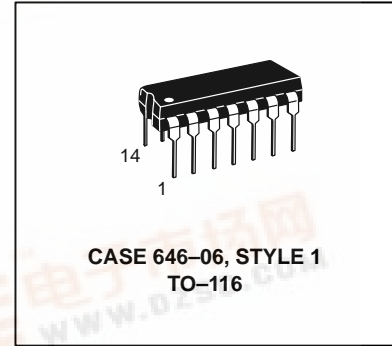
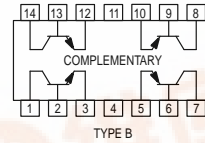


Quad Amplifier Transistors

PNP Silicon



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		$^\circ\text{C}$

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
----------------	--------	-----	-----	-----	------

OFF CHARACTERISTICS

Collector–Emitter Breakdown Voltage ($I_C = -1.0$ mAdc, $I_E = 0$)	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}	— —	— —	nAdc
Emitter Cutoff Current ($V_{EB} = -3.0$ Vdc, $I_C = 0$)		I_{EBO}	—	—	nAdc



MPQ7091 MPQ7093

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

Characteristic	Symbol	Min	Max	Max	Unit
ON CHARACTERISTICS					
DC Current Gain (I _C = -1.0 mA, V _{CE} = -10 Vdc) (I _C = -10 mA, V _{CE} = -10 Vdc) (I _C = -30 mA, V _{CE} = -10 Vdc)	h _{FE}	25 35 25	40 55 50	— — —	—
Collector–Emitter Saturation Voltage (I _C = -20 mA, I _B = -2.0 mA)	V _{CE(sat)}	—	-0.3	-0.5	Vdc
Base–Emitter Saturation Voltage (I _C = -20 mA, I _B = -2.0 mA)	V _{BE(sat)}	—	-0.7	-0.9	Vdc

SMALL-SIGNAL CHARACTERISTICS

Current–Gain — Bandwidth Product (I _C = -10 mA, V _{CE} = -20 Vdc, f = 100 MHz)	f _T	50	70	—	MHz
Output Capacitance (V _{CB} = -20 Vdc, I _E = 0, f = 1.0 MHz)	C _{obo}	—	3.0	5.0	pF
Input Capacitance (V _{EB} = -3.0 Vdc, I _C = 0, f = 1.0 MHz)	C _{ibo}	—	60	75	pF

