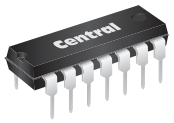
MPQ2222
MPQ2222A

NPN SILICON QUAD TRANSISTOR



TO-116 CASE

www.centralsemi.com

DESCRIPTION:

The CENTRAL SEMICONDUCTOR MPQ2222 and MPQ2222A types are comprised of four independent NPN silicon transistors mounted in a 14-pin DIP, designed for general purpose amplifier and switching applications.

MARKING: FULL PART NUMBER

MAXIMUM RATINGS: (T_A=25°C)	**SYMBOL**	**MPQ2222**	**MPQ2222A**	**UNITS**
Collector-Base Voltage	V_{CBO}	60	75	V
Collector-Emitter Voltage	V_{CEO}	40	40	V
Emitter-Base Voltage	V_{EBO}	5.0	6.0	V
Continuous Collector Current	I_C	500		mA
Power Dissipation (per transistor)	P_D	650		mW
Power Dissipation (total package)	P_D	1.9		W
Operating and Storage Junction Temperature	T_J, T_{stg}	-65 to +150		°C
Thermal Resistance (total package)	Θ_{JA}	66		°C/W

ELECTRICAL CHARACTERISTICS PER TRANSISTOR: (T_A=25°C)

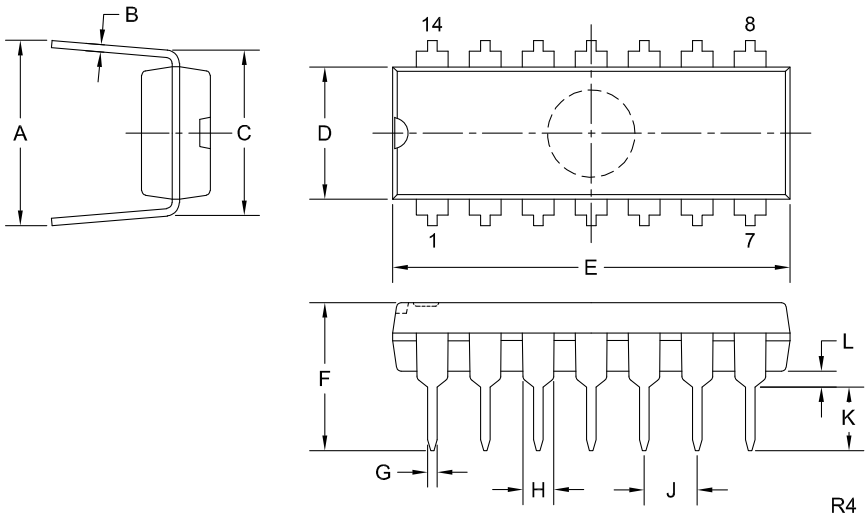
		MPQ2222		**MPQ2222A**		
SYMBOL	**TEST CONDITIONS**	**MIN**	**MAX**	**MIN**	**MAX**	**UNITS**
I_{CBO}	V_{CB}=50V	-	50	-	-	nA
I_{CBO}	V_{CB}=60V	-	-	-	10	nA
I_{EBO}	V_{EB}=3.0V	-	100	-	100	nA
BV_{CBO}	I_C=10μA	60	-	75	-	V
BV_{CEO}	I_C=10mA	40	-	40	-	V
BV_{EBO}	I_E=10μA	5.0	-	6.0	-	V
$V_{CE(SAT)}$	I_C=150mA, I_B=15mA	-	0.4	-	0.3	V
$V_{CE(SAT)}$	I_C=300mA, I_B=30mA	-	1.6	-	-	V
$V_{CE(SAT)}$	I_C=500mA, I_B=50mA	-	-	-	1.0	V
$V_{BE(SAT)}$	I_C=150mA, I_B=15mA	-	1.3	0.6	1.2	V
$V_{BE(SAT)}$	I_C=300mA, I_B=30mA	-	2.6	-	-	V
$V_{BE(SAT)}$	I_C=500mA, I_B=50mA	-	-	-	2.0	V
h_{FE}	V_{CE}=10V, I_C=0.1mA	-	-	35	-	
h_{FE}	V_{CE}=10V, I_C=1.0mA	-	-	50	-	
h_{FE}	V_{CE}=10V, I_C=10mA	75	-	75	-	
h_{FE}	V_{CE}=10V, I_C=150mA	100	300	100	300	
h_{FE}	V_{CE}=10V, I_C=300mA	30	-	-	-	
h_{FE}	V_{CE}=10V, I_C=500mA	-	-	40	-	
f_T	V_{CE}=20V, I_C=20mA, f=100MHz	200	-	200	-	MHz
C_{ob}	V_{CB}=10V, I_E=0, f=1.0MHz	-	8.0	-	8.0	pF
C_{ib}	V_{EB}=0.5V, I_C=0, f=1.0MHz	-	30	-	30	pF
t_r	V_{CC}=30V, V_{BE}=0.5V, I_C=150mA, I_{B1}=15mA	-	-	-	35	ns
t_s	V_{CC}=30V, I_C=150mA, I_{B1}=I_{B2}=15mA	-	-	-	285	ns

R3 (27-September 2021)

