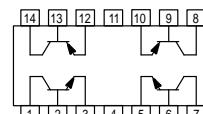


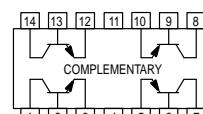
Quad Complementary Pair Transistors

NPN/PNP Silicon



MPQ6001, MPQ6002

TYPE A

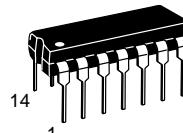


MPQ6502

TYPE B

MPQ6001
MPQ6002
MPQ6502

Voltage and current are negative
for PNP transistors



CASE 646-06, STYLE 1
TO-116

MAXIMUM RATINGS

Rating	Symbol	Value		Unit
Collector-Emitter Voltage	V_{CEO}	30		Vdc
Collector-Base Voltage	V_{CBO}	60		Vdc
Emitter-Base Voltage	V_{EBO}	5.0		Vdc
Collector Current — Continuous	I_C	500		mAdc
		Each Transistor	Four Transistors Equal Power	
Total Device Dissipation @ $T_A = 25^\circ\text{C}$ MPQ6001, MPQ6002, MPQ6502 Derate above 25°C MPQ6001, MPQ6002, MPQ6502	P_D	0.65	1.25	Watts
		5.18	10	$\text{mW}/^\circ\text{C}$
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ MPQ6001, MPQ6002, MPQ6502 Derate above 25°C MPQ6001, MPQ6002, MPQ6502	P_D	1.0	3.0	Watts
		8.0	24	$\text{mW}/^\circ\text{C}$
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 Effective, 4 Die	MPQ6001, MPQ6002, MPQ6502 MPQ6001, MPQ6002, MPQ6502	125 41.6	$^\circ\text{C}/\text{W}$
Coupling Factors Q1-Q4 or Q2-Q3 Q1-Q2 or Q3-Q4	MPQ6001, MPQ6002, MPQ6502 MPQ6001, MPQ6002, MPQ6502	30 20	%

1. Voltage and Current are negative for PNP devices.

MPQ6001 MPQ6002 MPQ6502
ELECTRICAL CHARACTERISTICS (TA = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage ⁽²⁾ (IC = 10 mA, IB = 0)	V(BR)CEO	30	—	—	Vdc
Collector-Base Breakdown Voltage (IC = 10 μA, IE = 0)	V(BR)CBO	60	—	—	Vdc
Emitter-Base Breakdown Voltage (IE = 10 μA, IC = 0)	V(BR)EBO	5.0	—	—	Vdc
Collector Cutoff Current (V _{CB} = 50 Vdc, IE = 0)	I _{CBO}	—	—	30	nA
Emitter Cutoff Current (V _{EB} = 3.0 Vdc, IC = 0)	I _{EBO}	—	—	30	nA
ON CHARACTERISTICS					
DC Current Gain ⁽²⁾ (IC = 1.0 mA, V _{CE} = 10 Vdc)	h _{FE}	25	—	—	—
		50	—	—	—
(IC = 10 mA, V _{CE} = 10 Vdc)	MPQ6001 MPQ6002, MPQ6502	35	—	—	—
		75	—	—	—
(IC = 150 mA, V _{CE} = 10 Vdc)	MPQ6001 MPQ6002, MPQ6502	40	—	—	—
		100	—	—	—
(IC = 300 mA, V _{CE} = 10 Vdc)	MPQ6001 MPQ6002, MPQ6502	20	—	—	—
		30	—	—	—
Collector-Emitter Saturation Voltage ⁽²⁾ (IC = 150 mA, IB = 15 mA) (IC = 300 mA, IB = 30 mA)	V _{CE(sat)}	—	—	0.4	Vdc
		—	—	1.4	
Base-Emitter Saturation Voltage ⁽²⁾ (IC = 150 mA, IB = 15 mA) (IC = 300 mA, IB = 30 mA)	V _{BE(sat)}	—	—	1.3	Vdc
		—	—	2.0	
SMALL-SIGNAL CHARACTERISTICS					
Current-Gain — Bandwidth Product ⁽²⁾ (IC = 50 mA, V _{CE} = 20 Vdc, f = 100 MHz)	f _T	200	350	—	MHz
Output Capacitance (V _{CB} = 10 Vdc, IE = 0, f = 1.0 MHz)	C _{obo}	—	6.0	8.0	pF
	PNP NPN	—	4.5	8.0	
Input Capacitance (V _{EB} = 2.0 Vdc, IC = 0, f = 1.0 MHz)	C _{i_{bo}}	—	20	30	pF
	PNP NPN	—	17	30	
SWITCHING CHARACTERISTICS					
Turn-On Time (V _{CC} = 30 Vdc, V _{EB} = 0.5 Vdc, IC = 150 mA, IB1 = 15 mA, Figure 1)	t _{on}	—	30	—	ns
Turn-Off Time (V _{CC} = 30 Vdc, IC = 150 mA, IB1 = IB2 = 15 mA)	t _{off}	—	225	—	ns

