

MD7000**CASE 654-07, STYLE 1****DUAL
GENERAL PURPOSE
TRANSISTOR****NPN SILICON**

Refer to MD2218 for graphs.

MAXIMUM RATINGS

Rating	Symbol	Value		Unit
Collector-Emitter Voltage	V _{CEO}	30		Vdc
Collector-Base Voltage	V _{CBO}	50		Vdc
Emitter-Base Voltage	V _{EBO}	5.0		Vdc
Collector Current — Continuous	I _C	500		mAdc
		One Die	Both Die	
Total Device Dissipation @ T _A = 25°C Derate above 25°C	P _D	575	625	mW
		3.29	3.57	mW/°C
Total Device Dissipation @ T _C = 25°C Derate above 25°C	P _D	1.8	2.5	Watts
		10.3	14.3	mW/°C
Operating and Storage Junction Temperature Range	T _J , T _{stg}	- 65 to + 200		°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	One Die	Both Die	Unit
Thermal Resistance, Junction to Case	R _{θJC}	97	70	°C/W
Thermal Resistance, Junction to Ambient	R _{θJA} (1)	304	280	°C/W
		Junction to Ambient	Junction to Case	
Coupling Factor		84	44	%

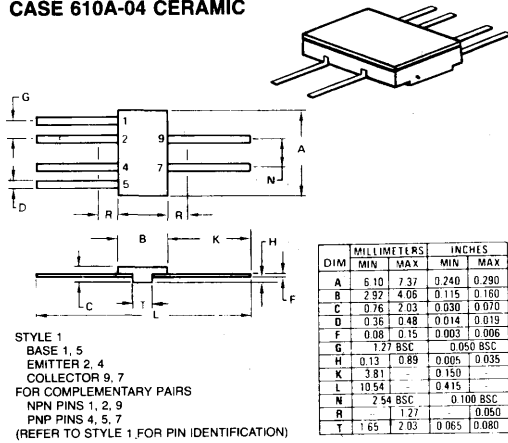
(1) R_{θJA} is measured with the device soldered into a typical printed circuit board.**ELECTRICAL CHARACTERISTICS** (T_A = 25°C unless otherwise noted.)

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage(2) (I _C = 10 mAdc, I _B = 0)	V _{(BR)CEO}	30	—	—	Vdc
Collector-Base Breakdown Voltage (I _C = 10 μAdc, I _E = 0)	V _{(BR)CBO}	50	—	—	Vdc
Emitter-Base Breakdown Voltage (I _E = 10 μAdc, I _C = 0)	V _{(BR)EBO}	5.0	—	—	Vdc
Collector Cutoff Current (V _{CB} = 40 Vdc, I _E = 0)	I _{CBO}	—	—	100	nAdc
ON CHARACTERISTICS					
DC Current Gain(2) (I _C = 1.0 mAdc, V _{CE} = 10 Vdc) (I _C = 150 mAdc, V _{CE} = 10 Vdc) (I _C = 300 mAdc, V _{CE} = 10 Vdc)	h _{FE}	40 70 30	60 80 50	—	—
Collector-Emitter Saturation Voltage (I _C = 150 mAdc, I _B = 15 mAdc)	V _{CE(sat)}	—	0.2	0.4	Vdc
Base-Emitter Saturation Voltage (I _C = 150 mAdc, I _B = 15 mAdc)	V _{BE(sat)}	—	0.95	1.3	Vdc
SMALL-SIGNAL CHARACTERISTICS					
Current-Gain — Bandwidth Product (I _C = 20 mAdc, V _{CE} = 20 Vdc, f = 100 MHz)	f _T	200	250	—	MHz
Output Capacitance (V _{CB} = 10 Vdc, I _E = 0, f = 100 kHz)	C _{obo}	—	3.5	8.0	pF
Input Capacitance (V _{EB} = 2.0 Vdc, I _C = 0, f = 100 kHz)	C _{ibo}	—	15	30	pF