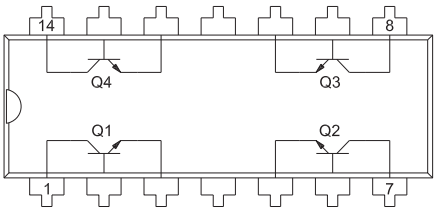
MPQ2222
MPQ2222A

NPN SILICON QUAD TRANSISTOR

TO-116 CASE - MECHANICAL OUTLINE



PIN CONFIGURATION



LEAD CODE:

1) Collector Q1	8) Collector Q3
2) Base Q1	9) Base Q3
3) Emitter Q1	10) Emitter Q3
4) No Connection	11) No Connection
5) Emitter Q2	12) Emitter Q4
6) Base Q2	13) Base Q4
7) Collector Q2	14) Collector Q4

MARKING: FULL PART NUMBER

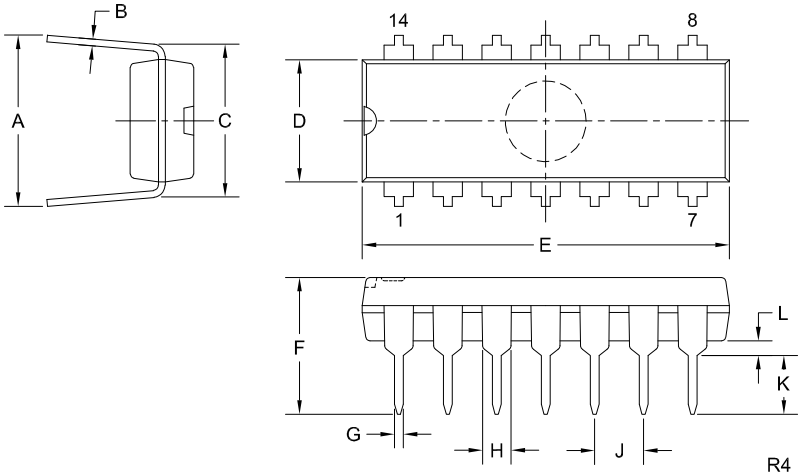
DIMENSIONS				
	INCHES		MILLIMETERS	
SYMBOL	MIN	MAX	MIN	MAX
A	0.310	0.390	7.9	9.9
B	0.008	0.014	0.2	0.4
C	0.310		7.9	
D	0.240	0.260	6.1	6.6
E	0.740	0.760	18.8	19.3
F	0.300		7.6	
G	0.014	0.022	0.4	0.6
H	0.050		1.3	
J	0.100		2.5	
K	0.125	0.150	3.2	3.8
L	0.015	-	0.4	-

TO-116 (REV: R4)

R3 (27-September 2021)

Package Details
TO-116

Mechanical Drawing



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TO-116 (REV: R4)

Packing Options

Bulk - Packing Code: C
C = Antistatic coated plastic sleeve (surface resistivity of $>10^9$ and $<10^{13}$ ohms per square).
Bulk Packing Quantity: 25

Material Composition Specification

TO-116 Case

Device average mass . . . . . **1035 mg**

Fluctuation margin . . . . . **+/-10%**

Component	Material	Material		Substance	CAS No.	Substance		
		(%wt)	(mg)			(%wt)	(mg)	(ppm)
active device	doped Si	0.05%	0.5	Si	7440-21-3	0.048%	0.5	483
bond wire	gold	0.02%	0.21	Au	7440-57-5	0.02%	0.21	203
leadframe	Cu alloy 194 w/ silver plating	32.85%	340	Cu	7440-50-8	31.981%	331	319,807
				Fe	7439-89-6	0.773%	8	7,729
				Zn	7440-66-6	0.043%	0.45	435
				P	7723-14-0	0.035%	0.36	348
				Ag	7440-22-4	0.018%	0.19	184
die attach	silver epoxy	0.03%	0.29	Ag	7440-22-4	0.022%	0.23	222
				epoxy resin	9003-36-5	0.003%	0.03	29
				diluent	26647-14-3	0.002%	0.02	19
				hardener	620-92-8	0.001%	0.01	10
encapsulation*	EMC	65.89%	682	silica	7631-86-9	52.715%	545.6	527,150
				epoxy resin	Proprietary	9.884%	102.3	98,841
				TBBA	79-94-7	1.652%	17.1	16,522
				Sb_2O_3	1309-64-4	1.314%	13.6	13,140
				carbon black	1333-86-4	0.329%	3.4	3,285
	EMC GREEN	65.89%	682	silica (fused)	60676-86-0	56.01%	579.7	560,097
				epoxy resin	Proprietary	4.193%	43.4	41,932
				phenol resin	9003-35-4	4.193%	43.4	41,932
				epoxy, cresol novolac	29690-82-2	1.314%	13.6	13,140
				carbon black	1333-86-4	0.184%	1.9	1,836
plating**	tin/lead process	1.16%	12	Sn	7440-31-5	0.928%	9.6	9,275
				Pb	7439-92-1	0.232%	2.4	2,319
	matte tin	1.16%	12	Sn	7440-31-5	1.159%	12	11,594

*EMC GREEN molding compound is Halogen-Free.

**For Lead Free plating, add suffix “PB FREE” to part number.
For Tin/Lead plating, add suffix “TIN/LEAD” to part number.
No suffix designation allows for the supply of either lead-free or tin/lead plated product depending on availability.