

**COMPLEMENTARY MEDIUM-VOLTAGE
POWER TRANSISTORS**

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

FEATURES:

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

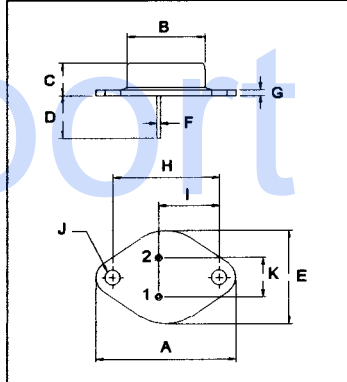
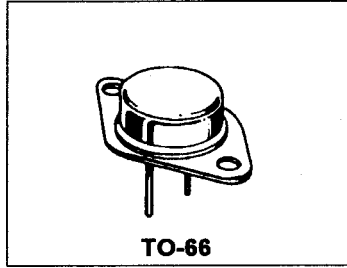
Boca Semiconductor Corp.

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

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 @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	35 0.2				W W/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_J, T_{STG}	-65 to +200				$^\circ\text{C}$

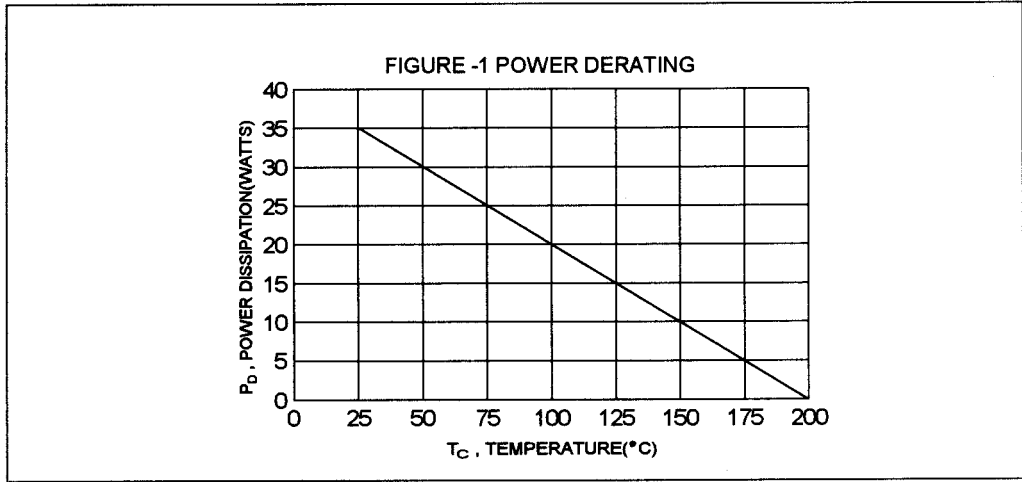


PIN 1. BASE
2. EMITTER
COLLECTOR (CASE)

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

THERMAL CHARACTERISTICS

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



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 2N3583,2N6420 2N3584,2N6421 ($I_C = 50\text{ mA}$, $I_B = 0$) PNP 2N3585,2N6422 2N4240,2N6423	$V_{CE(sus)}$	175 250 300 300		V
Collector Cutoff Current ($V_{CE} = 150\text{ V}$, $I_B = 0$) 2N3583,2N6420 2N3584,2N6421 2N3585,2N6422 2N4240,2N6423	I_{CEO}		10 5.0 5.0 5.0	mA
Collector Cutoff Current ($V_{CE} = 225\text{ V}$, $V_{BE(off)} = 1.5\text{ V}$) ($V_{CE} = 340\text{ V}$, $V_{BE(off)} = 1.5\text{ V}$) ($V_{CE} = 450\text{ V}$, $V_{BE(off)} = 1.5\text{ V}$) 2N3583,2N6420 2N3584,2N6421 2N3585,2N6422 2N4240,2N6423 ($V_{CE} = 225\text{ V}$, $V_{BE(off)} = 1.5\text{ V}$, $T_C = 150^\circ\text{C}$) ($V_{CE} = 300\text{ V}$, $V_{BE(off)} = 1.5\text{ V}$, $T_C = 150^\circ\text{C}$) 2N3583,2N6420 2N3584,2N6421 2N3585,2N6422 2N4240,2N6423	I_{CEX}		1.0 1.0 1.0 2.0 3.0 3.0 3.0 5.0	mA
Emitter Cutoff Current ($V_{EB} = 6.0\text{ V}$, $I_C = 0$) 2N3583,2N6420 2N3584,2N6421 2N3585,2N6422 2N4240,2N6423	I_{EBO}		5.0 0.5 0.5 0.5	mA

