

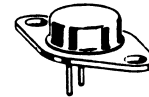
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2N3441

**3 AMPERES
 NPN SILICON
 POWER TRANSISTOR**

**140 VOLTS
 25 WATTS**



NPN SILICON POWER TRANSISTOR

... 2N3441 transistor is designed for use in general-purpose switching and linear amplifier applications requiring high breakdown voltages. It is characterized for use as:

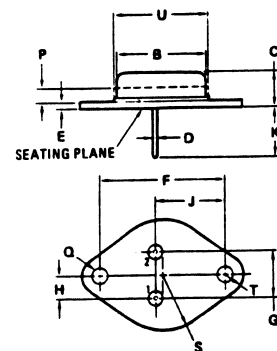
- Driver for High Power Outputs
- Series and Shunt Regulators
- Audio and Servo Amplifiers
- Solenoid and Relay Drivers
- Power Switching Circuits

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V _{CEO}	140	Vdc
Collector-Base Voltage	V _{CBO}	160	Vdc
Emitter-Base Voltage	V _{EBO}	7	Vdc
Collector Current - Continuous	I _C	3	Adc
Base Current - Continuous	I _B	2	Adc
Total Power Dissipation @ T _C = 25°C Derate above 25°C	P _D	25 0.142	Watts W/°C
Operating and Storage Junction Temperature Range	T _J , T _{stg}	-65 to +200	°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	R _{θJC}	7	°C/W



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

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
B	11.94	12.70	0.470	0.500
C	6.35	6.64	0.250	0.260
D	0.71	0.88	0.028	0.034
E	1.27	1.91	0.050	0.075
F	24.33	24.43	0.958	0.962
G	4.83	5.33	0.190	0.210
H	2.41	2.67	0.095	0.105
J	14.48	14.99	0.570	0.590
K	9.14	-	0.360	-
P	-	1.27	-	0.050
Q	3.61	3.88	0.142	0.152
S	-	6.89	-	0.270
T	-	3.68	-	0.145
U	-	15.75	-	0.620

All JEDEC Dimensions and Notes Apply.

(TO-66)



New Jersey Semi-Conductor Products, Inc.

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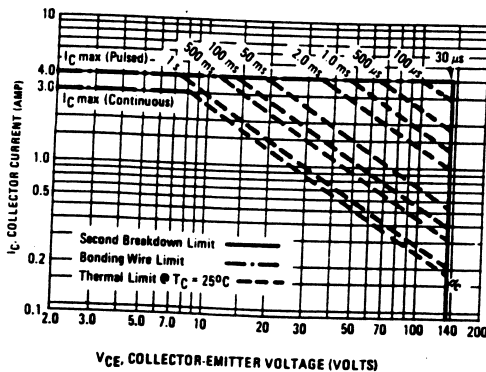
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2N3441

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

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector-Emitter Sustaining Voltage (1) ($I_C = 100 \text{ mAdc}, I_B = 0$)	$V_{CEO(sus)}$	140	—	Vdc
Collector Cutoff Current ($V_{CE} = 140 \text{ Vdc}, I_B = 0$)	I_{CEO}	—	100	mA
Collector Cutoff Current ($V_{CE} = 140 \text{ Vdc}, V_{BE(off)} = 1.5 \text{ V}$) ($V_{CE} = 140 \text{ Vdc}, V_{BE(off)} = 1.5 \text{ V @ } 150^\circ\text{C}$)	I_{CEX}	—	5.0 6.0	mA
Emitter Cutoff Current ($V_{BE} = 7.0 \text{ Vdc}, I_C = 0$)	I_{EBO}	—	1.0	mA
ON CHARACTERISTICS				
DC Current Gain (1) ($I_C = 0.5 \text{ Adc}, V_{CE} = 4.0 \text{ V}$) ($I_C = 2.7 \text{ Adc}, V_{CE} = 4.0 \text{ V}$)	h_{FE}	25 5.0	100 —	—
Collector-Emitter Saturation Voltage (1) ($I_C = 2.7 \text{ Adc}, I_B = 0.9 \text{ Adc}$)	$V_{CE(sat)}$	—	6.0	Vdc
Base-Emitter On Voltage (1) ($I_C = 2.7 \text{ Adc}, V_{CE} = 4.0 \text{ Vdc}$)	$V_{BE(on)}$	—	6.7	Vdc
DYNAMIC CHARACTERISTICS				
Small-Signal Current Gain ($I_C = 0.5 \text{ Adc}, V_{CE} = 4.0 \text{ Vdc}, f_{test} = 1 \text{ kHz}$)	h_{fe}	15	75	—
Small-Signal Current Gain ($I_C = 0.5 \text{ Adc}, V_{CE} = 4.0 \text{ Vdc}, f_{test} = 0.4 \text{ MHz}$)	h_{fe1}	5.0	—	—

FIGURE 1 - ACTIVE-REGION SAFE OPERATING AREA



There are two limitations on the power-handling ability of a transistor: average junction temperature and second breakdown. Safe operating area curves indicate I_C - V_{CE} limits of the transistor that must be observed for reliable operation, i.e., the transistor must not be subjected to greater dissipation than the curves indicate.

The data of Figure 1 is based on $T_{J(pk)} = 200^\circ\text{C}$; T_C is variable depending on conditions. At high case temperatures, thermal limitations will reduce the power that can be handled to values less than the limitations imposed by second breakdown.

