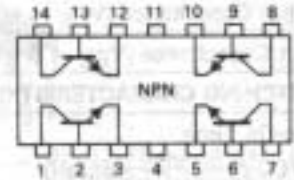


MPQ2222,A*



**CASE 646-06, STYLE 1
TO-116**

**QUAD
GENERAL PURPOSE
TRANSISTORS
NPN SILICON**

*MPQ2222A is a Motorola designated preferred device.
Refer to MD2218 for graphs.

MAXIMUM RATINGS

Rating	Symbol	MPQ2222	MPQ2222A	Unit
Collector-Emitter Voltage	V_{CEO}	30	40	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	Total Device	
Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	0.65	1.9	Watts
		5.2	15.2	mW/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-55 to +150		$^\circ\text{C}$

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	66	$^\circ\text{C/W}$

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(1) ($I_C = 10 \text{ mAdc}, I_B = 0$)	MPQ2222 MPQ2222A	$V_{(BR)CEO}$	40 40	— —	Vdc
Collector-Base Breakdown Voltage ($I_C = 10 \mu\text{Adc}, I_E = 0$)	MPQ2222 MPQ2222A	$V_{(BR)CBO}$	60 75	— —	Vdc
Emitter-Base Breakdown Voltage ($I_E = 10 \mu\text{Adc}, I_C = 0$)	MPQ2222 MPQ2222A	$V_{(BR)EBO}$	5.0 6.0	— —	Vdc
Collector Cutoff Current ($V_{CB} = 50 \text{ Vdc}, I_E = 0$) ($V_{CB} = 60 \text{ Vdc}, I_E = 0$)	MPQ2222 MPQ2222A	I_{CBO}	— —	50 10	nAdc
Emitter Cutoff Current ($V_{EB} = 3.0 \text{ Vdc}, I_C = 0$)	MPQ2222 MPQ2222A	I_{EBO}	— —	50 10	nAdc

ON CHARACTERISTICS

DC Current Gain(1) ($I_C = 100 \mu\text{Adc}, V_{CE} = 10 \text{ Vdc}$) ($I_C = 1.0 \text{ mAdc}, V_{CE} = 10 \text{ Vdc}$) ($I_C = 10 \text{ mAdc}, V_{CE} = 10 \text{ Vdc}$) ($I_C = 150 \text{ mAdc}, V_{CE} = 10 \text{ Vdc}$) ($I_C = 300 \text{ mAdc}, V_{CE} = 10 \text{ Vdc}$) ($I_C = 500 \text{ mAdc}, V_{CE} = 10 \text{ Vdc}$)	MPQ2222A MPQ2222A MPQ2222A MPQ2222A MPQ2222 MPQ2222A	h_{FE}	35 50 75 100 30 40	— — — 300 — —	—
Collector-Emitter Saturation Voltage ($I_C = 150 \text{ mAdc}, I_B = 15 \text{ mAdc}$) ($I_C = 300 \text{ mAdc}, I_B = 30 \text{ mAdc}$) ($I_C = 500 \text{ mA}, I_B = 50 \text{ mA}$)	MPQ2222 MPQ2222A MPQ2222 MPQ2222A	$V_{CE(sat)}$	— — — —	0.4 0.3 1.6 1.0	Vdc
Base-Emitter Saturation Voltage ($I_C = 150 \text{ mAdc}, I_B = 15 \text{ mAdc}$) ($I_C = 300 \text{ mAdc}, I_B = 30 \text{ mAdc}$) ($I_C = 500 \text{ mA}, I_B = 50 \text{ mA}$)	MPQ2222 MPQ2222A MPQ2222 MPQ2222A	$V_{BE(sat)}$	— 0.6 — —	1.3 1.2 2.6 2.0	Vdc

MPQ2222, A

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

Characteristic	Symbol	Min	Max	Unit
SMALL-SIGNAL CHARACTERISTICS				
Current-Gain — Bandwidth Product(1) ($I_C = 20\text{ mA dc}$, $V_{CE} = 20\text{ V dc}$, $f = 100\text{ MHz}$)	f_T	200	—	MHz
Output Capacitance ($V_{CB} = 10\text{ V dc}$, $I_E = 0$, $f = 1.0\text{ MHz}$)	C_{obo}	—	8.0	pF
Input Capacitance ($V_{EB} = 0.5\text{ V dc}$, $I_C = 0$, $f = 1.0\text{ MHz}$)	C_{ibo}	—	30	pF
SWITCHING CHARACTERISTICS				
Turn-On Time ($V_{CC} = 30\text{ V dc}$, $V_{BE(off)} = -0.5\text{ V dc}$, $I_C = 150\text{ mA dc}$, $I_{B1} = 15\text{ mA dc}$)	t_{on}	—	35	ns
MPQ2222A				
Turn-Off Time ($V_{CC} = 30\text{ V dc}$, $I_C = 150\text{ mA dc}$, $I_{B1} = I_{B2} = 15\text{ mA dc}$)	t_{off}	—	285	ns
MPQ2222A				

(1) Pulse Test: Pulse Width $\leq 300\ \mu\text{s}$, Duty Cycle $\leq 2.0\%$.

FIGURE 1 — DELAY AND RISE TIME EQUIVALENT TEST CIRCUIT

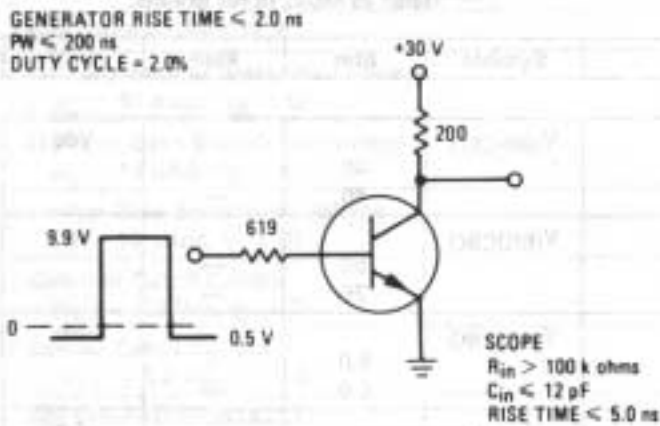


FIGURE 2 — STORAGE TIME AND FALL TIME EQUIVALENT TEST CIRCUIT

