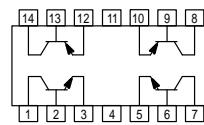
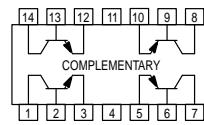


**Quad Complementary Pair  
Transistors**  
NPN/PNP Silicon



MPQ6100A  
TYPE A



MPQ6600A1  
TYPE B

**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 @ $T_A = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	PD	500 4.0	900 7.2	mW mW/ $^\circ\text{C}$
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	PD	0.825 6.7	2.4 19.2	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 <sup>(1)</sup>	Each Die Effective, 4 Die	151 52	250 139	$^\circ\text{C/W}$ $^\circ\text{C/W}$
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

# MPQ6100A MPQ6600A1

## ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
<b>OFF CHARACTERISTICS</b>					
Collector-Emitter Breakdown Voltage <sup>(2)</sup> (I <sub>C</sub> = 10 mA, I <sub>B</sub> = 0)	V <sub>(BR)CEO</sub>	45	—	—	V <sub>dc</sub>
Collector-Base Breakdown Voltage (I <sub>C</sub> = 10 μA, I <sub>E</sub> = 0)	V <sub>(BR)CBO</sub>	60	—	—	V <sub>dc</sub>
Emitter-Base Breakdown Voltage (I <sub>E</sub> = 10 μA, I <sub>C</sub> = 0)	V <sub>(BR)EBO</sub>	5.0	—	—	V <sub>dc</sub>
Collector Cutoff Current (V <sub>CB</sub> = 50 V <sub>dc</sub> , I <sub>E</sub> = 0)	I <sub>CBO</sub>	—	—	10	nA

## ON CHARACTERISTICS<sup>(2)</sup>

DC Current Gain (I <sub>C</sub> = 100 μA, V <sub>CE</sub> = 5.0 V <sub>dc</sub> ) (I <sub>C</sub> = 500 μA, V <sub>CE</sub> = 5.0 V <sub>dc</sub> ) (I <sub>C</sub> = 1.0 mA, V <sub>CE</sub> = 5.0 V <sub>dc</sub> ) (I <sub>C</sub> = 10 mA, V <sub>CE</sub> = 5.0 V <sub>dc</sub> )	MPQ6100A, 6600A1 MPQ6100A, 6600A1 MPQ6100A, 6600A1 MPQ6100A, 6600A1	$h_{FE}$	100 150 150 125	— — — —	— — — —
Collector-Emitter Saturation Voltage (I <sub>C</sub> = 1.0 mA, I <sub>B</sub> = 100 μA)	V <sub>CE(sat)</sub>	—	—	0.25	V <sub>dc</sub>
Base-Emitter Saturation Voltage (I <sub>C</sub> = 1.0 mA, I <sub>B</sub> = 100 μA)	V <sub>BE(sat)</sub>	—	—	0.8	V <sub>dc</sub>

## SMALL-SIGNAL CHARACTERISTICS

Current-Gain — Bandwidth Product (I <sub>C</sub> = 500 μA, V <sub>CE</sub> = 5.0 V <sub>dc</sub> , f = 20 MHz)	$f_T$	50	—	—	MHz
Output Capacitance (V <sub>CB</sub> = 5.0 V <sub>dc</sub> , I <sub>E</sub> = 0, f = 1.0 MHz)	C <sub>obo</sub> PNP NPN	— —	1.2 1.8	4.0 4.0	pF
Input Capacitance (V <sub>EB</sub> = 0.5 V <sub>dc</sub> , I <sub>C</sub> = 0, f = 1.0 MHz)	C <sub>ibo</sub> PNP NPN	— —	— —	8.0 8.0	pF
Noise Figure (I <sub>C</sub> = 100 μA, V <sub>CE</sub> = 5.0 V <sub>dc</sub> , R <sub>S</sub> = 10 kΩ, f = 1.0 kHz, BW = 10 kHz)	NF	—	4.0	—	dB

## MATCHING CHARACTERISTICS (MPQ6600A1 ONLY)

DC Current Gain Ratio (I <sub>C</sub> = 100 μA, V <sub>CE</sub> = 5.0 V <sub>dc</sub> )	$h_{FE1}/h_{FE2}$	0.8	—	1.0	—
Base-Emitter Voltage Differential (I <sub>C</sub> = 100 μA, V <sub>CE</sub> = 5.0 V <sub>dc</sub> )	V <sub>BE1</sub> -V <sub>BE2</sub>	—	—	20	mV <sub>dc</sub>

