

MAXIMUM RATINGS

Rating	Symbol	Value	Unit	
Collector-Emitter Voltage	V _{CEO}	30	V _{dc}	
Collector-Base Voltage	V _{CBO}	50	V _{dc}	
Emitter-Base Voltage	V _{EBO}	5.0	V _{dc}	
Collector Current — Continuous	I _C	600	mA _{dc}	
		One Die	All Die	
Total Device Dissipation @ T _A = 25°C	P _D	600	650	mW
MD7001		350	400	
MD7001F		400	600	
MQ7001				
Derate above 25°C				mW/°C
MD7001		3.42	3.7	
MD7001F		2.0	2.28	
MQ7001		2.28	3.42	
Total Device Dissipation @ T _C = 25°C	P _D	2.1	3.8	Watts
MD7001		1.25	2.5	
MD7001F		1.0	4.0	
MQ7001				
Derate above 25°C				mW/°C
MD7001		12	17.2	
MD7001F		7.15	14.3	
MQ7001		5.71	22.8	
Operating and Storage Junction Temperature Range	T _J , T _{stg}	-65 to +200		°C

MD7001,F MQ7001

MD7001
CASE 654-07, STYLE 1

MD7001F
CASE 610A-04, STYLE 1

MQ7001
CASE 607-04, STYLE 1

DUAL
AMPLIFIER TRANSISTOR

PNP SILICON

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THERMAL CHARACTERISTICS

Characteristic	Symbol	One Die	All Die Equal Power	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	83.3 140 175	58.3 70 43.8	$^\circ\text{C/W}$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}(1)$	292 500 438	270 438 292	$^\circ\text{C/W}$
		Junction to Ambient	Junction to Case	
Coupling Factor		85 75 57 55	40 0 0 0	%
	MD7001 MD7001F MQ7001 (Q1-Q2) (Q1-Q3 or Q1-Q4)			

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

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

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage(2) ($I_C = 10 \text{ mA}_{dc}, I_B = 0$)	$V_{(BR)CEO}$	30	—	—	Vdc
Collector-Base Breakdown Voltage ($I_C = 10 \text{ mA}_{dc}, I_E = 0$)	$V_{(BR)CBO}$	50	—	—	Vdc
Emitter-Base Breakdown Voltage ($I_E = 10 \text{ mA}_{dc}, I_C = 0$)	$V_{(BR)EBO}$	5.0	—	—	Vdc
Collector Cutoff Current ($V_{CB} = 40 \text{ Vdc}, I_E = 0$)	I_{CBO}	—	—	100	nA _{dc}
ON CHARACTERISTICS(2)					
DC Current Gain ($I_C = 1.0 \text{ mA}_{dc}, V_{CE} = 10 \text{ Vdc}$) ($I_C = 150 \text{ mA}_{dc}, V_{CE} = 10 \text{ Vdc}$) ($I_C = 300 \text{ mA}_{dc}, V_{CE} = 10 \text{ Vdc}$)	h_{FE}	40 70 30	50 90 60	—	—
Collector-Emitter Saturation Voltage ($I_C = 150 \text{ mA}_{dc}, I_B = 15 \text{ mA}_{dc}$)	$V_{CE(sat)}$	—	0.25	0.4	Vdc

MD7001,F, MQ7001

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

Characteristic	Symbol	Min	Typ	Max	Unit
Base-Emitter Saturation Voltage ($I_C = 150\text{ mA}$, $I_B = 15\text{ mA}$)	$V_{BE(sat)}$	—	0.88	1.3	Vdc

SMALL-SIGNAL CHARACTERISTICS

Current-Gain — Bandwidth Product(2) ($I_C = 20\text{ mA}$, $V_{CE} = 20\text{ Vdc}$, $f = 100\text{ MHz}$)	f_T	200	320	—	MHz
Output Capacitance ($V_{CB} = 10\text{ Vdc}$, $I_E = 0$, $f = 100\text{ kHz}$)	C_{obo}	—	5.8	8.0	pF
Input Capacitance ($V_{BE} = 2.0\text{ Vdc}$, $I_C = 0$, $f = 100\text{ kHz}$)	C_{ibo}	—	16	30	pF

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