

HIGH-VOLTAGE HIGH POWER TRANSISTORS

... designed for use in high power amplifier, and switching application.

FEATURES:

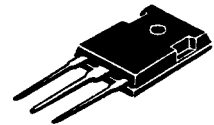
- * High Power Dissipation
 $P_D = 200W(T_C = 25^\circ C)$
- * High Collector Current- $I_C = 25A(DC)$
- * High Speed Switching - $t_r = 0.5 \mu s(Typ) @ I_C = 15A$
- * Low Saturation Voltage- $V_{CE(sat)} = 1.0V(Max) @ I_C = 15A$

NPN
2SD1313

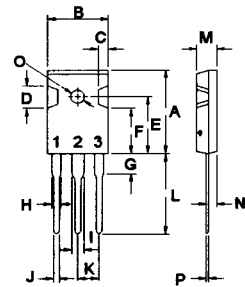
25 AMPERE
POWER
TRANSISTORS
350 VOLTS
200 WATTS

MAXIMUM RATINGS

Characteristic	Symbol	2SD1313	Unit
Collector-Emitter Voltage	V_{CEO}	350	V
Collector-Base Voltage	V_{CBO}	800	V
Emitter-Base Voltage	V_{EBO}	7.0	V
Collector Current - Continuous	I_C	25	A
Base Current	I_B	10	A
Total Power Dissipation @ $T_C = 25^\circ C$ Derate above $25^\circ C$	P_D	200 1.6	W W/ $^\circ C$
Operating and Storage Junction Temperature Range	T_J, T_{STG}	-55 to +150	$^\circ C$



TO-247(3P)



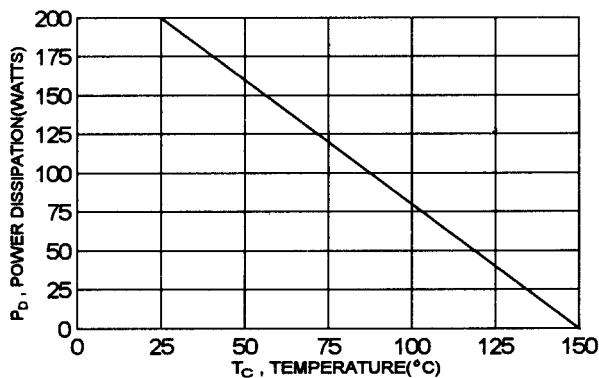
PIN 1.BASE
2.COLLECTOR
3.EMITTER

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance Junction to Case	$R_{\theta jc}$	0.625	$^\circ C/W$

DIM	MILLIMETERS	
	MIN	MAX
A	20.63	22.38
B	15.38	16.20
C	1.90	2.70
D	5.10	6.10
E	14.81	15.22
F	11.72	12.84
G	4.20	4.50
H	1.82	2.46
I	2.92	3.23
J	0.89	1.53
K	5.26	5.66
L	18.50	21.50
M	4.68	5.36
N	2.40	2.80
O	3.25	3.65
P	0.55	0.70

FIGURE -1 POWER DERATING



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

Characteristic	Symbol	Min	Max	Unit
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OFF CHARACTERISTICS

Collector-Emitter Breakdown Voltage ($I_C = 10\text{ mA}$, $I_B = 0$)	$V_{(BR)CEO}$	350		V
Collector Cutoff Current ($V_{CB} = 800\text{ V}$, $I_E = 0$)	I_{CBO}		1.0	mA
Emitter Cutoff Current ($V_{EB} = 7.0\text{ V}$, $I_C = 0$)	I_{EBO}		1.0	mA

ON CHARACTERISTICS (1)

DC Current Gain ($I_C = 1.0\text{ A}$, $V_{CE} = 5.0\text{ V}$) ($I_C = 25\text{ A}$, $V_{CE} = 5.0\text{ V}$)	hFE	15 4.0		
Collector-Emitter Saturation Voltage ($I_C = 15\text{ A}$, $I_B = 3.0\text{ A}$)	$V_{CE(sat)}$		1.0	V
Base-Emitter Saturation Voltage ($I_C = 15\text{ A}$, $I_B = 3.0\text{ A}$)	$V_{BE(sat)}$		1.7	V

DYNAMIC CHARACTERISTICS

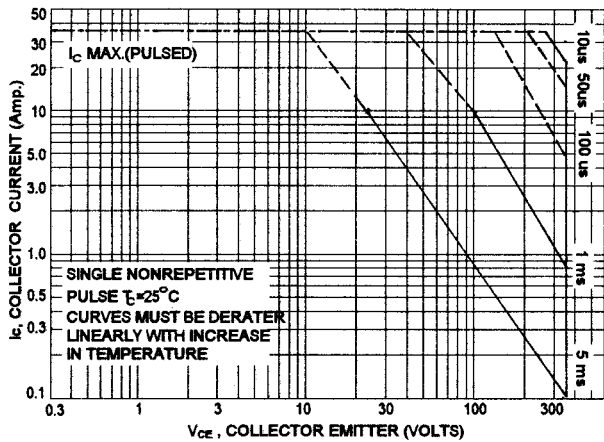
Current-Gain-Bandwidth Product ($I_C = 1.0\text{ A}$, $V_{CE} = 10\text{ V}$, $f = 1.0\text{ MHz}$)	f_T	5.0(typ)		MHz
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SWITCHING CHARACTERISTICS

