

**COMPLEMENTARY MEDIUM-POWER HIGH 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:**

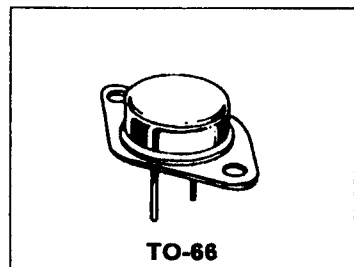
- \* Continuous Collector Current -  $I_C = 2$  A
- \* Power Dissipation -  $P_D = 35$  W @  $T_C = 25^\circ\text{C}$
- \*  $V_{CE(SAT)} = 0.75$  V (Max.) @  $I_C = 1.0$  A,  $I_B = 125$  mA

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

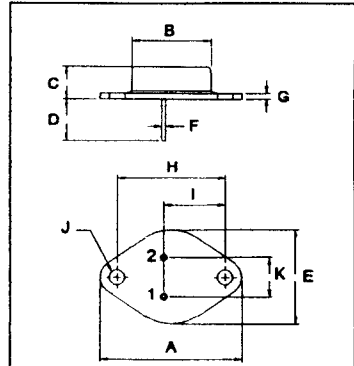
**MAXIMUM RATINGS**

Characteristic	Symbol	2N3583	2N3584	2N3585	2N4240	Unit
		2N6420	2N6421	2N6422	2N6423	
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	2.0		A	
		5.0	5.0			
Base Current	$I_B$	1.0				A
Total Power Dissipation @ $T_C = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	35				W
		0.2				
Operating and Storage Junction Temperature Range	$T_J, T_{STG}$	-65 to +200				$^\circ\text{C}$



**THERMAL CHARACTERISTICS**

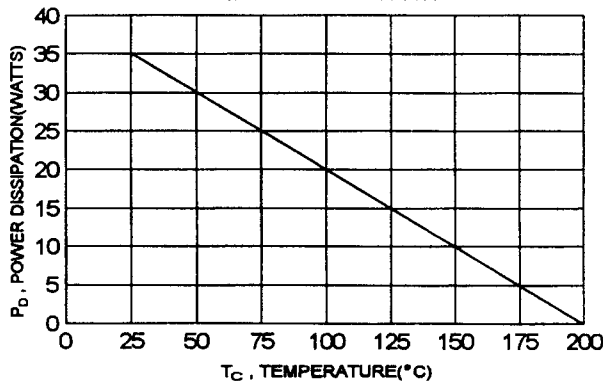
Characteristic	Symbol	Max	Unit
Thermal Resistance Junction to Case	$R_{\theta jc}$	5.0	$^\circ\text{C}/\text{W}$



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

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 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

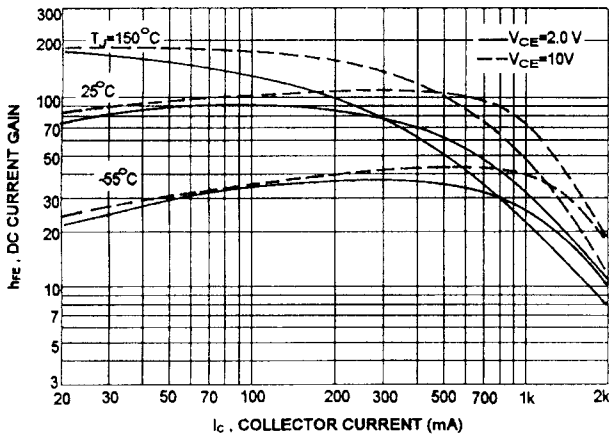
## ON CHARACTERISTICS (1)

DC Current Gain ( $I_C = 0.1\text{ A}$ , $V_{CE} = 10\text{ V}$ ) ( $I_C = 0.5\text{ A}$ , $V_{CE} = 10\text{ V}$ ) ( $I_C = 0.75\text{ A}$ , $V_{CE} = 2.0\text{ V}$ ) ( $I_C = 0.75\text{ A}$ , $V_{CE} = 10\text{ V}$ ) ( $I_C = 1.0\text{ A}$ , $V_{CE} = 2.0\text{ V}$ ) All devices 2N3583,2N6420 2N4240,2N6423 2N4240,2N6423 2N3584,2N6421 2N3585,2N6422 2N3583,2N6420 2N3C84,2N6421 2N3585,2N6422	hFE	40 40 10 30 8.0 8.0 10 25 25	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

