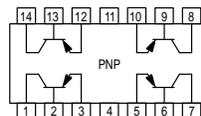


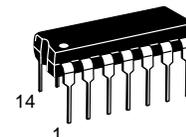
Quad Amplifier Transistors

PNP Silicon



MPQ3798
MPQ3799*

*Motorola Preferred Device



CASE 646-06, STYLE 1
TO-116

MAXIMUM RATINGS

Rating	Symbol	MPQ3798	MPQ3799	Unit
Collector–Emitter Voltage	V_{CEO}	-40	-60	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 @ $T_A = 25^\circ\text{C}$ ⁽¹⁾ Derate above 25°C	P_D	0.5 4.0	0.9 7.2	Watts mW/ $^\circ\text{C}$
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	0.825 6.7	2.4 19.2	Watts m/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-55 to +150		$^\circ\text{C}$

THERMAL CHARACTERISTICS

Characteristic		$R_{\theta JC}$ Junction to Case	$R_{\theta JA}$ Junction to Ambient	Unit
Thermal Resistance	Each Die	151	250	$^\circ\text{C}/\text{W}$
	Effective, 4 Die	52	139	$^\circ\text{C}/\text{W}$
Coupling Factors	Q1–Q4 or Q2–Q3	34	70	%
	Q1–Q2 or Q3–Q4	2.0	26	%

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

Characteristic	Symbol	Min	Typ	Max	Unit
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OFF CHARACTERISTICS

Collector–Emitter Breakdown Voltage ⁽²⁾ ($I_C = -10$ mAdc, $I_B = 0$)	$V_{(BR)CEO}$	-40 -60	— —	— —	Vdc
Collector–Base Breakdown Voltage ($I_C = -10$ μ Adc, $I_E = 0$)	$V_{(BR)CBO}$	-60	—	—	Vdc
Emitter–Base Breakdown Voltage ($I_E = -10$ μ Adc, $I_C = 0$)	$V_{(BR)EBO}$	-5.0	—	—	Vdc
Collector Cutoff Current ($V_{CB} = -50$ Vdc, $I_E = 0$)	I_{CBO}	—	—	-10	nAdc
Emitter Cutoff Current ($V_{EB} = -3.0$ Vdc, $I_C = 0$)	I_{EBO}	—	—	-20	nAdc

1. Second breakdown occurs at power levels greater than 3 times the power dissipation rating.
2. Pulse Test: Pulse Width ≤ 300 μ s; Duty Cycle $\leq 2.0\%$.

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

MPQ3798 MPQ3799**ELECTRICAL CHARACTERISTICS** ($T_A = 25^\circ\text{C}$ unless otherwise noted) (Continued)

Characteristic	Symbol	Min	Typ	Max	Unit
ON CHARACTERISTICS					
DC Current Gain ($I_C = -10 \mu\text{A}$, $V_{CE} = -5.0 \text{ Vdc}$)	h_{FE}	100	—	—	—
	MPQ3798	225	—	—	
	MPQ3799				
($I_C = -100 \mu\text{A}$, $V_{CE} = -5.0 \text{ Vdc}$)		150	—	—	
	MPQ3798	300	—	—	
	MPQ3799				
($I_C = -500 \mu\text{A}$, $V_{CE} = -5.0 \text{ Vdc}$)		150	—	—	
	MPQ3798	300	—	—	
	MPQ3799				
($I_C = -10 \text{ mA}$, $V_{CE} = -5.0 \text{ Vdc}$)		125	—	—	
	MPQ3798	250	—	—	
	MPQ3799				
Collector–Emitter Saturation Voltage ($I_C = -100 \mu\text{A}$, $I_B = -10 \mu\text{A}$) ($I_C = -1.0 \text{ mA}$, $I_B = -100 \mu\text{A}$)	$V_{CE(\text{sat})}$	—	-0.12	-0.2	Vdc
		—	-0.07	-0.25	
Base–Emitter Saturation Voltage ($I_C = -100 \mu\text{A}$, $I_B = -10 \mu\text{A}$) ($I_C = -1.0 \text{ mA}$, $I_B = -100 \mu\text{A}$)	$V_{BE(\text{sat})}$	—	-0.62	-0.7	Vdc
		—	-0.68	-0.8	
SMALL–SIGNAL CHARACTERISTICS					
Current–Gain — Bandwidth Product ($I_C = -1.0 \text{ mA}$, $V_{CE} = -5.0 \text{ Vdc}$, $f = 100 \text{ MHz}$)	f_T	60	250	—	MHz
Output Capacitance ($V_{CB} = -5.0 \text{ Vdc}$, $I_E = 0$, $f = 1.0 \text{ MHz}$)	C_{obo}	—	2.1	4.0	pF
Input Capacitance ($V_{EB} = -0.5 \text{ Vdc}$, $I_C = 0$, $f = 1.0 \text{ MHz}$)	C_{ibo}	—	5.5	8.0	pF
Noise Figure ($I_C = -100 \mu\text{A}$, $V_{CE} = -10 \text{ Vdc}$, $R_S = 3.0 \text{ k ohms}$, $f = 1.0 \text{ kHz}$)	NF	—	2.5	—	dB
	MPQ3798	—	1.5	—	
	MPQ3799				

