

## MEDIUM-POWER PNP TRANSISTORS

...ideal for use as drivers, switches and medium- power amplifier and applications

### FEATURES:

\* Low Collector-Emitter Saturation Voltage -

$$V_{CE(SAT)} = 0.6V(\text{Max.}) @ I_C = 1.0A$$

\* High Gain Characteristics -

$$hFE = 30 \sim 100 @ I_C = 250mA$$

\* Excellent Safe Area Limits

Boca Semiconductor Corp.

BSC

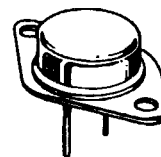
<http://www.bocasemi.com>

**PNP**  
**2N3740**  
**2N3741**

**4 AMPERE**  
**POWER TRANSISTORS**  
**PNP SILICON**  
**60 - 80 Volts**  
**25 Watts**

### MAXIMUM RATINGS

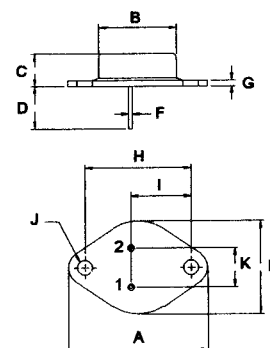
Characteristic	Symbol	2N3740	2N3741	Unit
Collector-Emitter Voltage	$V_{CEO}$	60	80	V
Collector-Base Voltage	$V_{CBO}$	60	80	V
Emitter-Base Voltage	$V_{EBO}$	7.0		V
Collector Current-Continuous -Peak	$I_C$ $I_{CM}$	4.0 10		A
Base Current	$I_B$	2.0		A
Total Power Dissipation@ $T_C=25^\circ C$ Derate above $25^\circ C$	$P_D$	25 0.143		W W/ $^\circ C$
Operating and Storage Junction Temperature Range	$T_J, T_{STG}$	- 65 to +200		$^\circ C$



**TO-66**

### THERMAL CHARACTERISTICS

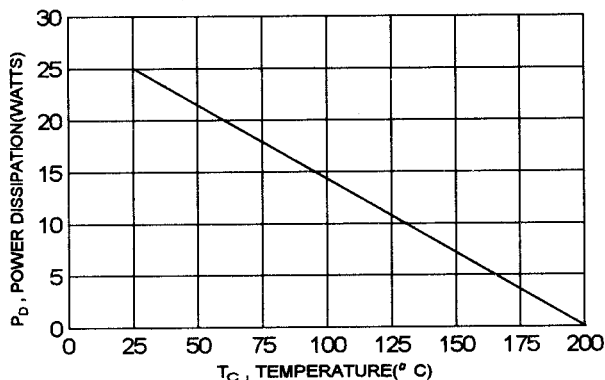
Characteristic	Symbol	Max	Unit
Thermal Resistance Junction to Case	$R_{\theta jc}$	7.0	$^\circ C/W$



PIN 1. BASE  
2. EMITTER  
COLLECTOR(CASE)

DIM	MILLIMETERS	
	MIN	MAX
A	30.60	32.52
B	13.85	14.16
C	6.54	7.22
D	9.50	10.50
E	17.26	18.46
F	0.76	0.92
G	1.38	1.65
H	24.16	24.78
I	13.84	15.60
J	3.32	3.92
K	4.86	5.34

FIGURE -1 POWER DERATING



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

Characteristic	Symbol	Min	Max	Unit
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**OFF CHARACTERISTICS**

Collector - Emitter Sustaining Voltage (1) ( $I_c = 100 \text{ mA}$ , $I_B = 0$ )	2N3740 2N3741	$V_{CEO(SUS)}$	60 80	V
Collector Cutoff Current ( $V_{CE} = 40 \text{ V}$ , $I_B = 0$ ) ( $V_{CE} = 60 \text{ V}$ , $I_B = 0$ )	2N3740 2N3741	$I_{CEO}$	1.0 1.0	mA
Collector Cutoff Current ( $V_{CE} = 60 \text{ V}$ , $V_{BE(off)} = 1.5 \text{ V}$ ) ( $V_{CE} = 80 \text{ V}$ , $V_{BE(off)} = 1.5 \text{ V}$ ) ( $V_{CE} = 40 \text{ V}$ , $V_{BE(off)} = 1.5 \text{ V}$ , $T_c = 150^\circ\text{C}$ ) ( $V_{CE} = 60 \text{ V}$ , $V_{BE(off)} = 1.5 \text{ V}$ , $T_c = 150^\circ\text{C}$ )	2N3740 2N3741 2N3740 2N3741	$I_{CEX}$	100 100 1.0 1.0	$\mu\text{A}$ $\mu\text{A}$ mA mA
Collector Cutoff Current ( $V_{CB} = 60 \text{ V}$ , $I_E = 0$ ) ( $V_{CB} = 80 \text{ V}$ , $I_E = 0$ )	2N3740 2N3741	$I_{CBO}$	100 100	$\mu\text{A}$
Emitter Cutoff Current ( $V_{EB} = 7.0 \text{ V}$ , $I_C = 0$ )		$I_{EBO}$	0.5	mA

