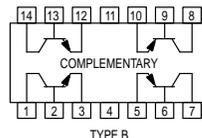


Quad Complementary Pair Transistor

NPN/PNP Silicon



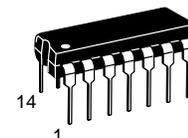
MPQ7051

Voltage and current are negative for PNP transistors

Motorola Preferred Device

MAXIMUM RATINGS

Rating	Symbol	Value		Unit
Collector–Emitter Voltage	V_{CEO}	150		Vdc
Collector–Base Voltage	V_{CBO}	150		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
TYPE B

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	Max	Unit
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OFF CHARACTERISTICS

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

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

MPQ7051**ELECTRICAL CHARACTERISTICS** ($T_A = 25^\circ\text{C}$ unless otherwise noted) (Continued)

Characteristic	Symbol	Min	Max	Unit
ON CHARACTERISTICS				
DC Current Gain ($I_C = 1.0 \text{ mAdc}$, $V_{CE} = 10 \text{ Vdc}$) ($I_C = 10 \text{ mAdc}$, $V_{CE} = 10 \text{ Vdc}$) ($I_C = 30 \text{ mAdc}$, $V_{CE} = 10 \text{ Vdc}$)	h_{FE}	25 35 25	— — —	—
Collector–Emitter Saturation Voltage ($I_C = 20 \text{ mAdc}$, $I_B = 2.0 \text{ mAdc}$)	$V_{CE(sat)}$	—	0.7	Vdc
Base–Emitter Saturation Voltage ($I_C = 20 \text{ mAdc}$, $I_B = 2.0 \text{ mAdc}$)	$V_{BE(sat)}$	—	0.9	Vdc
SMALL–SIGNAL CHARACTERISTICS				
Current–Gain — Bandwidth Product ($I_C = 10 \text{ mAdc}$, $V_{CE} = 20 \text{ Vdc}$, $f = 100 \text{ MHz}$)	f_T	50	—	MHz
Output Capacitance ($V_{CB} = 20 \text{ Vdc}$, $I_C = 0$, $f = 1.0 \text{ MHz}$)	C_{obo}	—	6.0	pF
Input Capacitance ($V_{EB} = 3.0 \text{ Vdc}$, $I_C = 0$, $f = 1.0 \text{ MHz}$)	C_{ibo}	— —	50 75	pF
	NPN			
	PNP			

