

MAXIMUM RATINGS

Rating	Symbol	MPQ6100 MPQ6600	MPQ6100A MPQ6600A	Unit
Collector-Emitter Voltage	V_{CE0}	40	45	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 @ $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	500 4.0	900 7.2	mW mW/°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 mW/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-55 to +150		°C

THERMAL CHARACTERISTICS

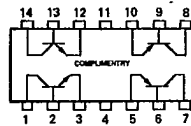
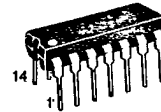
Characteristic	Junction to Case	Junction to Ambient	Unit
Thermal Resistance(1) Each Die	151	250	°C/W
Effective, 4 Die	52	139	°C/W
Coupling Factors Q1-Q4 or Q2-Q3	34	70	%
Q1-Q2 or Q3-Q4	2.0	26	%

(1) $R_{\theta JA}$ is measured with the device soldered into a typical printed circuit board.

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

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage(2) ($I_C = 10 \text{ mAdc}, I_E = 0$)	$V_{(BR)CEO}$	40 45	—	—	Vdc
Collector-Base Breakdown Voltage ($I_C = 10 \mu\text{Adc}, I_E = 0$)	$V_{(BR)CBO}$	60	—	—	Vdc
Emitter-Base Breakdown Voltage ($I_E = 10 \mu\text{Adc}, I_C = 0$)	$V_{(BR)EBO}$	5.0	—	—	Vdc
Collector Cutoff Current ($V_{CB} = 50 \text{ Vdc}, I_E = 0$)	I_{CBO}	—	—	10	nAdc
ON CHARACTERISTICS(2)					
DC Current Gain ($I_C = 100 \mu\text{Adc}, V_{CE} = 5.0 \text{ Vdc}$)	h_{FE}	50 100	—	—	—
($I_C = 500 \mu\text{Adc}, V_{CE} = 5.0 \text{ Vdc}$)		75 150	—	—	
($I_C = 1.0 \text{ mAdc}, V_{CE} = 5.0 \text{ Vdc}$)		75 150	—	—	
($I_C = 10 \text{ mAdc}, V_{CE} = 5.0 \text{ Vdc}$)		60 125	—	—	
Collector-Emitter Saturation Voltage ($I_C = 1.0 \text{ mAdc}, I_B = 100 \mu\text{Adc}$)	$V_{CE(sat)}$	—	—	0.25	Vdc
Base-Emitter Saturation Voltage ($I_C = 1.0 \text{ mAdc}, I_B = 100 \mu\text{Adc}$)	$V_{BE(sat)}$	—	—	0.8	Vdc
SMALL-SIGNAL CHARACTERISTICS					
Current-Gain — Bandwidth Product ($I_C = 500 \mu\text{Adc}, V_{CE} = 5.0 \text{ Vdc}, f = 20 \text{ MHz}$)	f_T	50	—	—	MHz
Output Capacitance ($V_{CB} = 5.0 \text{ Vdc}, I_E = 0, f = 100 \text{ kHz}$)	C_{obo}	—	1.2 1.8	4.0 4.0	pF

MPQ6100, A
STYLE 1
MPQ6600, A
STYLE 2
CASE 646-06
TO-116



**QUAD COMPLEMENTARY PAIR
TRANSISTORS**
NPN/PNP SILICON

Refer to MHQ2483 for NPN Curves.

Refer to MHQ3798 for PNP Curves.

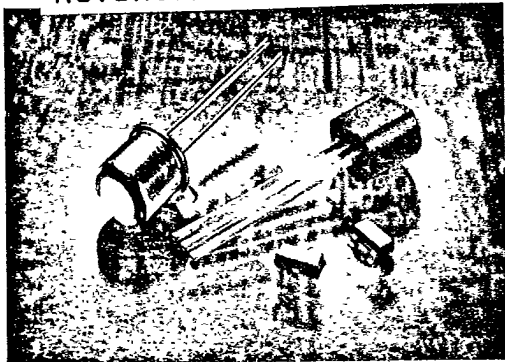
ELECTRICAL CHARACTERISTICS (continued) (T_A = 25°C unless otherwise noted.)

Characteristic	Symbol	Min	Typ	Max	Unit
Input Capacitance (V _{BE} = 0.5 Vdc, I _C = 0, f = 100 kHz)	C _{ibo}	—	—	8.0	pF
		PNP	—	8.0	
Noise Figure (I _C = 100 μA _{dc} , V _{CE} = 5.0 Vdc, R _S = 10 kohms, f = 10 Hz to 15.7 kHz, BW = 10 kHz)	NF	—	4.0	—	dB
		NPN	—	—	

(2) Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%.



T-91-20



The following pages contain information on the various packages referenced on the individual data sheets. Information includes: a picture of the package, dimensions in both millimeters and inches, the various pinout configurations (styles), a cross reference for case numbers, old JEDEC "TO" numbers, and the new JEDEC "TO" designation.

Additionally, abstracts of available application notes are provided. Please contact your local sales representative for those desired.

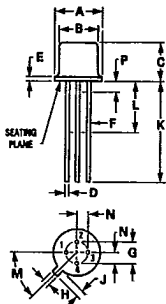
Package Outline Dimensions and Application Literature

7

Package Outline Dimensions

Dimensions are in inches unless otherwise noted.

