

# MJ9000 (SILICON)

## HIGH-VOLTAGE NPN SILICON TRANSISTOR

... designed for single unit use in color horizontal deflection output circuits in television receivers.

- High Collector-Emitter Voltage –  $V_{CES} = 700 \text{ Vdc}$
- Fast Fall Time –  $t_f = 1.1 \mu\text{s (Max)} @ I_C = 6.0 \text{ Adc}$

## 10 AMPERE POWER TRANSISTOR NPN SILICON

**700 VOLTS  
125 WATTS**

DS 3157

### MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	$V_{CEO}$	325	Vdc
Collector-Emitter Voltage	$V_{CES}$	700	Vdc
Emitter-Base Voltage	$V_{EB}$	5.0	Vdc
Collector Current – Continuous	$I_C$	10	A dc
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	125 1.0	Watts W/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	$T_{J-Tstg}$	-55 to +150	$^\circ\text{C}$

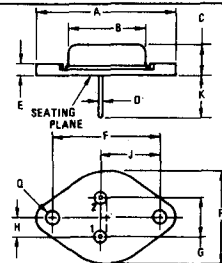
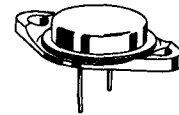
### THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$\theta_{JC}$	1.0	$^\circ\text{C/W}$

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

Characteristic	Symbol	Min	Max	Unit
<b>OFF CHARACTERISTICS</b>				
Collector-Emitter Breakdown Voltage (1) ( $I_C = 0.1 \text{ Adc}, I_B = 0$ )	$BV_{CEO}$	325	—	Vdc
Collector Cutoff Current ( $V_{CE} = 700 \text{ Vdc}, V_{EB} = 0$ )	$I_{CES}$	—	1.0	mAdc
<b>ON CHARACTERISTICS</b>				
Collector-Emitter Saturation Voltage ( $I_C = 6.0 \text{ Adc}, I_B = 1.8 \text{ Adc}$ )	$V_{CE(sat)}$	—	2.0	Vdc
<b>SWITCHING CHARACTERISTICS</b>				
Fall Time (See Figure 3) ( $V_{CC} = 80 \text{ Vdc}, I_C = 6.0 \text{ Adc}, I_{B1} = 1.8 \text{ Adc}$ )	$t_f$	—	1.1	$\mu\text{s}$

(1) Pulse Test: Pulse Width  $\leq 500 \mu\text{s}$ , Duty Cycle  $\leq 2.0\%$ .



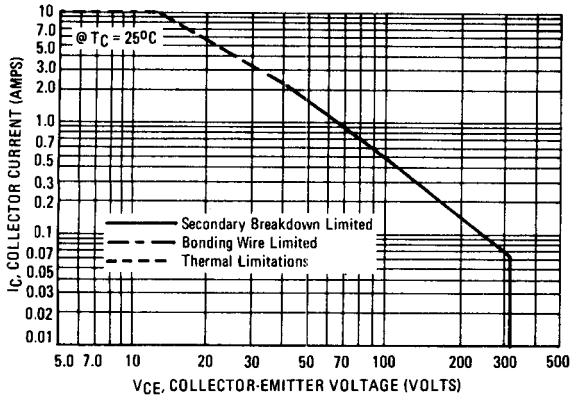
STYLE 1:  
PIN 1. BASE  
2. EMITTER  
CASE: COLLECTOR

NOTE:  
1. DIM "O" IS DIA.

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	—	39.37	—	1.550
B	—	21.08	—	0.830
C	6.35	7.62	0.250	0.300
D	0.99	1.09	0.039	0.043
E	—	3.43	—	0.135
F	29.90	30.40	1.177	1.197
G	10.67	11.18	0.420	0.440
H	5.33	5.59	0.210	0.220
J	16.64	17.15	0.655	0.675
K	11.18	12.19	0.440	0.480
L	3.84	4.09	0.151	0.161
R	—	26.67	—	1.050

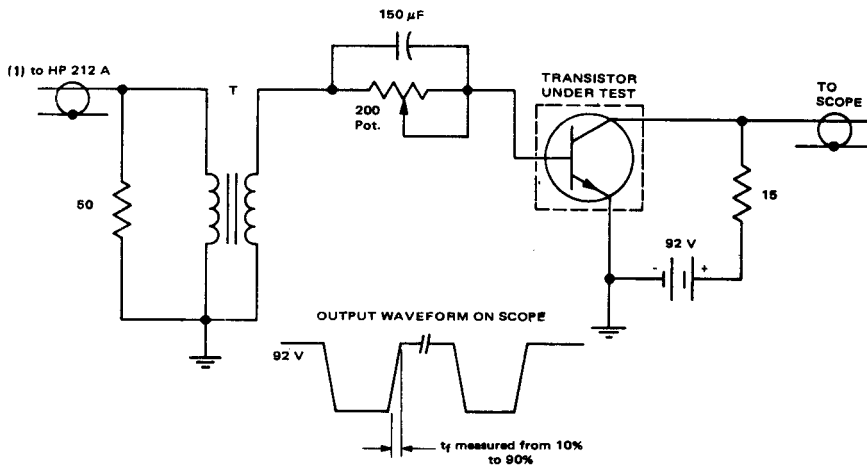
CASE 11

FIGURE 1 – ACTIVE-REGION DC SAFE OPERATING AREA



The Safe Operating Area Curves indicate  $I_C$ - $V_{CE}$  limits below which the device will not enter secondary breakdown. Collector load lines for specific circuits must fall within the applicable Safe Area to avoid causing a catastrophic failure. To insure operation below the maximum  $T_J$ , power-temperature derating must be observed for both steady state and pulse power conditions.

FIGURE 2 – TEST CIRCUIT FOR FALL TIME



(1) HP 212A: Set for 10  $\mu\text{s}$  wide pulses at 2000 pulses per sec. (500  $\mu\text{s}$  intervals). Adjust for  $I_{B1} = 1.6$  A.  
 Bias: Adjust to 1.5 V on a VTVM across the 200  $\Omega$  Pot.  
 T: Pulse Transformer: Motorola Part No. 25D68752A01.