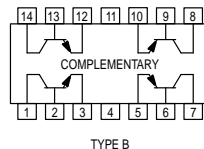


Quad Complementary Pair Transistor

NPN/PNP Silicon



MPQ6700

MPQ6501, MPQ6502
For Specifications,
See MPQ6001 Data

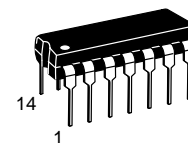
MPQ6600A1
For Specifications,
See MPQ6100A Data

Voltage and current are
negative for PNP transistors

Motorola Preferred Device

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector–Emitter Voltage	V_{CEO}	40	Vdc
Collector–Base Voltage	V_{CBO}	40	Vdc
Emitter–Base Voltage	V_{EBO}	5.0	Vdc
Collector Current — Continuous	I_C	200	mAdc
		Each Transistor	Four Transistors Equal Power
Total Device Dissipation @ $T_A = 25^\circ\text{C}$ ⁽¹⁾ Derate above 25°C	P_D	500 4.0	mW mW/ $^\circ\text{C}$
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	825 6.7	mW 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	151	$^\circ\text{C}/\text{W}$
	Effective, 4 Die	52	$^\circ\text{C}/\text{W}$
Coupling Factors	Q1–Q4 or Q2–Q3	34	%
	Q1–Q2 or Q3–Q4	2.0	%

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 ⁽²⁾ ($I_C = 10 \text{ mAdc}, I_E = 0$)	$V_{(BR)CEO}$	40	—	Vdc
Collector–Base Breakdown Voltage ($I_C = 10 \mu\text{Adc}, I_E = 0$)	$V_{(BR)CBO}$	40	—	Vdc
Emitter–Base Breakdown Voltage ($I_E = 10 \mu\text{Adc}, I_C = 0$)	$V_{(BR)EBO}$	5.0	—	Vdc
Collector Cutoff Current ($V_{CB} = 30 \text{ Vdc}, I_E = 0$)	I_{CBO}	—	50	nAdc
Emitter Cutoff Current ($V_{EB} = 4.0 \text{ Vdc}, I_C = 0$)	I_{EBO}	—	50	nAdc

- Second Breakdown occurs at power levels greater than 3 times the power dissipation rating.
- Pulse Test: Pulse Width $\leq 300 \mu\text{s}$; Duty Cycle $\leq 2.0\%$.

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

MPQ6700**ELECTRICAL CHARACTERISTICS** ($T_A = 25^\circ\text{C}$ unless otherwise noted) (Continued)

Characteristic	Symbol	Min	Max	Unit
ON CHARACTERISTICS⁽²⁾				
DC Current Gain ($I_C = 0.1 \text{ mAdc}$, $V_{CE} = 1.0 \text{ Vdc}$) ($I_C = 1.0 \text{ mAdc}$, $V_{CE} = 1.0 \text{ Vdc}$) ($I_C = 10 \text{ mAdc}$, $V_{CE} = 1.0 \text{ Vdc}$)	h_{FE}	30 50 70	— — —	—
Collector–Emitter Saturation Voltage ($I_C = 10 \text{ mAdc}$, $I_B = 1.0 \text{ mAdc}$)	$V_{CE(sat)}$	—	0.25	Vdc
Base–Emitter Saturation Voltage ($I_C = 10 \text{ mAdc}$, $I_B = 1.0 \text{ mAdc}$)	$V_{BE(sat)}$	—	0.9	Vdc
SMALL–SIGNAL CHARACTERISTICS				
Current–Gain — Bandwidth Product ⁽²⁾ ($I_C = 10 \text{ mAdc}$, $V_{CE} = 20 \text{ Vdc}$, $f = 100 \text{ MHz}$)	f_T	200	—	MHz
Output Capacitance ($V_{CB} = 5.0 \text{ Vdc}$, $I_E = 0$, $f = 1.0 \text{ MHz}$)	C_{obo}	—	4.5	pF
Input Capacitance ($V_{EB} = 0.5 \text{ Vdc}$, $I_C = 0$, $f = 1.0 \text{ MHz}$)	C_{ibo}	— —	10 8.0	pF
	PNP			
	NPN			