CASE 20-03 TO-72 (TO-206AF) METAL



DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	5.31	5.84	0.209	0.230
B	4.52	4.95	0.178	0.195
C	4.22	5.33	0.170	0.210
D	0.41	0.53	0.016	0.021
E	—	0.76	—	0.030
F	0.41	0.48	0.016	0.019
G	2.54 BSC	—	0.100 BSC	—
H	0.91	1.17	0.036	0.046
J	0.71	1.22	0.028	0.048
K	12.70	—	0.500	—
L	6.35	—	0.250	—
M	45° BSC	—	45° BSC	—
N	1.27 BSC	—	0.050 BSC	—
P	—	1.27	—	0.050

All JEDEC dimensions and notes apply.

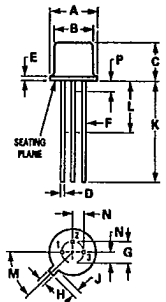
NOTE: ALL RULES AND NOTES ASSOCIATED WITH TO-72 OUTLINE SHALL APPLY.

CASE 20 STYLES

- STYLE 1:
PIN 1. SOURCE
2. DRAIN
3. GATE
4. CASE LEAD
- STYLE 2:
PIN 1. SOURCE
2. GATE
3. DRAIN
4. SUBSTRATE AND CASE LEAD
- STYLE 3:
PIN 1. DRAIN
2. SOURCE
3. GATE
4. CASE LEAD
- STYLE 4:
PIN 1. SOURCE
2. GATE
3. DRAIN
4. GATE 2 — SUBSTRATE AND CASE
- STYLE 5:
PIN 1. SOURCE
2. GATE 1
3. DRAIN
4. CASE
- STYLE 6:
PIN 1. DRAIN
2. SOURCE AND SUBSTRATE
3. GATE
4. SOURCE AND SUBSTRATE
- STYLE 7:
PIN 1. DRAIN
2. SOURCE
3. GATE
4. CASE AND SUBSTRATE
- STYLE 8:
PIN 1. EMITTER 2
2. BASE 1
3. COLLECTOR
4. EMITTER 1
BASE 2
- STYLE 9:
PIN 1. DRAIN
2. GATE 2
3. GATE 1
4. SOURCE, SUBSTRATE AND CASE
- STYLE 10:
PIN 1. EMITTER
2. BASE
3. COLLECTOR
4. CASE
- STYLE 11:
PIN 1. EMITTER
2. CATHODE
3. COLLECTOR
4. ANODE



CASE 22-03 TO-18 (TO-206AA) METAL



DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	5.31	5.84	0.209	0.230
B	4.52	4.95	0.178	0.195
C	4.32	5.33	0.170	0.210
D	0.406	0.533	0.016	0.021
E	—	0.762	—	0.030
F	0.406	0.483	0.016	0.019
G	2.54 BSC	—	0.100 BSC	—
H	0.914	1.17	0.036	0.046
J	0.711	1.22	0.028	0.048
K	12.70	—	0.500	—
L	6.35	—	0.250	—
M	45° BSC	—	45° BSC	—
N	1.27 BSC	—	0.050 BSC	—
P	—	1.27	—	0.050

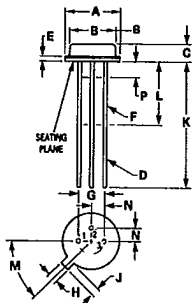
All JEDEC notes and dimensions apply.

CASE 22 STYLES

- STYLE 1:
PIN 1. EMITTER
2. BASE
3. COLLECTOR
- STYLE 2:
PIN 1. SOURCE, SUBSTRATE AND CASE
2. GATE
3. DRAIN
- STYLE 3:
PIN 1. SOURCE
2. DRAIN
3. GATE
- STYLE 4:
PIN 1. SOURCE
2. DRAIN
3. GATE AND CASE
- STYLE 5:
PIN 1. EMITTER
2. BASE 1
3. BASE 2
- STYLE 6:
PIN 1. CATHODE
2. GATE
3. ANODE
- STYLE 7:
PIN 1. ANODE
2. BASE
3. CATHODE
- STYLE 8:
PIN 1. GATE
2. ANODE 1
3. ANODE 2
- STYLE 9:
PIN 1. ANODE 2
2. ANODE 1
3. GATE (CONNECTED TO CASE)
- STYLE 10:
PIN 1. BASE
2. EMITTER
3. BASE
- STYLE 11:
PIN 1. DRAIN
2. GATE
3. SOURCE, SUBSTRATE
- STYLE 12:
PIN 1. SOURCE
2. GATE
3. DRAIN (CASE)
- STYLE 13:
PIN 1. ANODE
2. GATE
3. CATHODE



CASE 26-03 TO-46 (TO-206AB) METAL

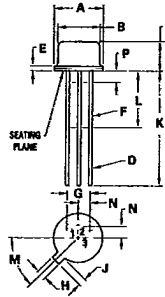


DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	5.31	5.84	0.209	0.230
B	4.52	4.95	0.178	0.195
C	1.65	2.16	0.065	0.085
D	0.406	0.533	0.016	0.021
E	—	1.02	—	0.040
F	0.395	0.483	0.015	0.019
G	2.54 BSC	—	0.100 BSC	—
H	0.914	1.17	0.036	0.046
J	0.711	1.22	0.028	0.048
K	12.70	—	0.500	—
L	6.35	—	0.250	—
M	45° BSC	—	45° BSC	—
N	1.27 BSC	—	0.050 BSC	—
P	—	1.27	—	0.050

All JEDEC dimensions and notes apply.

