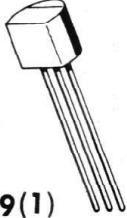


MPS6516 thru **MPS6519** (SILICON)
MPS6522
MPS6523



CASE 29(1)
(TO-92)

PNP silicon transistors designed for use in general purpose audio and low-frequency amplifier applications. Types MPS6522 and MPS6523 are particularly suited for low-noise applications.

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

Rating	Symbol	MPS6516	MPS6519	Unit
		MPS6517	MPS6522	
		MPS6518	MPS6523	
Collector-Emitter Voltage	V_{CEO}	40	25	Volts
Collector-Base Voltage	V_{CB}	40	25	Volts
Emitter Base Voltage	V_{EB}	4.0		Volts
Collector Current	I_C	100		mA
Total Device Dissipation @ $T_A = 60^\circ\text{C}$ @ $T_A = 25^\circ\text{C}$	P_D	210		mW
		310		
Junction Temperature	T_J	135		$^\circ\text{C}$

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Ambient	θ_{JA}	0.357	$^\circ\text{C}/\text{mW}$



MPS6516 thru MPS6519, MPS6522, MPS6523 (continued)

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

Characteristic		Symbol	Min	Typ	Max	Unit
Collector-Emitter Breakdown Voltage (I _C = 0.5 mA _{dc} , I _B = 0)	MPS6516 thru MPS6518 MPS6519, MPS6522, MPS6523	BV _{CEO}	40 25	—	—	V _{dc}
Emitter-Base Breakdown Voltage (I _B = 10 μA _{dc} , I _C = 0)		BV _{EBO}	4.0	—	—	V _{dc}
Collector Cutoff Current (V _{CB} = 30 V _{dc} , I _E = 0) (V _{CB} = 20 V _{dc} , I _E = 0) (V _{CB} = 30 V _{dc} , I _E = 0, T _A = 60°C) (V _{CB} = 20 V _{dc} , I _E = 0, T _A = 60°C)	MPS6516 thru MPS6518 MPS6519, MPS6522, MPS6523 MPS6516 thru MPS 6518 MPS6519, MPS6522, MPS6523	I _{CBO}	— — — —	— — — —	0.05 0.05 1.0 1.0	μA _{dc}
DC Current Gain (I _C = 100 μA _{dc} , V _{CE} = 10 V _{dc}) (I _C = 2 mA _{dc} , V _{CE} = 10 V _{dc}) (I _C = 100 mA _{dc} , V _{CE} = 10 V _{dc})	MPS6522 MPS6523 MPS6516 MPS6517 MPS6518 MPS6519 MPS6522 MPS6523 MPS6516 MPS6517 MPS6518 MPS6519	h _{FE}	100 150 50 90 150 250 200 300 30 60 90 150	— — — — — — — — — — — — — —	— — 100 180 300 500 400 600 — — — —	—
Collector-Emitter Saturation Voltage (I _C = 50 mA _{dc} , I _B = 5 mA _{dc})		V _{CE(sat)}	—	—	0.5	V _{dc}
Current Gain – Bandwidth Product (I _C = 2 mA _{dc} , V _{CE} = 10 V _{dc}) (I _C = 10 mA _{dc} , V _{CE} = 10 V _{dc})	MPS6516, MPS6517 MPS6518, MPS6519 MPS6522, MPS6523 MPS6516, MPS6517 MPS6518, MPS6519 MPS6522, MPS6523	f _T	— — — — —	200 340 340 270 420 420	— — — — —	MHz
Output Capacitance (V _{CB} = 10 V _{dc} , I _E = 0, f = 100 kHz)	MPS6516 thru MPS6519 MPS6522, MPS6523	C _{ob}	— —	— —	4.0 4.0	pF
Wideband Noise Figure (V _{CE} = 5 V _{dc} , I _C = 10 μA _{dc} , R _S = 10 kohms, Power Bandwidth = 15.7 kHz, 3 dB points @ 10 Hz and 10 kHz)	MPS6522, MPS6523	NF	—	1.8	3.0	dB

