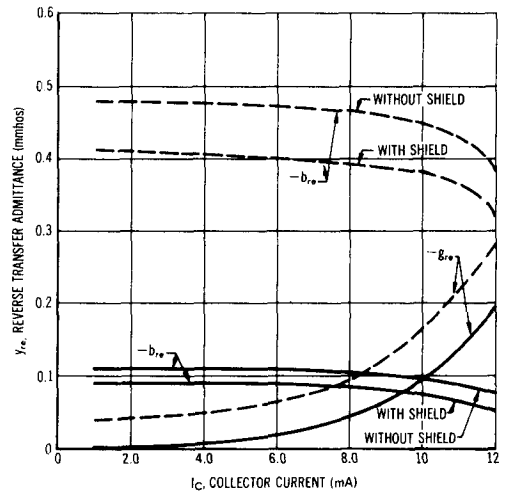


FIGURE 5 — FORWARD TRANSFER ADMITTANCE

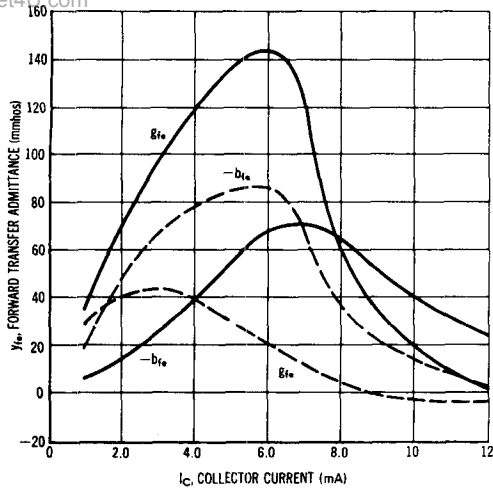
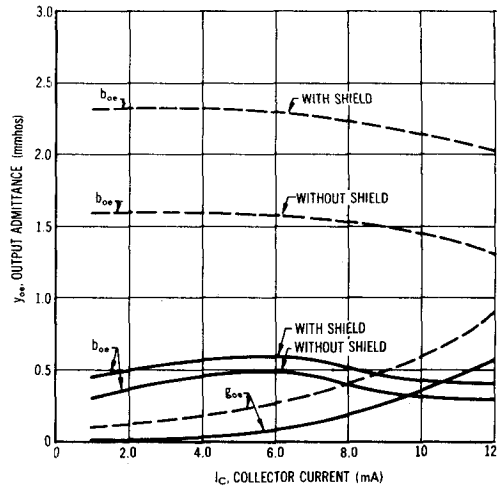


FIGURE 6 — OUTPUT ADMITTANCE



www.DataSheet4U.com

FIGURE 7 — DC CURRENT GAIN

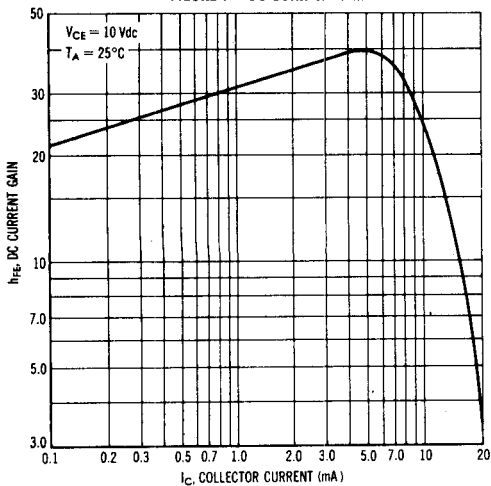


FIGURE 8 — COLLECTOR-BASE CAPACITANCE

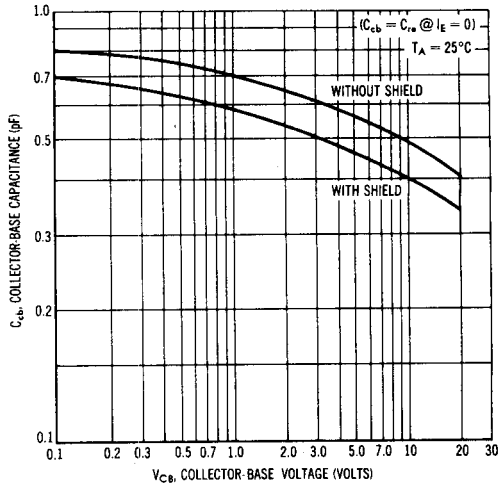


FIGURE 9 — 200 MHz FUNCTIONAL TEST CIRCUIT (NEUTRALIZED)

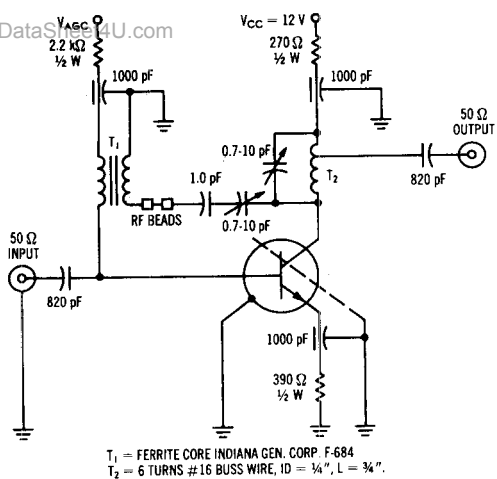


FIGURE 10 — 45 MHz FUNCTIONAL TEST CIRCUIT (UNNEUTRALIZED)

