

DESCRIPTION

- Low Collector Saturation Voltage-
: $V_{CE(sat)} = 0.75V(\text{Max.}) @ I_C = 10A$
- Wide Area of Safe Operation
- Complement to Type 2N4398

APPLICATIONS

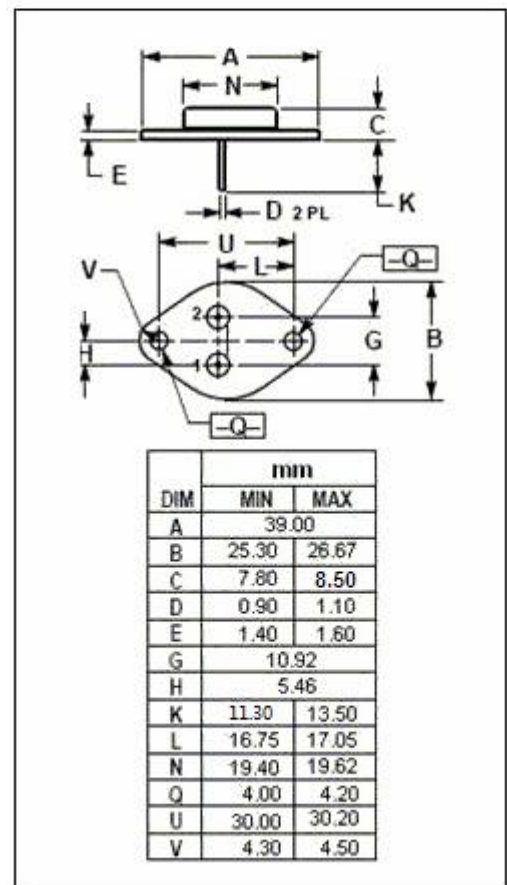
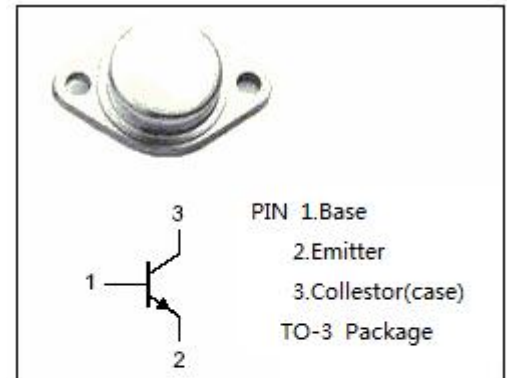
- Designed for use in power amplifier and switching circuits applications.

ABSOLUTE MAXIMUM RATINGS($T_a = 25^\circ\text{C}$)

SYMBOL	PARAMETER	VALUE	UNIT
V_{CBO}	Collector-Base Voltage	40	V
V_{CEO}	Collector-Emitter Voltage	40	V
V_{EBO}	Emitter-Base Voltage	5	V
I_C	Collector Current-Continuous	30	A
I_B	Base Current-Continuous	7.5	A
P_C	Collector Power Dissipation@ $T_C = 25^\circ\text{C}$	200	W
T_J	Junction Temperature	200	$^\circ\text{C}$
T_{stg}	Storage Temperature	-65~200	$^\circ\text{C}$

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	MAX	UNIT
$R_{th j-a}$	Thermal Resistance, Junction to Ambient	34	$^\circ\text{C/W}$
$R_{th j-c}$	Thermal Resistance, Junction to Case	0.875	$^\circ\text{C/W}$



SPTECH Silicon NPN Power Transistors

2N5301

ELECTRICAL CHARACTERISTICS

 $T_C=25^{\circ}\text{C}$ unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN	MAX	UNIT
$V_{CEO(SUS)}$	Collector-Emitter Sustaining Voltage	$I_C=50\text{mA}$; $I_B=0$	40		V
$V_{CE(sat)-1}$	Collector-Emitter Saturation Voltage	$I_C=10\text{A}$; $I_B=1\text{A}$		0.75	V
$V_{CE(sat)-2}$	Collector-Emitter Saturation Voltage	$I_C=20\text{A}$; $I_B=2\text{A}$		2.0	V
$V_{CE(sat)-3}$	Collector-Emitter Saturation Voltage	$I_C=30\text{A}$; $I_B=6\text{A}$		3.0	V
$V_{BE(sat)-1}$	Base-Emitter Saturation Voltage	$I_C=10\text{A}$; $I_B=1\text{A}$		1.7	V
$V_{BE(sat)-2}$	Base-Emitter Saturation Voltage	$I_C=15\text{A}$; $I_B=1.5\text{A}$		1.8	V
$V_{BE(sat)-3}$	Base-Emitter Saturation Voltage	$I_C=20\text{A}$; $I_B=2\text{A}$		2.5	V
$V_{BE(on)-1}$	Base-Emitter On Voltage	$I_C=15\text{A}$; $V_{CE}=2\text{V}$		1.7	V
$V_{BE(on)-2}$	Base-Emitter On Voltage	$I_C=30\text{A}$; $V_{CE}=4\text{V}$		3.0	V
I_{CEO}	Collector Cutoff Current	$V_{CE}=40\text{V}$; $I_B=0$		5.0	mA
I_{CBO}	Collector Cutoff Current	$V_{CB}=40\text{V}$; $I_E=0$		1.0	mA
I_{CEX}	Collector Cutoff Current	$V_{CE}=40\text{V}$; $V_{BE(off)}=1.5\text{V}$ $V_{CE}=40\text{V}$; $V_{BE(off)}=1.5\text{V}$, $T_C=150^{\circ}\text{C}$		1.0 10	mA
I_{EBO}	Emitter Cutoff Current	$V_{EB}=5\text{V}$; $I_C=0$		5.0	mA
h_{FE-1}	DC Current Gain	$I_C=1\text{A}$; $V_{CE}=2\text{V}$	40		
h_{FE-2}	DC Current Gain	$I_C=15\text{A}$; $V_{CE}=2\text{V}$	15	60	
h_{FE-3}	DC Current Gain	$I_C=30\text{A}$; $V_{CE}=4\text{V}$	5		
f_T	Current-Gain—Bandwidth Product	$I_C=1\text{A}$; $V_{CE}=10\text{V}$; $f_{test}=1.0\text{MHz}$	2		MHz

Switching Times

t_r	Rise Time	$V_{CC}=30\text{V}$; $I_C=10\text{A}$; $I_{B1}=-I_{B2}=1\text{A}$		1.0	μs
t_s	Storage Time			2.0	μs
t_f	Fall Time			1.0	μs