

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

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 _{θJC}			°C/W
MD7007,A,B		97	70	
MD7007F,BF		175	87.5	
MQ7007		195	48.8	
Thermal Resistance, Junction to Ambient	R _{θJA} (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_{θJA} 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 (I _C = 100 μAdc, V _{CE} = 10 Vdc) (I _C = 1.0 mAdc, V _{CE} = 10 Vdc) (I _C = 10 mAdc, V _{CE} = 10 Vdc) (I _C = 50 mAdc, V _{CE} = 10 Vdc)	h _{FE}	30 30 30 15	110 130 75 25	— — — —	—

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ELECTRICAL CHARACTERISTICS (continued) ($T_A = 25^\circ\text{C}$ unless otherwise noted.)

Characteristic	Symbol	Min	Typ	Max	Unit
Collector-Emitter Saturation Voltage ($I_C = 50 \text{ mAdc}$, $I_B = 5.0 \text{ mAdc}$)	$V_{CE(sat)}$	—	0.38	1.0	Vdc
Base-Emitter Saturation Voltage ($I_C = 50 \text{ mAdc}$, $I_B = 5.0 \text{ mAdc}$)	$V_{BE(sat)}$	—	0.9	1.5	Vdc

SMALL-SIGNAL CHARACTERISTICS

Current-Gain — Bandwidth Product(2) ($I_C = 10 \text{ mAdc}$, $V_{CE} = 10 \text{ Vdc}$, $f = 100 \text{ MHz}$)	f_T	300	600	—	MHz
Output Capacitance ($V_{CB} = 10 \text{ Vdc}$, $I_E = 0$, $f = 100 \text{ kHz}$)	C_{obo}	—	4.0	8.0	pF
Input Capacitance ($V_{BE} = 2.0 \text{ Vdc}$, $I_C = 0$, $f = 100 \text{ kHz}$)	C_{ibo}	—	3.8	10	pF

MATCHING CHARACTERISTICS

DC Current Gain Ratio(3) ($I_C = 1.0 \text{ mAdc}$, $V_{CE} = 10 \text{ Vdc}$)	MD7007A	h_{FE1}/h_{FE2}	0.75	—	1.0	—
	MD7007B		0.85	—	1.0	—
Base-Emitter Voltage Differential ($I_C = 1.0 \text{ mAdc}$, $V_{CE} = 10 \text{ Vdc}$)	MD7007A	$ V_{BE1} - V_{BE2} $	—	—	20	mVdc
	MD7007B		—	—	10	

(2) Pulse Test: Pulse Width $\leq 300 \mu\text{s}$, Duty Cycle $\leq 2.0\%$.

(3) The lowest h_{FE} reading is taken as h_{FE1} for this ratio.

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