



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



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## NPN POWER SILICON TRANSISTOR

Qualified per MIL-PRF-19500/466

### Devices

2N5683

2N5684

### Qualified Level

JAN  
JANTX  
JANTXV

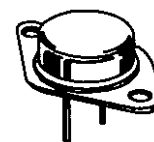
### MAXIMUM RATINGS

Ratings	Symbol	2N5683	2N5684	Unit
Collector-Emitter Voltage	$V_{CEO}$	60	80	Vdc
Collector-Base Voltage	$V_{CBO}$	60	80	Vdc
Emitter-Base Voltage	$V_{EBO}$	5.0		Vdc
Base Current	$I_B$	15		Adc
Collector Current	$I_C$	50		Adc
Total Power Dissipation <sup>(1)</sup>				
@ $T_C = 25^{\circ}\text{C}$	$P_T$	300		W
@ $T_C = 100^{\circ}\text{C}$		171		W
Operating & Storage Junction Temperature Range	$T_J, T_{stg}$	-65 to +200		$^{\circ}\text{C}$

### THERMAL CHARACTERISTICS

Characteristics	Symbol	Max.	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	0.584	$^{\circ}\text{C/W}$

1) Derate linearly 1.715 W/ $^{\circ}\text{C}$  between  $T_C = +25^{\circ}\text{C}$  and  $T_C = +200^{\circ}\text{C}$



TO-3\*  
(TO-204AA)

\*See appendix A for package outline

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

Characteristics	Symbol	Min.	Max.	Unit
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### OFF CHARACTERISTICS

Collector-Emitter Breakdown Voltage $I_C = 200 \text{ mAdc}$	2N5683 2N5684	$V_{(BR)CEO}$	60 80	Vdc
Collector-Emitter Cutoff Current $V_{CE} = 30 \text{ Vdc}$ $V_{CE} = 40 \text{ Vdc}$	2N5683 2N5684	$I_{CEO}$	5.0 5.0	$\mu\text{Adc}$
Collector-Emitter Cutoff Current $V_{CE} = 60 \text{ Vdc}, V_{BE} = 1.5 \text{ Vdc}$ $V_{CE} = 80 \text{ Vdc}, V_{BE} = 1.5 \text{ Vdc}$	2N5683 2N5684	$I_{CEX}$	5.0 5.0	$\mu\text{Adc}$
Collector-Base Cutoff Current $V_{CB} = 60 \text{ Vdc}$ $V_{CB} = 80 \text{ Vdc}$	2N5683 2N5684	$I_{CBO}$	5.0 5.0	$\mu\text{Adc}$
Emitter-Base Cutoff Current $V_{EB} = 5.0 \text{ Vdc}$		$I_{EBO}$	5.0	$\mu\text{Adc}$

**ELECTRICAL CHARACTERISTICS (con't)**

Characteristics	Symbol	Min.	Max.	Unit
<b>ON CHARACTERISTICS</b> <sup>(2)</sup>				
Forward-Current Transfer Ratio I <sub>C</sub> = 5.0 Adc, V <sub>CE</sub> = 2.0 Vdc I <sub>C</sub> = 25 Adc, V <sub>CE</sub> = 2.0 Vdc I <sub>C</sub> = 50 Adc, V <sub>CE</sub> = 5.0 Vdc	h <sub>FE</sub>	30 15 5.0	60	
Collector-Emitter Saturation Voltage I <sub>C</sub> = 25 Adc, I <sub>B</sub> = 2.5 Adc I <sub>C</sub> = 50 Adc, I <sub>B</sub> = 10 Adc	V <sub>CE(sat)</sub>		1.0 5.0	Vdc
Base-Emitter Saturation Voltage I <sub>C</sub> = 25 Adc, I <sub>B</sub> = 2.5 Adc	V <sub>BE(sat)</sub>		2.0	Vdc
Base-Emitter Voltage I <sub>C</sub> = 25 Adc, V <sub>CE</sub> = 2.0 Vdc	V <sub>BE(on)</sub>		2.0	Vdc

**DYNAMIC CHARACTERISTICS**

Magnitude of Common Emitter Small-Signal Short-Circuit Forward Current Transfer Ratio I <sub>C</sub> = 5.0 Adc, V <sub>CE</sub> = 10 Vdc, f = 1.0 MHz	h <sub>fe</sub>	2.0	20	
Small-Signal Short-Circuit Forward Current Transfer Ratio I <sub>C</sub> = 10 Adc, V <sub>CE</sub> = 5.0 Vdc, f = 1.0 kHz	h <sub>fe</sub>	15		
Output Capacitance V <sub>CB</sub> = 10 Vdc, I <sub>E</sub> = 0, 0.1 MHz ≤ f ≤ 1.0 MHz	C <sub>obo</sub>		2,000	pF

**SWITCHING CHARACTERISTICS**

Turn-On Time V <sub>CC</sub> = 30 Vdc; I <sub>C</sub> = 25 Adc; I <sub>B</sub> = 2.5 Adc	t <sub>on</sub>		1.5	μs
Turn-Off Time V <sub>CC</sub> = 30 Vdc; I <sub>C</sub> = 25 Adc; I <sub>B1</sub> = I <sub>B2</sub> = 2.5 Adc	t <sub>off</sub>		3.0	μs

**SAFE OPERATING AREA**

<b>DC Tests</b> T <sub>C</sub> = +25°C, 1 Cycle, t = 1.0 s				
<b>Test 1</b> V <sub>CE</sub> = 6.0 Vdc, I <sub>C</sub> = 50 Adc	All Types			
<b>Test 2</b> V <sub>CE</sub> = 30 Vdc, I <sub>C</sub> = 10 Adc	All Types			
<b>Test 3</b> V <sub>CE</sub> = 50 Vdc, I <sub>C</sub> = 560 mAdc	2N5683			
V <sub>CE</sub> = 60 Vdc, I <sub>C</sub> = 640 mAdc	2N5684			

(2) Pulse Test: Pulse Width = 300μs, Duty Cycle ≤ 2.0%.