**ON CHARACTERISTICS (1)**

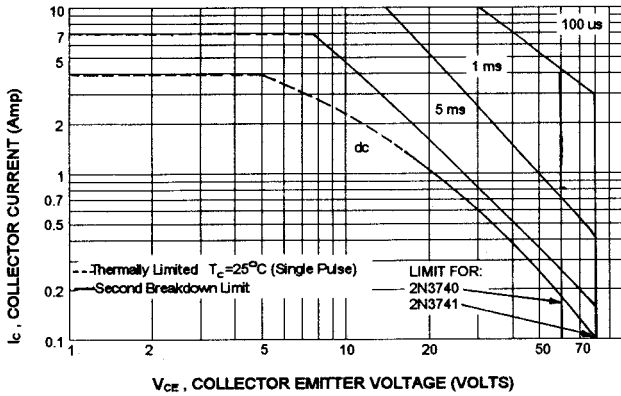
DC Current Gain ( $I_c = 100 \text{ mA}$ , $V_{CE} = 1.0 \text{ V}$ ) ( $I_c = 250 \text{ mA}$ , $V_{CE} = 1.0 \text{ V}$ ) ( $I_c = 500 \text{ mA}$ , $V_{CE} = 1.0 \text{ V}$ ) ( $I_c = 1.0 \text{ A}$ , $V_{CE} = 1.0 \text{ V}$ )		hFE	40 30 20 10	100
Collector-Emitter On Voltage ( $I_c = 1.0 \text{ A}$ , $I_B = 125 \text{ mA}$ )		$V_{CE(sat)}$		0.6
Base-Emitter On Voltage ( $I_c = 250 \text{ mA}$ , $V_{CE} = 1.0 \text{ V}$ )		$V_{BE(on)}$		1.0

**DYNAMIC CHARACTERISTICS**

Current-Gain-Bandwidth Product (2) ( $I_c = 100 \text{ mA}$ , $V_{CE} = 10 \text{ V}$ , $f = 1.0 \text{ MHz}$ )		$f_T$	3.0	MHz
Common Base Output Capacitance ( $V_{CB} = 10 \text{ V}$ , $I_C = 0$ , $f = 100 \text{ KHz}$ )		$C_{ob}$		100
Small-Signal Current Gain ( $I_c = 50 \text{ mA}$ , $V_{CE} = 10 \text{ V}$ , $f = 1.0 \text{ KHz}$ )		$h_{fe}$	25	

(1) Pulse Test: Pulse width  $\leq 300 \text{ us}$ , Duty Cycle  $\leq 2.0\%$ (2)  $f_T = |h_{fe}| \cdot f_{test}$

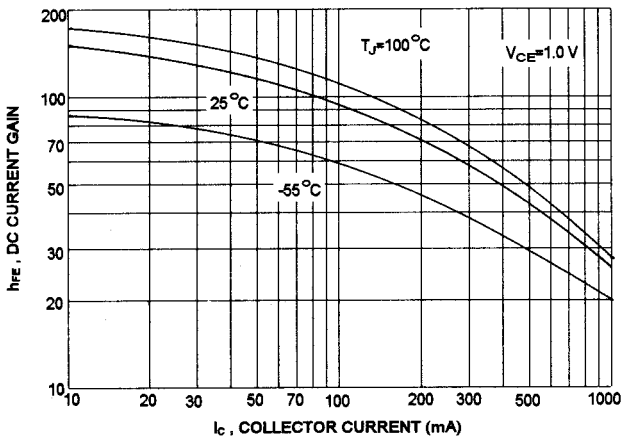
ACTIVE-REGION SAFE OPERATING AREA (SOA)



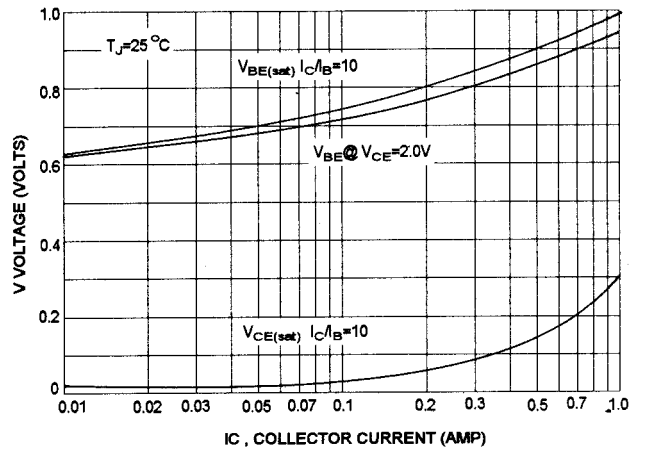
There are two limitation on the power handling ability of a transistor: average junction temperature and second breakdown safe operating area curves indicate  $I_C$ - $V_{CE}$  limits of the transistor that must be observed for reliable operation i.e., the transistor must not be subjected to greater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

The data of SOA curve is base on  $T_{J(PK)}=200^\circ\text{C}$ ;  $T_C$  is variable depending on conditions. second breakdown pulse limits are valid for duty cycles to 10% provided  $T_{J(PK)}\leq 200^\circ\text{C}$ . At high case temperatures, thermal limitation will reduce the power that can be handled to values less than the limitations imposed by second breakdown

DC CURRENT GAIN



"ON" VOLTAGES



COLLECTOR SATURATION REGION

