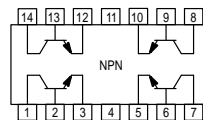


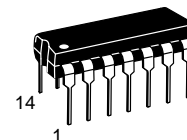
# Quad Amplifier Transistors

## 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
		<b>Each Transistor</b>	<b>Four Transistors Equal Power</b>	
Total Device Dissipation @ $T_A = 25^\circ\text{C}$ (1) Derate above $25^\circ\text{C}$	$P_D$	500 4.0	900 7.2	mW mW/°C
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	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 ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
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### OFF CHARACTERISTICS

Collector–Emitter Breakdown Voltage <sup>(2)</sup> ( $I_C = 10$ mAdc, $I_B = 0$ )	$V_{(BR)CEO}$	40	—	—	Vdc
Collector–Base Breakdown Voltage ( $I_C = 10$ $\mu$ Adc, $I_E = 0$ )	$V_{(BR)CBO}$	60	—	—	Vdc
Emitter–Base Breakdown Voltage ( $I_E = 10$ $\mu$ Adc, $I_C = 0$ )	$V_{(BR)EBO}$	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  $\leq 300$   $\mu$ s; Duty Cycle  $\leq 2.0\%$ .

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

**MPQ2483 MPQ2484****ELECTRICAL CHARACTERISTICS** ( $T_A = 25^\circ\text{C}$  unless otherwise noted) (Continued)

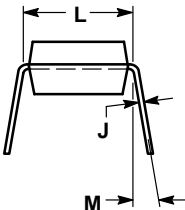
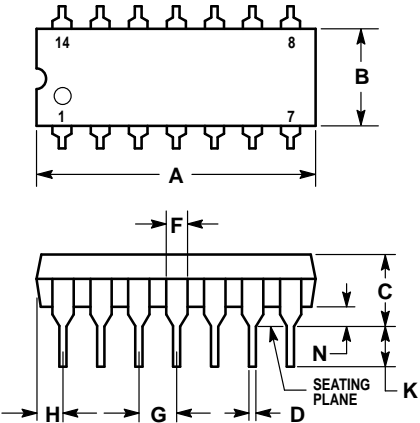
Characteristic	Symbol	Min	Typ	Max	Unit
<b>ON CHARACTERISTICS</b>					
DC Current Gain <sup>(2)</sup> ( $I_C = 0.1 \text{ mAdc}$ , $V_{CE} = 5.0 \text{ Vdc}$ )	$h_{FE}$	100	—	—	—
	MPQ2483	200	—	—	—
	MPQ2484				
( $I_C = 1.0 \text{ mAdc}$ , $V_{CE} = 5.0 \text{ Vdc}$ )	$h_{FE}$	150	—	—	—
	MPQ2483	300	—	—	—
	MPQ2484				
( $I_C = 10 \text{ mAdc}$ , $V_{CE} = 5.0 \text{ Vdc}$ )	$h_{FE}$	150	—	—	—
	MPQ2483	300	—	—	—
	MPQ2484				
Collector–Emitter Saturation Voltage ( $I_C = 1.0 \text{ mAdc}$ , $I_B = 0.1 \text{ mAdc}$ ) ( $I_C = 10 \text{ mAdc}$ , $I_B = 1.0 \text{ mAdc}$ )	$V_{CE(sat)}$	—	0.13	0.35	Vdc
		—	0.15	0.5	
Base–Emitter Saturation Voltage <sup>(2)</sup> ( $I_C = 100 \mu\text{A}$ , $V_{CE} = 5.0 \text{ Vdc}$ ) ( $I_C = 10 \text{ mAdc}$ , $V_{CE} = 5.0 \text{ Vdc}$ )	$V_{BE(sat)}$	—	0.58	0.7	Vdc
		—	0.70	0.8	

**SMALL–SIGNAL CHARACTERISTICS**

Current–Gain — Bandwidth Product ( $I_C = 500 \mu\text{A}$ , $V_{CE} = 5.0 \text{ Vdc}$ , $f = 20 \text{ MHz}$ )	$f_T$	50	100	—	MHz
Input Capacitance ( $V_{EB} = 0.5 \text{ Vdc}$ , $I_C = 0$ , $f = 1.0 \text{ MHz}$ )	$C_{ibo}$	—	4.0	8.0	pF
Collector–Base Capacitance ( $V_{CB} = 5.0 \text{ Vdc}$ , $I_E = 0$ , $f = 1.0 \text{ MHz}$ )	$C_{cb}$	—	1.8	6.0	pF
Noise Figure ( $I_C = 10 \mu\text{A}$ , $V_{CE} = 5.0 \text{ Vdc}$ , $R_S = 10 \text{ k ohms}$ , $f = 1.0 \text{ kHz}$ , $BW = 10 \text{ kHz}$ )	NF	—	3.0	—	dB
		—	2.0	—	

2. Pulse Test: Pulse Width  $\leq 300 \mu\text{s}$ ; Duty Cycle  $\leq 2.0\%$ .

PACKAGE DIMENSIONS



- STYLE 1:  
 PIN 1. COLLECTOR  
 2. BASE  
 3. EMITTER  
 4. NO CONNECTION  
 5. EMITTER  
 6. BASE  
 7. COLLECTOR  
 8. COLLECTOR  
 9. BASE  
 10. EMITTER  
 11. NO CONNECTION  
 12. EMITTER  
 13. BASE  
 14. COLLECTOR

- NOTES:  
 1. LEADS WITHIN 0.13 (0.005) RADIUS OF TRUE POSITION AT SEATING PLANE AT MAXIMUM MATERIAL CONDITION.  
 2. DIMENSION L TO CENTER OF LEADS WHEN FORMED PARALLEL.  
 3. DIMENSION B DOES NOT INCLUDE MOLD FLASH.  
 4. ROUNDED CORNERS OPTIONAL.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.715	0.770	18.16	19.56
B	0.240	0.260	6.10	6.60
C	0.145	0.185	3.69	4.69
D	0.015	0.021	0.38	0.53
F	0.040	0.070	1.02	1.78
G	0.100 BSC		2.54 BSC	
H	0.052	0.095	1.32	2.41
J	0.008	0.015	0.20	0.38
K	0.115	0.135	2.92	3.43
L	0.300 BSC		7.62 BSC	
M	0°	10°	0°	10°
N	0.015	0.039	0.39	1.01

CASE 646-06  
 TO-116  
 ISSUE M

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