

COMPLEMENTARY MEDIUM-POWER HIGH VOLTAGE

POWER TRANSISTORS

... designed for high-speed switching and linear amplifier application for high-voltage operational amplifiers, switching regulators, convertors, deflection stages and high fidelity amplifiers.

FEATURES:

- * Continuous Collector Current - $I_C = 2 \text{ A}$
- * Power Dissipation - $P_D = 35 \text{ W}$ @ $T_C = 25^\circ\text{C}$
- * $V_{CE(SAT)} = 0.75 \text{ V (Max.)}$ @ $I_C = 1.0 \text{ A}$, $I_B = 125 \text{ mA}$

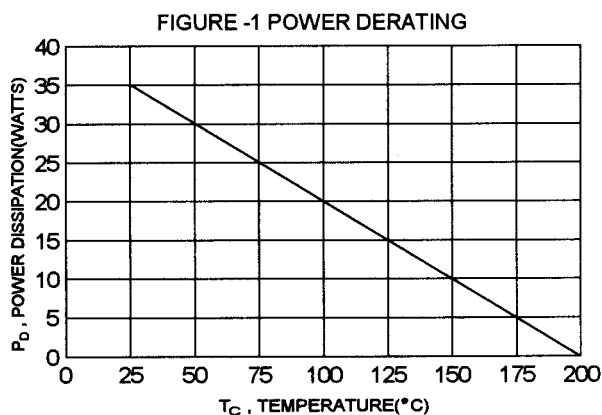
Boca Semiconductor Corp.

MAXIMUM RATINGS

Characteristic	Symbol	2N3583 2N6420	2N3584 2N6421	2N3585 2N6422	2N4240 2N6423	Unit
Collector-Emitter Voltage	V _{CEO}	175	250	300	300	V
Collector-Base Voltage	V _{CBO}	250	375	500	500	V
Emitter-Base Voltage	V _{EBO}	6				V
Collector Current-Continuous Peak	I _C	1.0 5.0	2.0 5.0			A
Base Current	I _B	1.0				A
Total Power Dissipation @T _C =25°C Derate above 25°C	P _D	35 0.2				W W/°C
Operating and Storage Junction Temperature Range	T _J , T _{STG}	-65 to +200				°C

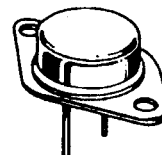
THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance Junction to Case	$R_{\theta jc}$	5.0	$^\circ\text{C/W}$

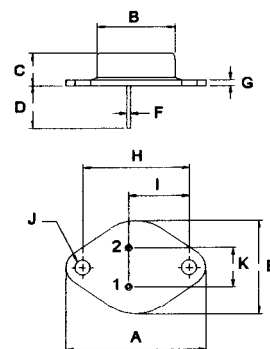


NPN	PNP
2N3583	2N6420
2N3584	2N6421
2N3585	2N6422
2N4240	2N6423

1.0 AND 2.0 AMPERE
POWER TRANSISTOR
COMPLEMENTARY SILICON
175-300 VOLTS
35 WATTS



TO-66



PIN 1.BASE
2.EMITTER
COLLECTOR (CASE)

DIM	MILLIMETERS	
	MIN	MAX
A	30.60	32.52
B	13.85	14.16
C	6.54	7.22
D	9.50	10.50
E	17.26	18.46
F	0.76	0.92
G	1.38	1.65
H	24.16	24.78
I	13.84	15.60
J	3.32	3.92
K	4.86	5.34

2N3583 thru 2N3585,2N4240 NPN / 2N6420 thru 2N6423 PNP

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

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector - Emitter Sustaining Voltage (1) ($I_C = 200\text{ mA}$, $I_B = 0$) NPN ($I_C = 50\text{ mA}$, $I_B = 0$) PNP	$V_{CE(sus)}$	175 250 300 300		V
Collector Cutoff Current ($V_{CE} = 150\text{ V}$, $I_B = 0$)	I_{CEO}		10 5.0 5.0 5.0	mA
Collector Cutoff Current ($V_{CE} = 225\text{ V}$, $V_{BE(off)} = 1.5\text{ V}$) ($V_{CE} = 340\text{ V}$, $V_{BE(off)} = 1.5\text{ V}$) ($V_{CE} = 450\text{ V}$, $V_{BE(off)} = 1.5\text{ V}$) ($V_{CE} = 225\text{ V}$, $V_{BE(off)} = 1.5\text{ V}$, $T_C = 150^\circ\text{C}$) ($V_{CE} = 300\text{ V}$, $V_{BE(off)} = 1.5\text{ V}$, $T_C = 150^\circ\text{C}$)	I_{CEX}		1.0 1.0 1.0 2.0 3.0 3.0 3.0 5.0	mA
Emitter Cutoff Current ($V_{EB} = 6.0\text{ V}$, $I_C = 0$)	I_{EBO}		5.0 0.5 0.5 0.5	mA

