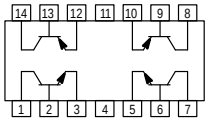
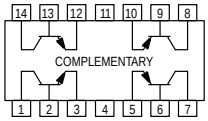
Quad Complementary Pair Transistors

NPN/PNP Silicon



MPQ6100A
TYPE A

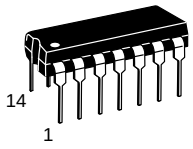


MPQ6600A1
TYPE B

MPQ6100A
MPQ6600A1*

Voltage and Current are negative for PNP Transistors

***Motorola Preferred Device**



CASE 646–06, STYLE 1
TO–116

MAXIMUM RATINGS

Rating	Symbol	MPQ6100A MPQ6600A1		Unit
Collector–Emitter Voltage	V_{CEO}	45		Vdc
Collector–Base Voltage	V_{CBO}	60		Vdc
Emitter–Base Voltage	V_{EBO}	5.0		Vdc
Collector Current — Continuous	I_C	50		mAdc
		Each Transistor	**Four Transistors Equal Power**	
Total Device Dissipation @ T_A = 25°C 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(1)	Each Die Effective, 4 Die	151 52	250 139	°C/W °C/W
Coupling Factors	Q1–Q4 or Q2–Q3 Q1–Q2 or Q3–Q4	34 2.0	70 26	% %

1. $R_{\theta JA}$ is measured with the device soldered into a typical printed circuit board.

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

REV 2

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)	MPQ6100A, 6600A1	$V_{(BR)CEO}$	45	—	—	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)		$V_{(BR)EBO}$	5.0	—	—	Vdc
Collector Cutoff Current (V_{CB} = 50 Vdc, I_E = 0)		I_{CBO}	—	—	10	nAdc
ON CHARACTERISTICS(2)						
DC Current Gain		h_{FE}				—
(I_C = 100 μAdc, V_{CE} = 5.0 Vdc)	MPQ6100A, 6600A1		100	—	—	
(I_C = 500 μAdc, V_{CE} = 5.0 Vdc)	MPQ6100A, 6600A1		150	—	—	
(I_C = 1.0 mAdc, V_{CE} = 5.0 Vdc)	MPQ6100A, 6600A1		150	—	—	
(I_C = 10 mAdc, V_{CE} = 5.0 Vdc)	MPQ6100A, 6600A1		125	—	—	
Collector–Emitter Saturation Voltage (I_C = 1.0 mAdc, I_B = 100 μAdc)		$V_{CE(sat)}$	—	—	0.25	Vdc
Base–Emitter Saturation Voltage (I_C = 1.0 mAdc, I_B = 100 μAdc)		$V_{BE(sat)}$	—	—	0.8	Vdc
SMALL–SIGNAL CHARACTERISTICS						
Current–Gain — Bandwidth Product (I_C = 500 μAdc, V_{CE} = 5.0 Vdc, f = 20 MHz)		f_T	50	—	—	MHz
Output Capacitance (V_{CB} = 5.0 Vdc, I_E = 0, f =1.0 MHz)		C_{obo}				pF
	PNP		—	1.2	4.0	
	NPN		—	1.8	4.0	
Input Capacitance (V_{EB} = 0.5 Vdc, I_C = 0, f = 1.0 MHz)		C_{ibo}				pF
	PNP		—	—	8.0	
	NPN		—	—	8.0	
Noise Figure (I_C = 100 μAdc, V_{CE} = 5.0 Vdc, R_S = 10 kΩ, f = 1.0 kHz, BW = 10 kHz)		NF	—	4.0	—	dB
MATCHING CHARACTERISTICS (MPQ6600A1 ONLY)						
DC Current Gain Ratio (I_C = 100 μAdc, V_{CE} = 5.0 Vdc)		h_{FE1}/h_{FE2}	0.8	—	1.0	—
Base–Emitter Voltage Differential (I_C = 100 μAdc, V_{CE} = 5.0 Vdc)		$\lvert V_{BE1}–V_{BE2}\rvert$	—	—	20	mVdc

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

SPOT NOISE FIGURE

(V_{CE} = 10 Vdc, T_A = 25°C)

