Silicon Power Transistor

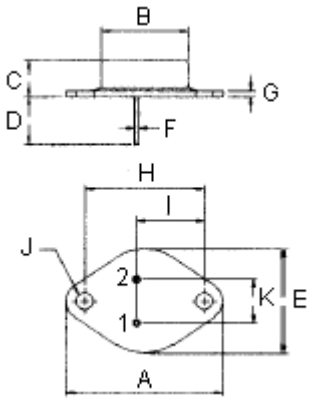
Features:

- High DC current gain at I_c = 10 A : h_{FE} = 2,400
- Collector - emitter sustaining voltage $V_{CEO(sus)}$ = 100 V (Minimum)
- Monolithic construction with built-in base - emitter shunt resistor

Application:

Designed for use general-purpose amplifier and low - frequency switching applications

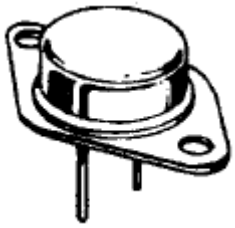
TO-3



Pin 1. Base
2. Emitter
3. Collector (Case)

Dimension	Millimetres	
	Minimum	Maximum
A	38.75	39.96
B	19.28	22.23
C	7.96	9.28
D	11.18	12.19
E	25.2	26.67
F	0.92	1.09
G	1.38	1.62
H	29.9	30.4
I	16.64	17.3
J	3.88	4.36
K	10.67	11.18

Dimensions : Millimetres



TO-3

Darlington
20 Amperes
Complementary Silicon
Power Transistor

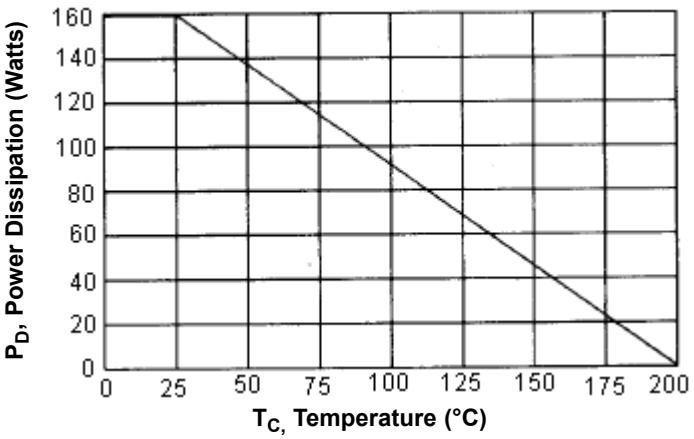
Maximum Ratings

Characteristic	Symbol	2N6284	Unit
Collector - emitter voltage	V_{CEO}	100	V
Emitter - base voltage	V_{CBO}	100	V
Collector - emitter voltage	V_{EBO}	5	V
Collector current - Continuous - Peak	I_C	20 40	A
Base current	I_B	0.5	A
Total power dissipation at T_C = 25°C Derate above 25°C	P_D	160 0.915	W W/°C
Operating and storage junction temperature range	T_J, T_{STG}	-65 to +200	°C

Thermal Characteristics

Characteristic	Symbol	Maximum	Unit
Thermal resistance junction to case	$R_{\theta jc}$	1.09	°C/W

Figure-1 Power Derating



Electrical Characteristics (T_C = 25°C Unless Otherwise Noted)

Characteristic	Symbol	Minimum	Maximum	Unit
OFF Characteristics				
Collector - emitter sustaining voltage (1) (I_C = 100 mA, I_B = 0)	$V_{CEO\ (SUS)}$	100	-	V
Collector - emitter breakdown voltage (1) (V_{CE} = 50 V, I_B = 0)	I_{CEO}	-	1	mA
Collector cut off current (V_{CE} = 100 V, $V_{BE\ (off)}$ = 1.5 V) (V_{Ce} = 100 V, $V_{BE\ (off)}$ = 1.5 V, T_C = 150°C)	I_{CEX}	-	0.5 5	mA
Emitter cut off current (V_{EB} = 5 V, I_C = 0)	I_{EBO}	-	2	mA
ON Characteristics (1)				
DC current gain (I_C = 7.5 A, V_{CE} = 3 V) (I_C = 20 A, V_{CE} = 3 V)	h_{FE}	75 100	18,000	-
Collector - emitter saturation voltage (I_C = 10 A, I_B = 40 mA) (I_C = 20 A, I_B = 200 mA)	$V_{CE\ (sat)}$	-	2 3	V
Base - emitter saturation voltage (I_C = 20 A, I_B = 200 mA)	$V_{BE\ (sat)}$	-	4	
Base - emitter on voltage (I_C = 10 A, V_{CE} = 3 V)	$V_{BE\ (on)}$	-	2.8	V
Dynamic Characteristics				
Current capacitance (V_{CB} = 10 V, I_E = 0, f = 1 MHz)	C_{ob}	-	400	pF
Small - signal current gain (I_c = 10 A, V_{CE} = 3 V, f = 1 KHZ)	h_{fe}	300	-	-