*Pulse Test: Pulse Width ≤ 30 μs, duty cycle ≤ 2%

WIDEBAND NOISE FIGURE versus SOURCE IMPEDANCE

FIGURE 1 — MPS6516 thru MPS6519

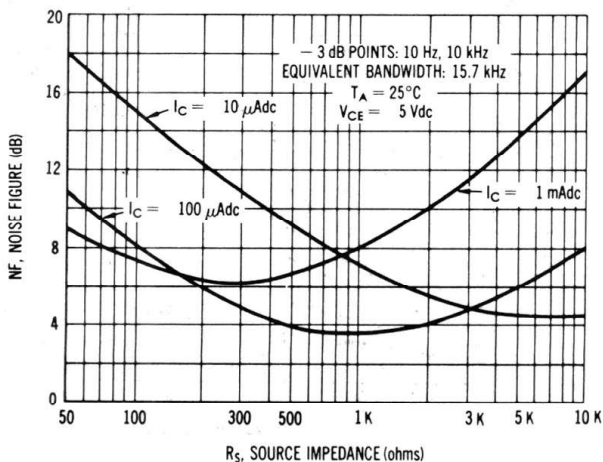
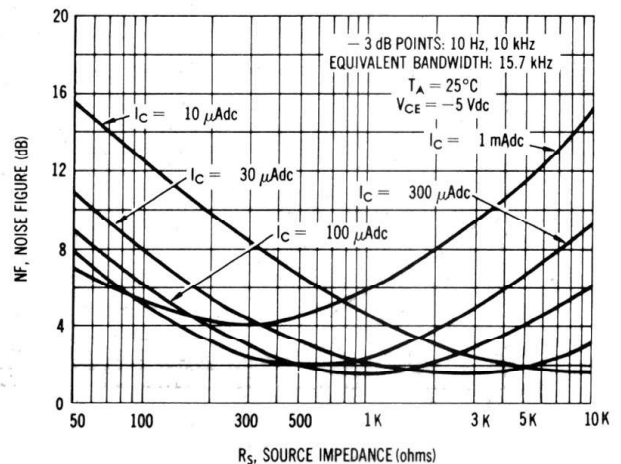