2. Pulse Test: Pulse Width  $\leq$  300 μs; Duty Cycle  $\leq$  2.0%.

## SPOT NOISE FIGURE

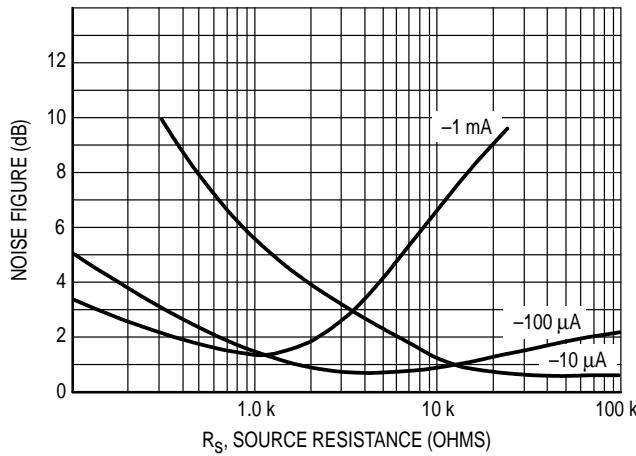
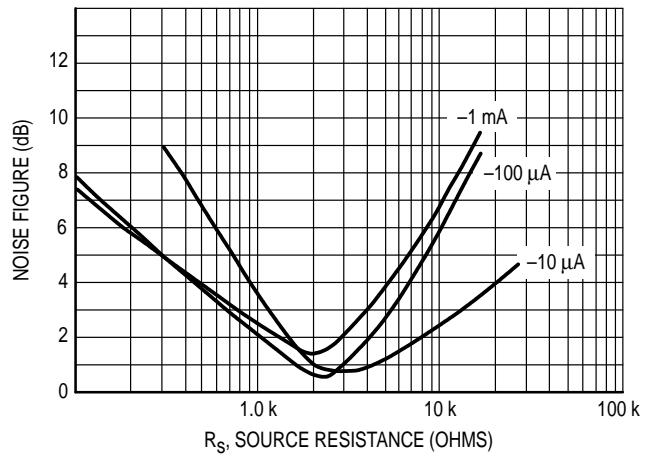
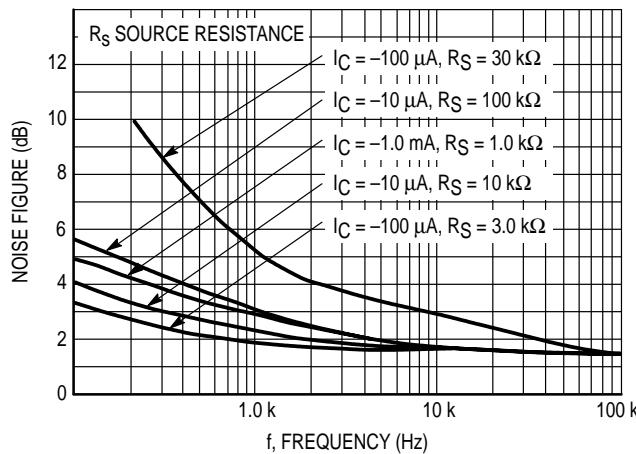
(V<sub>CE</sub> = 10 Vdc, T<sub>A</sub> = 25°C)Figure 1. Source Resistance Effects,  $f = 1.0$  kHzFigure 2. Source Resistance Effects,  $f = 10$  Hz

Figure 3. Frequency Effects

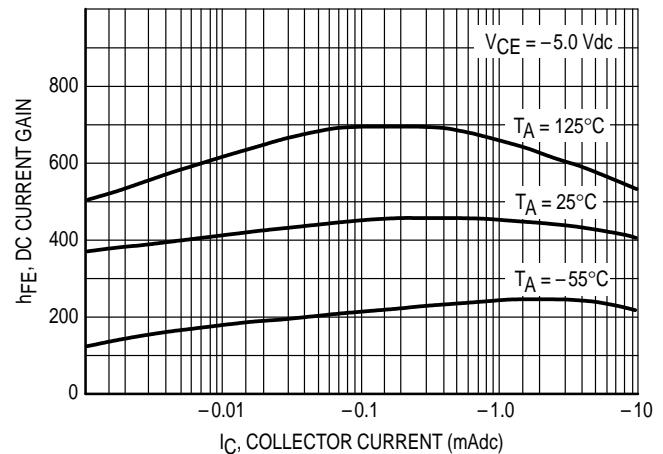
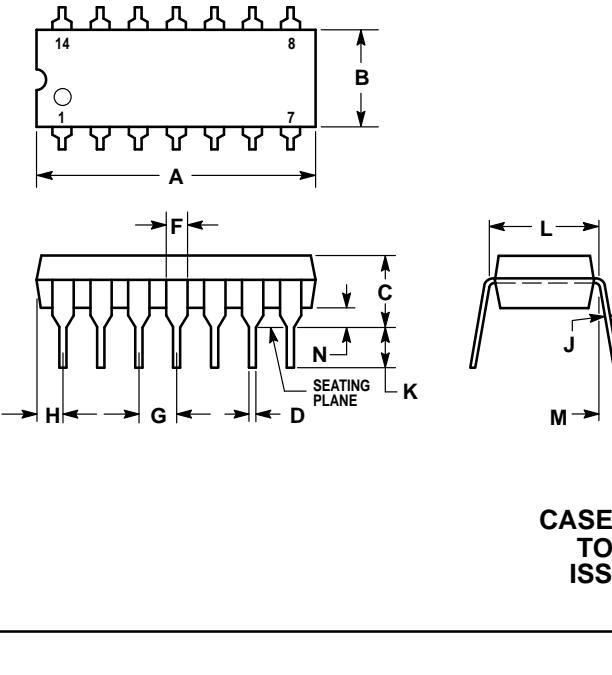


Figure 4. Typical Current Gain Characteristics

## PACKAGE DIMENSIONS



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.

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

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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