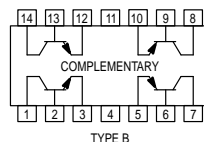


Quad Amplifier Transistors

PNP Silicon

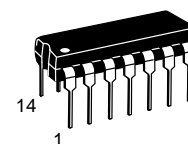


MPQ7091
MPQ7093*

*Motorola Preferred Device

MAXIMUM RATINGS

Rating	Symbol	MPQ7091	MPQ7093	Unit
Collector–Emitter Voltage	V_{CEO}	-150	-250	Vdc
Collector–Base Voltage	V_{CBO}	-150	-250	Vdc
Emitter–Base Voltage	V_{EBO}	-5.0		Vdc
Collector Current — Continuous	I_C	-500		mAdc
		Each Die	Four Die Equal Power	
Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	750 5.98	1700 13.6	mW mW/ $^\circ\text{C}$
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	1.25 10	3.2 25.6	Watts mW/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-55 to +150		$^\circ\text{C}$



CASE 646-06, STYLE 1
TO-116

THERMAL CHARACTERISTICS

Characteristic		Junction to Case	Junction to Ambient	Unit
Thermal Resistance	Each Die	100	167	$^\circ\text{C}/\text{W}$
	Effective, 4 Die	39	73.5	$^\circ\text{C}/\text{W}$
Coupling Factors	Q1–Q4 or Q2–Q3	46	56	%
	Q1–Q2 or Q3–Q4	5.0	10	%

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 ($I_C = -1.0$ mAdc, $I_B = 0$)	MPQ7091 MPQ7093	$V_{(BR)CEO}$	-150 -250	— —	— —	Vdc
Collector–Base Breakdown Voltage ($I_C = -100$ μAdc , $I_E = 0$)	MPQ7091 MPQ7093	$V_{(BR)CBO}$	-150 -250	— —	— —	Vdc
Emitter–Base Breakdown Voltage ($I_E = -100$ μAdc , $I_C = 0$)		$V_{(BR)EBO}$	-5.0	—	—	Vdc
Collector Cutoff Current ($V_{CB} = -120$ Vdc, $I_E = 0$)	MPQ7091 MPQ7093	I_{CBO}	— —	— —	-250 -250	nAdc
Emitter Cutoff Current ($V_{EB} = -3.0$ Vdc, $I_C = 0$)		I_{EBO}	—	—	-100	nAdc

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

MPQ7091 MPQ7093

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

Characteristic	Symbol	Min	Max	Max	Unit
ON CHARACTERISTICS					
DC Current Gain ($I_C = -1.0\text{ mA}$, $V_{CE} = -10\text{ Vdc}$) ($I_C = -10\text{ mA}$, $V_{CE} = -10\text{ Vdc}$) ($I_C = -30\text{ mA}$, $V_{CE} = -10\text{ Vdc}$)	h_{FE}	25 35 25	40 55 50	— — —	—
Collector–Emitter Saturation Voltage ($I_C = -20\text{ mA}$, $I_B = -2.0\text{ mA}$)	$V_{CE(sat)}$	—	-0.3	-0.5	Vdc
Base–Emitter Saturation Voltage ($I_C = -20\text{ mA}$, $I_B = -2.0\text{ mA}$)	$V_{BE(sat)}$	—	-0.7	-0.9	Vdc

SMALL–SIGNAL CHARACTERISTICS

Current–Gain — Bandwidth Product ($I_C = -10\text{ mA}$, $V_{CE} = -20\text{ Vdc}$, $f = 100\text{ MHz}$)	f_T	50	70	—	MHz
Output Capacitance ($V_{CB} = -20\text{ Vdc}$, $I_E = 0$, $f = 1.0\text{ MHz}$)	C_{obo}	—	3.0	5.0	pF
Input Capacitance ($V_{EB} = -3.0\text{ Vdc}$, $I_C = 0$, $f = 1.0\text{ MHz}$)	C_{ibo}	—	60	75	pF