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

NPN DATA

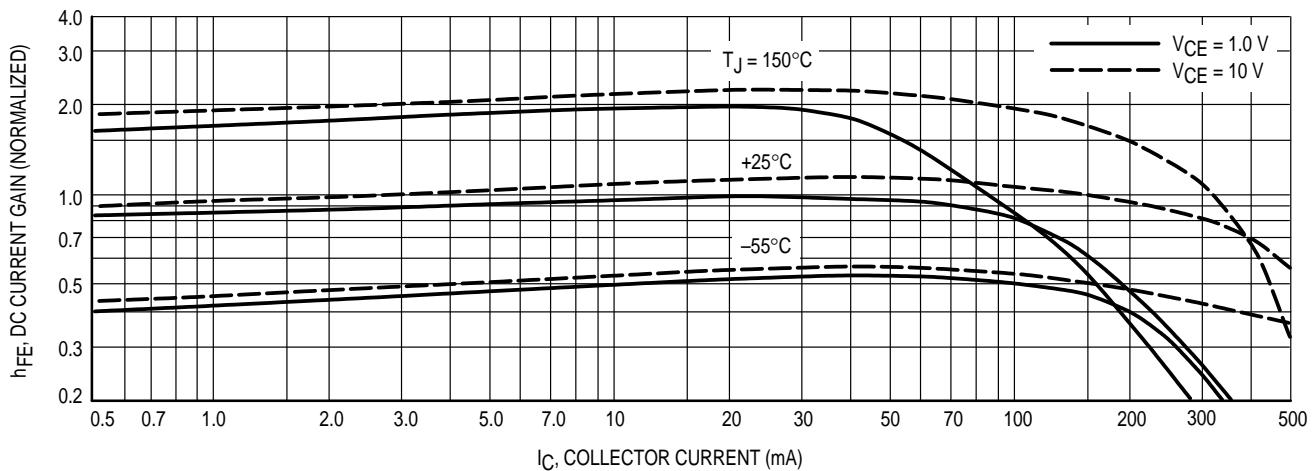


Figure 1. Normalized DC Current Gain

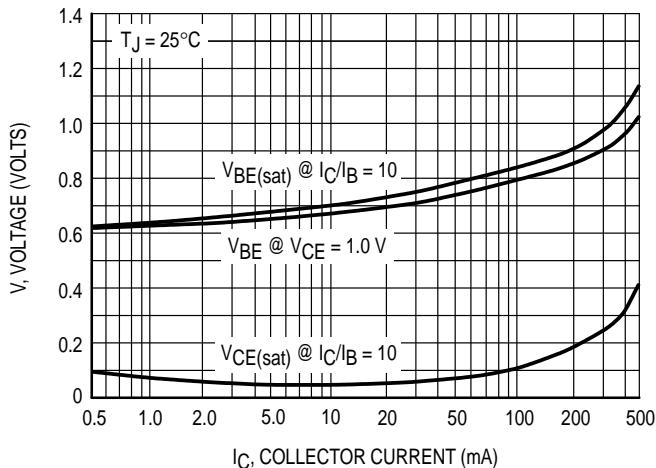


Figure 2. "ON" Voltages

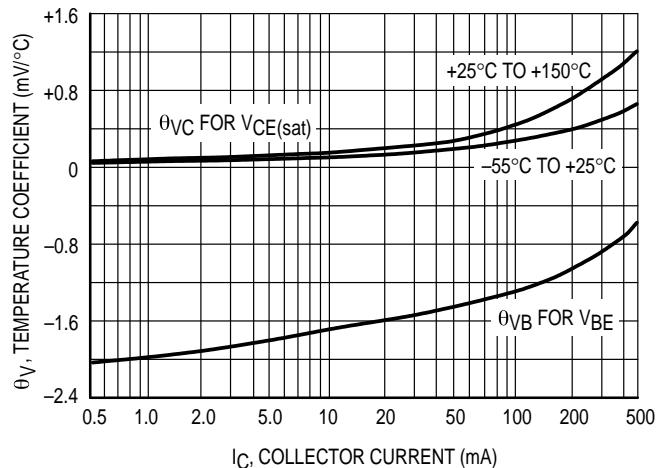


Figure 3. Temperature Coefficients

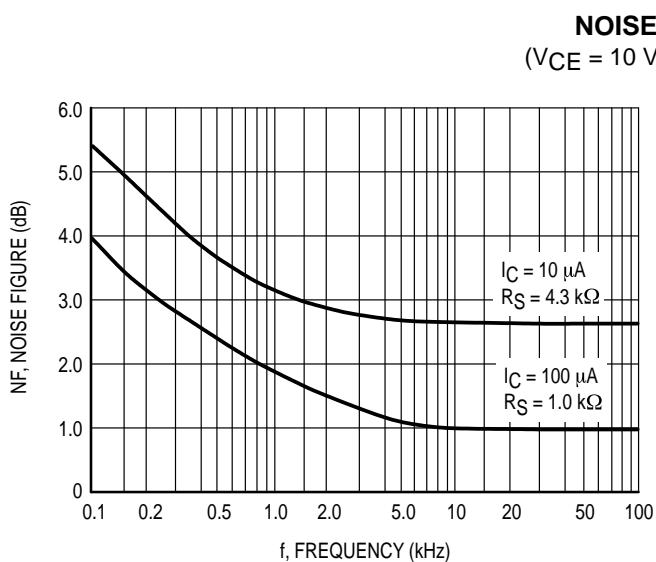


