



Shantou Huashan Electronic Devices Co.,Ltd.

NPN SILICON TRANSISTOR

HP31A

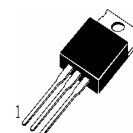
APPLICATIONS

Medium Power Linear switching Applications.

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

T_{stg}	Storage Temperature	-55~150 $^{\circ}\text{C}$
T_j	Junction Temperature	150 $^{\circ}\text{C}$
P_C	Collector Dissipation ($T_c=25^{\circ}\text{C}$)	40W
P_C	Collector Dissipation ($T_a=25^{\circ}\text{C}$)	2W
V_{CBO}	Collector-Base Voltage	60V
V_{CEO}	Collector-Emitter Voltage	60V
V_{EBO}	Emitter-Base Voltage	5V
I_C	Collector Current (DC)	3A
I_C	Collector Current (Pulse)	5A
I_b	Base Current	1A

TO-220



- 1—Base, B
- 2—Collector, C
- 3—Emitter, E

ELECTRICAL CHARACTERISTICS ($T_a=25^{\circ}\text{C}$)

Symbol	Characteristics	Min	Typ	Max	Unit	Test Conditions
BV_{CEO}	Collector-Emitter Breakdown Voltage	60			V	$I_C=30\text{mA}$, $I_B=0$
$H_{\text{FE}}(1)$	*DC Current Gain	25				$V_{\text{CE}}=4\text{V}$, $I_C=1\text{A}$
$H_{\text{FE}}(2)$	*DC Current Gain	10	50			$V_{\text{CE}}=4\text{V}$, $I_C=3\text{A}$
$V_{\text{CE(sat)}}$	*Collector- Emitter Saturation Voltage		1.2		V	$I_C=3\text{A}$, $I_B=375\text{mA}$
$V_{\text{BE(ON)}}$	*Base-Emitter On Voltage		1.8		V	$V_{\text{CE}}=4\text{V}$, $I_C=3\text{A}$
I_{CEO}	Collector Cut-off Current		0.3		mA	$V_{\text{CB}}=30\text{V}$, $I_B=0$
I_{CES}	Collector Cut-off Current		200		μA	$V_{\text{CE}}=60\text{V}$, $V_{\text{EB}}=0$
I_{EBO}	Emitter Cut-off Current		1		mA	$V_{\text{EB}}=5\text{V}$, $I_C=0$
f _T	Current Gain-Bandwidth Product	3.0			MHz	$V_{\text{CE}}=10\text{V}$, $I_C=500\text{mA}$, $f=1\text{MHz}$

*Pulse Test: $PW \leq 300 \mu\text{s}$, Duty cycle $\leq 2\%$



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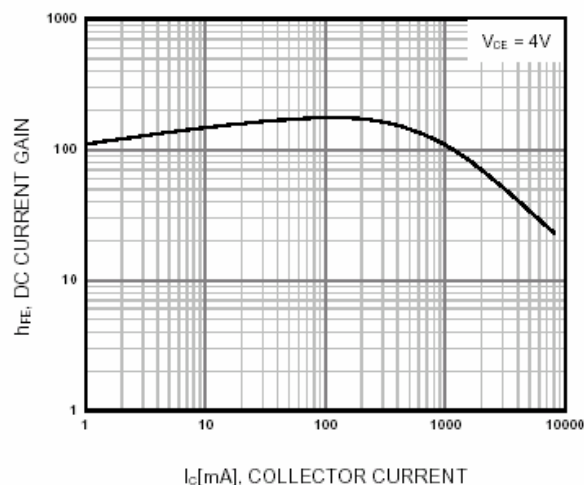


Figure 1. DC current Gain

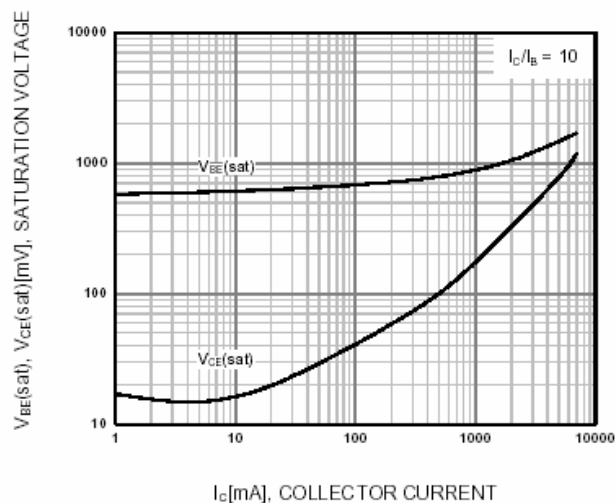


Figure 2. Base-Emitter Saturation Voltage
Collector-Emitter Saturation Voltage

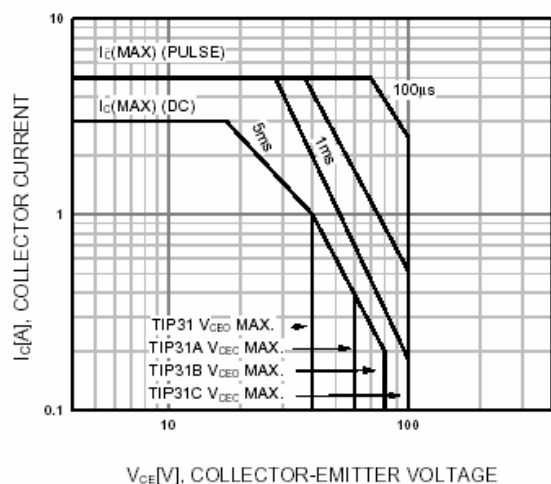


Figure 3. Safe Operating Area

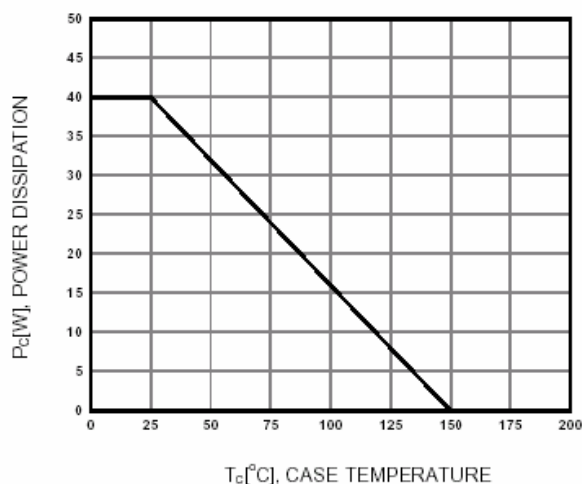


Figure 4. Power Derating