2. Pulse Test: Pulse Width $\leq 300 \mu\text{s}$; Duty Cycle $\leq 2.0\%$.

NPN

PNP

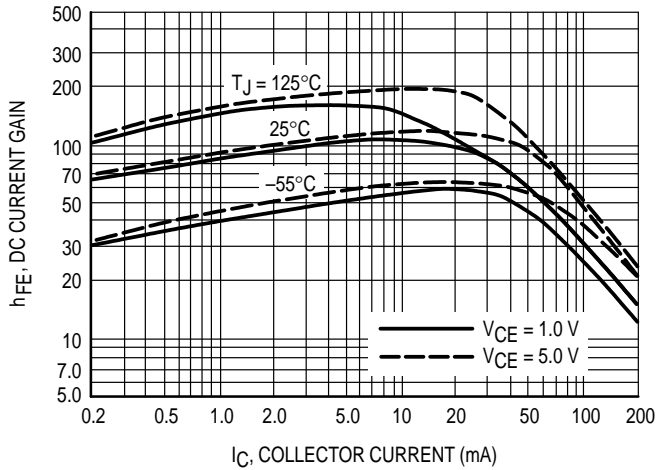


Figure 1. DC Current Gain

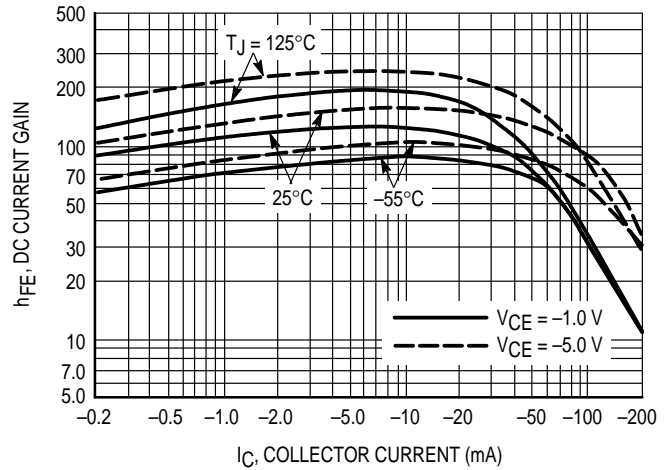


Figure 2. DC Current Gain

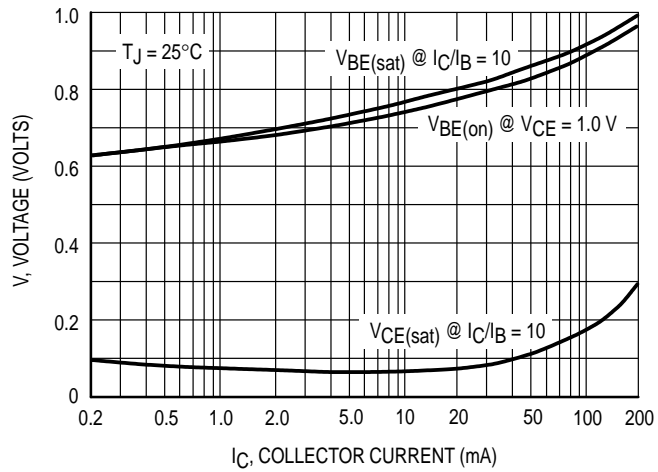


