MOSPEC

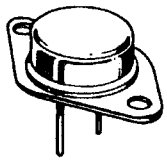
SILICON NPN POWER TRANSISITORS

... designed for medium-speed switching and amplifier applications

FEATURES
* Gain Ranged Specified at 1A and 3A.
* Low $V_{CE(sat)}$: typically 0.5 V @ I_C=5 A , I_B=0.5A
* Excellent Safe Operating Areas
* Complementary PNP Types Available 2N3789 thru 2N3792

NPN
2N3713
Thru
2N3716

10 AMPERE
POWER TRANSISTORS
NPN SILICON
60-80 VOLTS
150 WATTS



TO-3

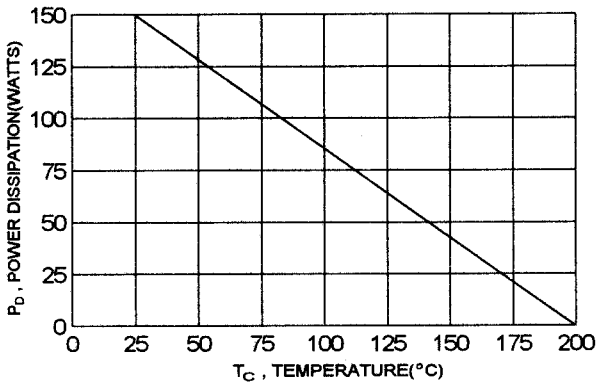
MAXIMUM RATINGS

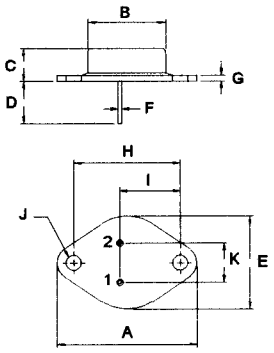
Characteristic	Symbol	2N3713 2N3715	2N3714 2N3716	Unit
Collector-Base Voltage	V_{CBO}	80	100	V
Collector-Emitter Voltage	V_{CEO}	60	80	V
Emitter-Base Voltage	V_{EBO}	7		V
Collector Current - Continuous	I_C	10		A
Base Current-Continuous	I_B	4		A
Total Power Dissipation @T_C=25°C Derate above 25°C	P_D	150 0.857		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	Rθjc	1.17	°C/W

FIGURE -1 POWER DERATING





PIN 1.BASE
2.EMITTER
COLLECTOR(CASE)

DIM	MILLIMETERS	
	MIN	MAX
A	38.75	39.96
B	19.28	22.23
C	7.96	9.28
D	11.18	12.19
E	25.20	26.67
F	0.92	1.09
G	1.38	1.62
H	29.90	30.40
I	16.64	17.30
J	3.88	4.36
K	10.67	11.18

ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise noted)

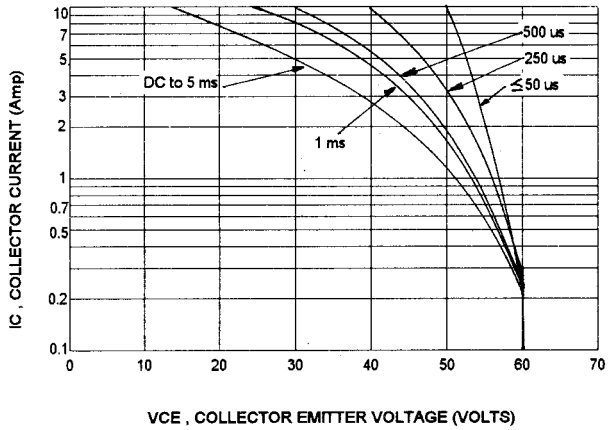
Characteristic		Symbol	Min	Max	Unit
OFF CHARACTERISTICS					
Collector-Emitter Sustaining Voltage (1) (I_C= 200 mA, I_B= 0)	2N3713, 2N3715 2N3714, 2N3716	$V_{CEO\ (sus)}$	60 80		V
Collector -Emitter Cutoff Current (V_{CE}= 80 V, $V_{BE(off)}$ = -1.5V) (V_{CE}= 100 V, $V_{BE(off)}$ = -1.5V) (V_{CE}= 60 V, $V_{BE(off)}$= -1.5V,T_C= 150°C) (V_{CE}= 80 V, $V_{BE(off)}$= -1.5V,T_C= 150°C)	 2N3713, 2N3715 2N3714, 2N3716 2N3713, 2N3715 2N3714, 2N3716	I_{CEX}		 1.0 1.0 10 10	mA
Emitter Cutoff Current (V_{EB}= 7.0 V, I_C =0)	All Types	I_{EBO}		5.0	mA
ON CHARACTERISTICS (1)					
DC Current Gain (I_C= 1.0 A, V_{CE}= 2.0 V) (I_C= 3.0 A, V_{CE}= 2.0 V)	 2N3713, 2N3714 2N3715, 2N3716 2N3713, 2N3714 2N3715, 2N3716	hFE	 25 50 15 30	 90 180	
Collector-Emitter Saturation Voltage (I_C= 5.0 A, I_B= 0.5 A)	 2N3713, 2N3714 2N3715, 2N3716	$V_{CE(sat)}$		 1.0 0.8	V
Base-Emitter Saturation Voltage (I_C= 5.0 A, I_B= 0.5 A)	 2N3713, 2N3714 2N3715, 2N3716	$V_{BE(sat)}$		 2.0 1.5	V
Base-Emitter On Voltage (I_C= 3.0 A, V_{CE}= 2.0 V)	All Types	$V_{BE(on)}$		1.5	V
DYNAMIC CHARACTERISTICS					
Current-Gain Bandwidth Product (I_C= 500 mA,V_{CE}= 10 V, f = 1MHz)		f_T	4.0		MHz