(1) Pulse Test: Pulse width ≤ 300 μs, Duty Cycle ≤ 2%

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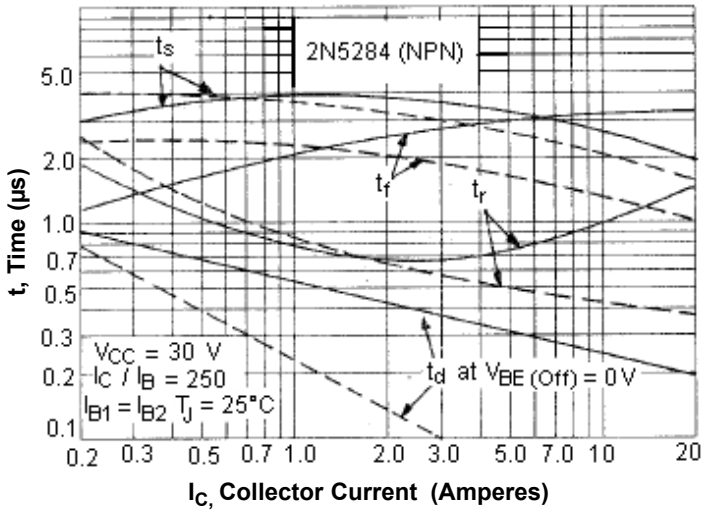
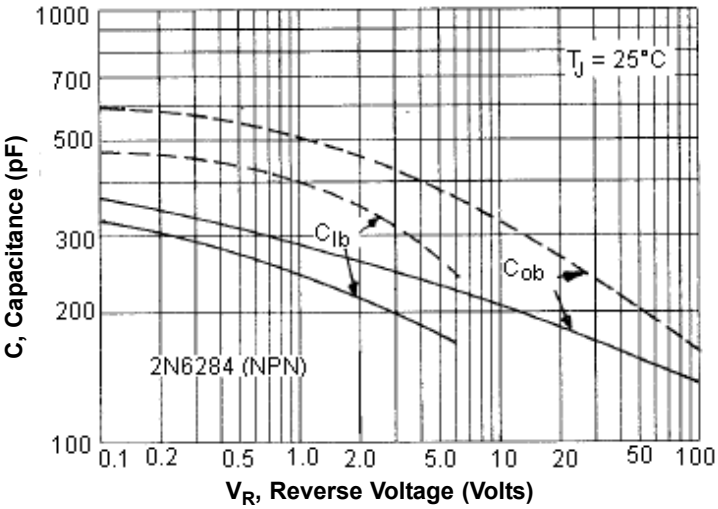
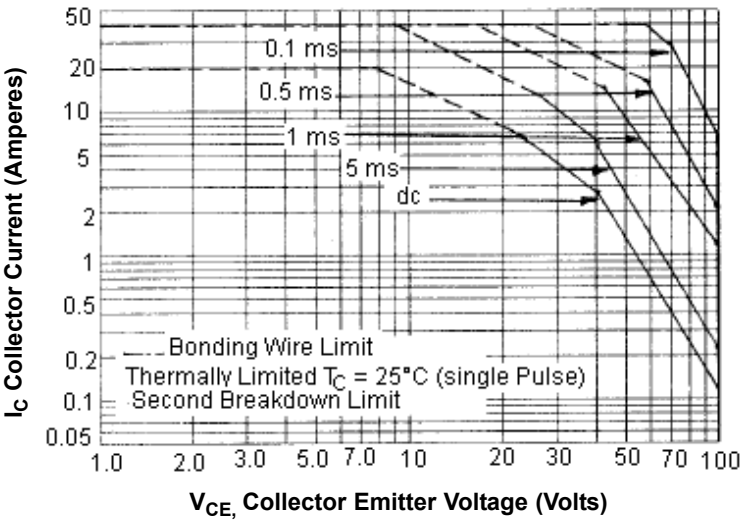
Switching Time