DC CHARACTERISTICS

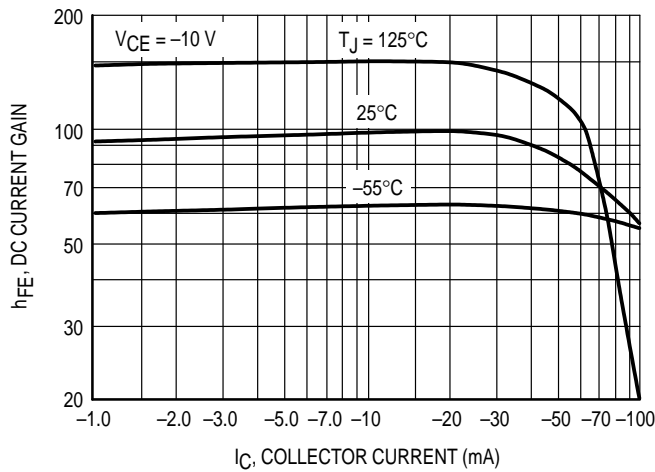


Figure 1. DC Current Gain

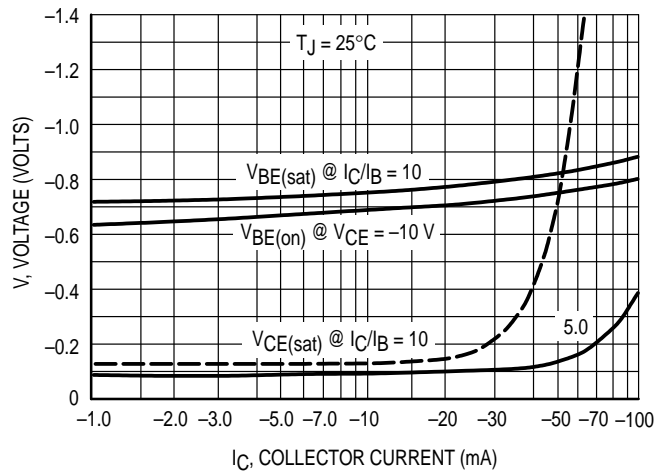


Figure 2. "ON" Voltages

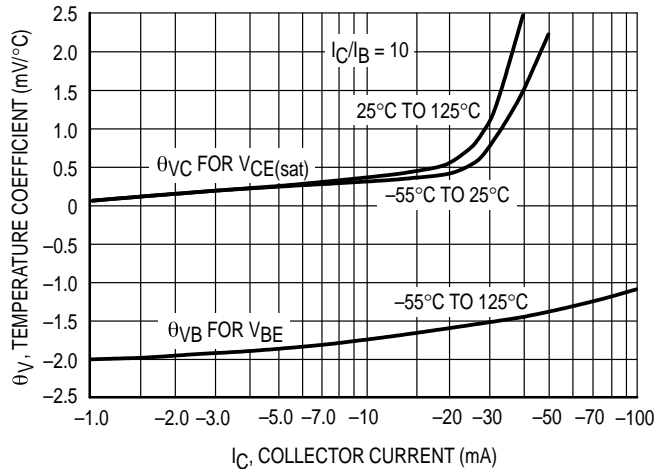
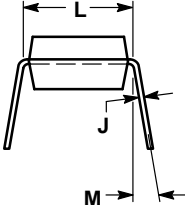
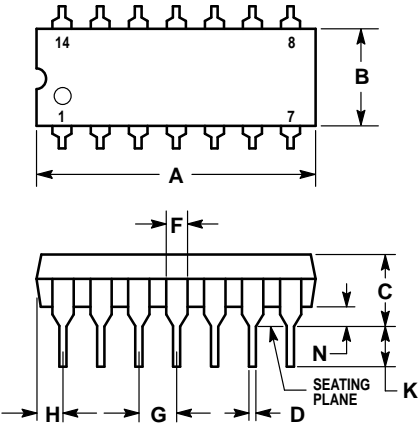


Figure 3. Temperature Coefficients

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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