- STYLE 1:
PIN 1. EMITTER
2. BASE
3. COLLECTOR

CASE 27-02 TO-52 (TO-206AC) METAL



- STYLE 1:
PIN 1. EMITTER
2. BASE
3. COLLECTOR
- STYLE 2:
PIN 1. DRAIN
2. SOURCE
3. GATE & CASE
- STYLE 3:
PIN 1. EMITTER
2. BASE
3. BASE 2
- STYLE 4:
PIN 1. SOURCE
2. DRAIN
3. GATE & CASE
- STYLE 5:
PIN 1. SOURCE
2. GATE
3. DRAIN & CASE

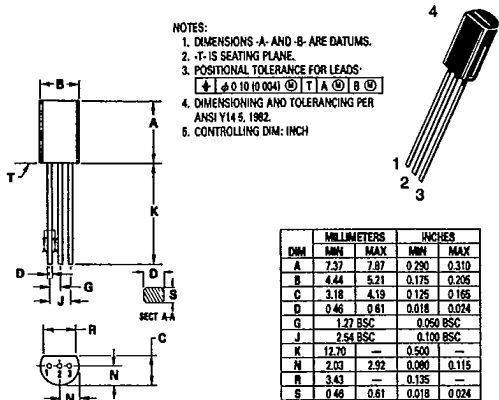
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	5.31	5.84	0.209	0.230
B	4.52	4.95	0.178	0.195
C	2.92	3.81	0.115	0.150
D	—	0.533	—	0.021
E	—	0.762	—	0.030
F	0.406	0.483	0.016	0.019
G	2.54 BSC	—	0.100 BSC	—
H	0.914	1.17	0.036	0.046
J	0.711	1.22	0.028	0.048
K	12.70	—	0.500	—
L	6.35	—	0.250	—
M	45° BSC	—	45° BSC	—
N	1.27 BSC	—	0.050 BSC	—
P	—	1.27	—	0.050

NOTE: 1 ALL RULES & NOTES ASSOCIATED WITH TO-52 OUTLINE SHALL APPLY.

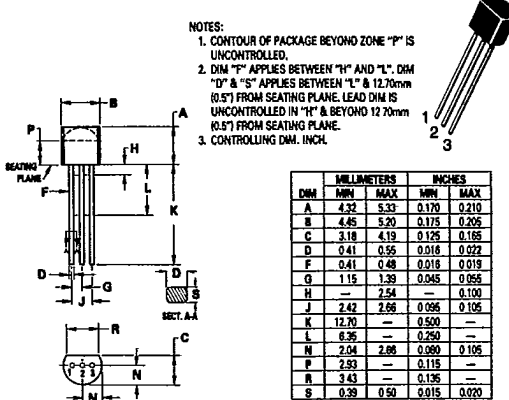
PACKAGE OUTLINE DIMENSIONS (continued)

