MD918
MD918A
MD918B

CASE 654-07, STYLE 1

MD918F
MD918AF
MD918BF

CASE 610A-04, STYLE 1

DUAL AMPLIFIER TRANSISTOR

NPN SILICON

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MAXIMUM RATINGS

Rating	Symbol	Value		Unit
Collector-Emitter Voltage	V_{CEO}	15		Vdc
Collector-Base Voltage	V_{CBO}	30		Vdc
Emitter-Base Voltage	V_{EBO}	3.0		Vdc
Collector Current — Continuous	I_C	50		mAdc
		One Die	Both Die	
Total Device Dissipation @ T_A = 25°C	P_D			
MD918,A,B		550	600	mW
MD918F,AF,BF		350	400	
Derate above 25°C				
MD918,A,B		3.14	3.42	mW/°C
MD918F,AF,BF		2.0	2.28	
Total Device Dissipation @ T_C = 25°C	P_D			
MD918,A,B		1.4	2.0	Watts
MD918F,AF,BF		0.7	1.4	
Derate above 25°C				
MD918,A,B		8.0	11.4	mW/°C
MD918F,AF,BF		4.0	8.0	
Operating and Storage Junction Temperature Range	T_J, T_{stg}	−65 to +200		°C

THERMAL CHARACTERISTICS

Characteristic		Symbol	One Die	All Die Equal Power	Unit
Thermal Resistance, Junction to Case		$R_{\theta JC}$			°C/W
	MD918,A,B		125	87.5	
	MD918F,AF,BF		250	125	
Thermal Resistance, Junction to Ambient		$R_{\theta JA}$(1)			°C/W
	MD918,A,B		319	292	
	MD918F,AF,BF		500	438	
			Junction to Ambient	Junction to Case	
Coupling Factors					%
	MD918,A,B		83	40	
	MD918F,AF,BF		75	0	

(1) $R_{\theta JA}$ is measured with the device soldered into a typical printed circuit board.

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

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage(2) (I_C = 3.0 mAdc, I_B = 0)	$V_{(BR)CEO}$	15	—	—	Vdc
Collector-Base Breakdown Voltage (I_C = 1.0 μAdc, I_E = 0)	$V_{(BR)CBO}$	30	—	—	Vdc
Emitter-Base Breakdown Voltage (I_E = 10 μAdc, I_C = 0)	$V_{(BR)EBO}$	3.0	—	—	Vdc
Collector Cutoff Current	I_{CBO}				
(V_{CB} = 15 Vdc, I_E = 0)		—	—	10	nAdc
(V_{CB} = 15 Vdc, I_E = 0, T_A = 150°C)		—	—	1.0	μAdc
ON CHARACTERISTICS					
DC Current Gain (I_C = 3.0 mAdc, V_{CE} = 5.0 Vdc)	h_{FE}	50	165	—	—
Collector-Emitter Saturation Voltage (I_C = 10 mAdc, I_B = 1.0 Adc)	$V_{CE(sat)}$	—	0.09	0.2	Vdc
Base-Emitter Saturation Voltage (I_C = 10 mAdc, I_B = 1.0 mAdc)	$V_{BE(sat)}$	—	0.86	0.9	Vdc
SMALL-SIGNAL CHARACTERISTICS					
Current-Gain — Bandwidth Product (I_C = 4.0 mAdc, V_{CE} = 10 Vdc, f = 100 MHz)	f_T	600	—	—	MHz
Output Capacitance (V_{CB} = 10 Vdc, I_E = 0, f = 100 kHz)	C_{obo}	—	1.1	1.7	pF

