


6367254 MOTOROLA SC (XSTRS/R F)

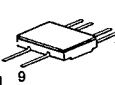
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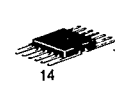
MAXIMUM RATINGS

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	50		mAdc
		One Die	All Die Equal Power	
Total Device Dissipation @ T _A = 25°C MD3250,A, MD3251,A MD3250,AF, MD3251F,AF MQ3251	P _D	575	625	mW
		350	400	
		400	600	
		Derate above 25°C		
MD3250,A, MD3251,A MD3250,AF, MD3251F,AF MQ3251	P _D	3.29	3.57	mW/°C
		2.0	2.28	
		2.28	3.42	
		Derate above 25°C		
MD3250,A, MD3251,A MD3250,AF, MD3251F,AF MQ3251	P _D	1.8	2.5	Watts
		1.0	2.0	
		0.9	3.6	
		Derate above 25°C		
MD3250,A, MD3251,A MD3250,AF, MD3251F,AF MQ3251	P _D	10.3	14.3	mW/°C
		5.71	11.4	
		5.13	20.5	
		Derate above 25°C		
Operating and Storage Junction Temperature Range	T _J , T _{stg}	-65 to +200		°C

MD3250,A,AF
MD3251,A,F,AF
MQ3251

MD3250,A
MD3251,A
CASE 654-07, STYLE 1 

MD3250,AF
MD3251F,AF
CASE 610A-04, STYLE 1 

MQ3251
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 _{θJC}	97	70	°C/W	
		175	87.5		
		195	48.8		
Thermal Resistance, Junction to Ambient	R _{θJA} (1)	304	280	°C/W	
		500	438		
		438	292		
Coupling Factors		Junction to Ambient	Junction to Case	%	
		MD3250,A, MD3251,A	84		44
		MD3250,AF, MD3251F,AF	75		0
		MQ3251 (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}	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} = 40 Vdc, I _E = 0) (V _{CB} = 40 Vdc, I _E = 0, T _A = 150°C)	I _{CBO}	—	—	10	nAdc μAdc
Emitter Cutoff Current (V _{BE} = 3.0 Vdc, I _C = 0)	I _{EBO}	—	—	10	nAdc

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MD3250,A,AF, MD3251,A,F,AF, MQ3251

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

Characteristic	Symbol	Min	Typ	Max	Unit	
ON CHARACTERISTICS(2)						
DC Current Gain ($I_C = 10 \mu\text{Adc}$, $V_{CE} = 5.0 \text{ Vdc}$)	MD3250,A,AF MD3251,A,F,AF	25	75	—	—	
		50	100	—		
($I_C = 100 \mu\text{Adc}$, $V_{CE} = 5.0 \text{ Vdc}$)	MD3250,A,AF MD3251,A,F,AF MQ3251	50	82	150	—	
		80	170	300		
		80	170	—		
($I_C = 100 \mu\text{Adc}$, $V_{CE} = 5.0 \text{ Vdc}$, $T_A = -55^\circ\text{C}$)	MD3250,A,AF MD3251,A,F,AF	25	35	—	—	
		50	75	—		
($I_C = 1.0 \text{ mAdc}$, $V_{CE} = 5.0 \text{ Vdc}$)	MD3250,A,AF MD3251,A,F,AF MQ3251	50	87	150	—	
		100	180	300		
		100	180	—		
($I_C = 10 \text{ mAdc}$, $V_{CE} = 5.0 \text{ Vdc}$)	MD3250,A,AF MD3251,A,F,AF MQ3251	50	92	—	—	
		100	190	—		
		100	190	300		
($I_C = 50 \text{ mAdc}$, $V_{CE} = 5.0 \text{ Vdc}$)	MD3250,A,AF MD3251,A,F,AF MQ3251	15	50	—	—	
		30	90	—		
		30	90	—		
Collector-Emitter Saturation Voltage ($I_C = 10 \text{ mAdc}$, $I_B = 1.0 \text{ mAdc}$) ($I_C = 50 \text{ mAdc}$, $I_B = 5.0 \text{ mAdc}$)	$V_{CE(sat)}$	—	0.11 0.18	0.25 0.5	Vdc	
Base-Emitter Saturation Voltage ($I_C = 10 \text{ mAdc}$, $I_B = 1.0 \text{ mAdc}$) ($I_C = 50 \text{ mAdc}$, $I_B = 5.0 \text{ mAdc}$)	$V_{BE(sat)}$	0.6	0.78 0.88	0.9 1.2	Vdc	
SMALL-SIGNAL CHARACTERISTICS						
Current-Gain — Bandwidth Product ($I_C = 10 \text{ mAdc}$, $V_{CE} = 20 \text{ Vdc}$, $f = 100 \text{ MHz}$)	MD3250,A,AF MD3251,A,F,AF MQ3251	f_T	200 250 300	600 600 600	— — —	MHz
Output Capacitance ($V_{CB} = 5.0 \text{ Vdc}$, $I_E = 0$, $f = 100 \text{ kHz}$)		C_{obo}	—	2.5	6.0	pF
Input Capacitance ($V_{BE} = 1.0 \text{ Vdc}$, $I_C = 0$, $f = 100 \text{ kHz}$)		C_{ibo}	—	6.0	8.0	pF
MATCHING CHARACTERISTICS (MD3250,A,AF & MD3251,A,F,AF ONLY)						
DC Current Gain Ratio(3) ($I_C = 100 \mu\text{Adc}$, $V_{CE} = 5.0 \text{ Vdc}$) ($I_C = 1.0 \text{ mAdc}$, $V_{CE} = 5.0 \text{ Vdc}$)	h_{FE1}/h_{FE2}	0.9	—	1.0	—	
		0.9	—	1.0		
Base-Emitter Voltage Differential ($I_C = 100 \mu\text{Adc}$, $V_{CE} = 5.0 \text{ Vdc}$) ($I_C = 10 \mu\text{Adc}$, $V_{CE} = 5.0 \text{ Vdc}$) ($I_C = 10 \text{ mAdc}$, $V_{CE} = 5.0 \text{ Vdc}$)	$ V_{BE1} - V_{BE2} $	—	—	3.0	mVdc	
		—	—	5.0		
		—	—	5.0		
Base-Emitter Voltage Differential Change Due to Temperature ($I_C = 100 \mu\text{Adc}$, $V_{CE} = 5.0 \text{ Vdc}$, $T_A = -55$ to $+25^\circ\text{C}$) ($I_C = 100 \mu\text{Adc}$, $V_{CE} = 5.0 \text{ Vdc}$, $T_A = +25$ to $+125^\circ\text{C}$)	$\Delta V_{BE1} - V_{BE2} $	—	—	0.8	mVdc	
		—	—	1.0		