T-90-20
T-91-20

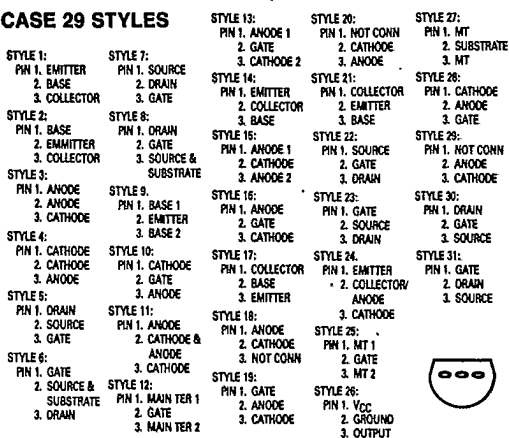
CASE 29-03 TO-92 (TO-226AE) PLASTIC



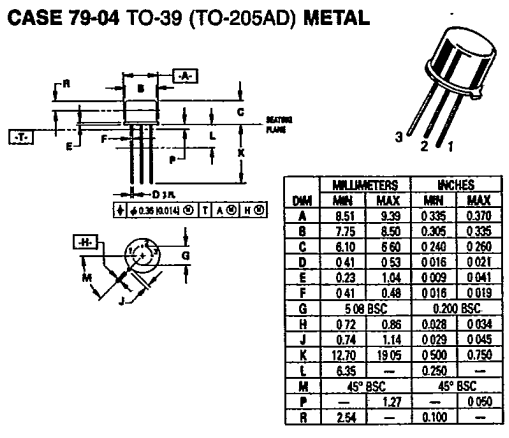
CASE 29-04 TO-92 (TO-226AA) PLASTIC



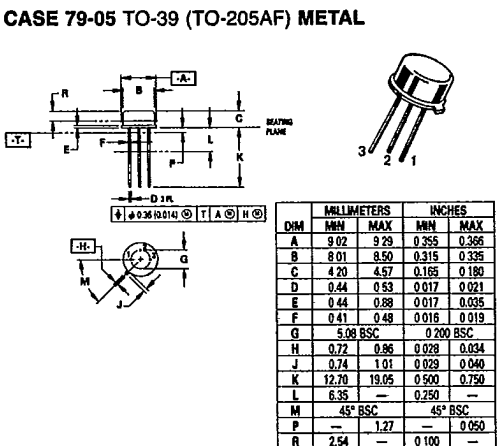
CASE 29 STYLES



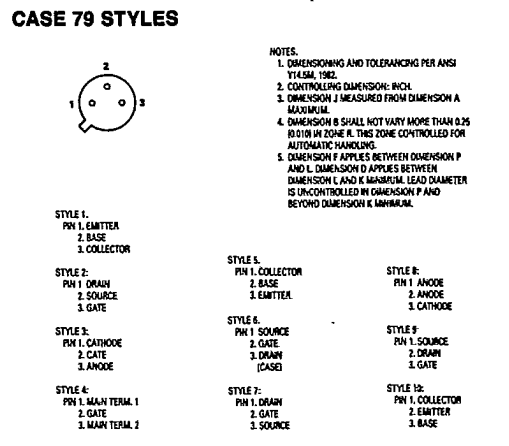
CASE 79-04 TO-39 (TO-205AD) METAL



CASE 79-05 TO-39 (TO-205AF) METAL



CASE 79 STYLES



7

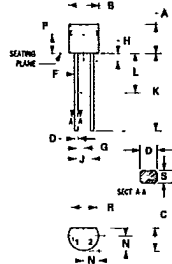
PACKAGE OUTLINE DIMENSIONS (continued)

T-90-20
T-91-20

CASE 182-02 TO-92 (TO-226AC) PLASTIC

NOTES:

1. CONTOUR OF PACKAGE BEYOND ZONE P IS UNCONTROLLED
2. DIMENSION F APPLIES BETWEEN H AND L. DIMENSION D AND S APPLIES BETWEEN L AND L2 FROM SEATING PLANE. LEAD DIMENSION IS UNCONTROLLED IN H AND BEYOND L2 FROM SEATING PLANE.



STYLE 1

- PIN 1. ANODE
- CATHODE

STYLE 2

- PIN 1. CATHODE
- ANODE

STYLE 3

- MAIN TERMINAL 1
- MAIN TERMINAL 2

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	4.32	5.33	0.170	0.210
B	4.45	5.21	0.175	0.205
C	3.18	4.19	0.125	0.165
D	0.41	0.56	0.016	0.022
F	0.407	0.482	0.016	0.019
G	1.27 BSC		0.050 BSC	
H	—	1.27	—	0.050
J	2.54 BSC		0.100 BSC	
K	12.70	—	0.500	—
L	6.35	—	0.250	—
M	2.03	2.66	0.080	0.105
P	2.93	—	0.115	—
R	3.43	—	0.135	—
S	0.36	0.41	0.014	0.016



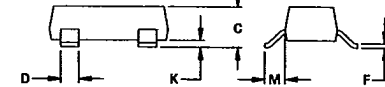
CASE 318-03 TO-236AB (SOT-23) PLASTIC

NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.



DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	2.90	3.04	0.1102	0.1197
B	1.20	1.40	0.0472	0.0551
C	0.89	1.11	0.0350	0.0440
D	0.37	0.50	0.0150	0.0200
F	0.085	0.130	0.0034	0.0051
G	1.28	2.04	0.0508	0.0807
H	0.45	0.60	0.0177	0.0236
K	0.013	0.100	0.0005	0.0040
L	2.10	2.50	0.0820	0.0984
M	0.45	0.60	0.0180	0.0236
N	0.89	1.02	0.0350	0.0401



CASE 318 STYLES

STYLE 6:

- PIN 1. BASE
- EMITTER
- COLLECTOR

STYLE 7:

- PIN 1. EMITTER
- BASE
- COLLECTOR

STYLE 8:

- PIN 1. ANODE
- NO CONNECTION
- CATHODE

STYLE 9:

- PIN 1. ANODE
- ANODE
- CATHODE

STYLE 10:

- PIN 1. DRAIN
- SOURCE
- GATE

- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 2. CONTROLLING DIMENSION: INCH.