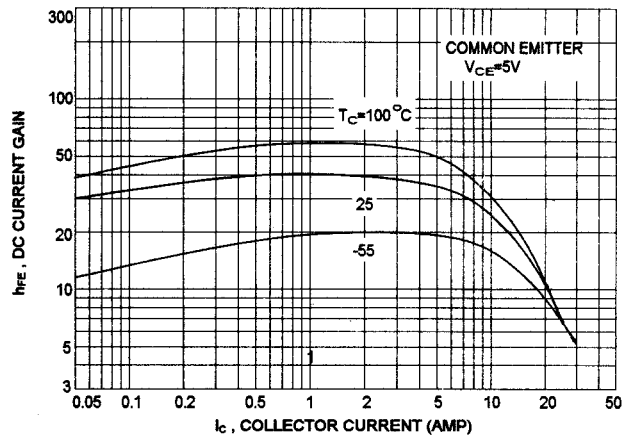
Turn-on Time	$V_{CC} = 200\text{ V}$, $I_C = 10\text{ A}$ $I_{B1} = -I_{B2} = 2.0\text{ A}$ $PW = 20\text{ us}$	t_{on}	1.0	us
Storage Time		t_s	4.0	us
Fall Time		t_f	0.8	us

(1) Pulse Test: Pulse Width = 300 us, Duty Cycle $\leq 2.0\%$

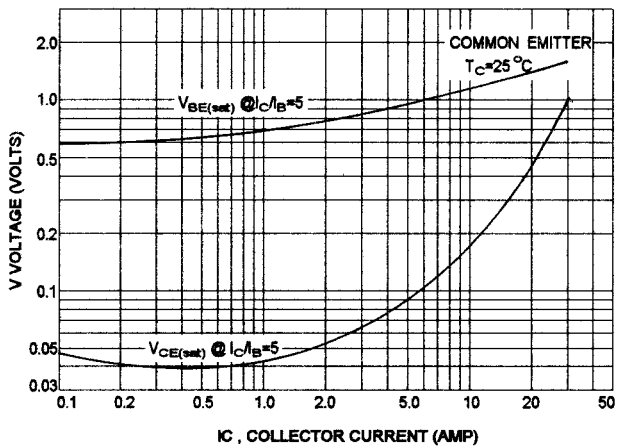
ACTIVE REGION SAFE OPERATING AREA



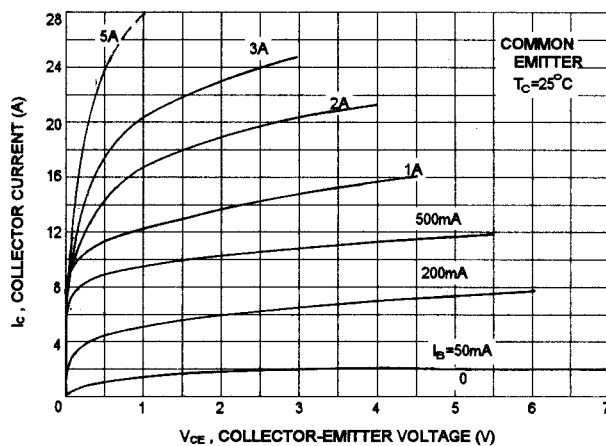
DC CURRENT GAIN



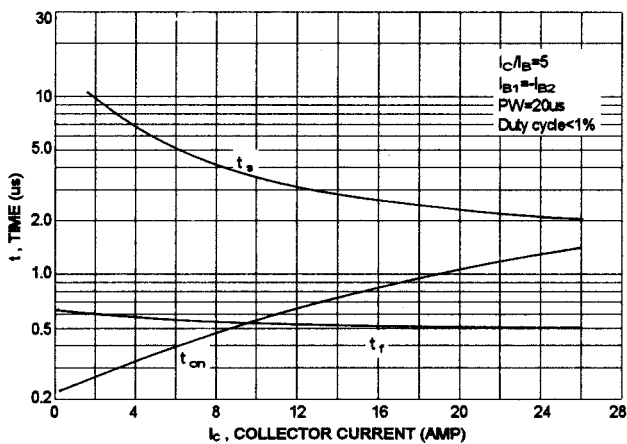
"ON" VOLTAGES



$I_C - V_{CE}$



SWITCHING TIME



$I_C - V_{BE}$

