

Silicon NPN Power Transistors

2N5301 2N5302 2N5303

DESCRIPTION

- With TO-3 package
- Complement to type 2N4398/4399/5745
- Low collector/saturation voltage
- Excellent safe operating area

APPLICATIONS

- For use in power amplifier and switching circuits applications.

PINNING

PIN	DESCRIPTION
1	Base
2	Emitter
3	Collector



Fig.1 simplified outline (TO-3) and symbol

Absolute maximum ratings($T_a = \square$)

SYMBOL	PARAMETER		CONDITIONS	VALUE	UNIT
V_{CBO}	Collector-base voltage	2N5301	Open emitter	40	V
		2N5302		60	
		2N5303		80	
V_{CEO}	Collector-emitter voltage	2N5301	Open base	40	V
		2N5302		60	
		2N5303		80	
V_{EBO}	Emitter-base voltage		Open collector	5	V
I_C	Collector current	2N5301/5302		30	A
		2N5303		20	
I_B	Base current			7.5	A
P_D	Total power dissipation		$T_C = 25\square$	200	W
T_j	Junction temperature			200	$\square$
T_{stg}	Storage temperature			-65~200	$\square$

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	VALUE	UNIT
$R_{th\ j-c}$	Thermal resistance junction to case	0.875	$\square/W$

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CHARACTERISTICS

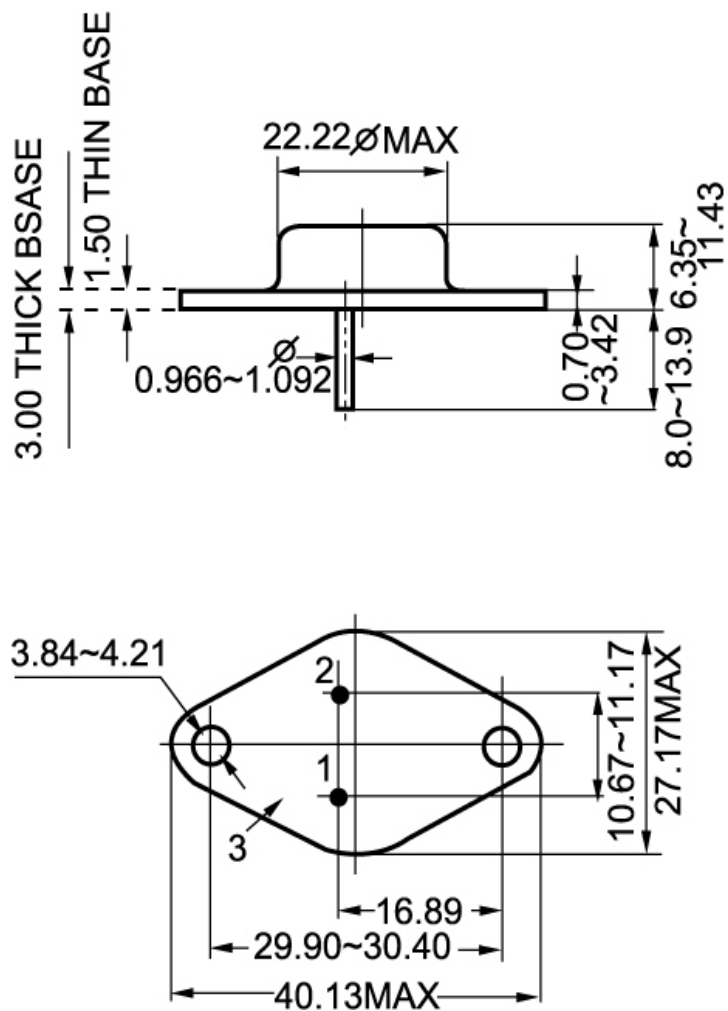
T_j=25°C unless otherwise specified

SYMBOL	PARAMETER		CONDITIONS	MIN	TYP.	MAX	UNIT
V _{CEQ(SUS)}	Collector-emitter sustaining voltage	2N5301	I _C =0.2A ; I _B =0	40			V
		2N5302		60			
		2N5303		80			
V _{CEsat-1}	Collector-emitter saturation voltage	2N5301/5302	I _C =10A ; I _B =1A			0.75	V
		2N5303				1.0	
V _{CEsat-2}	Collector-emitter saturation voltage	2N5301/5302	I _C =20A ; I _B =2A			2.0	V
		2N5303	I _C =15A ; I _B =1.5A			1.5	
V _{CEsat-3}	Collector-emitter saturation voltage	2N5301/5302	I _C =30A ; I _B =6A			3.0	V
		2N5303	I _C =20A ; I _B =4A			2.0	
V _{BEsat-1}	Base-emitter saturation voltage		I _C =10A ; I _B =1A			1.7	V
V _{BEsat-2}	Base-emitter saturation voltage	2N5301/5302	I _C =15A ; I _B =1.5A			1.8	V
		2N5303				2.0	
V _{BEsat-3}	Base-emitter saturation voltage	2N5301/5302	I _C =20A ; I _B =2A			2.5	V
		2N5303	I _C =20A ; I _B =4A				
V _{BE-1}	Base-emitter on voltage	2N5301/5302	I _C =15A ; V _{CE} =2V			1.7	V
		2N5303	I _C =10A ; V _{CE} =2V			1.5	
V _{BE-2}	Base-emitter on voltage	2N5301/5302	I _C =30A ; V _{CE} =4V			3.0	V
		2N5303	I _C =20A ; V _{CE} =4V			2.5	
I _{CEX}	Collector cut-off current		V _{CE} = Rated V _{CEO} ; V _{BE(off)} =1.5V T _C =150°C			1.0 10	mA
I _{CEO}	Collector cut-off current		V _{CE} =Rated V _{CEO} ; I _B =0			5.0	mA
I _{CBO}	Collector cut-off current		V _{CB} =Rated V _{CBO} ; I _E =0			1.0	mA
I _{EBO}	Emitter cut-off current		V _{EB} =5V; I _C =0			5.0	mA
h _{FE-1}	DC current gain		I _C =1A ; V _{CE} =2V	40			
h _{FE-2}	DC current gain	2N5303	I _C =10A ; V _{CE} =2V	15		60	
		2N5301/5302	I _C =15A ; V _{CE} =2V				
h _{FE-3}	DC current gain	2N5303	I _C =20A ; V _{CE} =4V	5			
		2N5301/5302	I _C =30A ; V _{CE} =4V				
f _T	Transition frequency		I _C =1A ; V _{CE} =10V; f=1.0MHz	2			MHz

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PACKAGE OUTLINE

Fig.2 outline dimensions (unindicated tolerance: $\pm 0.1\text{mm}$)