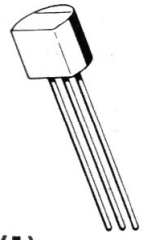
MPS918 (SILICON)
MPS3563

MOTOROLA



NPN silicon annular, plastic encapsulated transistors for low-cost amplifier and oscillator applications at VHF and UHF.

CASE 29(1)
(TO-92)

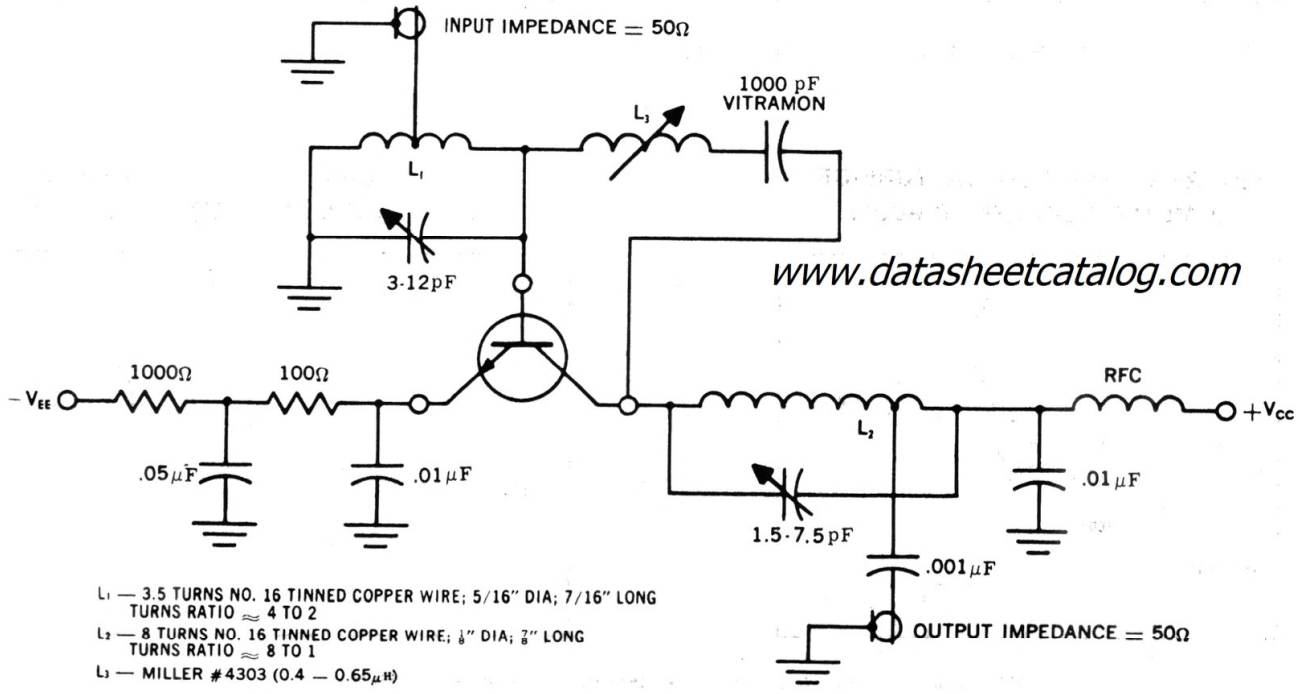
MAXIMUM RATINGS

Rating	Symbol	MPS918	MPS3563	Unit
Collector-Base Voltage	V_{CB}	30	30	Volts
Collector-Emitter Voltage	V_{CEO}	15	12	Volts
Emitter-Base Voltage	V_{EB}	3.0	2.0	Volts
Total Device Dissipation @ $T_A = 25^oC$ Derate above 25^oC	P_D	310 2.81		mW mW/^{o}C
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-55 to +135		^{o}C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Ambient	θ_{JA}	0.357	^{o}C/mW

200 MC POWER GAIN TEST CIRCUIT



L1 — 3.5 TURNS NO. 16 TINNED COPPER WIRE; 5/16" DIA; 7/16" LONG
TURNS RATIO ≈ 4 TO 2
L2 — 8 TURNS NO. 16 TINNED COPPER WIRE; 1/8" DIA; 7/8" LONG
TURNS RATIO ≈ 8 TO 1
L3 — MILLER #4303 (0.4 — 0.65μH)

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

Characteristic		Symbol	Min	Max	Unit
Collector Cutoff Current V_{CB} = 15V, I_E = 0	MPS918 MPS3563	I_{CBO}	– –	10 50	nA
Collector-Base Breakdown Voltage I_C = 1.0 μA, I_E = 0 I_C = 100 μA, I_E = 0	MPS918 MPS3563	BV_{CBO}	30 30	– –	Volts
Emitter-Base Breakdown Voltage I_E = 10 μA, I_C = 0	MPS918 MPS3563	BV_{EBO}	3.0 2.0	– –	Volts
Collector-Emitter Voltage* I_C = 3.0 mA, I_E = 0	MPS918 MPS3563	BV_{CEO}*	15 12	– –	Volts
DC Current Gain* V_{CE} = 1V, I_C = 3mA V_{CE} = 10V, I_C = 8mA	MPS918 MPS3563	h_{FE}*	20 20	– 200	—
Collector-Emitter Saturation Voltage I_C = 10mA, I_B = 1mA	MPS918	$V_{CE(sat)}$	–	0.4	Volts
Base-Emitter Saturation Voltage I_C = 10mA, I_B = 1mA	MPS918	$V_{BE(sat)}$	–	1.0	Volts
Small Signal Current Gain I_C = 4mA, V_{CE} = 10V, f = 100 MHz I_C = 8mA, V_{CE} = 10V, f = 100 MHz I_C = 8mA, V_{CE} = 10V, f = 1 kHz	MPS918 MPS3563 MPS3563	h_{fe}	6.0 6.0 20	– 15 250	—
Output Capacitance V_{CB} = 10V. I_E = 0, f = 140 kHz V_{CB} = 10V, I_E = 0, f = 1 MHz V_{CB} = 0V, I_E = 0, f = 140 kHz	MPS918 MPS3563 MPS918	C_{ob}	– – –	1.7 1.7 3.0	pF
Input Capacitance V_{BE} = 0.5V, I_C = 0	MPS918	C_{ib}	–	2.0	pF
Amplifier Power Gain I_C = 6mA, f = 200 MHz, V_{CB} = 12V I_C = 8mA, V_{CE} = 10V, f = 200 MHz $G_{fd} + G_{re}$ < -20 dB	MPS918 MPS3563	Gpe	15 14	– –	dB
Power Output I_C = 8mA, V_{CB} = 15V, f = 500 MHz	MPS918	Pout	30		mW
Collector Efficiency I_C = 8mA, V_{CB} = 15V, f = 500 MHz	MPS918	eff	25		%
Noise Figure I_C = 1mA, V_{CE} = 6V, f = 60 MHz Rg = 400	MPS918	NF	–	6.0	dB

*PW ≤ 300 μs. DC ≤ 1%