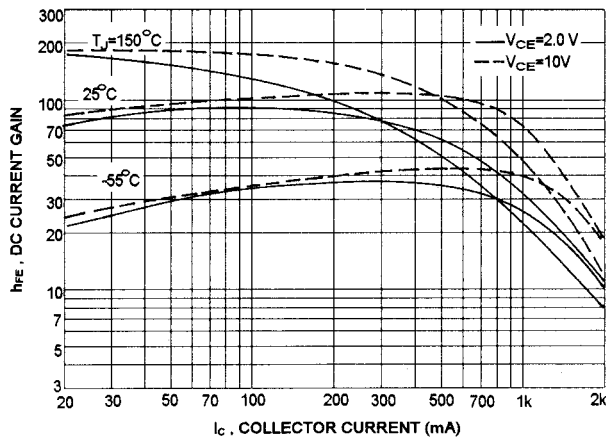
ON CHARACTERISTICS (1)

DC Current Gain ($I_C = 0.1\text{ A}$, $V_{CE} = 10\text{ V}$) ($I_C = 0.5\text{ A}$, $V_{CE} = 10\text{ V}$) ($I_C = 0.75\text{ A}$, $V_{CE} = 2.0\text{ V}$) ($I_C = 0.75\text{ A}$, $V_{CE} = 10\text{ V}$) ($I_C = 1.0\text{ A}$, $V_{CE} = 2.0\text{ V}$) ($I_C = 1.0\text{ A}$, $V_{CE} = 10\text{ V}$)	All devices 2N3583,2N6420 2N4240,2N6423 2N4240,2N6423 2N3584,2N6421 2N3585,2N6422 2N3583,2N6420 2N3584,2N6421 2N3585,2N6422	h_{FE}	40 40 10 30 8.0 8.0 10 25 25	200 100 150 80 80 100 100	
Collector - Emitter Saturation Voltage ($I_C = 0.75\text{ A}$, $I_B = 75\text{ mA}$) ($I_C = 1.0\text{ A}$, $I_B = 125\text{ mA}$)	2N4240,2N6423 2N3583,2N6420 2N3584,2N6421 2N3585,2N6422	$V_{CE(sat)}$		1.0 5.0 0.75 0.75	V
Base - Emitter Saturation Voltage ($I_C = 0.75\text{ A}$, $I_B = 75\text{ mA}$) ($I_C = 1.0\text{ A}$, $I_B = 100\text{ mA}$)	2N4240,2N6423 2N3584,2N6421 2N3585,2N6422	$V_{BE(sat)}$		1.8 1.4 1.4	V
Base - Emitter On Voltage ($I_C = 1.0\text{ A}$, $V_{CE} = 10\text{ V}$)	All devices	$V_{BE(on)}$		1.4	V