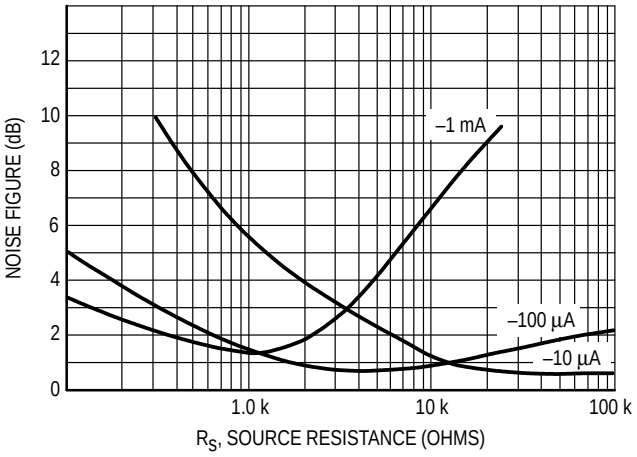


Figure 1. Source Resistance Effects, f = 1.0 kHz

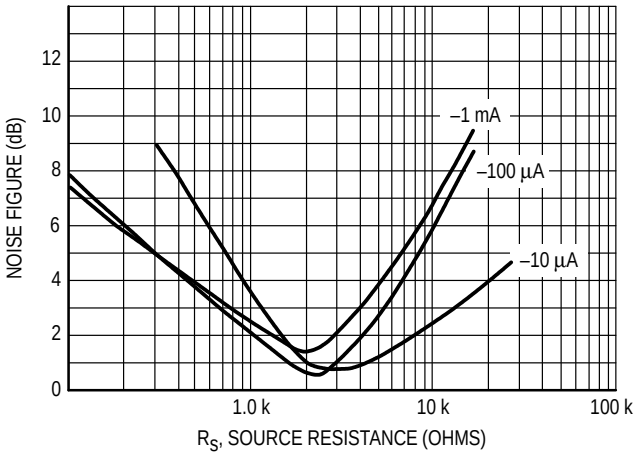


Figure 2. Source Resistance Effects, f = 10 Hz

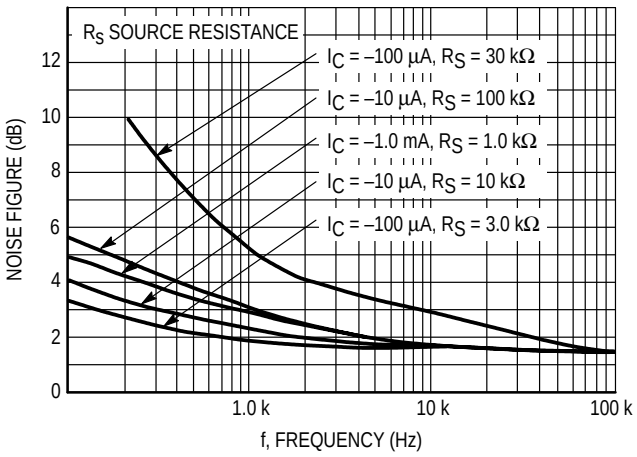


Figure 3. Frequency Effects

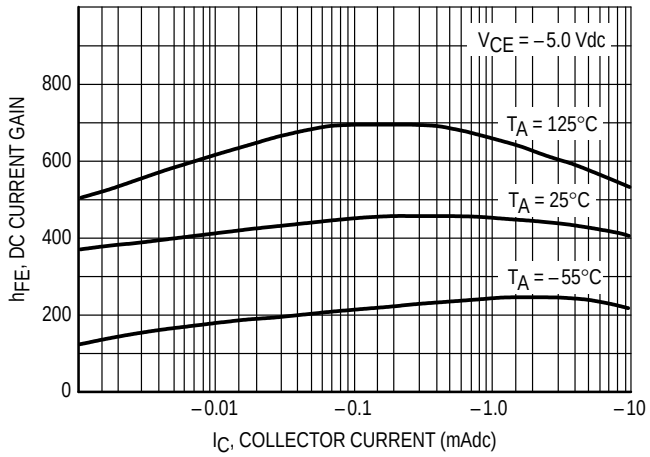
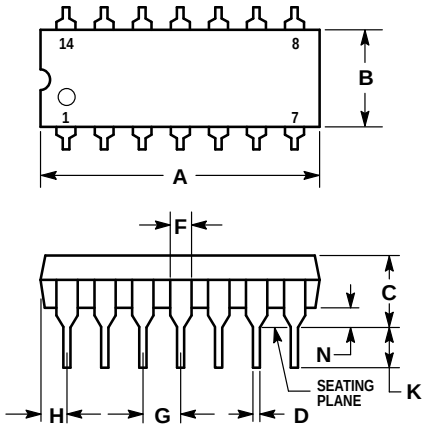


Figure 4. Typical Current Gain Characteristics

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.

	INCHES		MILLIMETERS	
DIM	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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