Figure 3. "ON" Voltage

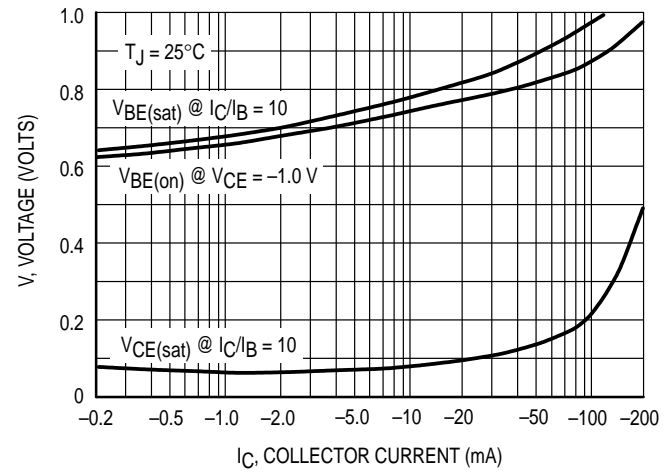


Figure 4. "ON" Voltage

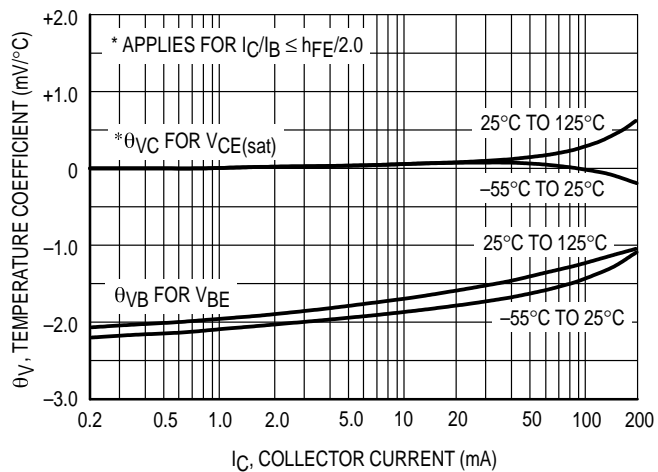


Figure 5. Temperature Coefficients

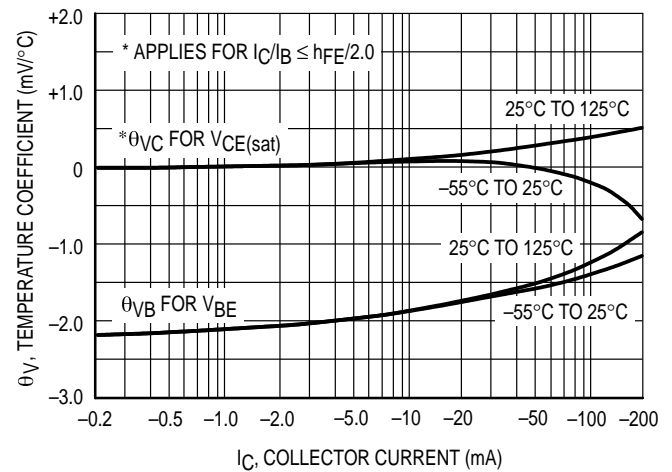


Figure 6. Temperature Coefficients

NPN

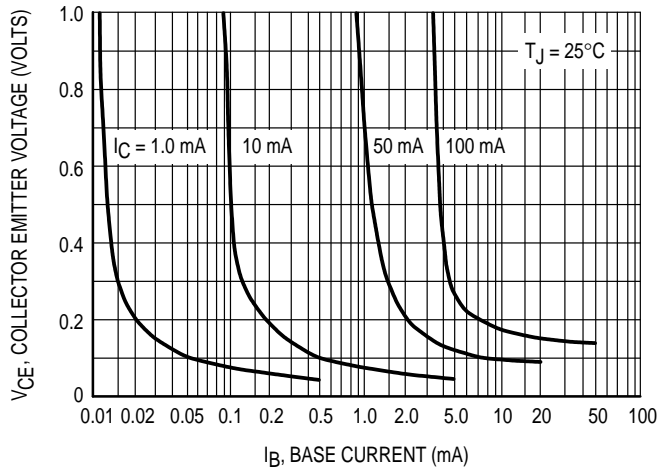


