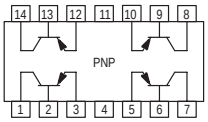
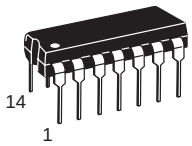
Quad Amplifier Transistors
PNP Silicon



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°C(1) Derate above 25°C	P_D	0.5 4.0	0.9 7.2	Watts mW/°C
Total Device Dissipation @ T_C = 25°C Derate above 25°C	P_D	0.825 6.7	2.4 19.2	Watts m/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}	–55 to +150		°C

THERMAL CHARACTERISTICS

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

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

Characteristic		Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Collector–Emitter Breakdown Voltage(2) (I_C = –10 mAdc, I_B = 0)	MPQ3798 MPQ3799	$V_{(BR)CEO}$	 –40 –60	 — —	 — —	Vdc
Collector–Base Breakdown Voltage (I_C = –10 μAdc, I_E = 0)		$V_{(BR)CBO}$	–60	—	—	Vdc
Emitter–Base Breakdown Voltage (I_E = –10 μAdc, 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 μs; Duty Cycle ≤ 2.0%.

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

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted) (Continued)

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

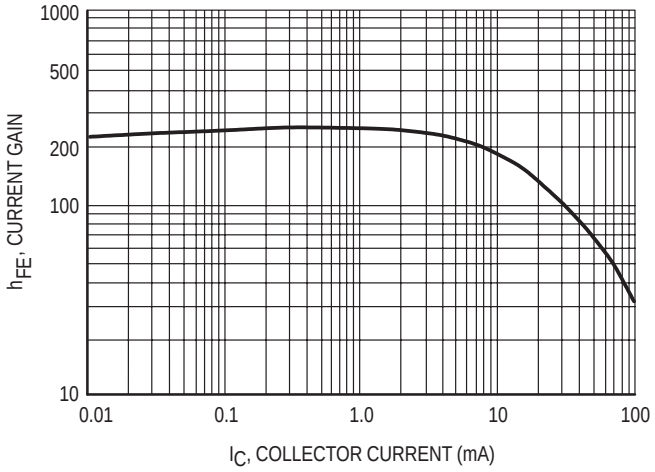


Figure 1. DC Current Gain versus Collector Current

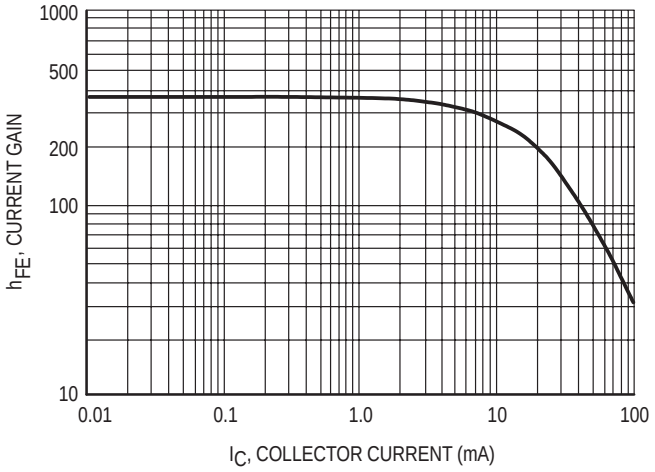


Figure 2. DC Current Gain versus Collector Current

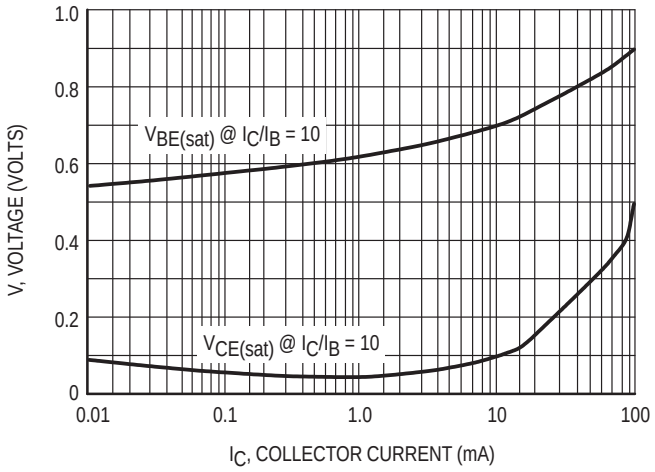


Figure 3. “ON” Voltages

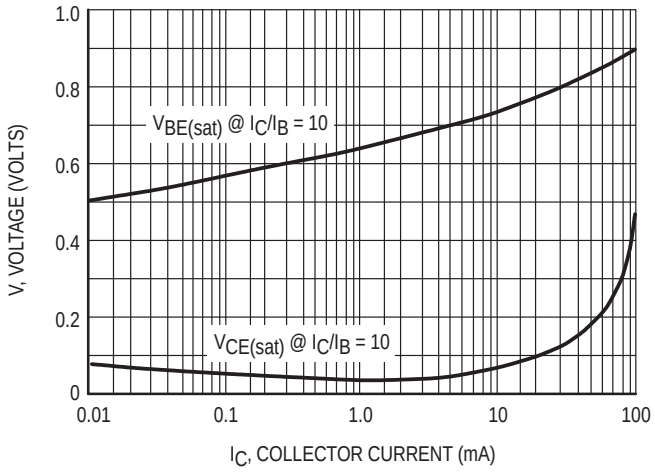


Figure 4. “ON” Voltages