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

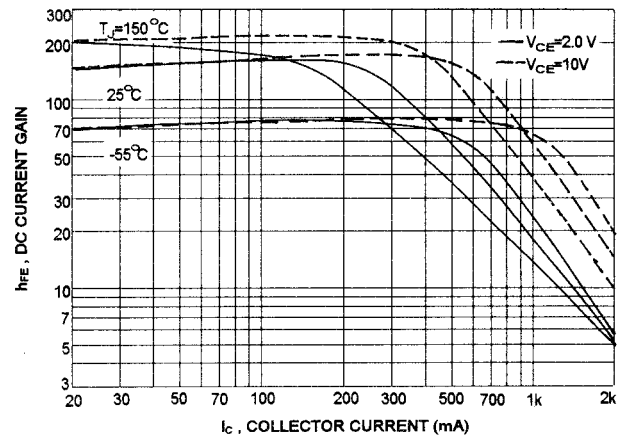
2N3583 thru 2N3585,2N4240

DC CURRENT GAIN

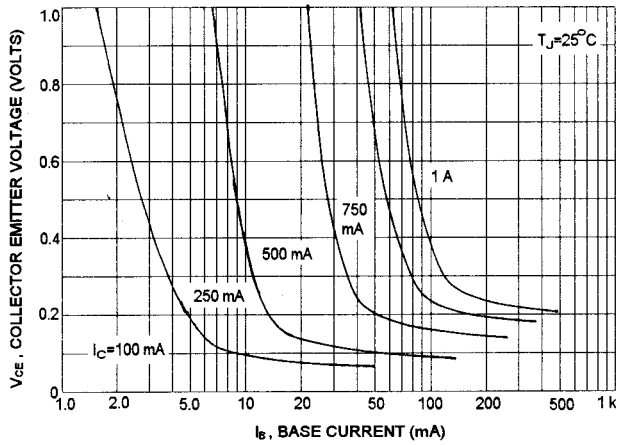


2N6420 thru 2N6423

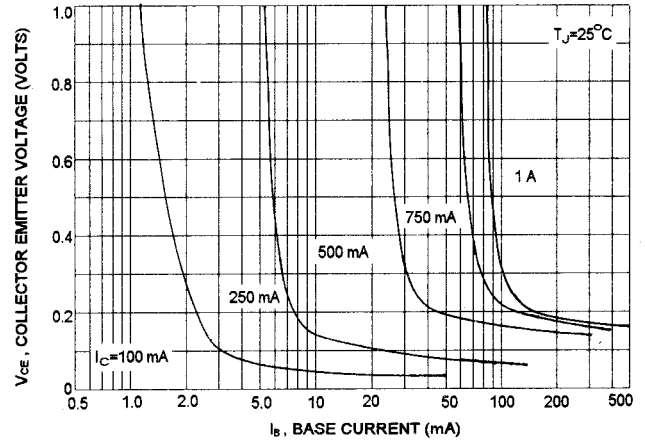
DC CURRENT GAIN



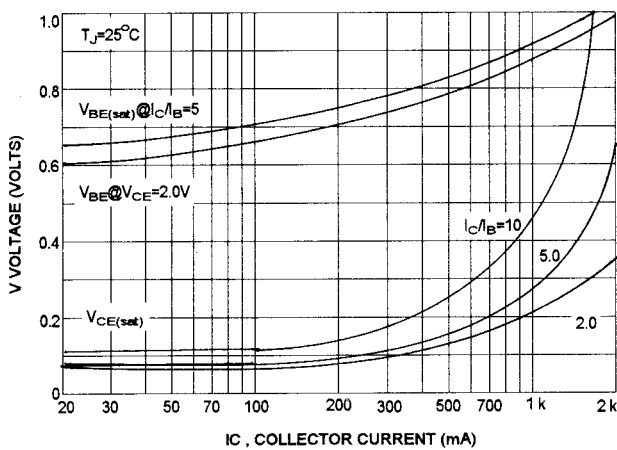
COLLECTOR SATURATION REGION



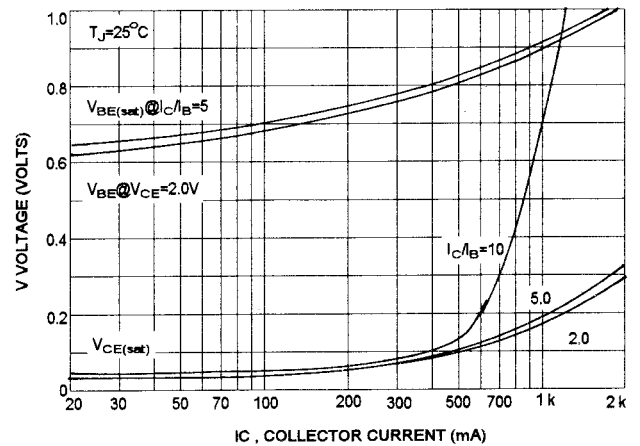
COLLECTOR SATURATION REGION



"ON" VOLTAGES

