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MAXIMUM RATINGS

Rating	Symbol	MD2218,A,F	MD2219,A	Unit
		MD2218,A,F	MD2219,A	
Collector-Emitter Voltage	V _{CEO}	30	40	V _{dc}
Collector-Base Voltage	V _{CBO}	60	75	V _{dc}
Emitter-Base Voltage	V _{EB0}	5.0	6.0	V _{dc}
Collector Current — Continuous	I _C	500		mAdc
		One Die	All Die Equal Power	
Total Device Dissipation @ T _A = 25°C	P _D			mW
MD2218,A, MD2219,A		575	625	
MD2218F,AF, MD2219F,AF		360	400	
MD2218,A, MQ2219,A		400	600	mW/°C
Derate above 25°C				
MD2218,A, MD2219,A		3.29	3.57	
MD2218F,AF, MD2219F,AF		2.0	2.28	
MD2218,A, MQ2219,A		2.28	3.42	
Total Device Dissipation @ T _C = 25°C	P _D			Watts
MD2218,A, MD2219,A		1.8	2.5	
MD2218F,AF, MD2219F,AF		1.0	2.0	
MD2218,A, MQ2219,A		0.9	3.6	mW/°C
Derate above 25°C				
MD2218,A, MD2219,A		10.3	14.3	
MD2218F,AF, MD2219F,AF		5.71	11.4	
MD2218,A, MQ2219,A		5.13	20.5	
Operating and Storage Junction Temperature Range	T _J , T _{stg}	- 65 to + 200		°C


MD2218,A,F,AF
MD2219,A,AF
MQ2218,A
MQ2219,A



MD2218,A
MD2219,A
CASE 654-07, STYLE 1



MD2218F,AF
MD2219F,AF
CASE 610A-04, STYLE 1



MD2218,A
MQ2219,A
CASE 607-04, STYLE 1

DUAL
AMPLIFIER TRANSISTOR
NPN SILICON

THERMAL CHARACTERISTICS

Characteristic	Symbol	One Die	All Die Equal Power	Unit
Thermal Resistance, Junction to Case	R _{θJC}			°C/W
MD2218,A, MD2219,A		87	70	
MD2218F,AF, MD2219F,AF		175	87.5	
MD2218,A, MQ2219,A		185	48.8	
Thermal Resistance, Junction to Ambient	R _{θJA} (1)			°C/W
MD2218,A, MD2219,A		304	280	
MD2218F,AF, MD2219F,AF		500	438	
MD2218,A, MQ2219,A		438	292	
		Junction to Ambient	Junction to Case	
Coupling Factors				%
MD2218,A, MD2219,A		84	44	
MD2218F,AF, MD2219F,AF		75	0	
MD2218,A, MQ2219,A (Q1-Q2)		57	0	
(Q1-Q3 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}				V _{dc}
MD2218,A,F, MD2219,A, MQ2218,A, MQ2219,A		30	—	—	
MD2218AF, MD2219AF		40	—	—	
Collector-Base Breakdown Voltage (I _C = 10 μAdc, I _E = 0)	V _{(BR)CBO}				V _{dc}
MD2218,A,F, MD2219,A, MQ2218,A, MD2219,A		60	—	—	
MD2218AF, MD2219AF		75	—	—	



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Quality Semi-Conductors

MD2218,A,F,AF, MD2218,A,AF, MQ2218,A, MQ2219,A

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

Characteristic	Symbol	Min	Typ	Max	Unit
Emitter-Base Breakdown Voltage (I _E = 10 μAdc, I _C = 0)	V(BR)EBO	5.0 6.0	— —	— —	Vdc
Collector Cutoff Current (V _{CE} = 50 Vdc, V _{EB(off)} = 3.0 Vdc)	I _{CEV}	20 16	— —	— —	nAdc
Base Cutoff Current (V _{CE} = 50 Vdc, V _{EB(off)} = 3.0 Vdc)	I _{BL}	30	—	—	nAdc

ON CHARACTERISTICS(2)