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

(2) $f_T = |h_{fe}| \cdot f_{test}$

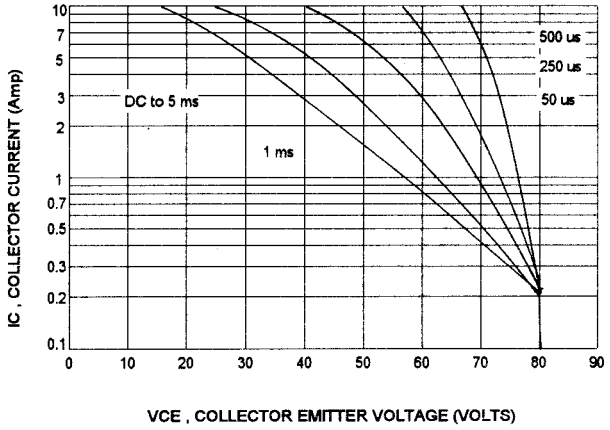
2N3713,2N3715

ACTIVE REGION SAFE OPERATING AREA

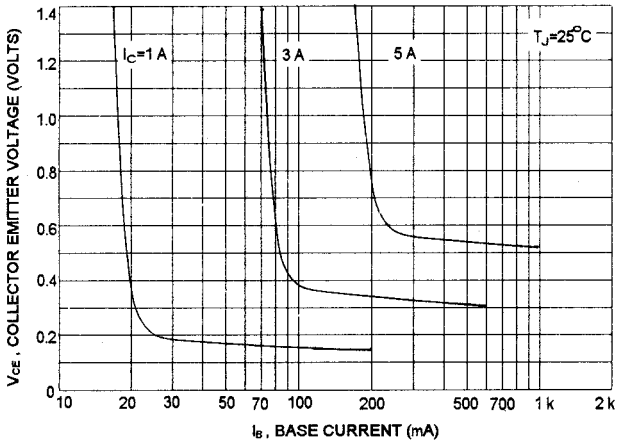


2N3714,2N3716

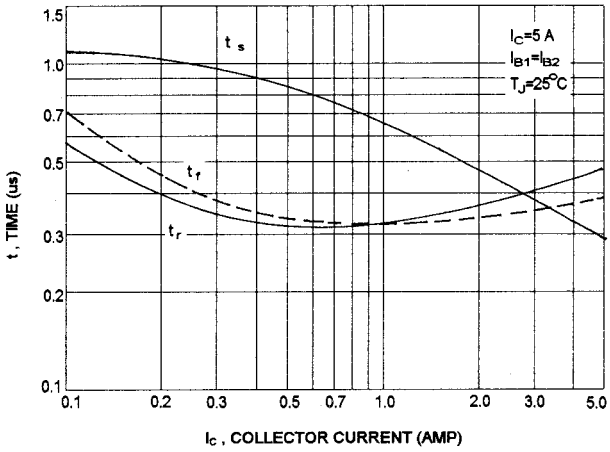
ACTIVE REGION SAFE OPERATING AREA



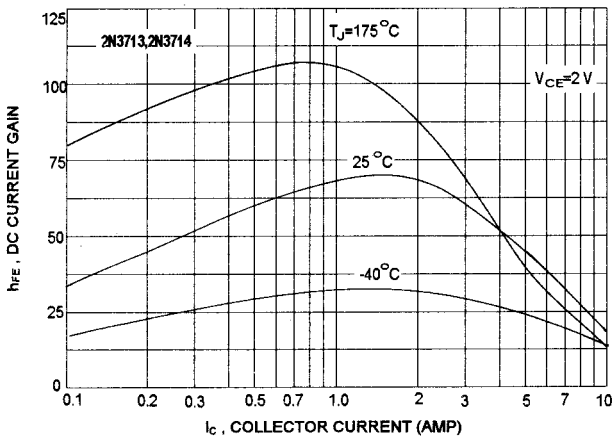
COLLECTOR SATURATION REGION



TYPICAL SWITCHING TIME



DC CURRENT GAIN



DC CURRENT GAIN