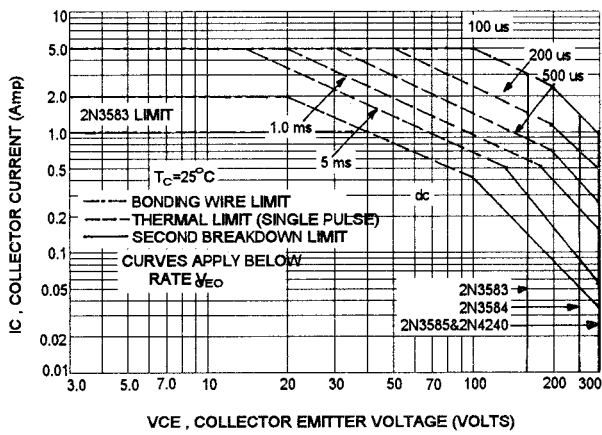


"ON" VOLTAGES



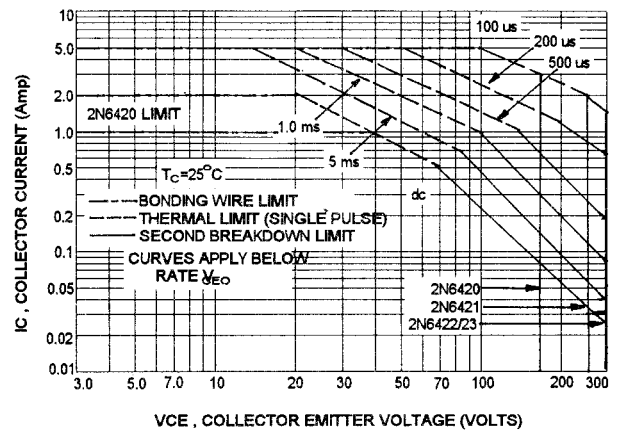
2N3583 thru 2N3585, 2N4240

ACTIVE REGION SAFE OPERATING AREA

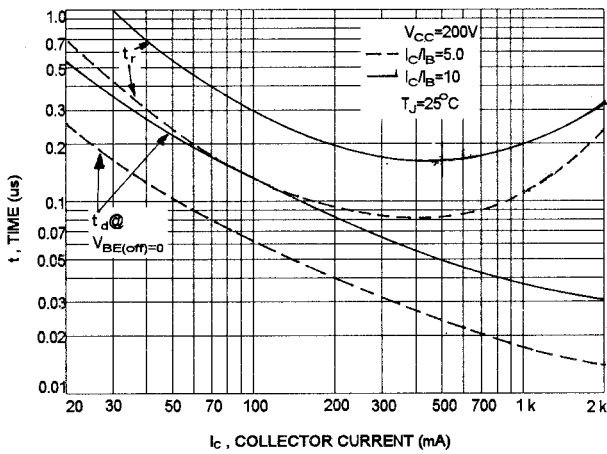


2N6420 thru 2N6423

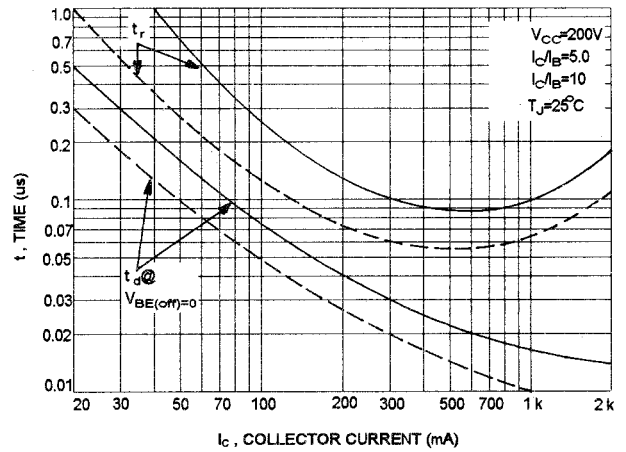
ACTIVE REGION SAFE OPERATING AREA



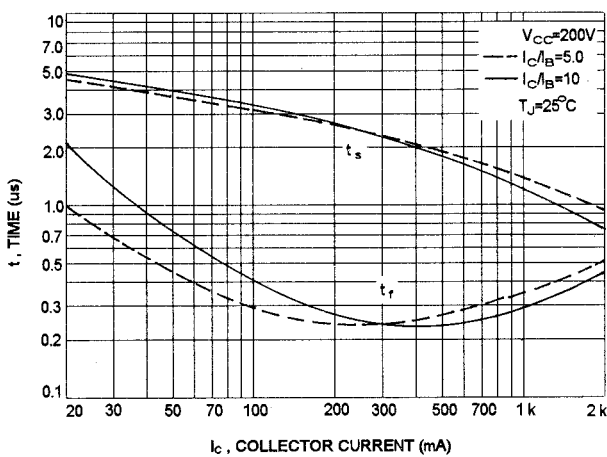
TURN-ON TIME



TURN-ON TIME



TURN-OFF TIME



TURN-OFF TIME

