MD2484FHXV (DUAL)
MHQ2484HX, HXV (QUAD)
MQ2484HXV (QUAD)

CRYSTALONICS
2805 Veterans Highway
Suite 14
Ronkonkoma, N.Y. 11779

NPN Silicon Dual/Quad Small-Signal Transistors

. . .designed for general-purpose amplifier applications.

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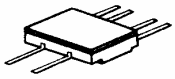
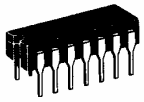
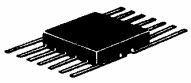
MAXIMUM RATINGS				
Rating	**Symbol**	**Value**		**Unit**
Collector-Emitter Voltage	V_{CEO}	60		Vdc
Collector-Base Voltage	V_{CBO}	60		Vdc
Emitter-Base Voltage	V_{EBO}	6.0		Vdc
Collector Current — Continuous	I_C	50		mAdc
		One Die	**All Die Equal Power**	
Device Dissipation	P_T			Watts
@ T_A = 25°C				
MD2484F		0.35	0.4	
MHQ2484		0.6	1.8	
MQ2484		0.4	0.6	
Derate above 25°C				mW/°C
MD2484F		2.0	2.28	
MHQ2484		3.42	10.3	
MQ2484		2.28	3.42	
@ T_C = 25°C				Watts
MD2484F		1.0	2.0	
MHQ2484		1.2	4.2	
MQ2484		0.9	3.6	
Derate above 25°C				mW/°C
MD2484F		5.7	11.4	
MHQ2484		6.85	24	
MQ2484		5.13	20.5	
Operating Junction and Storage Temperature Range	T_J, T_{stg}	−65 to 200		°C



MD2484F
CASE 610A-04



MHQ2484
CASE 632-08
(TO-116)



MQ2484
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 = 10 mAdc, I_B = 0)	$V_{(BR)CEO}$	60	—	Vdc
Collector-Base Breakdown Voltage (I_C = 10 μAdc, I_E = 0)	$V_{(BR)CBO}$	60	—	Vdc
Emitter-Base Breakdown Voltage (I_E = 10 μAdc, I_C = 0)	$V_{(BR)EBO}$	6.0	—	Vdc
Collector Cutoff Current (V_{CB} = 45 Vdc, I_E = 0) (V_{CB} = 45 Vdc, I_E = 0, T_A = 150°C)	I_{CBO}	— —	0.005 10	μAdc
Collector Cutoff Current (V_{CE} = 5.0 Vdc, I_E = 0)	I_{CEO}	—	0.002	μAdc
Collector Cutoff Current (V_{CE} = 45 Vdc, I_E = 0)	I_{CES}	—	0.005	μAdc
Emitter Cutoff Current (V_{BE} = 5.0 Vdc, I_C = 0)	I_{EBO}	—	0.002	μAdc
ON CHARACTERISTICS				
DC Current Gain(1) (I_C = 1.0 μAdc, V_{CE} = 5.0 Vdc) (I_C = 10 μAdc, V_{CE} = 5.0 Vdc) (I_C = 100 μAdc, V_{CE} = 5.0 Vdc) (I_C = 100 μAdc, V_{CE} = 5.0 Vdc) (I_C = 500 μAdc, V_{CE} = 5.0 Vdc) (I_C = 1.0 mAdc, V_{CE} = 5.0 Vdc) (I_C = 10 mAdc, V_{CE} = 5.0 Vdc) (I_C = 10 μAdc, V_{CE} = 5.0 Vdc, T_A = −55°C)	h_{FE}	 45 200 225 250 250 225 35	 — 500 675 800 800 800 —	—
Collector-Emitter Voltage (I_C = 1.0 mAdc, I_B = 0.1 mAdc)	$V_{CE(sat)}$	—	0.3	Vdc
Base-Emitter Saturation Voltage (I_C = 0.1 mAdc, V_{CE} = 5.0 Vdc)	V_{BE}	0.5	0.7	Vdc
SMALL-SIGNAL CHARACTERISTICS				
Collector-Base Capacitance (V_{CB} = 5.0 Vdc, I_E = 0, f = 0.1 to 1.0 MHz)	C_{obo}	—	5.0	pF
Input Capacitance (V_{BE} = 0.5 Vdc, I_C = 0, f = 0.1 to 1.0 MHz)	C_{ibo}	—	6.0	pF
DC Current Gain (I_C = 1.0 mAdc, V_{CE} = 5.0 Vdc, f = 1.0 kHz)	h_{fe}	250	900	—
Small-Signal Current Transfer Ratio, Magnitude (I_C = 50 μAdc, V_{CE} = 5.0 Vdc, f = 5.0 MHz) (I_C = 500 μAdc, V_{CE} = 5.0 Vdc, f = 30 MHz)	$\lvert h_{fe} \rvert$	 3.0 2.0	 — 7.0	—
Input Impedance (I_C = 1.0 mAdc, V_{CE} = 5.0 Vdc, f = 0.1 to 1.0 kHz)	h_{ie}	3.5	24	kohms
Voltage Feedback Ratio (I_C = 1.0 mAdc, V_{CE} = 5.0 Vdc, f = 1.0 kHz)	h_{re}	0	8.0	X 10^{-4}
Output Admittance (I_C = 1.0 mAdc, V_{CE} = 5.0 Vdc, f = 1.0 kHz)	h_{oe}	0	40	μohms

ELECTRICAL CHARACTERISTICS —continued (T_A = 25°C unless otherwise noted.)				
Characteristic	**Symbol**	**Min**	**Max**	**Unit**
SMALL-SIGNAL CHARACTERISTICS (continued)				
Noise Figure, R_G = 10 kohm (I_C = 10 μAdc, V_{CE} = 5.0 Vdc, f = 100 Hz) (I_C = 10 μAdc, V_{CE} = 5.0 Vdc, f = 1.0 kHz) (I_C = 10 μAdc, V_{CE} = 5.0 Vdc, f = 10 kHz) (I_C = 10 mAdc, V_{CE} = 5.0 Vdc, f = 10 Hz to 15.7 kHz)	NF	 — — — —	 7.5 3.0 2.0 3.0	dB

ASSURANCE TESTING (Pre/Post Burn-In)				
		Initial and End Point Limits		
Characteristics Tested	**Symbol**	**Min**	**Max**	**Unit**
Collector Cutoff Current (V_{CB} = 45 Vdc)	I_{CBO}	—	5.0	μAdc
DC Current Gain(1) (I_C = 500 μAdc, V_{CE} = 5.0 Vdc)	h_{FE}	250	800	—

Delta from Pre-Burn-In Measured Values		**Min**	**Max**	
Delta Collector Cutoff Current	ΔI_{CBO}	—	±100 or ±2.0 whichever is greater	% of Initial Value nAdc
Delta DC Current Gain(1)	Δh_{FE}	—	±25	% of Initial Value

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