DC CHARACTERISTICS

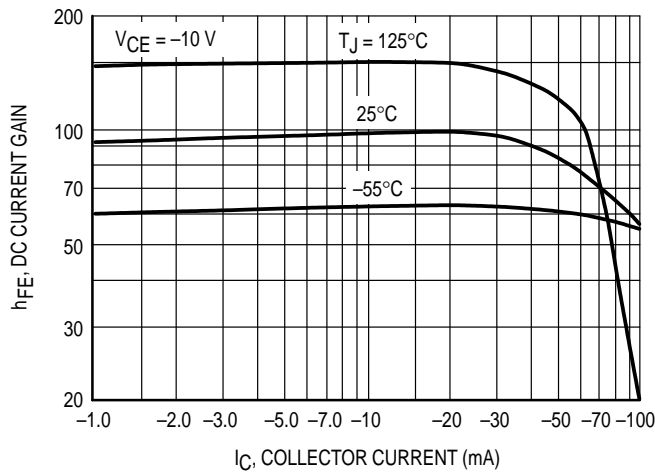


Figure 1. DC Current Gain

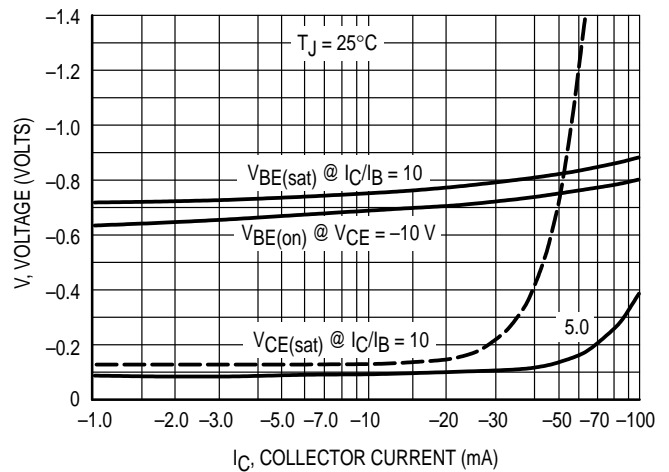


Figure 2. "ON" Voltages

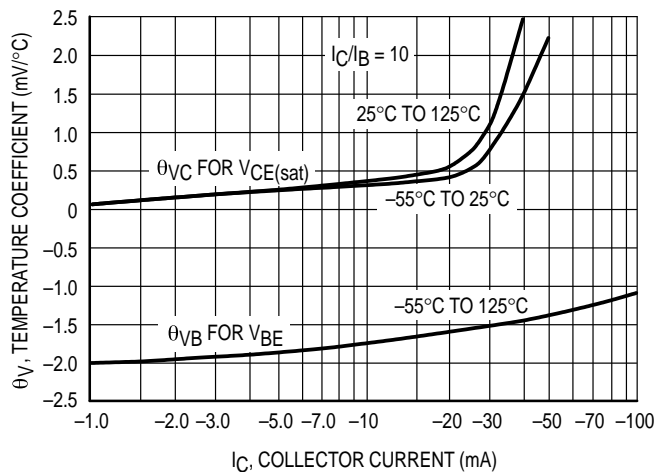
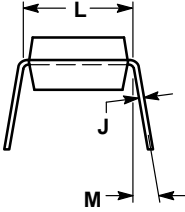
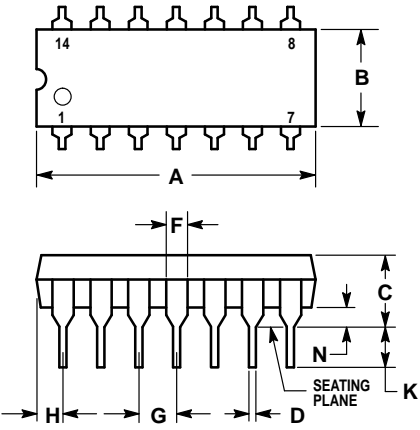


Figure 3. Temperature Coefficients

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**

MPQ7091 MPQ7093

Motorola reserves the right to make changes without further notice to any products herein. Motorola makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does Motorola assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation consequential or incidental damages. "Typical" parameters which may be provided in Motorola data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. Motorola does not convey any license under its patent rights nor the rights of others. Motorola products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the Motorola product could create a situation where personal injury or death may occur. Should Buyer purchase or use Motorola products for any such unintended or unauthorized application, Buyer shall indemnify and hold Motorola and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that Motorola was negligent regarding the design or manufacture of the part. Motorola and  are registered trademarks of Motorola, Inc. Motorola, Inc. is an Equal Opportunity/Affirmative Action Employer.

Mfax is a trademark of Motorola, Inc.

How to reach us:

USA/EUROPE/Locations Not Listed: Motorola Literature Distribution;
P.O. Box 5405, Denver, Colorado 80217. 303-675-2140 or 1-800-441-2447

JAPAN: Nippon Motorola Ltd.: SPD, Strategic Planning Office, 4-32-1,
Nishi-Gotanda, Shinagawa-ku, Tokyo 141, Japan. 81-3-5487-8488

Mfax™: RMFAX0@email.sps.mot.com – TOUCHTONE 602-244-6609
– US & Canada ONLY 1-800-774-1848

ASIA/PACIFIC: Motorola Semiconductors H.K. Ltd.; 8B Tai Ping Industrial Park,
51 Ting Kok Road, Tai Po, N.T., Hong Kong. 852-26629298

INTERNET: <http://motorola.com/sps>



MOTOROLA