Figure 7. Collector Saturation Region

PNP

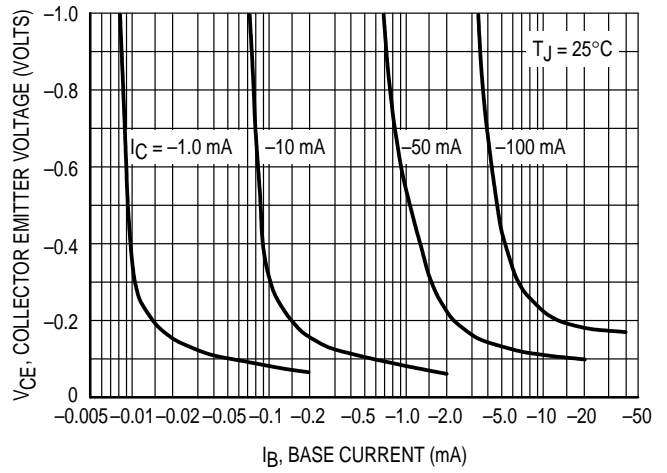


Figure 8. Collector Saturation Region

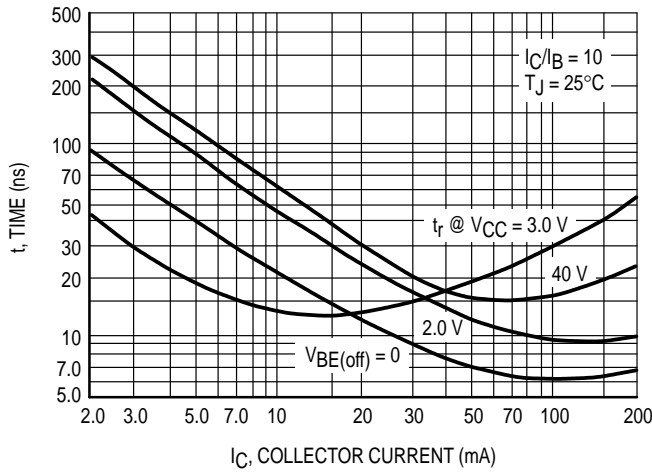


Figure 9. Turn-On Time

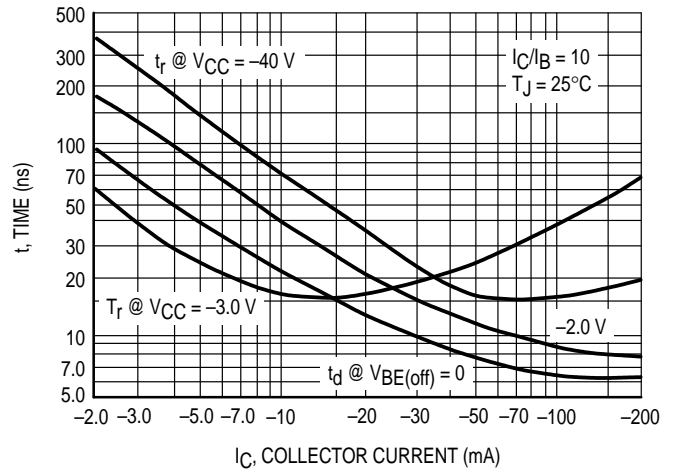


Figure 10. Turn-On Time

