

## NPN SILICON POWER TRANSISTORS

...designed for use in B/W TV horizontal output applications.

### FEATURES:

\* Collector-Emitter Sustaining Voltage-

$V_{CE(sus)} = 70 \text{ V (Min)-2SC681}$   
 $= 80 \text{ V (Min)-2SC681ARD}$   
 $= 80 \text{ V (Min)-2SC681AYL}$

\* Low Collector-Emitter Saturation Voltage

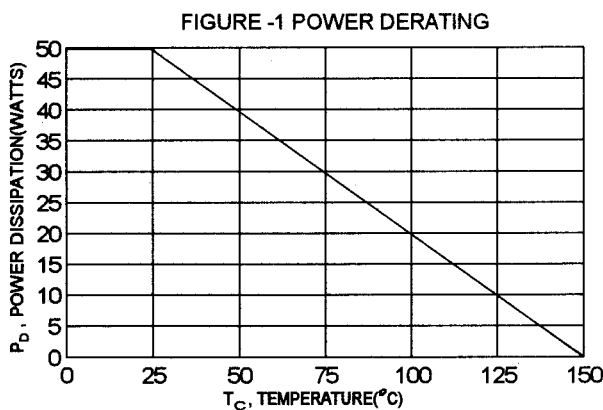
$V_{CE(sat)} = 2.0 \text{ V (Max) @ } I_C = 5.0 \text{ A, } I_B = 0.6 \text{ A}$

### MAXIMUM RATINGS

Characteristic	Symbol	2SC			Unit
		681	681ARD	681AYL	
Collector-Emitter Voltage	$V_{CEO}$	70	80	80	V
Collector-Base Voltage	$V_{CBO}$	200	250	300	V
Emitter-Base Voltage	$V_{EBO}$	5.0			V
Collector Current-Continuous -Peak	$I_C$	6.0	6.0	6.0	A
	$I_{CM}$	20	20	25	
Base Current	$I_B$	2.0			A
Total Power Dissipation @ $T_C = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	50			W
		0.4			
Operating and Storage Junction Temperature Range	$T_J, T_{STG}$	- 65 to +150			$^\circ\text{C}$

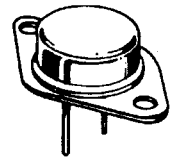
### THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance Junction to Case	$R_{\theta jc}$	2.5	$^\circ\text{C}/\text{W}$

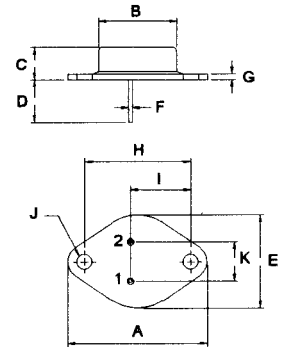


**NPN**  
**2SC681**  
**2SC681ARD**  
**2SC681AYL**

**6 AMPERE**  
**SILICON POWER**  
**TRANSISTOR**  
**70-80 VOLTS**  
**50 WATTS**



**TO-3**



PIN 1.BASE  
 2.EMITTER  
 COLLECTOR(CASE)

DIM	MILLIMETERS	
	MIN	MAX
A	38.75	39.96
B	19.28	22.23
C	7.96	9.28
D	11.18	12.19
E	25.20	26.67
F	0.92	1.09
G	1.38	1.62
H	29.90	30.40
I	16.64	17.30
J	3.88	4.36
K	10.67	11.18

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

Characteristic	Symbol	Min	Max	Unit
----------------	--------	-----	-----	------

**OFF CHARACTERISTICS**

Collector - Emitter Sustaining Voltage (1) ( $I_c = 50 \text{ mA}, I_B = 0$ )	2SC681 2SC681ARD 2SC681AYL	$V_{CE(sus)}$	70 80 80	V
Collector Cutoff Current ( $V_{CE} = 200 \text{ V}, I_E = 0$ ) ( $V_{CE} = 250 \text{ V}, I_E = 0$ ) ( $V_{CE} = 300 \text{ V}, I_E = 0$ )	2SC681 2SC681ARD 2SC681AYL	$I_{CBO}$	1.0 1.0 1.0	mA
Emitter Cutoff Current ( $V_{EB} = 5.0 \text{ V}, I_C = 0$ )		$I_{EBO}$	10	mA

**ON CHARACTERISTICS (1)**

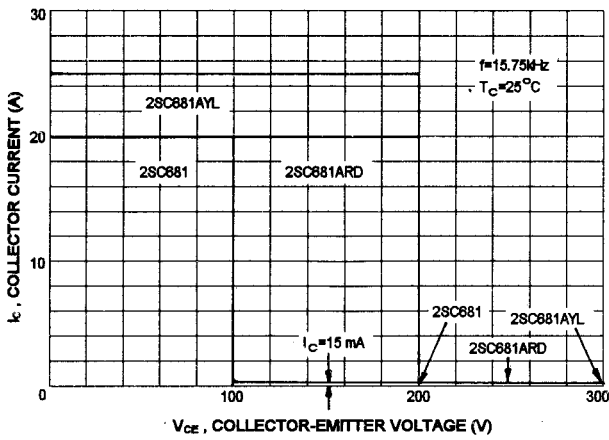
Collector-Emitter Saturation Voltage ( $I_c = 5.0 \text{ A}, I_B = 0.6 \text{ A}$ )		$V_{CE(sat)}$	2.0	V
Base-Emitter Saturation Voltage ( $I_c = 5.0 \text{ A}, I_B = 0.6 \text{ A}$ )		$V_{BE(sat)}$	1.5	V