DC CHARACTERISTICS

NPN

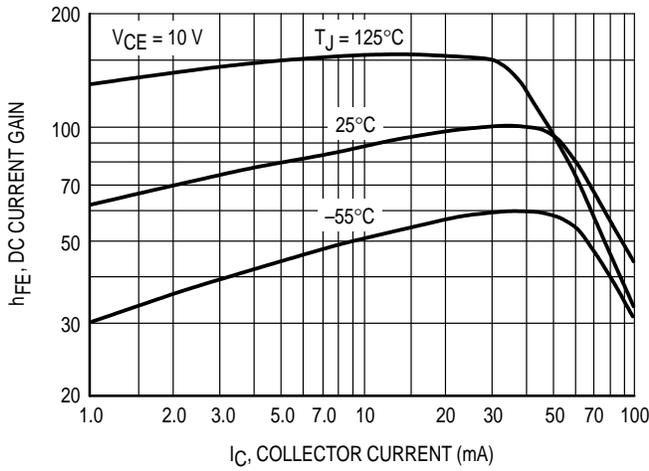


Figure 1. DC Current Gain

PNP

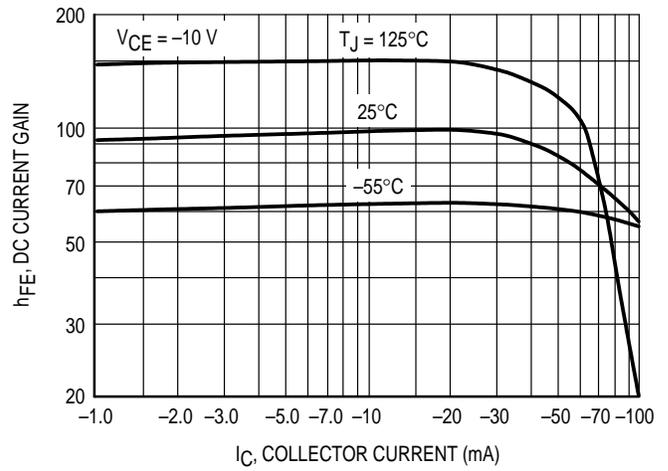


Figure 2. DC Current Gain

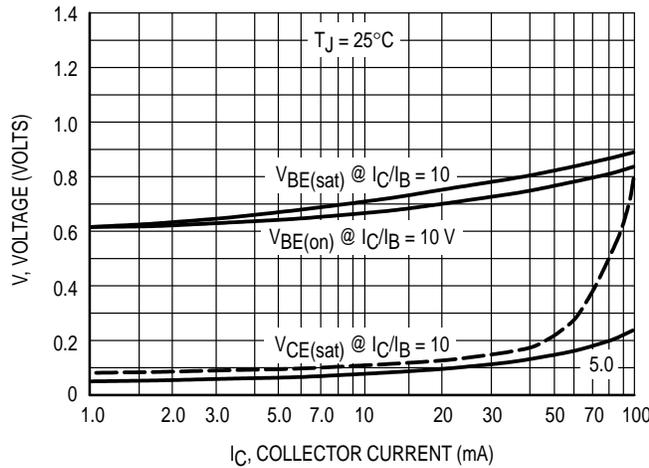


Figure 3. "ON" Voltages

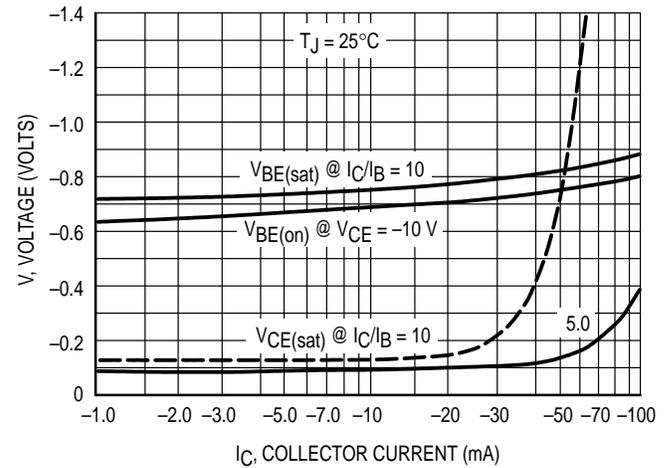