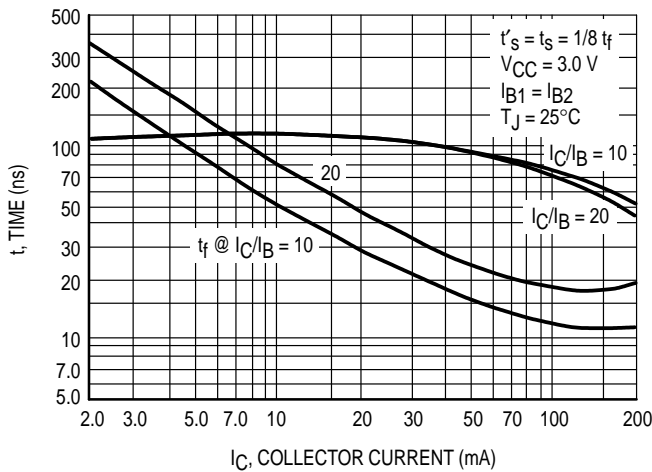


Figure 11. Turn-Off Time

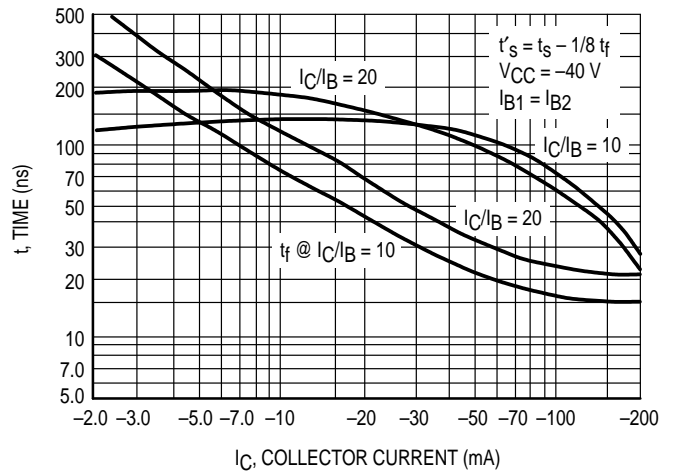


Figure 12. Turn-Off Time

NPN

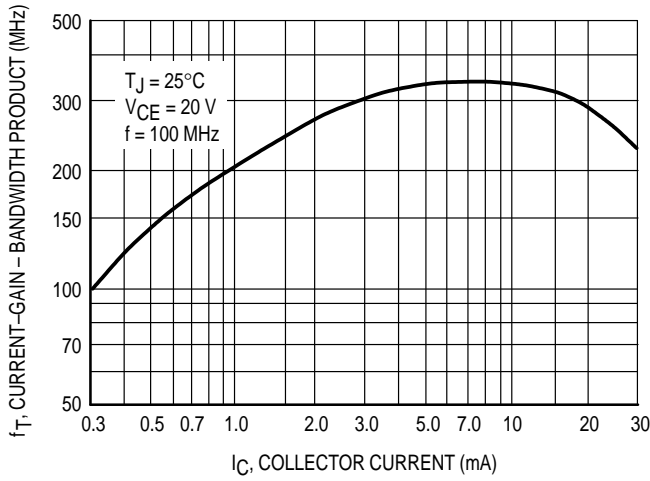


Figure 13. Current-Gain — Bandwidth Product

PNP

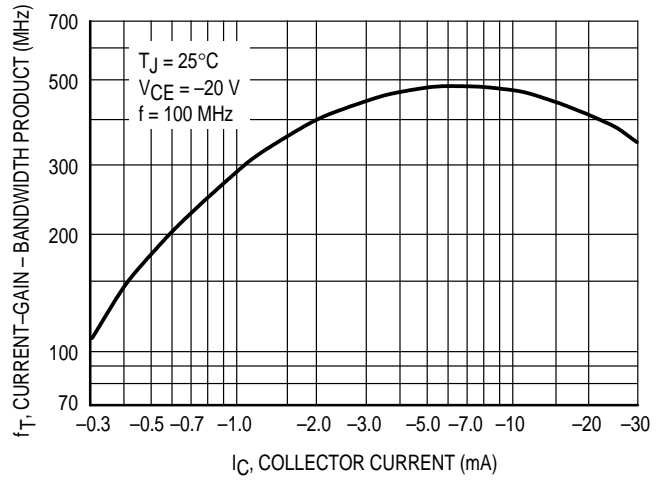