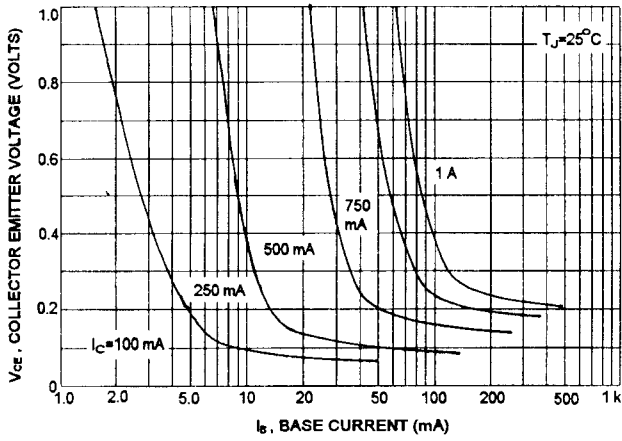
(1) Pulse Test: Pulse width = 300 us, Duty Cycle  $\leq$  2.0%

2N3583 thru 2N3585,2N4240

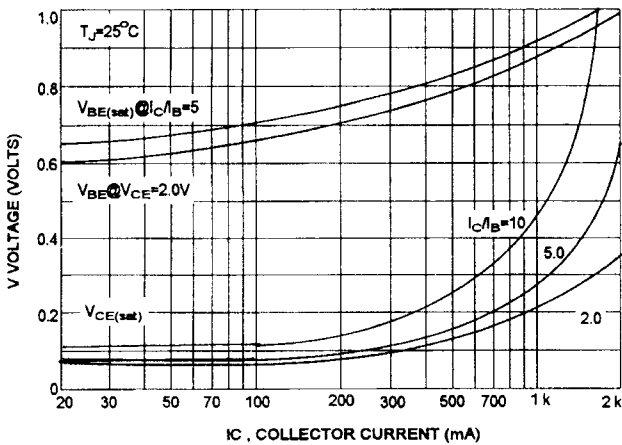
DC CURRENT GAIN



COLLECTOR SATURATION REGION

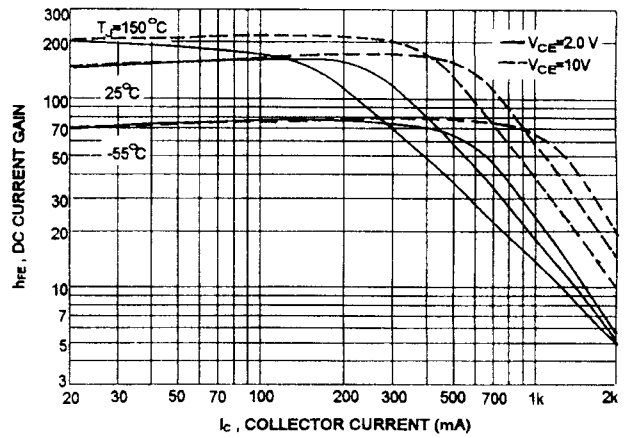


"ON" VOLTAGES

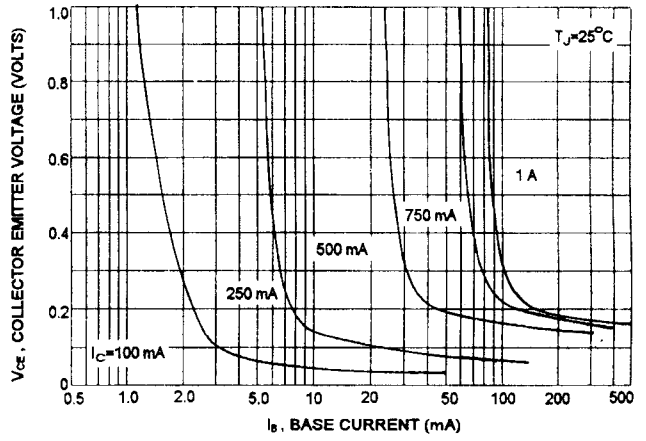


2N6420 thru 2N6423

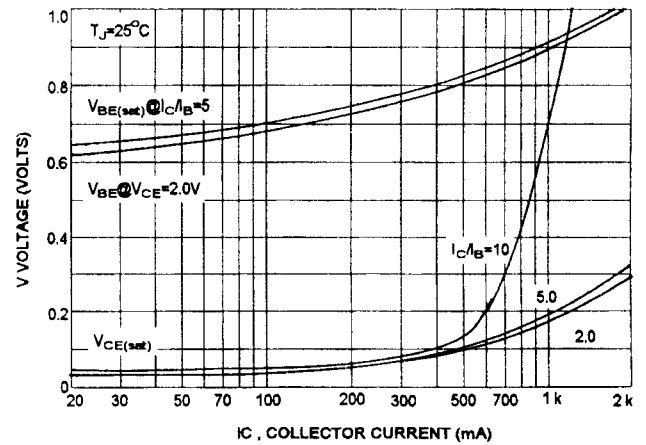
DC CURRENT GAIN