FIGURE 2 — MPS6522, MPS6523



COLLECTOR CHARACTERISTICS — COMMON EMITTER

FIGURE 3 — MPS6516

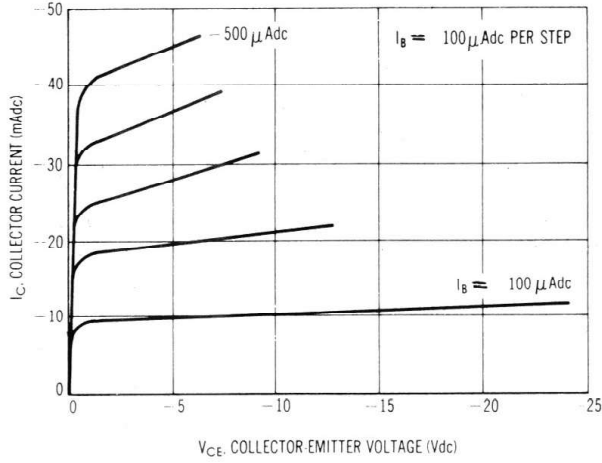


FIGURE 4 — MPS6517

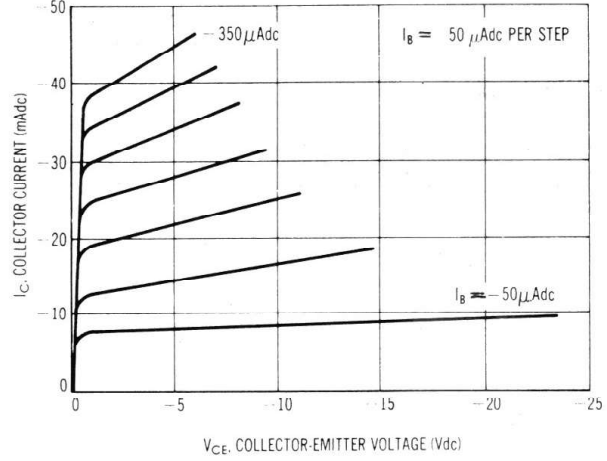


FIGURE 5 — MPS6518, MPS6522

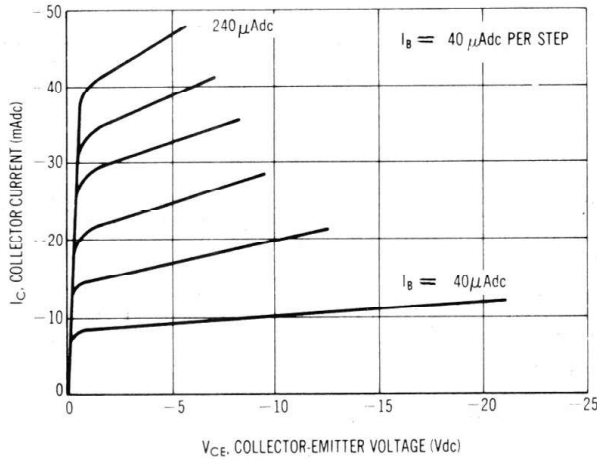


FIGURE 6 — MPS6519, MPS6523

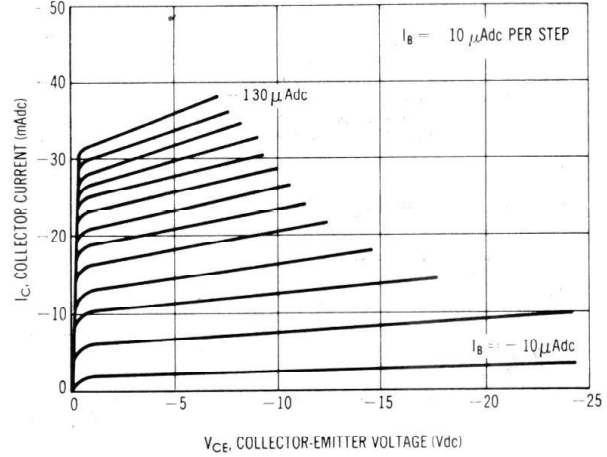


FIGURE 7 — SPOT NOISE FIGURE versus FREQUENCY

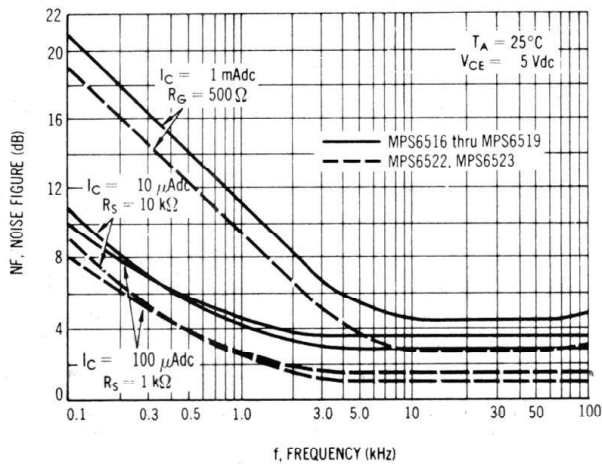
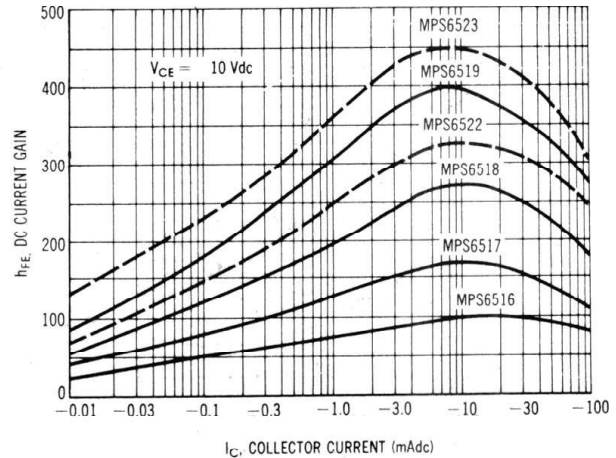


FIGURE 8 — DC CURRENT GAIN versus COLLECTOR CURRENT





MPS6516 thru MPS6519, MPS6522, MPS6523 (continued)

h PARAMETER VARIATIONS
(f = 1 kHz, T_A = 25°C)