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

Characteristic		Symbol	Min	Typ	Max	Unit
Input Capacitance (V_{BE} = 0.5 Vdc, I_C = 0, f = 100 kHz)		C_{ibo}	—	1.15	2.0	pF
Noise Figure (I_C = 1.0 mAdc, V_{CE} = 6.0 Vdc, R_S = 400Ω, f = 60 MHz)		NF	—	—	6.0	dB
MATCHING CHARACTERISTICS						
DC Current Gain Ratio(3) (I_C = 1.0 mAdc, V_{CE} = 5.0 Vdc)	MD918B,BF MD918A,AF	h_{FE1}/h_{FE2}	0.8 0.9	—	1.0 1.0	—
Base-Emitter Voltage Differential (I_C = 1.0 mAdc, V_{CE} = 5.0 Vdc)	MD918B,BF MD918A,AF	$\lvert V_{BE1}-V_{BE2}\rvert$	— —	— —	10 5.0	mVdc
Base-Emitter Voltage Differential Gradient (I_C = 1.0 mAdc, V_{CE} = 5.0 Vdc, T_A = −55 to +125°C)	MD918B,AF,BF MD918A	$\frac{\Delta(V_{BE1}-V_{BE2})}{\Delta T_A}$	— —	— —	20 10	μV/dc °C

(2) Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%.
(3) The lowest h_{FE} reading is taken as h_{FE1} for this ratio.

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FIGURE 1 – DC CURRENT GAIN

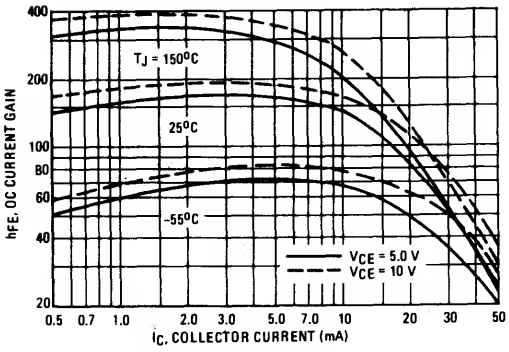


FIGURE 2 – "ON" VOLTAGES

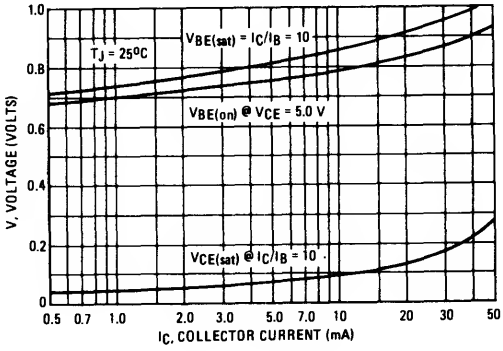


FIGURE 3 – BASE-EMITTER TEMPERATURE COEFFICIENT

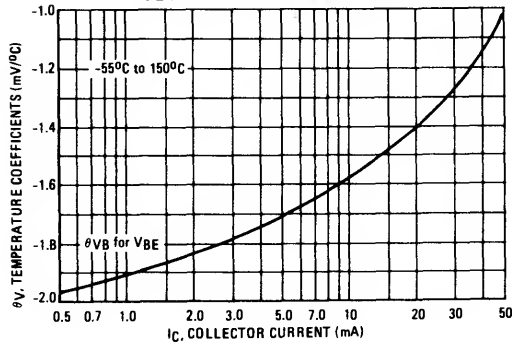


FIGURE 4 – CURRENT-GAIN BANDWIDTH PRODUCT

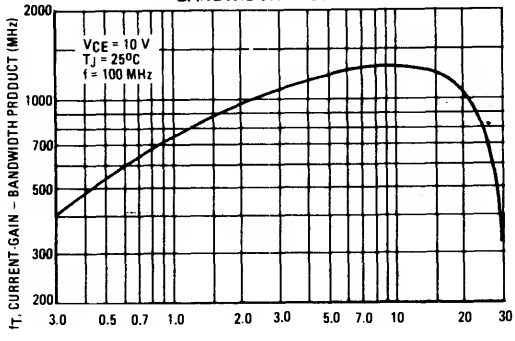
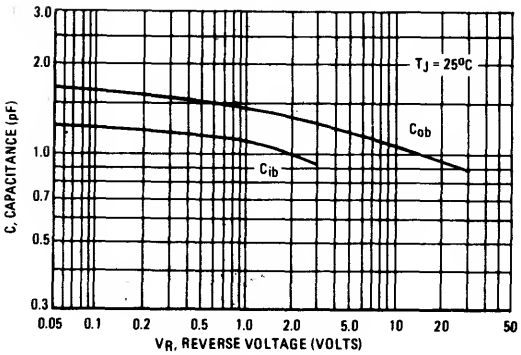


FIGURE 5 – CAPACITANCE



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