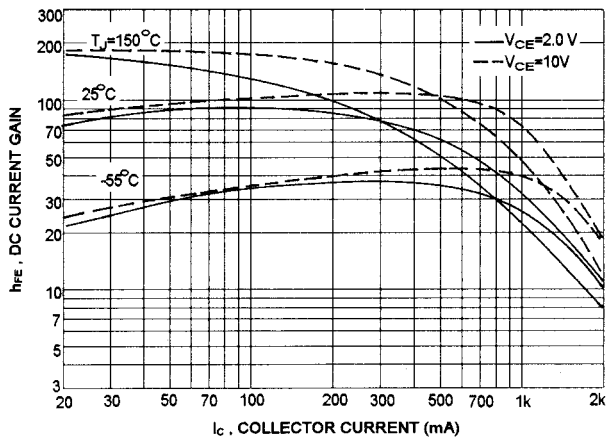
ON CHARACTERISTICS (1)

DC Current Gain ($I_C = 0.1\text{ A}$, $V_{CE} = 10\text{ V}$) ($I_C = 0.5\text{ A}$, $V_{CE} = 10\text{ V}$) ($I_C = 0.75\text{ A}$, $V_{CE} = 2.0\text{ V}$) ($I_C = 0.75\text{ A}$, $V_{CE} = 10\text{ V}$) ($I_C = 1.0\text{ A}$, $V_{CE} = 2.0\text{ V}$) 2N3583,2N6420 2N3584,2N6421 2N3585,2N6422 2N4240,2N6423 2N3583,2N6420 2N3584,2N6421 2N3585,2N6422	hFE	40 40 10 30 8.0 8.0	200 100 150 80 80	
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 us , Duty Cycle $\leq 2.0\%$

