

**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.

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MAXIMUM RATINGS				
Rating	Symbol	Value		Unit
Collector-Emitter Voltage	V _{CEO}	15		Vdc
Collector-Base Voltage	V _{CBO}	30		Vdc
Emitter-Base Voltage	V _{EB0}	3.0		Vdc
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°C unless otherwise noted.)				
Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector-Emitter Breakdown Voltage ⁽¹⁾ (I _C = 3.0 mA _{dc} , I _B = 0)	V _{(BR)CEO}	15	—	V _{dc}
Collector-Base Breakdown Voltage (I _C = 1.0 μA _{dc} , I _E = 0)	V _{(BR)CBO}	30	—	V _{dc}
Emitter-Base Breakdown Voltage (I _E = 10 μA _{dc} , I _C = 0)	V _{(BR)EBO}	3.0	—	V _{dc}
Collector Cutoff Current (V _{CB} = 25 V _{dc} , I _E = 0) (V _{CB} = 25 V _{dc} , I _E = 0, T _A = 150°C)	I _{CBO}	— —	10 1.0	nA _{dc} μA _{dc}
Emitter Cutoff Current (V _{EB} = 2.5 V _{dc})	I _{EBO}	—	10	nA _{dc}
ON CHARACTERISTICS				
DC Current Gain (I _C = 500 μA _{dc} , V _{CE} = 10 V _{dc}) (I _C = 3.0 mA _{dc} , V _{CE} = 10 V _{dc}) ⁽¹⁾ (I _C = 10 mA _{dc} , V _{CE} = 10 V _{dc}) (I _C = 3.0 mA _{dc} , V _{CE} = 1.0 V _{dc} , T _A = -55°C)	h _{FE}	10 20 20 10	— 200 — —	—
Collector-Emitter Saturation Voltage (I _C = 10 mA _{dc} , I _B = 1.0 mA _{dc})	V _{CE(sat)}	—	0.4	V _{dc}
Base-Emitter Saturation Voltage (I _C = 10 mA _{dc} , I _B = 1.0 mA _{dc})	V _{BE(sat)}	—	1.0	V _{dc}
SMALL-SIGNAL CHARACTERISTICS				
Output Capacitance (V _{CB} = 10 V _{dc} , I _E = 0, f = 0.1 to 1.0 MHz) (V _{CB} = 0 V _{dc} , I _E = 0, f = 0.1 to 1.0 MHz)	C _{obo}	— —	1.7 3.0	pF
Input Capacitance (V _{BE} = 0.5 V _{dc} , 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 mA _{dc} , V _{CE} = 10 V _{dc} , f = 100 MHz)	h _{fe}	6.0	18	—
Noise Figure (I _C = 1.0 mA _{dc} , V _{CE} = 6.0 V _{dc} , f = 60 MHz, R _S = 400 ohms)	NF	—	6.0	dB
OUTPUT CHARACTERISTICS				
Power Gain (V _{CB} = 12 V _{dc} , I _C = 6.0 mA _{dc} , f = 200 MHz)	G _{pe}	15	—	dB
Power Output (V _{CB} = 15 V _{dc} , I _C = 8.0 mA _{dc} , f = 500 MHz)	P _o	30	—	mW
Efficiency (V _{CB} = 15 V _{dc} , I _C = 8.0 mA _{dc} , f = 500 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 V _{dc})	I _{CBO}	—	10	nA _{dc}
DC Current Gain ⁽¹⁾ (I _C = 3.0 mA _{dc} , V _{CE} = 1.0 V _{dc})	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 nA _{dc}
Delta DC Current Gain ⁽¹⁾	Δh _{FE}	—	±20	% of Initial Value

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