

# MJ2840 (SILICON)

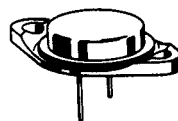
# MJ2841

## HIGH-POWER NPN SILICON TRANSISTORS

... designed for use in audio amplifier circuits utilizing complementary symmetry.

- Excellent Safe Operating Area
- DC Current Gain –  
 $h_{FE} = 20 - 100 @ I_C = 3.0 \text{ Adc (MJ2840)}$   
 $= 4.0 \text{ Adc (MJ2841)}$
- Complement to PNP MJ2940 and MJ2941

**10 AMPERE  
POWER TRANSISTORS**  
**NPN SILICON**  
**60-80 VOLTS**  
**150 WATTS**



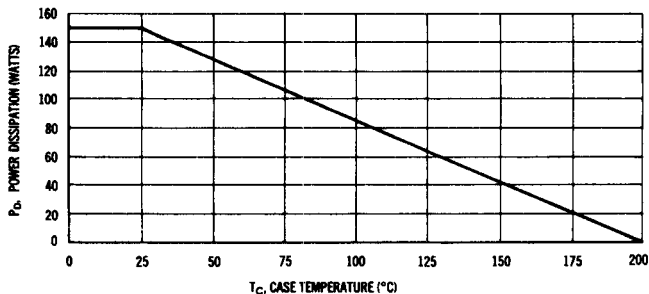
### MAXIMUM RATINGS

Rating	Symbol	MJ2840	MJ2841	Unit
Collector-Emitter Voltage	$V_{CEO}$	60	80	Vdc
Collector-Base Voltage	$V_{CB}$	60	80	Vdc
Emitter-Base Voltage	$V_{EB}$	4.0		Vdc
Collector Current – Continuous	$I_C$	10		A dc
Base Current	$I_B$	4.0		A dc
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	150	0.85	Watts W/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	$T_J, T_{stg}$	-65 to +200		$^\circ\text{C}$

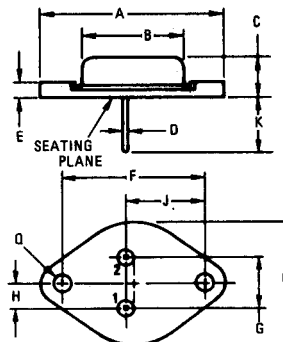
### THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$\theta_{JC}$	1.17	$^\circ\text{C/W}$

FIGURE 1 – POWER-TEMPERATURE DERATING CURVE



Safe Area Limits are indicated by Figure 4. Both limits are applicable and must be observed.



STYLE 1:

PIN 1. BASE

2. EMITTER

CASE: COLLECTOR

NOTE:

1. DIM "Q" 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
Q	3.84	4.09	0.151	0.161
R	—	26.67	—	1.050

CASE 11

# MJ2840, MJ2841 (continued)

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

Characteristic	Symbol	Min	Max	Unit	
<b>OFF CHARACTERISTICS</b>					
Collector-Emitter Sustaining Voltage <sup>(1)</sup> ( $I_C = 200\text{ mA dc}$ , $I_B = 0$ )	MJ2840 MJ2841	$V_{CE0(sus)}$	60 80	— —	Vdc
Collector-Base Cutoff Current ( $V_{CB} = \text{Rated } V_{CB}$ , $I_E = 0$ )	Both Types	$I_{CB0}$	0.1	—	mA dc
( $V_{CB} = \text{Rated } V_{CB}$ , $I_E = 0$ , $T_C = 150^\circ\text{C}$ )	Both Types		2.0	—	
Base-Emitter Cutoff Current ( $V_{BE} = 4.0\text{ Vdc}$ , $I_C = 0$ )	Both Types	$I_{EBO}$	1.0	—	mA dc
<b>ON CHARACTERISTICS</b>					
DC Current Gain <sup>(1)</sup> ( $I_C = 50\text{ mA dc}$ , $V_{CE} = 10\text{ Vdc}$ )	Both Types	$h_{FE}$	40	—	—
( $I_C = 3.0\text{ A dc}$ , $V_{CE} = 2.0\text{ Vdc}$ )	MJ2840		20	100	
( $I_C = 4.0\text{ A dc}$ , $V_{CE} = 2.0\text{ Vdc}$ )	MJ2841		20	100	
Base-Emitter On Voltage <sup>(1)</sup> ( $I_C = 3.0\text{ A dc}$ , $V_{CE} = 2.0\text{ Vdc}$ )	MJ2840	$V_{BE(on)}$	—	1.3	Vdc
( $I_C = 4.0\text{ A dc}$ , $V_{CE} = 2.0\text{ Vdc}$ )	MJ2841		—	1.4	
<b>DYNAMIC CHARACTERISTICS</b>					
Current-Gain-Bandwidth Product ( $I_C = 0.5\text{ A dc}$ , $V_{CE} = 10\text{ Vdc}$ , $f = 1.0\text{ MHz}$ )		$f_T$	2.0	20	MHz

(1) Pulse Test: Pulse Width  $\leq 300\ \mu\text{s}$ , Duty Cycle  $\leq 2\%$ .

FIGURE 2 — DC CURRENT GAIN

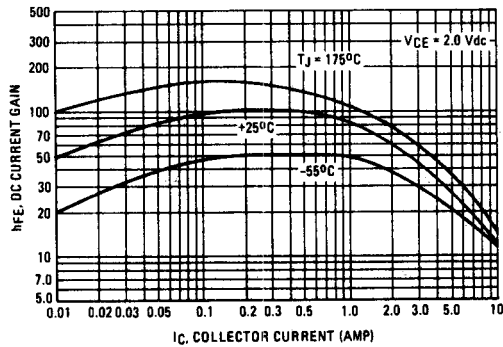


FIGURE 3 — "ON" VOLTAGES

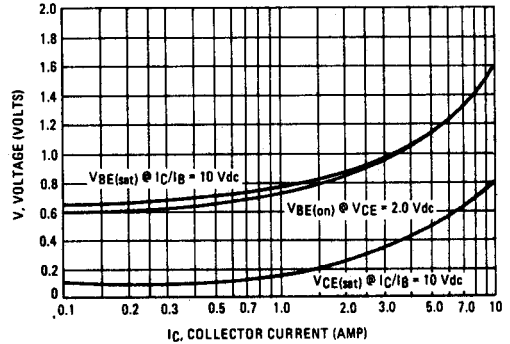
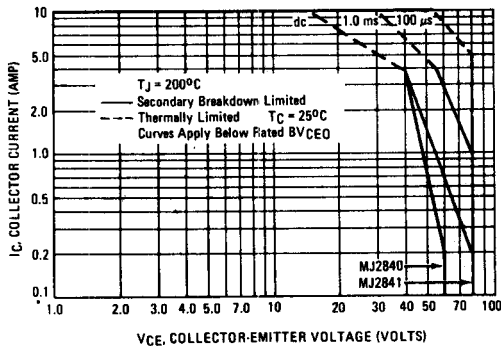


FIGURE 4 — ACTIVE-REGION SAFE OPERATING AREA



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.

# MJ2901 (SILICON)

For Specifications, See MJ2801 Data.