MOSPEC

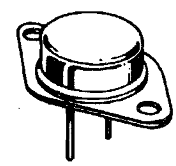
COMPLEMENTARY SILICON MEDIUM-POWER TRANSISTORS

... designed for general-purpose power amplifier and application.

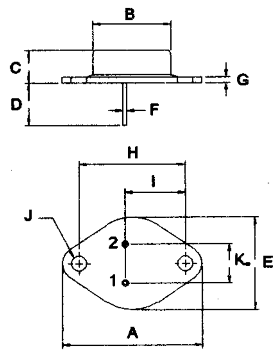
NPN	PNP
2N6315	2N6317
2N6316	2N6318

7.0 AMPERE
COMPLEMENTARY SILICON
POWER TRANSISTORS
60-80 VOLTS
90 WATTS

FEATURES:
* Low Collector-Emitter Saturation Voltage
  $V_{CE(SAT)}$ = 1.0 V (Max) @ I_C = 4.0 A
* Excellent DC Current Gain- hFE = 20 (Min) @ I_C =2.5A
* Low Leakage Current - I_{cex}=250 uA (Max)



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

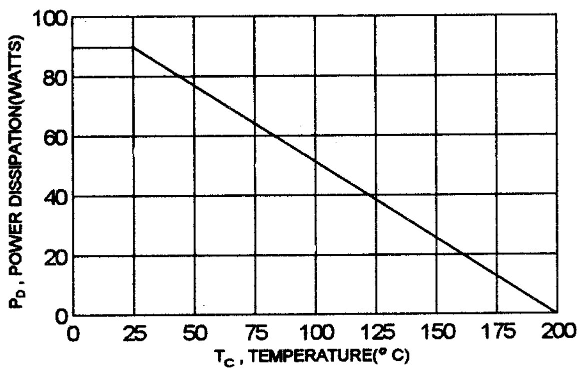
MAXIMUM RATINGS

Characteristic	Symbol	2N6315 2N6317	2N6316 2N6318	Unit
Collector-Emitter Voltage	V_{CEO}	60	80	V
Collector-Base Voltage	V_{CBO}	60	80	V
Emitter-Base Voltage	V_{EBO}	5.0		V
Collector Current-Continuous -Peak	I_C	7.0 15		A
Base Current	I_B	2.0		A
Total Power Dissipation @T_C=25°C Derate above 25°C	P_D	90 0.515		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	1.94	°C/W

FIGURE -1 POWER DERATING



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

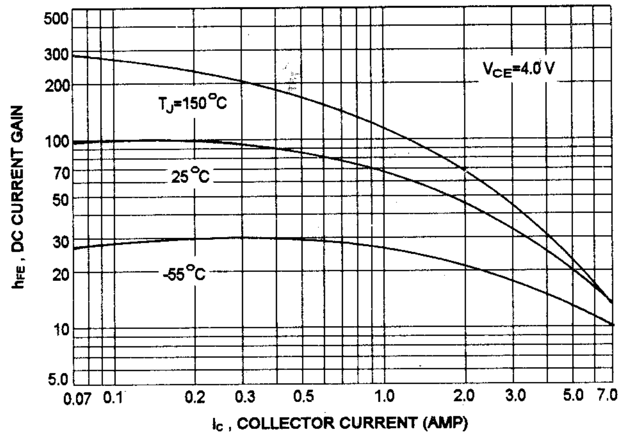
Characteristic		Symbol	Min	Max	Unit
OFF CHARACTERISTICS					
Collector - Emitter Sustaining Voltage (1) (I_C = 100 mA, I_B = 0)	 2N6315,2N6317 2N6316,2N6318	$V_{CEO(SUS)}$	 60 80		V
Collector Cutoff Current (V_{CE} = 30 V, I_B= 0) (V_{CE} = 40 V, I_B= 0)	 2N6315,2N6317 2N6316,2N6318	I_{CEO}		 0.5 0.5	mA
Collector Cutoff Current (V_{CE}=60 V, $V_{BE(OFF)}$ = 1.5 V) (V_{CE}=80 V, $V_{BE(OFF)}$ = 1.5 V) (V_{CE}=60 V, $V_{BE(OFF)}$ = 1.5 V, T_C = 150°C) (V_{CE}=80 V, $V_{BE(OFF)}$ = 1.5 V, T_C = 150°C)	 2N6315,2N6317 2N6316,2N6318 2N6315,2N6317 2N6316,2N6318	I_{CEX}		 0.25 0.25 2.0 2.0	mA
Collector Cutoff Current (V_{CB} = 60 V, I_E=0) (V_{CB} = 80 V, I_E=0)	 2N6315,2N6317 2N6316,2N6318	I_{CBO}		 0.25 0.25	mA
Emitter Cutoff Current (V_{EB} = 5.0 V , I_C = 0)		I_{EBO}		1.0	mA
ON CHARACTERISTICS (1)					
DC Current Gain (I_C = 0.5 A , V_{CE} = 4.0 V) (I_C = 2.5 A , V_{CE} = 4.0 V) (I_C = 7.0 A , V_{CE} = 4.0 V)		hFE	 35 20 4.0	 100	
Collector - Emitter Saturation Voltage (I_C = 4.0 A , I_B = 0.4 A) (I_C = 7.0 A, I_B = 1.75 A)		$V_{CE(sat)}$		 1.0 2.0	V
Base - Emitter Saturation Voltage (I_C = 7.0 A, I_B = 1.75 A)		$V_{BE(sat)}$		2.5	V
Base - Emitter On Voltage (I_C= 2.5 A, V_{CE} = 4.0 V)		$V_{BE(on)}$		1.5	V
DYNAMIC CHARACTERISTICS					
Current Gain - Bandwidth Product (2) (I_C = 0.25 A , V_{CE} = 10 V , f = 1.0 MHz)		f_T	4.0		MHz
Small-Signal Current Gain (I_C=0.5 A, V_{CE}=4.0 V, f= 1.0 KHz)		h_{fe}	20		