STYLE 11:

- PIN 1. ANODE
- CATHODE
- CATHODE-ANODE

STYLE 12:

- PIN 1. CATHODE
- CATHODE
- ANODE

STYLE 13:

- PIN 1. SOURCE
- DRAIN
- GATE

STYLE 14:

- PIN 1. CATHODE
- GATE
- ANODE

STYLE 15:

- PIN 1. GATE
- CATHODE
- ANODE

STYLE 16:

- PIN 1. ANODE
- CATHODE
- CATHODE

STYLE 17:

- PIN 1. NO CONNECTION
- ANODE
- CATHODE

STYLE 18:

- PIN 1. NO CONNECTION
- CATHODE
- ANODE

STYLE 19:

- PIN 1. CATHODE
- ANODE
- CATHODE - ANODE

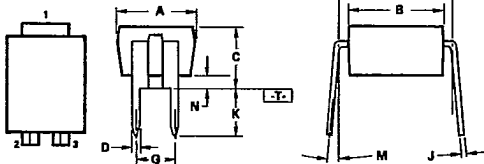
STYLE 20:

- PIN 1. CATHODE
- ANODE
- GATE

STYLE 21:

- PIN 1. GATE
- SOURCE
- DRAIN

CASE 370-01 (FET DIP) PLASTIC

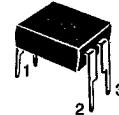


NOTES:

1. SURFACE "T" IS BOTH A DATUM AND SEATING PLANE.
2. POSITIONAL TOLERANCE FOR LEADS: 0.040 4 PL

LEADS: J DIM 4 PL
 ↓ 0.27 (0.010) (T) A ⊙
 ↓ 0.27 (0.010) (J) T: B ⊙

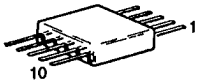
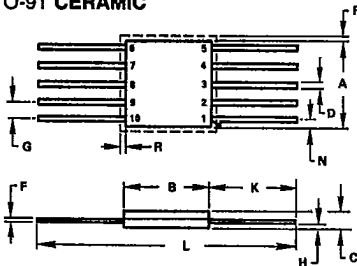
- STYLE 1:
- PIN 1. DRAIN
 - GATE
 - SOURCE



3. DIMENSIONING AND TOLERANCING PER Y14.5M, 1982.
4. CONTROLLING DIMENSION: INCH
5. DIMENSION "J" PRIOR TO SOLDER DIP PLATING

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	4.70	5.02	0.185	0.198
B	6.10	7.11	0.240	0.280
C	4.08	5.08	0.160	0.200
D	0.38	0.53	0.015	0.0205
G	2.54 BSC		0.100 BSC	
J	0.30	0.43	0.012	0.017
K	2.79	3.81	0.110	0.150
L	7.62 BSC		0.300 BSC	
M	0°	15°	0°	15°
N	0.51	1.77	0.020	0.070

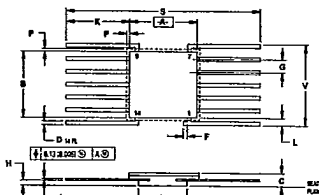
CASE 606-04 TO-91 CERAMIC



- NOTES:
1. ALL RULES & NOTES ASSOCIATED WITH TO-91 OUTLINE SHALL APPLY.
 2. LEADS WITHIN 0.25 mm (0.010) TOTAL OF TRUE POSITION AT MAXIMUM MATERIAL CONDITION (AT BODY)

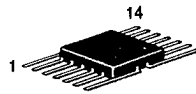
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	6.10	7.36	0.240	0.290
B	6.10	6.50	0.240	0.260
C	0.762	1.77	0.030	0.070
D	0.254	0.482	0.010	0.019
F	0.077	0.152	0.003	0.006
G	1.15	1.39	0.045	0.055
H	0.127	0.889	0.005	0.035
K	1.78	—	0.070	—
R	—	0.281	—	0.0115

CASE 607-04 CERAMIC



NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. DIMENSIONS P DETERMINE ZONE WITHIN WHICH ALL BODY AND LEAD IRREGULARITIES LIE.



STYLE 1

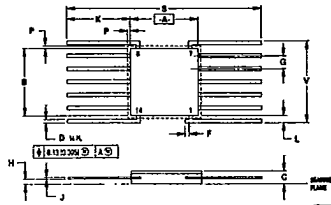
- PIN 1. COLLECTOR
- BASE
- EMITTER
- NOT CONNECTED
- EMITTER
- BASE
- COLLECTOR
- COLLECTOR
- BASE
- EMITTER
- NOT CONNECTED
- EMITTER
- BASE
- COLLECTOR

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	6.10	6.98	0.240	0.275
B	6.10	6.98	0.240	0.275
C	0.77	1.77	0.030	0.070
D	0.26	0.48	0.010	0.019
F	—	0.38	—	0.015
G	1.27 BSC		0.050 BSC	
H	0.13	0.88	0.005	0.035
J	0.08	0.015	0.003	0.006
K	6.35	—	0.250	—
L	0.26	—	0.010	—
N	4.45	4.95	0.175	0.195
P	—	0.38	—	0.015
S	18.80	—	0.740	—
V	7.62	8.38	0.300	0.330

PACKAGE OUTLINE DIMENSIONS (continued)

T-90-20

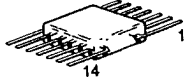
CASE 607-05 CERAMIC



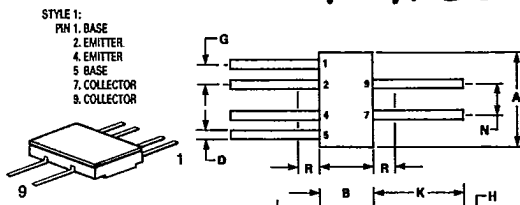
- STYLE 1:
 PIN 1. COLLECTOR
 2. BASE
 3. EMITTER
 4. NOT CONNECTED
 5. EMITTER
 6. BASE
 7. COLLECTOR
 8. COLLECTOR
 9. BASE
 10. EMITTER
 11. NOT CONNECTED
 12. EMITTER
 13. BASE
 14. COLLECTOR

