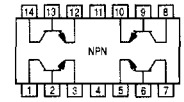
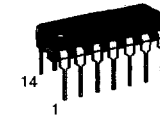
Quad Amplifier Transistors

NPN Silicon



MPQ2483
MPQ2484*

*Motorola Preferred Device



CASE 646–06, STYLE 1
TO–116

MAXIMUM RATINGS

Rating	Symbol	Value		Unit
Collector–Emitter Voltage	V_{CEO}	40		Vdc
Collector–Base Voltage	V_{CBO}	60		Vdc
Emitter–Base Voltage	V_{EBO}	6.0		Vdc
Collector Current — Continuous	I_C	50		mAdc
		Each Transistor	**Four Transistors Equal Power**	
Total Device Dissipation @ T_A = 25°C(1) Derate above 25°C	P_D	500 4.0	900 7.2	mW mW/°C
Total Device Dissipation @ T_C = 25°C Derate above 25°C	P_D	0.825 6.7	2.4 19.2	Watts mW/°C
Operating and Storage Junction *Temperature Range*	T_J, T_{stg}	–55 to +150		°C

THERMAL CHARACTERISTICS

Characteristic		Junction to Case	Junction to Ambient	Unit
Thermal Resistance	Each Die	151	250	°C/W
	Effective, 4 Die	52	134	°C/W
Coupling Factors	Q1–Q4 or Q2–Q3	34	70	%
	Q1–Q2 or Q3–Q4	2.0	26	%

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)	$V_{(BR)CBO}$	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)	I_{CBO}	—	—	20	nAdc
Emitter Cutoff Current (V_{EB} = 3.0 Vdc, I_C = 0)	I_{EBO}	—	—	20	nAdc

1. Second Breakdown occurs at power levels greater than 3 times the power dissipation rating.
2. Pulse Test: Pulse Width ≤ 300 μs; Duty Cycle ≤ 2.0%.

Preferred devices are Motorola recommended choices for future use and best overall value.

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

Characteristic		Symbol	Min	Typ	Max	Unit
ON CHARACTERISTICS						
DC Current Gain[2]		h_{FE}				—
(I_C = 0.1 mAdc, V_{CE} = 5.0 Vdc)	MPQ2483		100	—	—	
	MPQ2484		200	—	—	
(I_C = 1.0 mAdc, V_{CE} = 5.0 Vdc)	MPQ2483		150	—	—	
	MPQ2484		300	—	—	
(I_C = 10 mAdc, V_{CE} = 5.0 Vdc)	MPQ2483		150	—	—	
	MPQ2484		300	—	—	
Collector–Emitter Saturation Voltage		$V_{CE(sat)}$				Vdc
(I_C = 1.0 mAdc, I_B = 0.1 mAdc)			—	0.13	0.35	
(I_C = 10 mAdc, I_B = 1.0 mAdc)			—	0.15	0.5	
Base–Emitter Saturation Voltage[2]		$V_{BE(sat)}$				Vdc
(I_C = 100 μAdc, V_{CE} = 5.0 Vdc)			—	0.58	0.7	
(I_C = 10 mAdc, V_{CE} = 5.0 Vdc)			—	0.70	0.8	
SMALL–SIGNAL CHARACTERISTICS						
Current–Gain — Bandwidth Product (I_C = 500 μAdc, V_{CE} = 5.0 Vdc, f = 20 MHz)		f_T	50	100	—	MHz
Input Capacitance (V_{EB} = 0.5 Vdc, I_C = 0, f = 1.0 MHz)		C_{ibo}	—	4.0	8.0	pF
Collector–Base Capacitance (V_{CB} = 5.0 Vdc, I_E = 0, f = 1.0 MHz)		C_{cb}	—	1.8	6.0	pF
Noise Figure		NF				dB
(I_C = 10 μAdc, V_{CE} = 5.0 Vdc, R_S = 10 k ohms,	MPQ2483		—	3.0	—	
f = 1.0 kHz, BW = 10 kHz)	MPQ2484		—	2.0	—	

2. Pulse Test: Pulse Width ≤ 300 μs; Duty Cycle ≤ 2.0%.