MD7007,A,B,F,BF
MQ7007

MD7007,A,B
CASE 654-07, STYLE 1

MD7007F,BF
CASE 610A-04, STYLE 1

MQ7007
CASE 607-04, STYLE 1

DUAL AMPLIFIER TRANSISTOR

PNP SILICON

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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	200		mAdc
		One Die	All Die Equal Power	
Total Device Dissipation @ T_A = 25°C	P_D			mW
MD7007,A,B		575	625	
MD7007F,BF		350	400	
MQ7007		400	600	
Derate above 25°C				mW/°C
MD7007,A,B		3.29	3.57	
MD7007F,BF		2.0	2.28	
MQ7007		2.28	3.42	
Total Device Dissipation @ T_C = 25°C	P_D			Watts
MD7007,A,B		1.8	2.5	
MD7007F,BF		1.0	2.0	
MQ7007		0.9	3.6	
Derate above 25°C				mW/°C
MD7007,A,B		10.3	14.3	
MD7007F,BF		5.71	11.4	
MQ7007		5.13	20.5	
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
MD7007,A,B		97	70	
MD7007F,BF		175	87.5	
MQ7007		195	48.8	
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$(1)			°C/W
MD7007,A,B		304	280	
MD7007F,BF		500	438	
MQ7007		438	292	
		Junction to Ambient	Junction to Case	
Coupling Factors				%
MD7007,A,B		84	44	
MD7007F,BF		75	0	
MQ7007 (Q1-Q2)		57	0	
(Q1-Q2 or Q1-Q4)		55	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 = 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(2)					
DC Current Gain	h_{FE}				—
(I_C = 100 μAdc, V_{CE} = 10 Vdc)		30	110	—	
(I_C = 1.0 mAdc, V_{CE} = 10 Vdc)		30	130	—	
(I_C = 10 mAdc, V_{CE} = 10 Vdc)		30	75	—	
(I_C = 50 mAdc, V_{CE} = 10 Vdc)		15	25	—	

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

Characteristic		Symbol	Min	Typ	Max	Unit
Collector-Emitter Saturation Voltage (I_C = 50 mAdc, I_B = 5.0 mAdc)		$V_{CE(sat)}$	—	0.38	1.0	Vdc
Base-Emitter Saturation Voltage (I_C = 50 mAdc, I_B = 5.0 mAdc)		$V_{BE(sat)}$	—	0.9	1.5	Vdc
SMALL-SIGNAL CHARACTERISTICS						
Current-Gain — Bandwidth Product(2) (I_C = 10 mAdc, V_{CE} = 10 Vdc, f = 100 MHz)		f_T	300	600	—	MHz
Output Capacitance (V_{CB} = 10 Vdc, I_E = 0, f = 100 kHz)		C_{obo}	—	4.0	8.0	pF
Input Capacitance (V_{BE} = 2.0 Vdc, I_C = 0, f = 100 kHz)		C_{ibo}	—	3.8	10	pF
MATCHING CHARACTERISTICS						
DC Current Gain Ratio(3) (I_C = 1.0 mAdc, V_{CE} = 10 Vdc)	MD7007A MD7007B	h_{FE1}/h_{FE2}	 0.75 0.85	 — —	 1.0 1.0	—
Base-Emitter Voltage Differential (I_C = 1.0 mAdc, V_{CE} = 10 Vdc)	MD7007A MD7007B	$\lvert V_{BE1}-V_{BE2}\rvert$	 — —	 — —	 20 10	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.