Figure 4. Frequency Effects

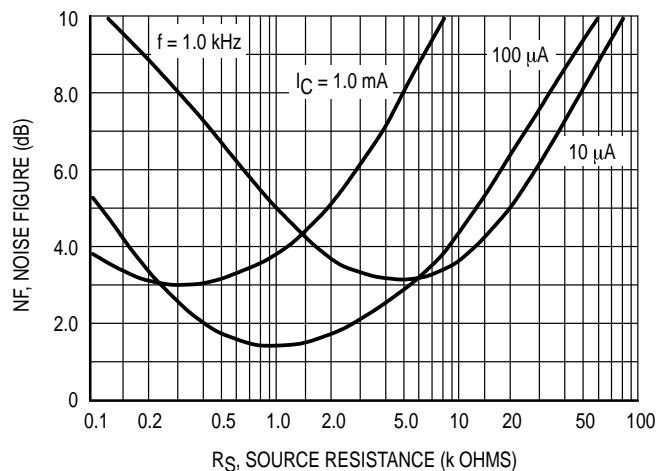
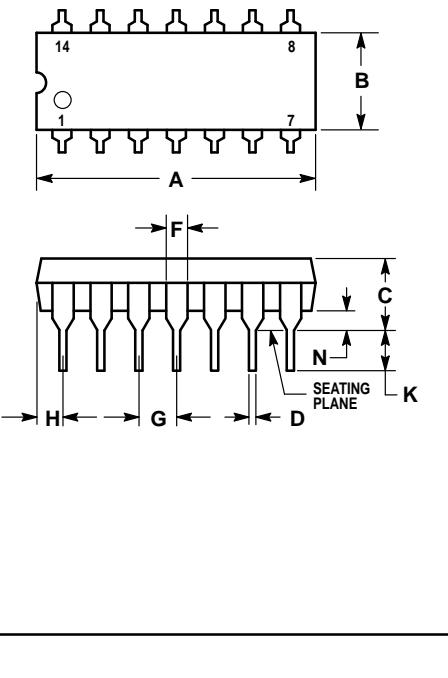


Figure 5. Source Resistance Effects

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.

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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