MD7002,A,B

CASE 654-07, STYLE 1

DUAL AMPLIFIER TRANSISTOR

NPN SILICON

Refer to 2N2919 for graphs.

MAXIMUM RATINGS

Rating	Symbol	Value		Unit
Collector-Emitter Voltage	V_{CEO}	40		Vdc
Collector-Base Voltage	V_{CBO}	50		Vdc
Emitter-Base Voltage	V_{EBO}	5.0		Vdc
Collector Current — Continuous	I_C	30		mAdc
		One Die	Both Die Equal Power	
Total Device Dissipation @ T_A = 25°C Derate above 25°C	P_D	575 3.29	625 3.57	mW mW/°C
Total Device Dissipation @ T_C = 25°C Derate above 25°C	P_D	1.8 10.3	2.5 14.3	Watts mW/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}	−65 to +200		°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	One Die	Both Die Equal Power	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	97	70	°C/W
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$(1)	304	280	°C/W
		Junction to Ambient	Junction to Case	
Coupling Factors		84	44	%

(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 = 10 mAdc, I_B = 0)		$V_{(BR)CEO}$	40	—	—	Vdc
Collector-Base Breakdown Voltage (I_C = 10 μAdc, I_E = 0)		$V_{(BR)CBO}$	50	—	—	Vdc
Emitter-Base Breakdown Voltage (I_E = 10 μAdc, I_C = 0)		$V_{(BR)EBO}$	5.0	—	—	Vdc
Collector Cutoff Current (V_{CB} = 30 Vdc, I_E = 0)		I_{CBO}	—	—	100	nAdc
ON CHARACTERISTICS						
DC Current Gain(2) (I_C = 100 μAdc, V_{CE} = 10 Vdc) (I_C = 10 mAdc, V_{CE} = 10 Vdc)		h_{FE}	40 50	130 170	— —	—
Collector-Emitter Saturation Voltage (I_C = 10 mAdc, I_B = 1.0 mAdc)		$V_{CE(sat)}$	—	0.2	0.35	Vdc
Base-Emitter Saturation Voltage (I_C = 10 mAdc, I_B = 1.0 mAdc)		$V_{BE(sat)}$	—	0.8	1.0	Vdc
SMALL-SIGNAL CHARACTERISTICS						
Current-Gain — Bandwidth Product(2) (I_C = 5.0 mAdc, V_{CE} = 20 Vdc, f = 100 MHz)		f_T	200	260	—	MHz
Output Capacitance (V_{CB} = 10 Vdc, I_E = 0, f = 100 kHz)		C_{obo}	—	2.6	6.0	pF
Input Capacitance (V_{BE} = 2.0 Vdc, I_C = 0, f = 100 kHz)		C_{ibo}	—	2.3	8.0	pF
MATCHING CHARACTERISTICS						
DC Current Gain Ratio(3) (I_C = 100 μAdc, V_{CE} = 10 Vdc)	MD7002A MD7002B	h_{FE1}/h_{FE2}	0.75 0.85	— —	1.0 1.0	—
Base-Emitter Voltage Differential (I_C = 100 μAdc, V_{CE} = 10 Vdc)	MD7002A MD7002B	$\lvert V_{BE1}-V_{BE2}\rvert$	— —	— —	25 15	mVdc

(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.