(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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FIGURE 1 - CAPACITANCE

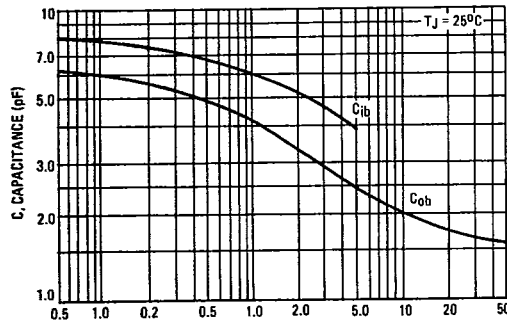
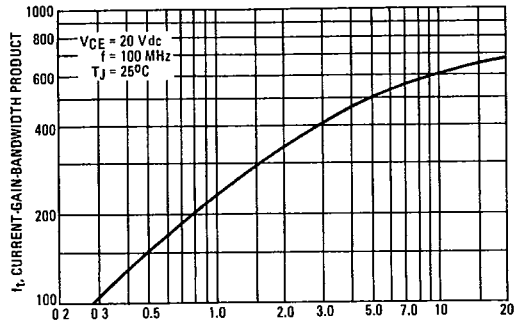


FIGURE 2 - CURRENT-GAIN BANDWIDTH PRODUCT



NOISE FIGURE VARIATIONS
 (V_{CE} = 6.0 V, T_A = 25°C)

FIGURE 3 - EFFECTS OF FREQUENCY

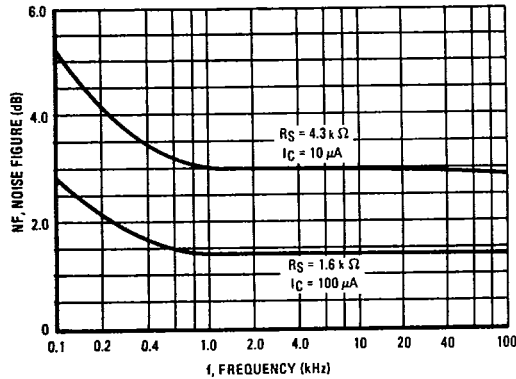


FIGURE 4 - EFFECTS OF SOURCE RESISTANCE

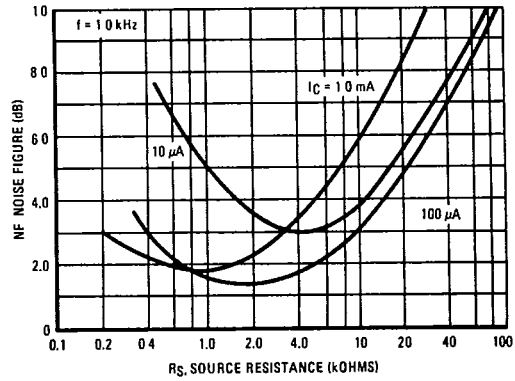


FIGURE 5 - DC CURRENT GAIN