FIGURE 9 — INPUT IMPEDANCE versus COLLECTOR CURRENT

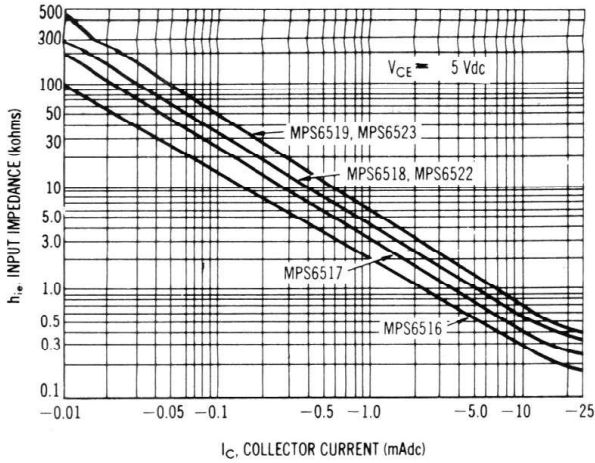


FIGURE 10 — REVERSE VOLTAGE TRANSFER RATIO versus COLLECTOR CURRENT

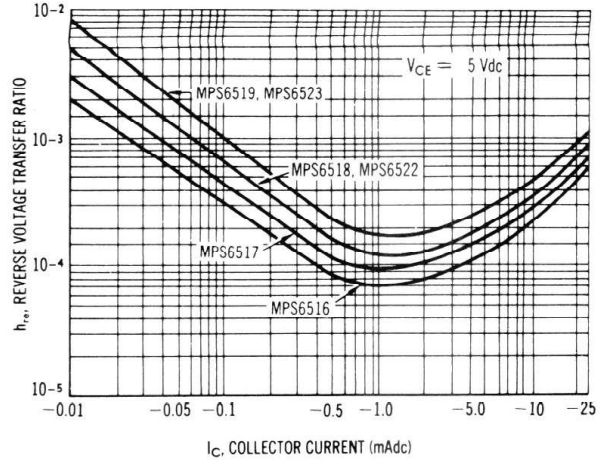


FIGURE 11 — SMALL-SIGNAL CURRENT GAIN versus COLLECTOR CURRENT

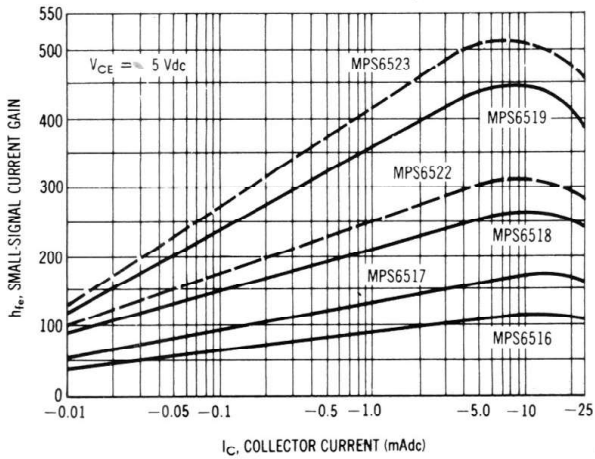


FIGURE 12 — OUTPUT ADMITTANCE versus COLLECTOR CURRENT

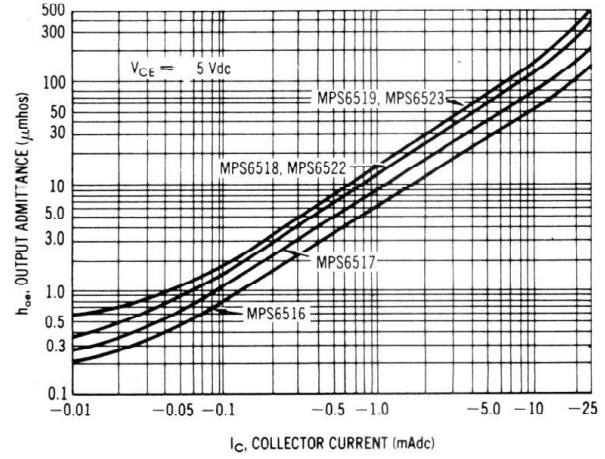


FIGURE 13 — GAIN — BANDWIDTH PRODUCT versus COLLECTOR CURRENT

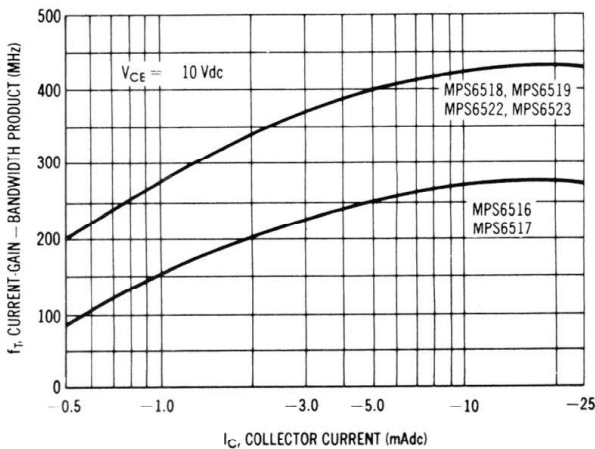


FIGURE 14 — COLLECTOR CURRENT versus BASE-EMITTER TURN-ON VOLTAGE