DC Current Gain (I _C = 0.1 mAdc, V _{CE} = 10 Vdc)	h _{FE}	20 35	50 45	— —	—
MD2218,A,F,AF, MQ2218,A MD2219,A,AF, MQ2219,A		(I _C = 1.0 mAdc, V _{CE} = 10 Vdc)	25 50	55 55	— —
MD2218,A,F,AF, MQ2218,A MD2219,A,AF, MQ2219,A	(I _C = 10 mAdc, V _{CE} = 10 Vdc)	35 75	65 85	— —	
MD2218,A,F,AF, MQ2218,A MD2219,A,AF, MQ2219,A	(I _C = 150 mAdc, V _{CE} = 1.0 Vdc)	20 50	85 65	— —	
MD2218,A,F,AF, MQ2218,A MD2219,A,AF, MQ2219,A	(I _C = 150 mAdc, V _{CE} = 10 Vdc)	40 100	30 120	120 300	
MD2218,A, MQ2218,A MD2219,A, MQ2219,A	(I _C = 300 mAdc, V _{CE} = 10 Vdc)	25 30	75 75	— —	
Collector-Emitter Saturation Voltage (I _C = 150 mAdc, I _B = 15 mAdc)	V _{CE(sat)}	— —	0.2 —	0.4 0.3	Vdc
MD2218,A,F, MD2219,A, MQ2218,A, MQ2219,A MD2218AF, MD2219AF		(I _C = 300 mAdc, I _B = 30 mAdc)	— —	0.35 —	1.2 0.9
MD2218,A,F, MD2219,A, MQ2218,A, MQ2219,A MD2218AF, MD2219AF	V _{BE(sat)}	0.6 0.6	0.95 1.0	1.3 1.2	Vdc
(I _C = 300 mAdc, I _B = 30 mAdc) MD2218,A,F, MD2219,A, MQ2218,A, MQ2219,A MD2218AF, MD2219AF		— —	— —	2.0 1.8	

SMALL-SIGNAL CHARACTERISTICS

Current-Gain — Bandwidth Product (I _C = 20 mAdc, V _{CE} = 20 Vdc, f = 100 MHz)	f _T	200	250	—	MHz
Output Capacitance (V _{CB} = 10 Vdc, I _E = 0, f = 100 kHz)	C _{obo}	—	3.5	8.0	pF
Input Capacitance (V _{EB} = 0.5 Vdc, I _C = 0, f = 100 kHz)	C _{ibo}	— —	15 18	20 25	pF
MD2218,A,F, MD2219,A, MQ2218,A, MQ2219,A MD2218AF, MD2219AF					

MD2218,A,F,AF, MD2219,A,AF, MQ2218,A, MQ2219,A

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

Characteristic	Symbol	Min	Typ	Max	Unit
SWITCHING CHARACTERISTICS					
Delay Time	t_d	—	—	20	μs
				16	
Rise Time	t_r	—	—	40	μs
				30	
Storage Time	t_s	—	—	280	μs
				250	
Fall Time	t_f	—	—	70	μs
				60	

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

FIGURE 1 — NORMALIZED DC CURRENT GAIN

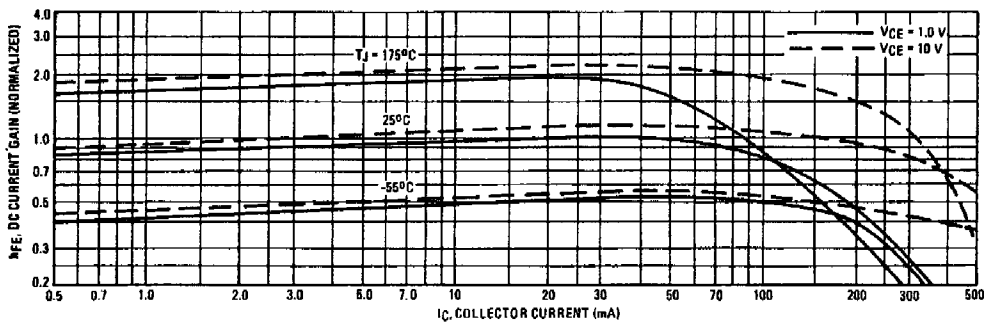


FIGURE 2 — "ON" VOLTAGES

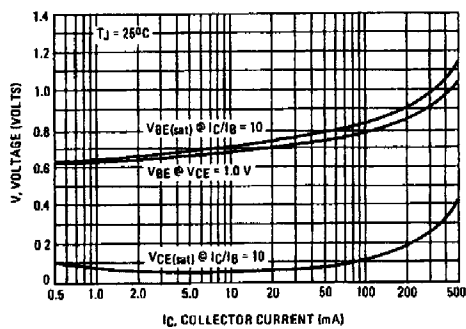


FIGURE 3 — TEMPERATURE COEFFICIENTS