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	6.10	6.60	0.240	0.260
B	6.10	6.60	0.240	0.260
C	0.77	1.77	0.030	0.070
D	0.33	0.48	0.013	0.019
F	—	0.38	—	0.015
G	1.27 BSC	—	0.050 BSC	—
H	0.30	0.88	0.012	0.035
J	0.08	0.15	0.003	0.006
K	6.25	9.39	0.250	0.370
L	0.26	—	0.010	—
P	—	0.38	—	0.015
S	18.80	—	0.740	—
V	7.62	8.38	0.300	0.330

- NOTES:
 1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 2. CONTROLLING DIMENSION: INCH.
 3. DIMENSIONS P DETERMINE ZONE WITHIN WHICH ALL BODY AND LEAD IRREGULARITIES I.E.



CASE 610A-04 CERAMIC

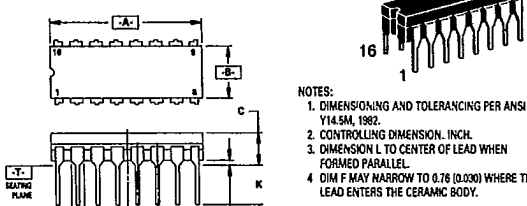


- STYLE 1:
 PIN 1. BASE
 2. EMITTER
 4. EMITTER
 5. BASE
 7. COLLECTOR
 8. COLLECTOR

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	6.10	7.37	0.240	0.290
B	2.92	4.06	0.115	0.160
C	0.78	2.03	0.030	0.070
D	0.36	0.48	0.014	0.019
F	0.08	0.15	0.003	0.006
G	1.27 BSC	—	0.050 BSC	—
H	0.13	0.89	0.005	0.035
K	3.81	—	0.150	—
L	10.54	—	0.415	—
M	2.54 BSC	—	0.100 BSC	—
R	—	1.27	—	0.050
T	1.65	2.03	0.065	0.080

- NOTES:
 1. DIM "D," "G" & "N" TO BE MEASURED IN ZONE "R."
 2. LEADS WITHIN 0.13 mm (0.005) TOTAL OF TRUE POSITION WITHIN "R" AT MAXIMUM MATERIAL CONDITION.

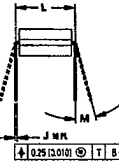
CASE 620-09 (16-PIN DIP) CERAMIC



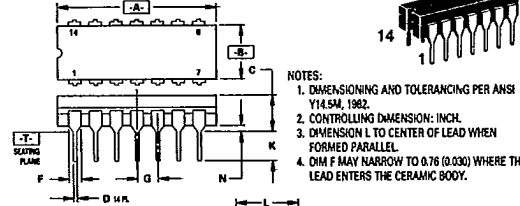
- NOTES:
 1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 2. CONTROLLING DIMENSION: INCH.
 3. DIMENSION L TO CENTER OF LEAD WHEN FORMED PARALLEL.
 4. DIM F MAY NARROW TO 0.76 (0.030) WHERE THE LEAD ENTERS THE CERAMIC BODY.

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	19.05	19.55	0.750	0.770
B	6.10	7.38	0.240	0.290
C	—	4.19	—	0.165
D	0.39	0.53	0.015	0.021
E	1.27 BSC	—	0.050 BSC	—
F	1.40	1.77	0.055	0.070
G	2.54 BSC	—	0.100 BSC	—
J	0.23	0.27	0.009	0.011
K	—	5.08	—	0.200
L	7.62 BSC	—	0.300 BSC	—
M	0°	15°	0°	15°
N	0.39	0.88	0.015	0.035

- STYLE 1:
 PIN 1. CATHODE
 2. CATHODE
 3. CATHODE
 4. CATHODE
 5. CATHODE
 6. CATHODE
 7. CATHODE
 8. CATHODE

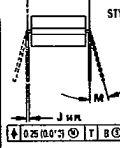


CASE 632-08 MO-001AA (TO-116) CERAMIC



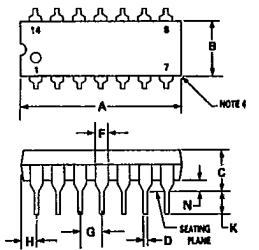
- NOTES:
 1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 2. CONTROLLING DIMENSION: INCH.
 3. DIMENSION L TO CENTER OF LEAD WHEN FORMED PARALLEL.
 4. DIM F MAY NARROW TO 0.76 (0.030) WHERE THE LEAD ENTERS THE CERAMIC BODY.

