

**MD918HX, HXV (DUAL)
MD918FHXV (DUAL)
MHQ918HX, HXV (QUAD)
MQ918HXV (QUAD)**

CRYSTALONCS
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**NPN Silicon Dual/Quad
Small-Signal Transistors**

... designed for high-frequency amplifier applications.

3

MAXIMUM RATINGS					
Rating		Symbol	Value		Unit
Collector-Emitter Voltage		V _{CEO}	15		V _{dc}
Collector-Base Voltage		V _{CBO}	30		V _{dc}
Emitter-Base Voltage		V _{EB0}	3.0		V _{dc}
Collector Current — Continuous		I _C	50		mAdc
			One Die	All Die Equal Power	
Device Dissipation @ T _A = 25°C		P _T			Watts
MD918	0.55		0.6		
MD918F	0.35		0.4		
MHQ918	0.5		1.6		
MQ918	0.35		0.4		
Derate above 25°C					mW/°C
MD918	3.14		3.42		
MD918F	2.0		2.28		
MHQ918	2.86		8.58		
MQ918	2.0		2.28		
@ T _C = 25°C					Watts
MD918	1.4		2.0		
MD918F	0.7		1.4		
MHQ918	1.3		4.6		
MQ918	0.7		1.4		
Derate above 25°C					mW/°C
MD918	8.0		11.4		
MD918F	4.0		8.0		
MHQ918	7.43		26.3		
MQ918	4.0		8.0		
Operating Junction and Storage Temperature Range		T _J , T _{stg}	-65 to 200		°C



MD918
CASE 654-07
(TO-78)



MD918F
CASE 610A-04



MHQ918
CASE 632-08
(TO-116)



MQ918
CASE 607-04

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted.)				
Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector-Emitter Breakdown Voltage ⁽¹⁾ ($I_C = 3.0\text{ mAdc}$, $I_B = 0$)	$V_{(BR)CEO}$	15	—	Vdc
Collector-Base Breakdown Voltage ($I_C = 1.0\text{ }\mu\text{Adc}$, $I_E = 0$)	$V_{(BR)CBO}$	30	—	Vdc
Emitter-Base Breakdown Voltage ($I_E = 10\text{ }\mu\text{Adc}$, $I_C = 0$)	$V_{(BR)EBO}$	3.0	—	Vdc
Collector Cutoff Current ($V_{CB} = 25\text{ Vdc}$, $I_E = 0$) ($V_{CB} = 25\text{ Vdc}$, $I_E = 0$, $T_A = 150^\circ\text{C}$)	I_{CBO}	— —	10 1.0	nAdc μAdc
Emitter Cutoff Current ($V_{EB} = 2.5\text{ Vdc}$)	I_{EBO}	—	10	nAdc
ON CHARACTERISTICS				
DC Current Gain ($I_C = 500\text{ }\mu\text{Adc}$, $V_{CE} = 10\text{ Vdc}$) ($I_C = 3.0\text{ mAdc}$, $V_{CE} = 10\text{ Vdc}$) ⁽¹⁾ ($I_C = 10\text{ mAdc}$, $V_{CE} = 10\text{ Vdc}$) ($I_C = 3.0\text{ mAdc}$, $V_{CE} = 1.0\text{ Vdc}$, $T_A = -55^\circ\text{C}$)	h_{FE}	10 20 20 10	— 200 — —	—
Collector-Emitter Saturation Voltage ($I_C = 10\text{ mAdc}$, $I_B = 1.0\text{ mAdc}$)	$V_{CE(sat)}$	—	0.4	Vdc
Base-Emitter Saturation Voltage ($I_C = 10\text{ mAdc}$, $I_B = 1.0\text{ mAdc}$)	$V_{BE(sat)}$	—	1.0	Vdc
SMALL-SIGNAL CHARACTERISTICS				
Output Capacitance ($V_{CB} = 10\text{ Vdc}$, $I_E = 0$, $f = 0.1$ to 1.0 MHz) ($V_{CB} = 0\text{ Vdc}$, $I_E = 0$, $f = 0.1$ to 1.0 MHz)	C_{obo}	— —	1.7 3.0	pF
Input Capacitance ($V_{BE} = 0.5\text{ Vdc}$, $I_C = 0$, $f = 0.1$ to 1.0 kHz)	C_{ibo}	—	2.0	pF
Small-Signal Transfer Current Ratio, Magnitude ($I_C = 4.0\text{ mAdc}$, $V_{CE} = 10\text{ Vdc}$, $f = 100\text{ MHz}$)	$ h_{fe} $	6.0	18	—
Noise Figure ($I_C = 1.0\text{ mAdc}$, $V_{CE} = 6.0\text{ Vdc}$, $f = 60\text{ MHz}$, $R_S = 400\text{ ohms}$)	NF	—	6.0	dB
OUTPUT CHARACTERISTICS				
Power Gain ($V_{CB} = 12\text{ Vdc}$, $I_C = 6.0\text{ mAdc}$, $f = 200\text{ MHz}$)	G_{pe}	15	—	dB
Power Output ($V_{CB} = 15\text{ Vdc}$, $I_C = 8.0\text{ mAdc}$, $f = 500\text{ MHz}$)	P_o	30	—	mW
Efficiency ($V_{CB} = 15\text{ Vdc}$, $I_C = 8.0\text{ mAdc}$, $f = 500\text{ MHz}$)	η	25	—	%

(1) Pulsed. Pulse Width 300 μs . Duty Cycle 2.0%.

ASSURANCE TESTING (Pre/Post Burn-In)				
Characteristics Tested	Symbol	Initial and End Point Limits		Unit
		Min	Max	
Collector Cutoff Current ($V_{CB} = 25\text{ Vdc}$)	I_{CBO}	—	10	nAdc
DC Current Gain ⁽¹⁾ ($I_C = 3.0\text{ mAdc}$, $V_{CE} = 1.0\text{ Vdc}$)	h_{FE}	20	200	—

Delta from Pre-Burn-In Measured Values		Min	Max	
Delta Collector Cutoff Current	ΔI_{CBO}	—	± 100 or ± 5.0 whichever is greater	% of Initial Value nAdc
Delta DC Current Gain ⁽¹⁾	Δh_{FE}	—	± 20	% of Initial Value

(1) Pulsed. Pulse Width 300 μs . Duty Cycle 2.0%.