(1) Pulse Test: Pulse width = 300 μs , Duty Cycle ≦ 2.0%

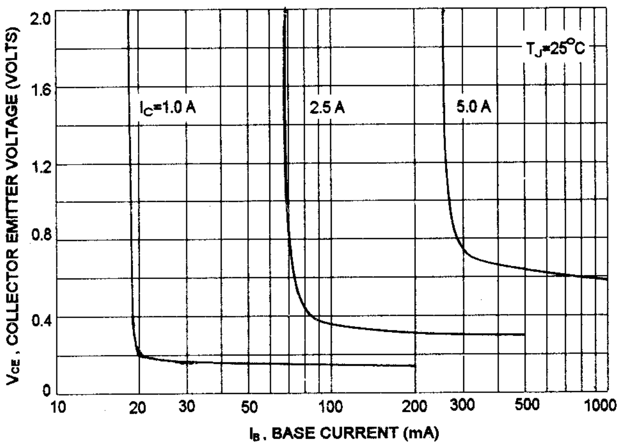
(2) $f_T = |h_{fe}| \circ f_{test}$

NPN 2N6315,2N6316

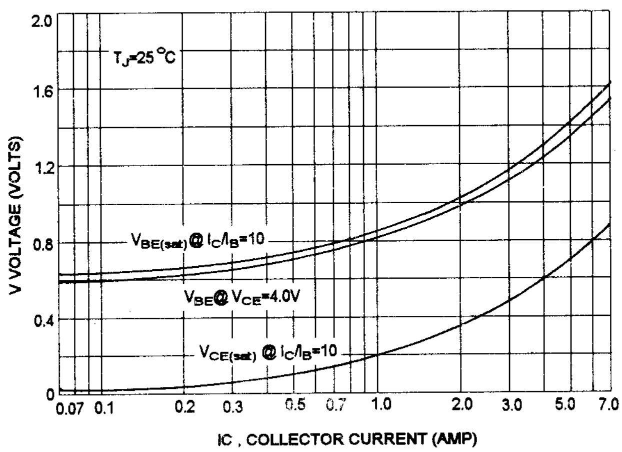
DC CURRENT GAIN



COLLECTOR SATURATION REGION

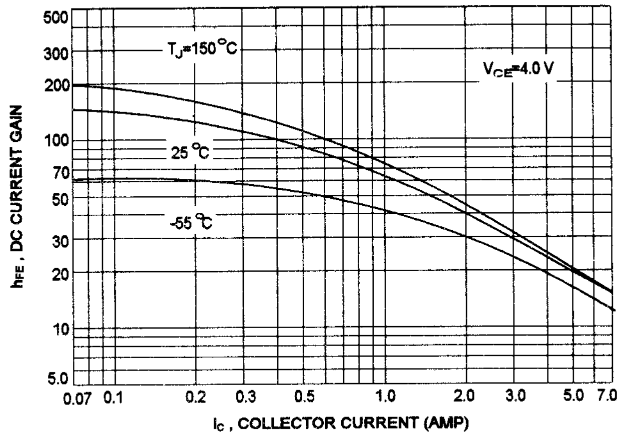


"ON" VOLTAGES

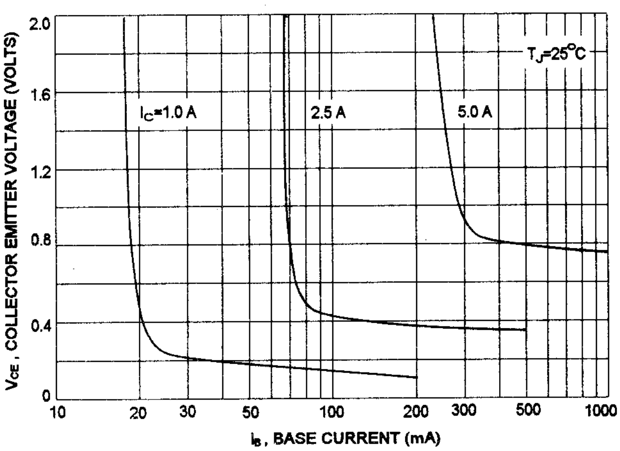


PNP 2N6317,2N6318

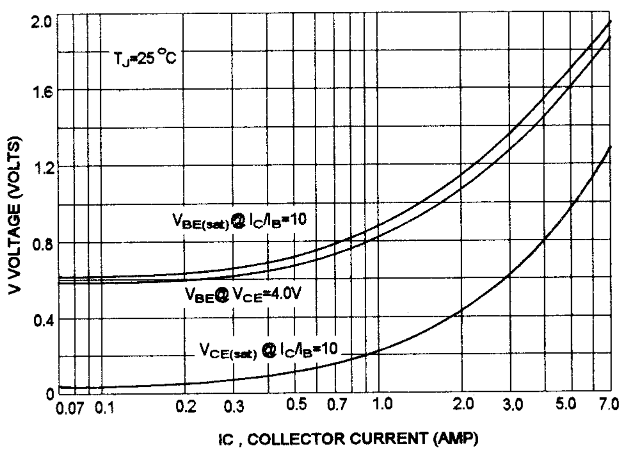
DC CURRENT GAIN



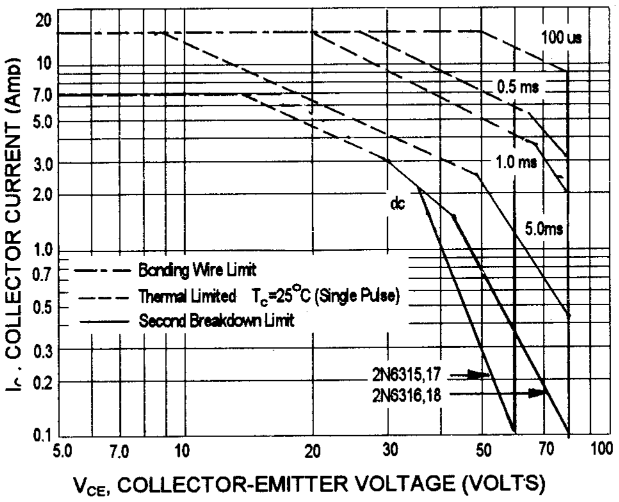
COLLECTOR SATURATION REGION



"ON" VOLTAGES



ACTIVE-REGION SAFE OPERATING AREA (SOA)



There are two limitation on the power handling ability of a transistor:average junction temperature and second breakdown safe operating area curves indicate I_C-V_{CE} limits of the transistor that must be observed for reliable operation i.e., the transistor must not be subjected to greater dissipation than curves indicate.

The data of SOA curve is base on $T_{J(PK)}$=200 °C;T_C is variable depending on conditions. second breakdown pulse limits are valid for duty cycles to 10% provided $T_{J(PK)} \leq 200°C$,At high case temperatures, thermal limitation will reduce the power that can be handled to values less than the limitations imposed by second breakdown.