Figure 4. "ON" Voltages

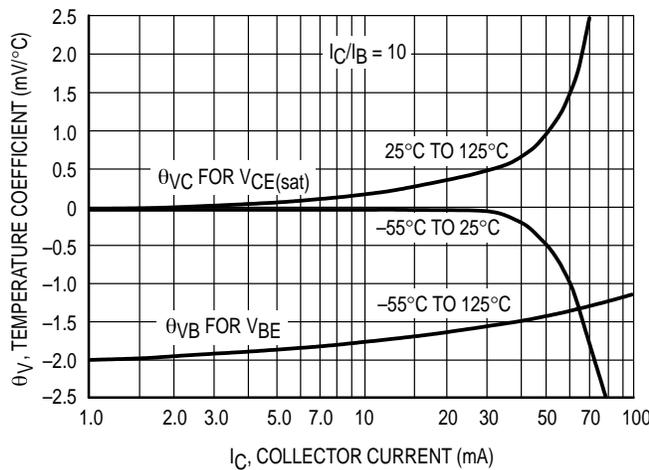


Figure 5. Temperature Coefficients

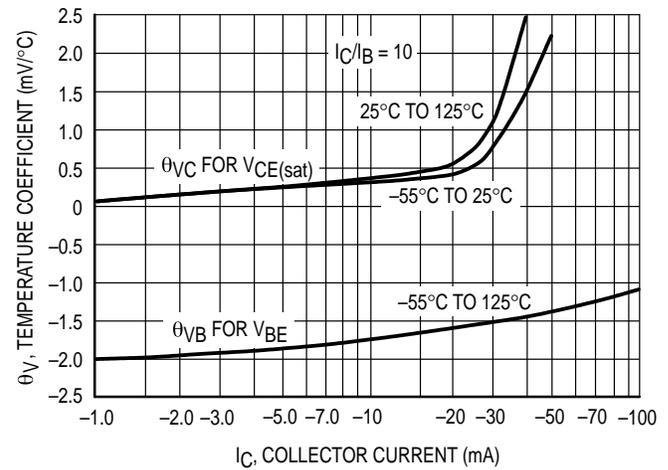
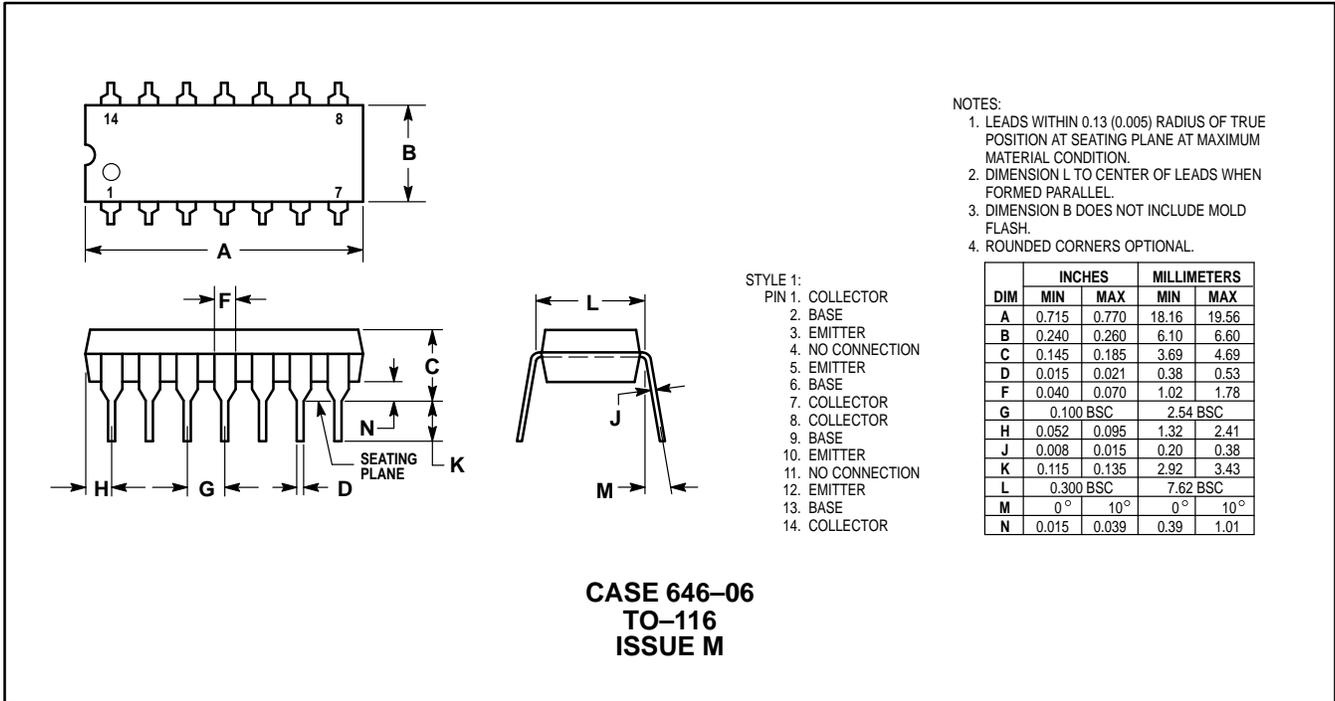


Figure 6. Temperature Coefficients

PACKAGE DIMENSIONS



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