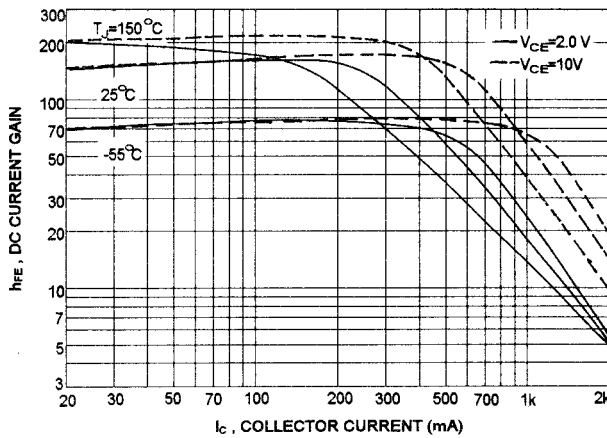
2N3583 thru 2N3585,2N4240

DC CURRENT GAIN

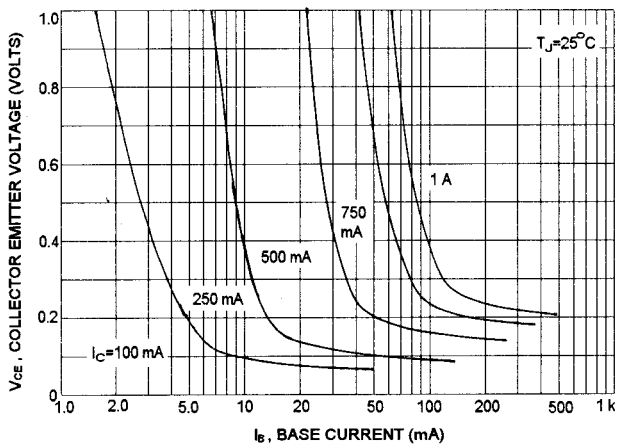


2N6420 thru 2N6423

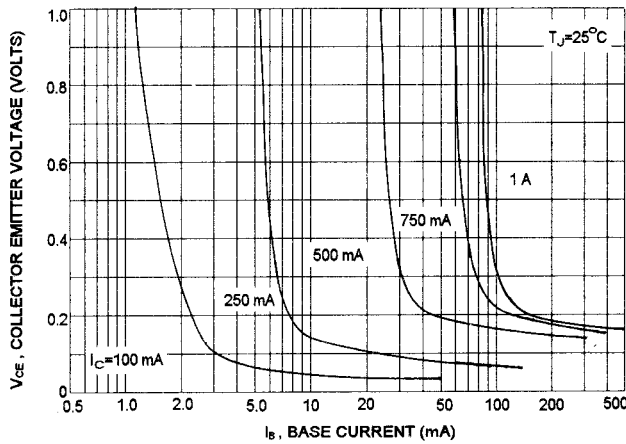
DC CURRENT GAIN



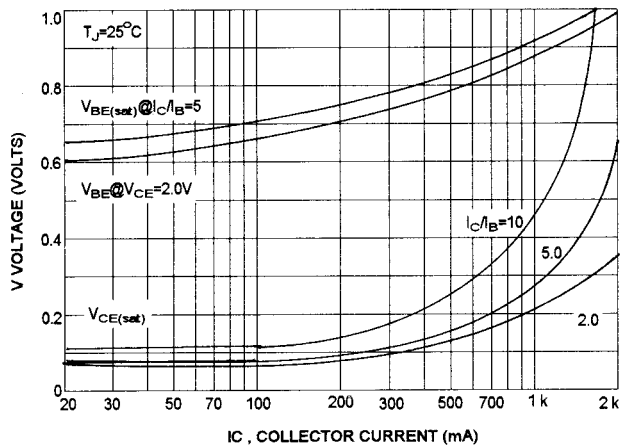
COLLECTOR SATURATION REGION



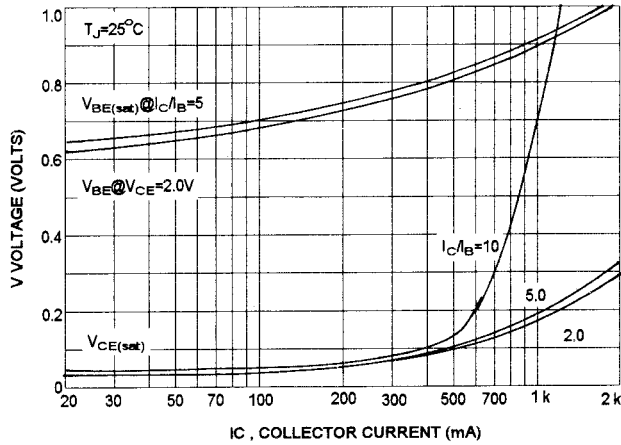
COLLECTOR SATURATION REGION



"ON" VOLTAGES



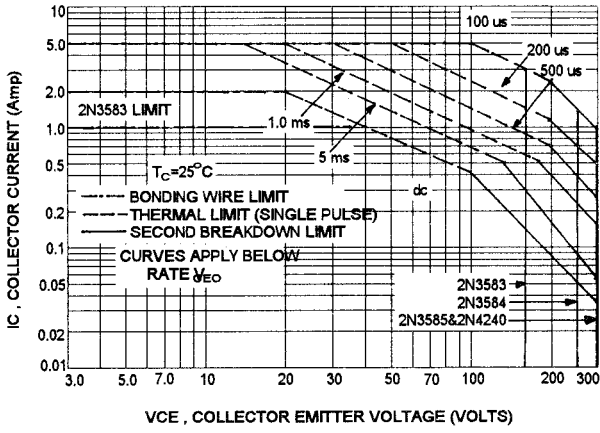