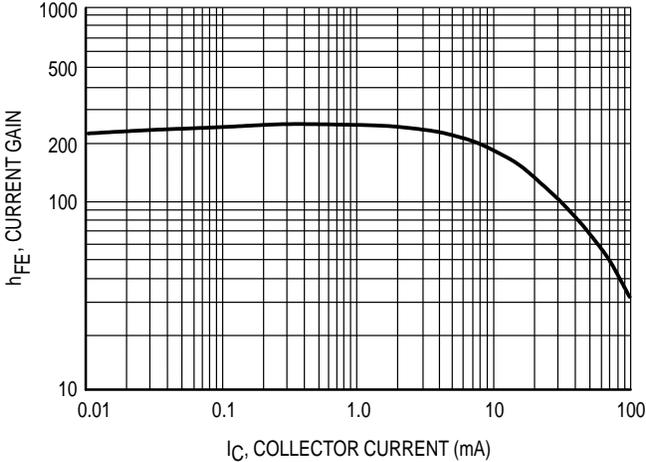


Figure 1. DC Current Gain versus Collector Current

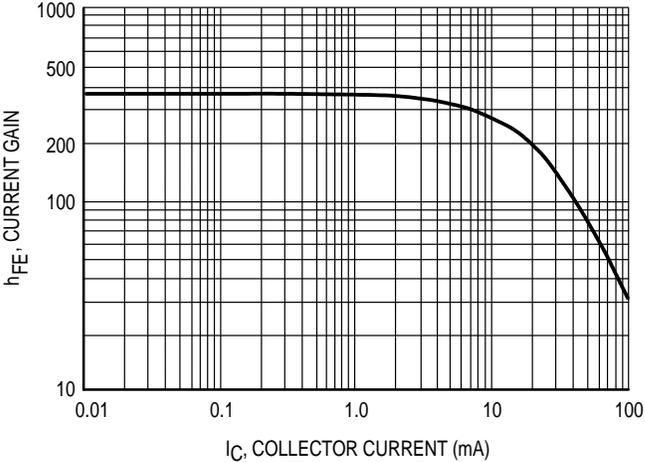


Figure 2. DC Current Gain versus Collector Current

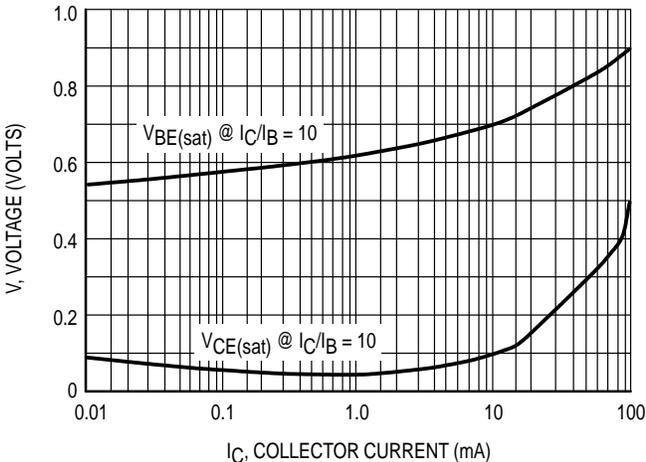