Figure 14. Current-Gain — Bandwidth Product

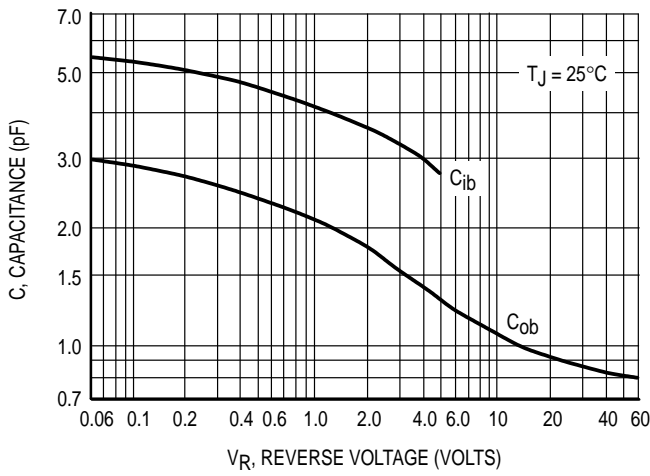


Figure 15. Capacitance

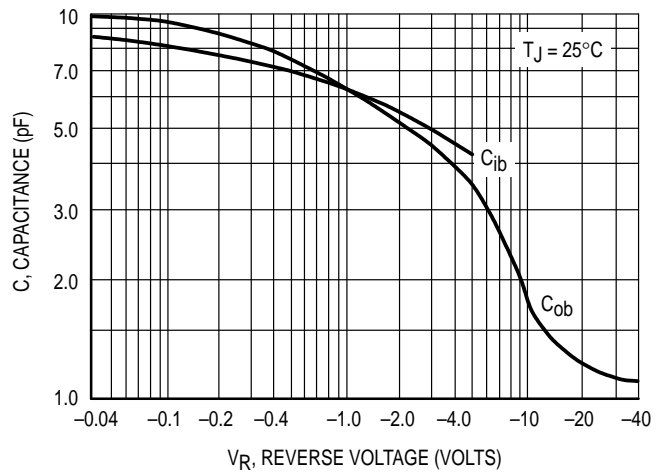
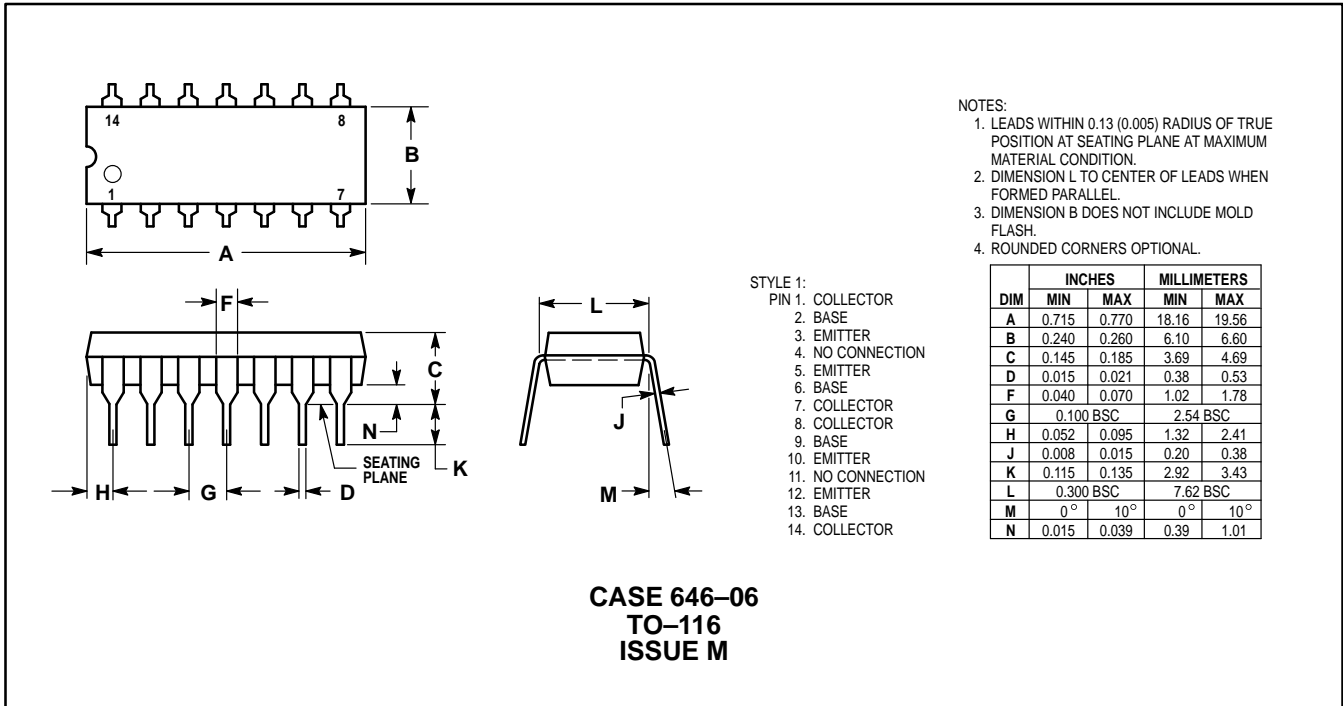


Figure 16. Capacitance

PACKAGE DIMENSIONS



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