**SWITCHING CHARACTERISTICS**

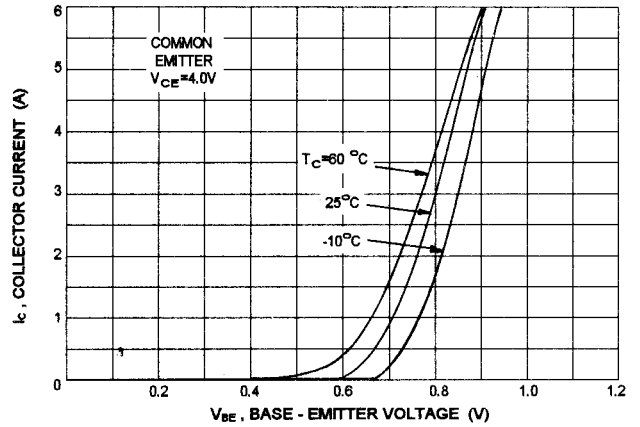
Fall Time ( $I_c = 5.0 \text{ A}, I_{B1} = 0.6 \text{ A}, I_{B2} = -1.0 \text{ A}, V_{CC} = 25 \text{ V}$ )		$t_f$	0.5	us
--	--	-------	-----	----

(1) Pulse Test: Pulse width = 300 us , Duty Cycle  $\leq$  2.0%

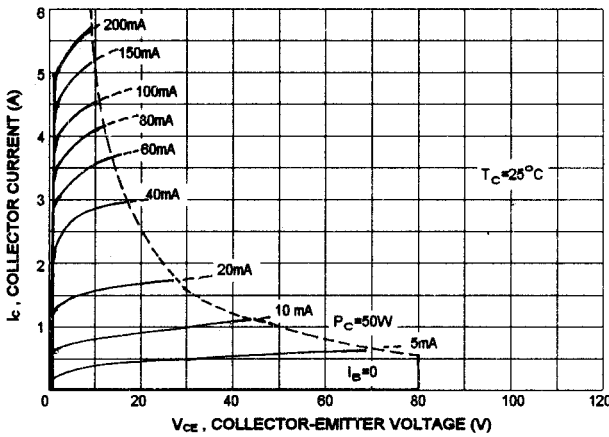
REVERSE BIASE SAFE OPERATING AREA



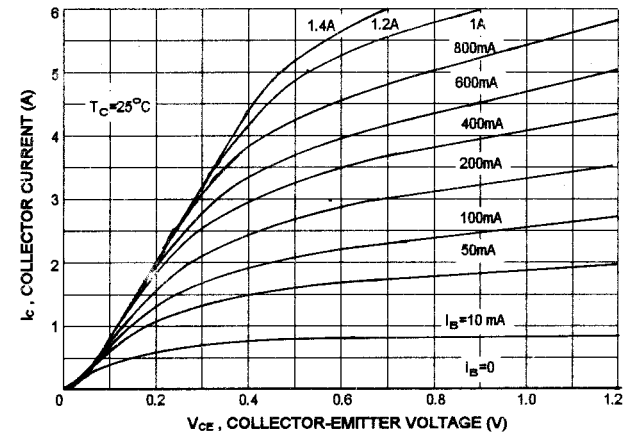
$I_C - V_{BE}$



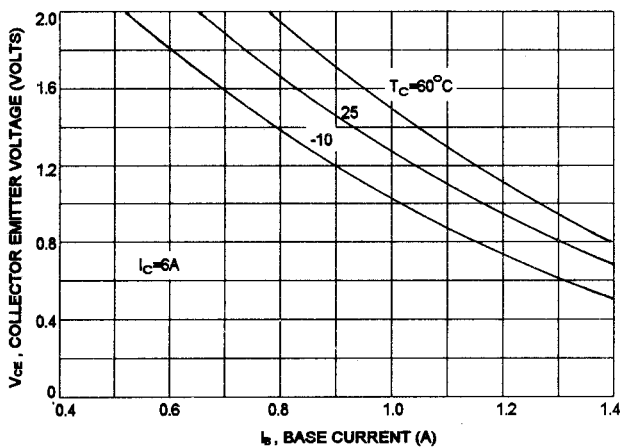
$I_C - V_{CE}$



$I_C - V_{CE}$



COLLECTOR SATURATION REGION



$I_B - V_{BE}$