Capacitances

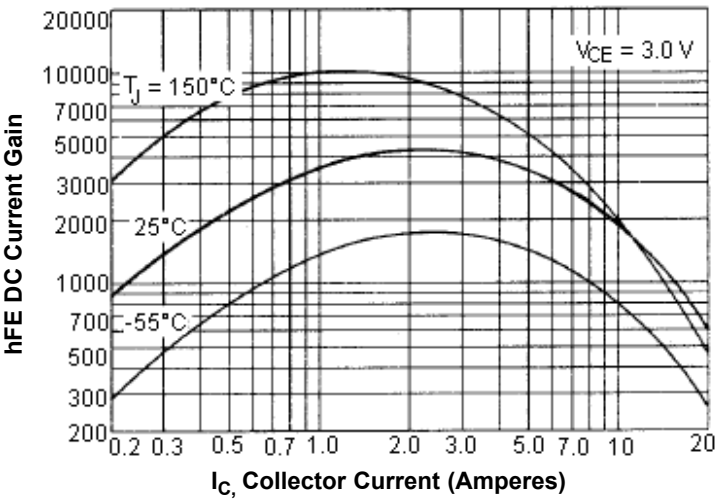


Active - Region Safe Operating Area (SOA)

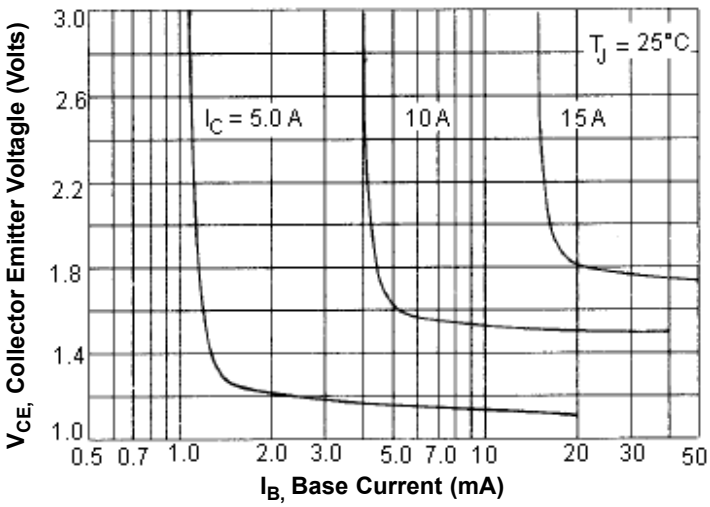


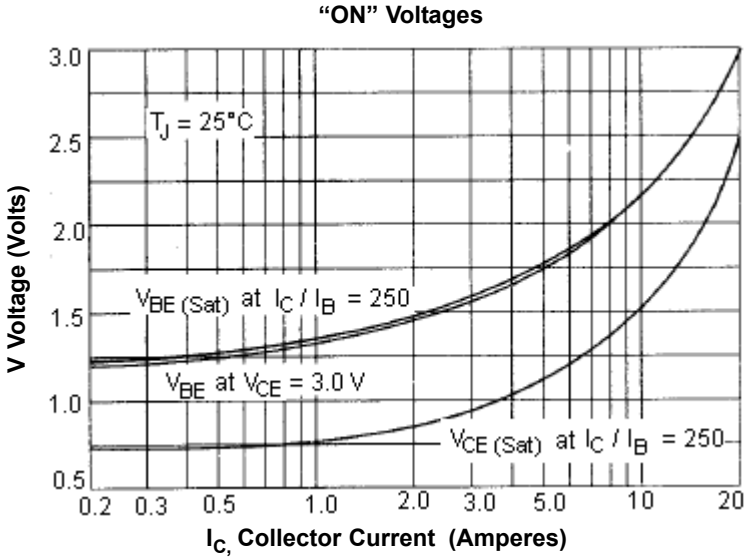
There are two limitation on the power handling ability of a transistor:average junction tertfperature and second breakdown safe operating area curves indicate I_C-V_{CE} limits of the transistor that must be observed for reliable operation i.e., the transistor must not be subjected to greater dissipation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

DC Current Gain



Collector Saturation Region





Part Number Table

Description	Part Number
Silicon Power Transistor	2N6284