"ON" VOLTAGES



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

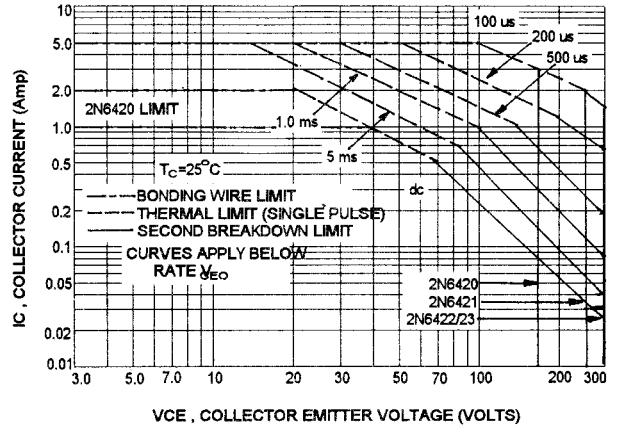
2N3583 thru 2N3585, 2N4240

ACTIVE REGION SAFE OPERATING AREA

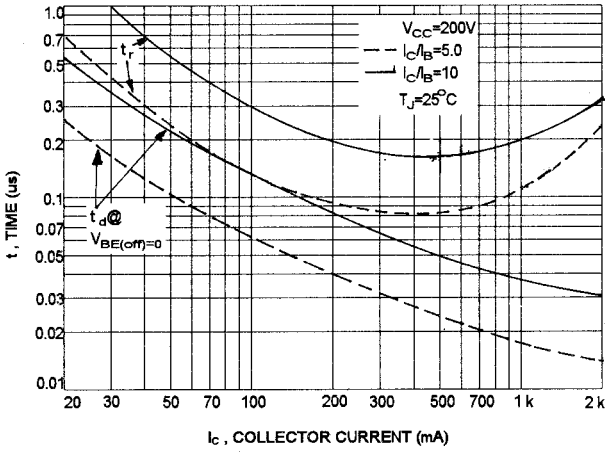


2N6420 thru 2N6423

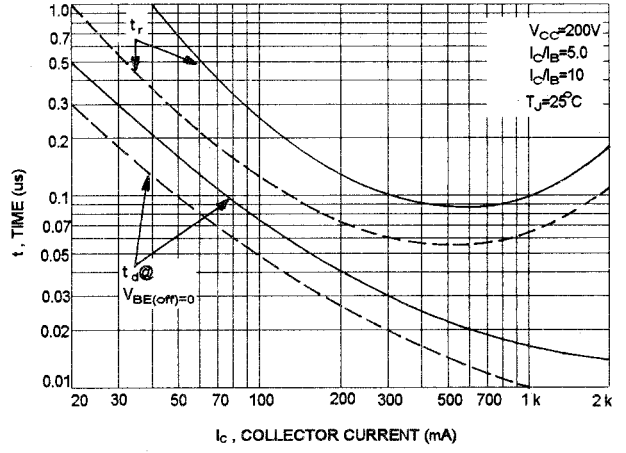
ACTIVE REGION SAFE OPERATING AREA



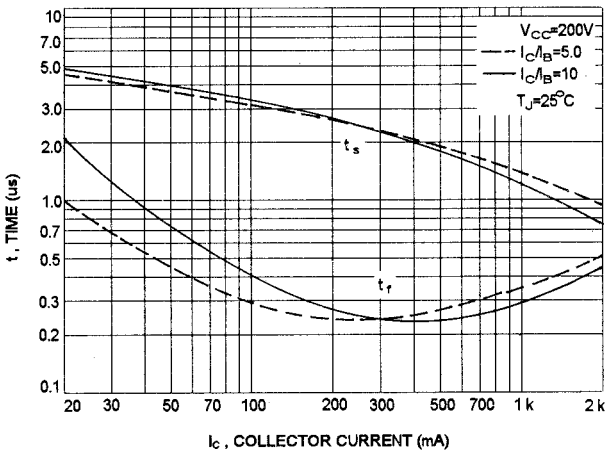
TURN-ON TIME



TURN-ON TIME



TURN-OFF TIME



TURN-OFF TIME