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	19.05	19.94	0.750	0.785
B	6.23	7.11	0.245	0.280
C	3.94	5.08	0.155	0.200
D	0.39	0.50	0.015	0.020
F	1.40	1.65	0.055	0.065
G	2.54 BSC	—	0.100 BSC	—
J	0.21	0.26	0.008	0.010
K	3.18	4.31	0.125	0.170
L	7.62 BSC	—	0.300 BSC	—
M	0°	15°	0°	15°
N	0.51	1.01	0.020	0.040



- STYLE 1:
 PIN 1. COLLECTOR
 2. BASE
 3. EMITTER
 4. NO CONNECTION
 5. EMITTER
 6. BASE
 7. COLLECTOR
 8. COLLECTOR
 9. BASE
 10. EMITTER
 11. NO CONNECTION
 12. EMITTER
 13. BASE
 14. COLLECTOR
- STYLE 4:
 PIN 1. DRAIN
 2. SOURCE
 3. GATE
 4. NO CONNECTION
 5. GATE
 6. SOURCE
 7. DRAIN
 8. DRAIN
 9. SOURCE
 10. GATE
 11. NO CONNECTION
 12. GATE
 13. SOURCE
 14. DRAIN

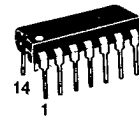
CASE 646-06 (14-PIN DIP) PLASTIC



- STYLE 1:
 PIN 1. COLLECTOR
 2. BASE
 3. EMITTER
 4. NO CONNECTION
 5. EMITTER
 6. BASE
 7. COLLECTOR
 8. COLLECTOR
 9. BASE
 10. EMITTER
 11. NO CONNECTION
 12. EMITTER
 13. BASE
 14. COLLECTOR
- STYLE 6:
 PIN 1. GATE
 2. DRAIN
 3. SOURCE
 4. NO CONNECTION
 5. SOURCE
 6. DRAIN
 7. GATE
 8. GATE
 9. DRAIN
 10. SOURCE
 11. NO CONNECTION
 12. SOURCE
 13. DRAIN
 14. GATE

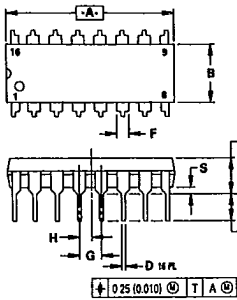
- NOTES:
 1. LEADS WITHIN 0.13 mm (0.005) RADIUS OF TRUE POSITION AT SEATING PLANE AT MAXIMUM MATERIAL CONDITION.
 2. DIMENSION "L" TO CENTER OF LEADS WHEN FORMED PARALLEL.
 3. DIMENSION "B" DOES NOT INCLUDE MOLD FLASH.
 4. ROUNDED CORNERS OPTIONAL.

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	18.16	19.56	0.715	0.770
B	6.10	6.60	0.240	0.260
C	3.69	4.69	0.145	0.185
D	0.36	0.53	0.015	0.021
F	1.02	1.78	0.040	0.070
G	2.54 BSC	—	0.100 BSC	—
H	1.32	2.41	0.052	0.095
J	0.20	0.36	0.008	0.015
K	2.92	3.43	0.115	0.135
L	7.62 BSC	—	0.300 BSC	—
M	0°	10°	0°	10°
N	0.39	1.01	0.015	0.039



7

CASE 648-08 (16-PIN DIP) PLASTIC



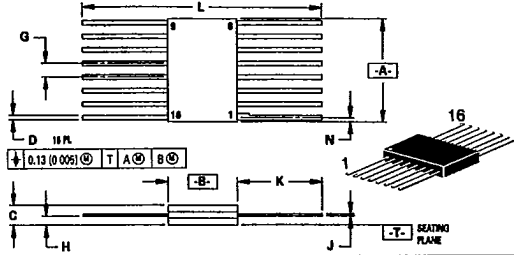
- NOTES:
 1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 2. CONTROLLING DIMENSION: INCH.
 3. DIMENSION "L" TO CENTER OF LEADS WHEN FORMED PARALLEL.
 4. DIMENSION "B" DOES NOT INCLUDE MOLD FLASH.
 5. ROUNDED CORNERS OPTIONAL.



- | | |
|----------------|---------------------|
| STYLE 1: | STYLE 2: |
| PIN 1. CATHODE | PIN 1. COMMON DRAIN |
| 2. CATHODE | 2. COMMON DRAIN |
| 3. CATHODE | 3. COMMON DRAIN |
| 4. CATHODE | 4. COMMON DRAIN |
| 5. CATHODE | 5. COMMON DRAIN |
| 6. CATHODE | 6. COMMON DRAIN |
| 7. CATHODE | 7. COMMON DRAIN |
| 8. CATHODE | 8. COMMON DRAIN |
| 9. ANODE | 9. GATE |
| 10. ANODE | 10. SOURCE |
| 11. ANODE | 11. GATE |
| 12. ANODE | 12. SOURCE |
| 13. ANODE | 13. GATE |
| 14. ANODE | 14. SOURCE |
| 15. ANODE | 15. GATE |
| 16. ANODE | 16. SOURCE |

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	18.90	19.55	0.740	0.770
B	0.35	0.95	0.015	0.270
C	3.03	4.44	0.145	0.175
D	0.39	0.53	0.015	0.021
F	1.02	1.77	0.040	0.070
G	2.54 BSC		0.100 BSC	
H	1.27 BSC		0.050 BSC	
J	0.21	0.38	0.008	0.015
K	2.80	3.30	0.110	0.130
L	7.50	7.74	0.295	0.305
M	0°	10°	0°	10°
S	0.51	1.01	0.020	0.040