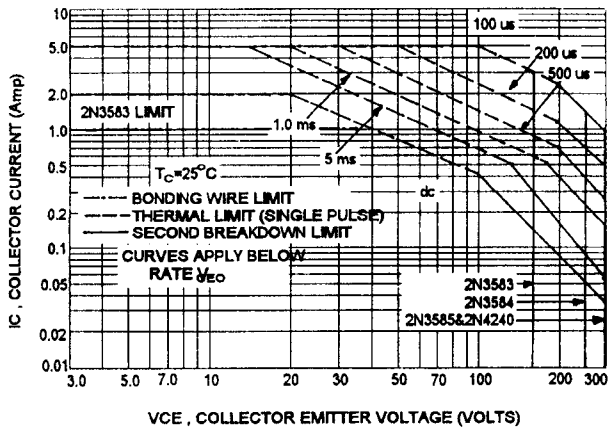
COLLECTOR SATURATION REGION



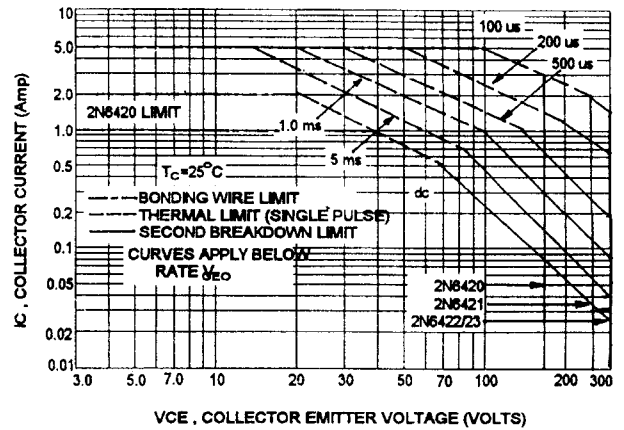
"ON" VOLTAGES



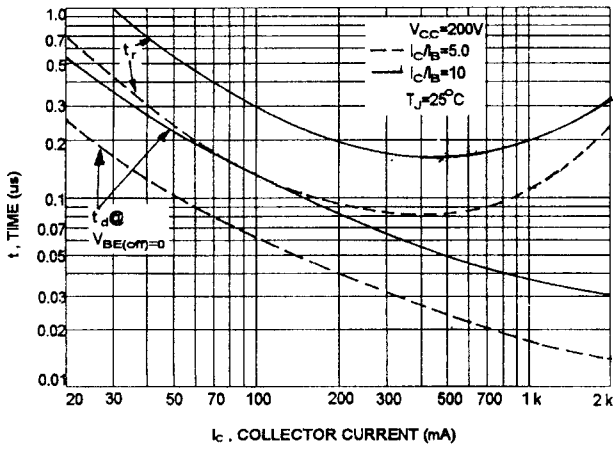
2N3583 thru 2N3585, 2N4240  
ACTIVE REGION SAFE OPERATING AREA



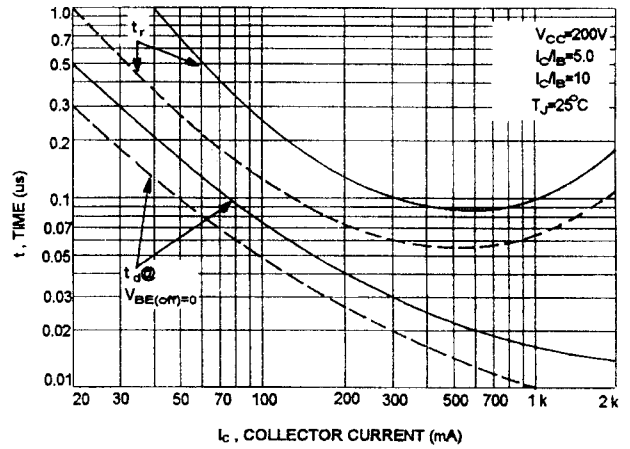
2N6420 thru 2N6423  
ACTIVE REGION SAFE OPERATING AREA



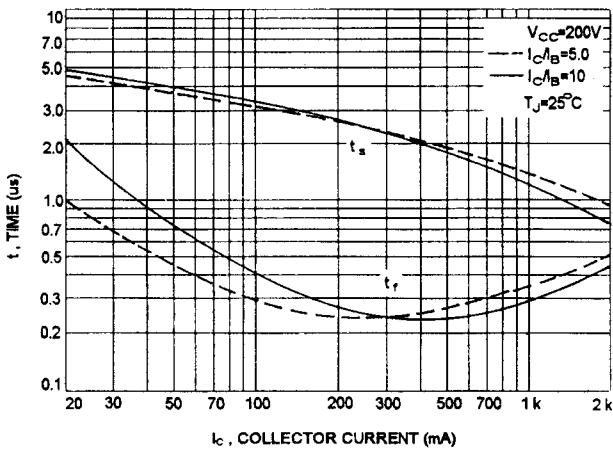
TURN-ON TIME



TURN-ON TIME



TURN-OFF TIME



TURN-OFF TIME

