

DESCRIPTION

- Low Collector Saturation Voltage-
: $V_{CE(sat)} = -1.0V(\text{Max.}) @ I_C = -15A$
- Wide Area of Safe Operation
- Complement to Type 2N5302

APPLICATIONS

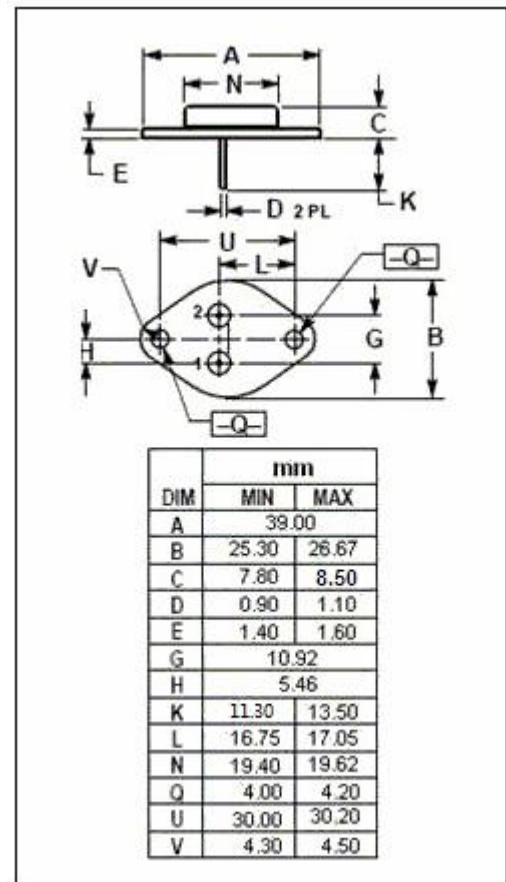
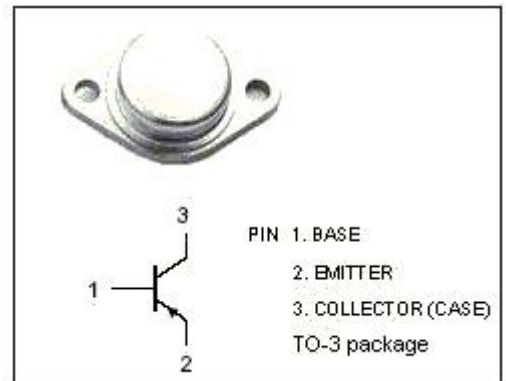
- Designed for use in power amplifier and switching circuits.

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

SYMBOL	PARAMETER	VALUE	UNIT
V_{CBO}	Collector-Base Voltage	-60	V
V_{CEO}	Collector-Emitter Voltage	-60	V
V_{EBO}	Emitter-Base Voltage	-5	V
I_C	Collector Current-Continuous	-30	A
I_{CM}	Collector Current-Peak	-50	A
I_B	Base Current-Continuous	-7.5	A
I_{BM}	Base Current-Peak	-15	A
P_C	Collector Power Dissipation@ $T_a = 25^\circ\text{C}$	5	W
	Collector Power Dissipation@ $T_c = 25^\circ\text{C}$	200	
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	35	$^\circ\text{C/W}$
$R_{th\ j-c}$	Thermal Resistance, Junction to Case	0.875	$^\circ\text{C/W}$



SPTECH Silicon PNP Power Transistors

2N4399

ELECTRICAL CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MIN	MAX	UNIT
$V_{CEO(SUS)}$	Collector-Emitter Sustaining Voltage	$I_C = -50\text{mA}$; $I_B = 0$	-60		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	$I_C = -15\text{A}$; $I_B = -1.5\text{A}$		-1.0	V
$V_{CE(sat)-3}$	Collector-Emitter Saturation Voltage	$I_C = -20\text{A}$; $I_B = -2\text{A}$		-2.0	V
$V_{CE(sat)-4}$	Collector-Emitter Saturation Voltage	$I_C = -30\text{A}$; $I_B = -6\text{A}$		-4.0	V
$V_{BE(sat)-1}$	Base-Emitter Saturation Voltage	$I_C = -10\text{A}$; $I_B = -1\text{A}$		-1.6	V
$V_{BE(sat)-2}$	Base-Emitter Saturation Voltage	$I_C = -15\text{A}$; $I_B = -1.5\text{A}$		-1.85	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	$V_{CE} = -60\text{V}$; $I_B = 0$		-5.0	mA
I_{CBO}	Collector Cutoff Current	$V_{CB} = -60\text{V}$; $I_E = 0$		-1.0	mA
I_{CEX}	Collector Cutoff Current	$V_{CE} = -60\text{V}$; $V_{BE(off)} = -1.5\text{V}$ $V_{CE} = -30\text{V}$; $V_{BE(off)} = -1.5\text{V}$, $T_C = 150^\circ\text{C}$		-5.0 -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	$I_C = -1\text{A}$; $V_{CE} = -10\text{V}$; $f_{test} = 1.0\text{MHz}$	4		MHz

Switching Times

t_r	Rise Time	$V_{CC} = -30\text{V}$; $I_C = -10\text{A}$; $I_{B1} = -I_{B2} = -1\text{A}$		0.4	μs
t_s	Storage Time			1.5	μs
t_f	Fall Time			0.6	μs