Figure 3. "ON" Voltages

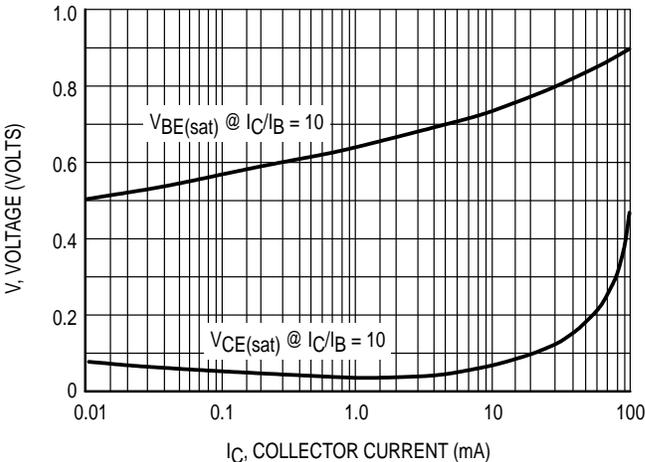
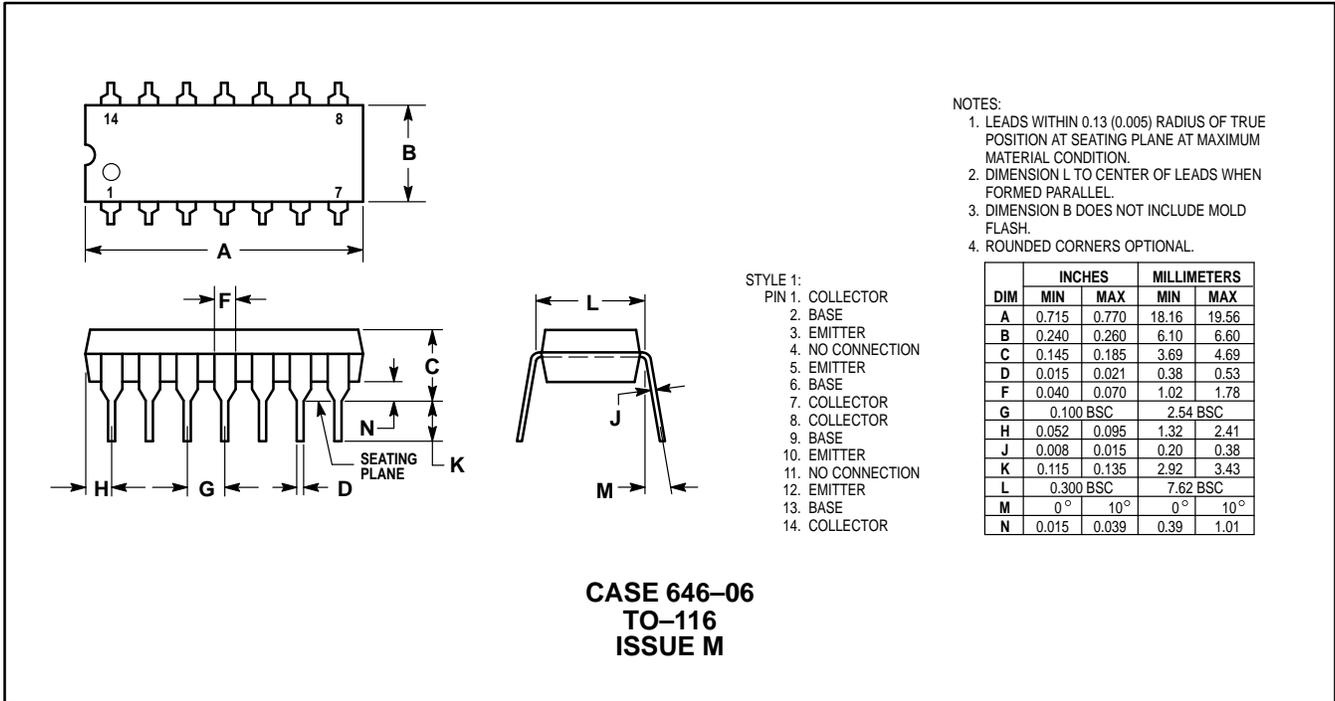


Figure 4. "ON" Voltages

PACKAGE DIMENSIONS



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