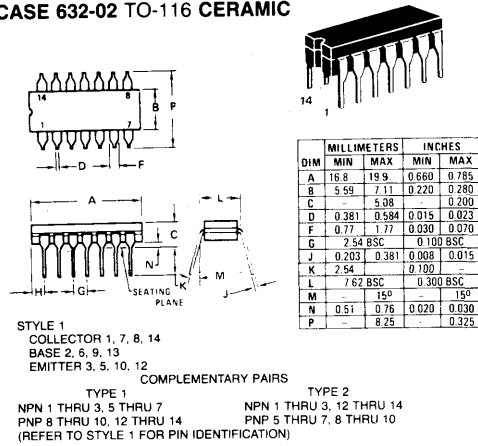
(2) Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%.

PACKAGE OUTLINE DIMENSIONS (continued)

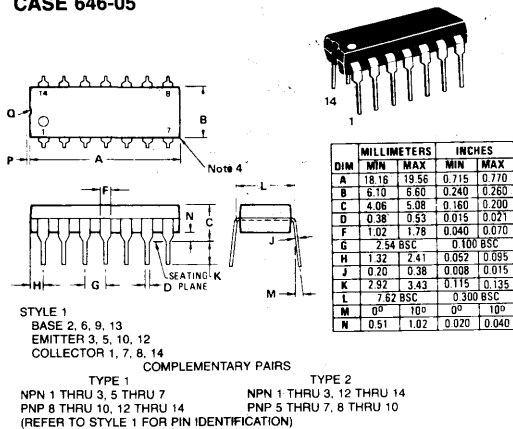
CASE 610A-04 CERAMIC



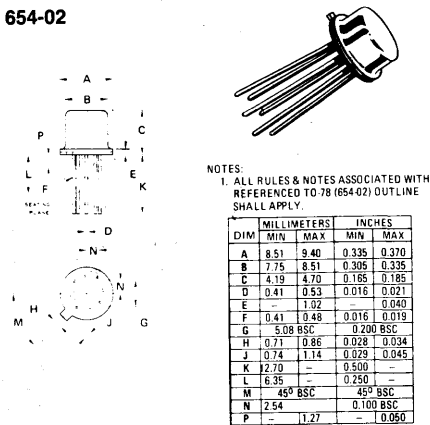
CASE 632-02 TO-116 CERAMIC



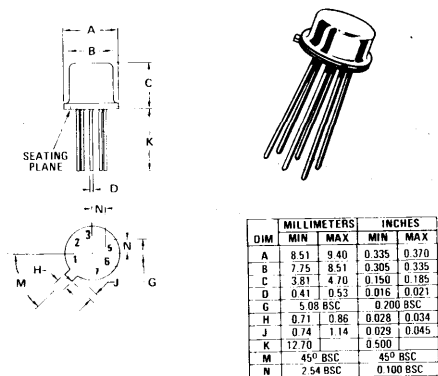
CASE 646-05



CASE 654-02



CASE 654-07



CASE 654 STYLES

STYLE 1: PIN 1. COLLECTOR 2. BASE 3. EMITTER 4. OMITTED	5. EMITTER 6. BASE 7. COLLECTOR 8. OMITTED	STYLE 4: PIN 1. GATE 2. SOURCE 3. DRAIN 4. OMITTED	5. DRAIN 6. SOURCE 7. GATE 8. OMITTED
STYLE 2: PIN 1. COLLECTOR 2. BASE 3. EMITTER 4. OMITTED	5. SOURCE 6. DRAIN 7. GATE 8. OMITTED	STYLE 5: SIDE 1 (NPN) PIN 1. COLLECTOR 2. BASE 3. EMITTER 4. OMITTED	SIDE 2 (PNP) 5. EMITTER 6. BASE 7. COLLECTOR 8. OMITTED
STYLE 3: PIN 1. EMITTER 2. BASE 3. COLLECTOR 4. OMITTED 5. ANODE 6. NO CONNECTION 7. CATHODE 8. OMITTED		STYLE 6: PIN 1. SOURCE 2. DRAIN 3. GATE 4. OMITTED	5. SOURCE 6. DRAIN 7. GATE 8. OMITTED