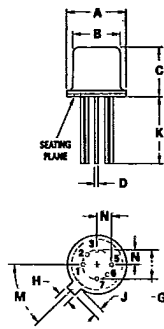
CASE 650-05 CERAMIC



- NOTES:
 1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 2. CONTROLLING DIMENSION: INCH.
 3. DIMENSION "A" AND "B" ALLOW FOR LID MISALIGNMENT, AND GLASS MISMATCH.
 4. DIMENSION "H" SHALL BE MEASURED AT THE POINT OF EXIT OF THE LEAD FROM THE BODY.
 5. LEAD NUMBER 1 IDENTIFIED BY TAB ON LEAD OR DOT ON COVER.
 6. DIMENSION "J" INCLUDES SOLDER LEAD FINISH.
 7. LEAD NUMBERS SHOWN FOR REFERENCE ONLY.

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	9.40	9.90	0.370	0.390
B	6.23	6.60	0.245	0.259
C	1.53	2.15	0.060	0.085
D	0.36	0.48	0.014	0.019
G	1.27 BSC		0.050 BSC	
H	0.64	1.01	0.025	0.040
J	0.11	0.17	0.004	0.007
K	6.25	9.39	0.250	0.370
L	18.93		0.745	
M		0.50		0.020

CASE 654-07 METAL

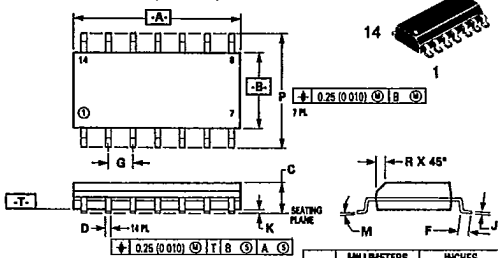


- STYLE 1:
 PIN 1. COLLECTOR
 2. BASE
 3. EMITTER
 4. EMITTER
 5. EMITTER
 6. BASE
 7. COLLECTOR
 8. EMITTER

- STYLE 5:
 SIDE 1 (PNP)
 PIN 1. COLLECTOR
 2. BASE
 3. EMITTER
 4. EMITTER
 SIDE 2 (PNP)
 5. EMITTER
 6. BASE
 7. COLLECTOR
 8. EMITTER

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	8.51	9.40	0.335	0.370
B	7.75	8.51	0.305	0.335
C	3.81	4.70	0.150	0.185
D	0.41	0.53	0.016	0.021
G	5.08 BSC		0.200 BSC	
H	0.71	0.96	0.028	0.034
J	0.74	1.14	0.029	0.045
K	12.70		0.500	
M	45° BSC		45° BSC	
N	2.54 BSC		0.100 BSC	

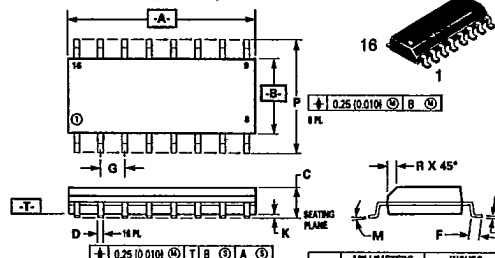
CASE 751A-02 (SO-14) PLASTIC



- NOTES:
 1. DIMENSIONS A AND B ARE DATUMS AND T IS A DATUM SURFACE.
 2. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 3. CONTROLLING DIMENSION: MILLIMETER.
 4. DIMENSION A AND B DO NOT INCLUDE MOLD PROTRUSION.
 5. MAXIMUM MOLD PROTRUSION 0.15 (0.006) PER SIDE.

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	8.55	8.75	0.337	0.344
B	3.90	4.00	0.150	0.157
C	1.35	1.75	0.054	0.069
D	0.35	0.49	0.014	0.019
F	0.40	1.25	0.016	0.049
G	1.27 BSC		0.050 BSC	
J	0.19	0.25	0.008	0.009
K	0.10	0.25	0.004	0.009
M	0°	7°	0°	7°
P	5.80	6.20	0.229	0.244
R	0.25	0.50	0.010	0.019

CASE 751B-03 (SO-16) PLASTIC



- NOTES:
 1. DIMENSIONS A AND B ARE DATUMS AND T IS A DATUM SURFACE.
 2. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 3. CONTROLLING DIMENSION: MILLIMETER.
 4. DIMENSION A AND B DO NOT INCLUDE MOLD PROTRUSION.
 5. MAXIMUM MOLD PROTRUSION 0.15 (0.006) PER SIDE.

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	9.80	10.00	0.386	0.393
B	3.80	4.00	0.150	0.157
C	1.35	1.75	0.054	0.069
D	0.35	0.49	0.014	0.019
F	0.40	1.25	0.016	0.049
G	1.27 BSC		0.050 BSC	
J	0.19	0.25	0.008	0.009
K	0.10	0.25	0.004	0.009
M	0°	7°	0°	7°
P	5.80	6.20	0.229	0.244
R	0.25	0.50	0.010	0.019