

Silicon Dual NPN Transistor

MD918F

High Frequency Transistor

30V / 50mA

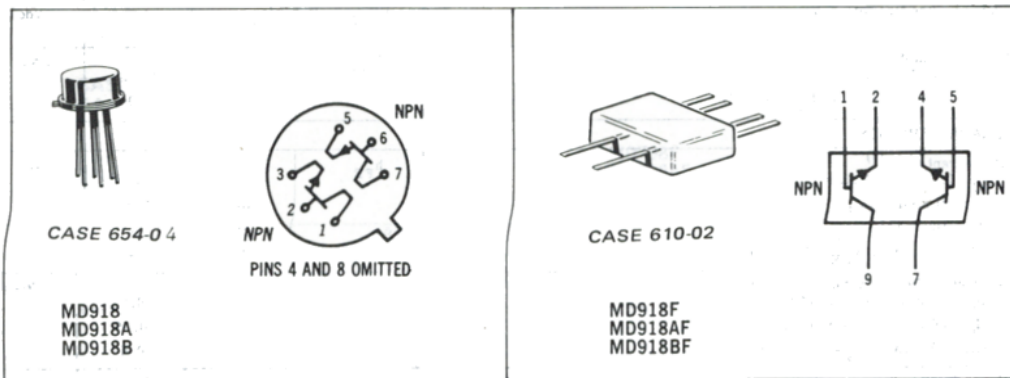
DATASHEET

OEM –Motorola

Source: Motorola Databook 1972

MD918, F (SILICON) MD918A, F MD918B, F

Dual NPN silicon annular transistors designed for ultra-high frequency oscillator and amplifier applications and for differential amplifier applications requiring a matched pair of transistors with a high degree of parameter uniformity under varying environmental conditions.



Pin Connections, Bottom View
All Leads Electrically Isolated from Case

MAXIMUM RATINGS (each side) (T_A = 25°C unless otherwise noted)

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V _{CEO}	15	Vdc
Collector-Base Voltage	V _{CB}	30	Vdc
Emitter-Base Voltage	V _{EB}	5.0	Vdc
Collector Current	I _C	50	mAdc
Operating and Storage Junction Temperature Range	T _J , T _{stg}	-65 to +200	°C
Total Device Dissipation @ T _A = 25°C	P _D	One Side	Both Sides
		300 1.7	400 2.3
Metal Can Derate above 25°C			mW mW/°C
Flat Package Derate above 25°C		250 1.5	350 2.0
			mW mW/°C

MD918,F/MD918A,F/MD918B,F (continued)**ELECTRICAL CHARACTERISTICS** (each side) ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Min	Max	Unit
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OFF CHARACTERISTICS

Collector-Emitter Breakdown Voltage ($I_C = 3 \text{ mAdc}$, $I_B = 0$)	BV_{CEO}	15	—	Vdc
Collector-Base Breakdown Voltage ($I_C = 1 \mu\text{Adc}$, $I_E = 0$)	BV_{CBO}	30	—	Vdc
Emitter-Base Breakdown Voltage ($I_E = 10 \mu\text{Adc}$, $I_C = 0$)	BV_{EBO}	5.0	—	Vdc
Collector Cutoff Current ($V_{CB} = 15 \text{ Vdc}$, $I_E = 0$) ($V_{CB} = 15 \text{ Vdc}$, $I_E = 0$, $T_A = 150^\circ\text{C}$)	I_{CBO}	— —	0.010 1.0	μAdc

ON CHARACTERISTICS

DC Current Gain ($I_C = 1 \text{ mAdc}$, $V_{CE} = 5 \text{ Vdc}$)	h_{FE}	50	—	—
Collector-Emitter Saturation Voltage ($I_C = 10 \text{ mAdc}$, $I_B = 1 \text{ mAdc}$)	$V_{CE(sat)}$	—	0.2	Vdc
Base-Emitter Saturation Voltage ($I_C = 10 \text{ mAdc}$, $I_B = 1 \text{ mAdc}$)	$V_{BE(sat)}$	—	0.9	Vdc

DYNAMIC CHARACTERISTICS

Current-Gain-Bandwidth Product ($I_C = 4 \text{ mAdc}$, $V_{CE} = 10 \text{ Vdc}$, $f = 100 \text{ MHz}$)	f_T	600	—	MHz
Output Capacitance ($V_{CB} = 10 \text{ Vdc}$, $I_E = 0$, $f = 140 \text{ kHz}$) ($V_{CB} = 0$, $I_E = 0$, $f = 140 \text{ kHz}$)	C_{ob}	— —	1.7 3.0	pF
Input Capacitance ($V_{BE} = 0.5 \text{ Vdc}$, $I_C = 0$, $f = 140 \text{ kHz}$)	C_{ib}	—	2.0	pF
Noise Figure ($I_C = 1 \text{ mAdc}$, $V_{CE} = 6 \text{ Vdc}$, $f = 60 \text{ MHz}$, $R_S = 400 \text{ ohms}$)	NF	—	6.0	dB

MATCHING CHARACTERISTICS

DC Current Gain Ratio* ($I_C = 1 \text{ mAdc}$, $V_{CE} = 5 \text{ Vdc}$)	MD918A, MD918AF MD918B, MD918BF	h_{FE1}/h_{FE2}^*	0.9 0.8	1.0 1.0	—
Base Voltage Differential ($I_C = 1 \text{ mAdc}$, $V_{CE} = 5 \text{ Vdc}$)	MD918A, MD918AF MD918B, MD918BF	$ V_{BE1} - V_{BE2} $	— —	5.0 10	mVdc
Base Voltage Differential Change ($I_C = 1 \text{ mAdc}$, $V_{CE} = 5 \text{ Vdc}$, $T_A = -55 \text{ to } +125^\circ\text{C}$)	MD918A, MD918AF MD918B, MD918BF	$\frac{\Delta(V_{BE1} - V_{BE2})}{\Delta T_A}$	— —	10 20	$\mu\text{V}/^\circ\text{C}$

*The lowest h_{FE} reading is taken as h_{FE1} for this ratio.