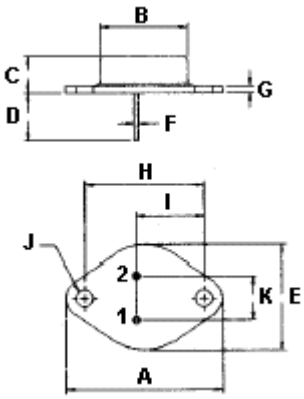
2N6054/2N6056

Darlington Transistors

Features:

- General-purpose power amplifier and low frequency switching applications.
- Low Collector-Emitter Saturation Voltage -
  $V_{CE(SAT)}$ = 2.0V (Maximum) at I_C = 4.0A
  = 3.0V (Maximum) at I_C = 8.0A
- Monolithic construction with Built-in Base-Emitter Shunt Resistors.



Pin 1. Base
2. Emitter
Collector(Case)

Dimension	Minimum	Maximum
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

Dimensions : Millimetres

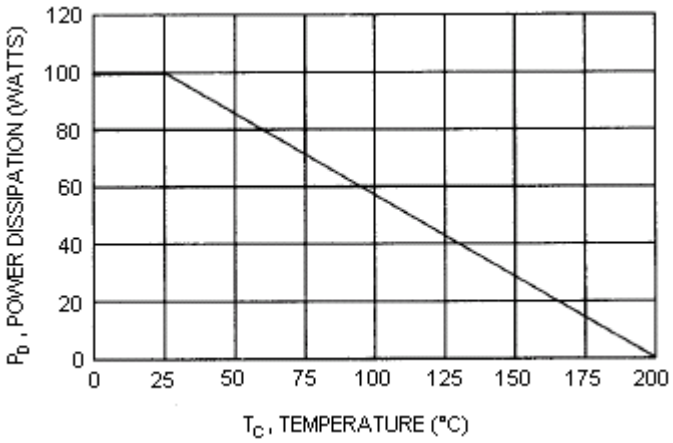
Maximum Ratings

Characteristic	Symbol	2N6056 2N6054	Unit
Collector-Emitter Voltage	V_{CEO}	80	V
Collector-Base Voltage	V_{CBO}		
Emitter-Base Voltage	V_{EBO}	5.0	
Collector Current -Continuous -Peak	I_C I_{CM}	8.0 16	A
Base Current	I_B	120	mA
Total Power Dissipation at T_C = 25°C Derated above 25°C	P_D	100 0.571	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	Rθjc	1.75	°C/W

Figure - 1 Power Derating



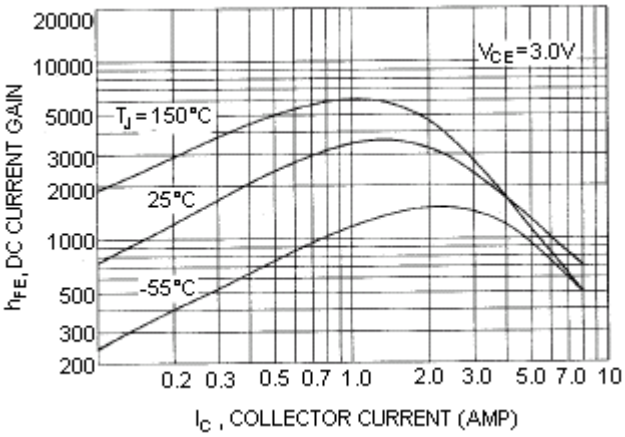
Electrical Characteristics (T_C = 25°C unless otherwise noted)

Characteristic		Symbol	Minimum	Maximum	Unit
OFF Characteristics					
Collector-Emitter Sustaining Voltage (1) (I_C = 100mA, I_B = 0)	2N6054, 2N6056	$V_{CEO(sus)}$	80	-	V
Collector Cutoff Current (V_{CE} = 40V, I_B = 0)	2N6054, 2N6056	I_{CEO}	-	0.5	mA
Collector Cutoff Current (V_{CE} = 80V, $V_{BE(off)}$ = 1.5V) (V_{CE} = 80V, $V_{BE(off)}$ = 1.5V, T_C = 150°C)	2N6054, 2N6056 2N6054, 2N6056	I_{CEX}	-	0.5 5.0	
Emitter Cutoff Current (V_{EB} = 5.0V, I_C = 0)		I_{EBO}	-	2.0	
ON Characteristics (1)					
DC Current Gain (I_C = 4.0A, V_{CE} = 3.0V)		h_{FE}	750	18,000	-
Collector-Emitter Saturation Voltage (I_C = 4.0A, I_B = 16mA) (I_C = 8.0A, I_B = 80mA)		$V_{CE(sat)}$	-	2.0 3.0	V
Base-Emitter On Voltage (I_C = 4A, V_{CE} = 3.0V)		$V_{BE(on)}$	-	2.8	
Base-Emitter Saturation Voltage (I_C = 8.0A, I_B = 80mA)		$V_{BE(sat)}$	-	4.0	
Dynamic Characteristics					
Output Capacitance (V_{CB} = 10V, I_E = 0, f = 0.1MHz)	2N6054 2N6056	C_{ob}	-	350 220	pF
Small-Signal Current Gain (I_C = 3.0A, V_{CE} = 3.0V, f = 1.0KHz)		h_{fe}	300	-	-

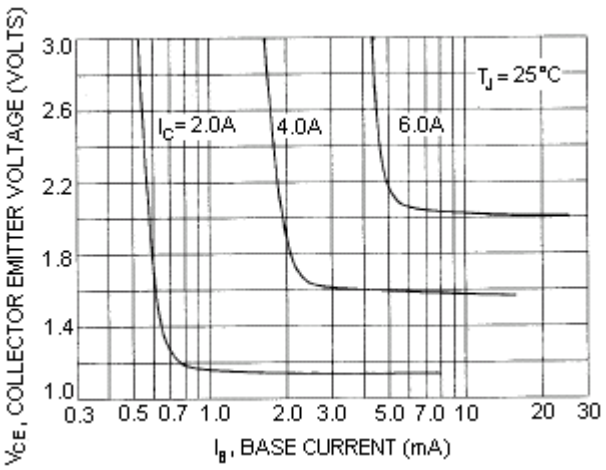
(1) Pulse Test: Pulse Width ≤300μs, Duty Cycle ≤2.0%

PNP 2N6054

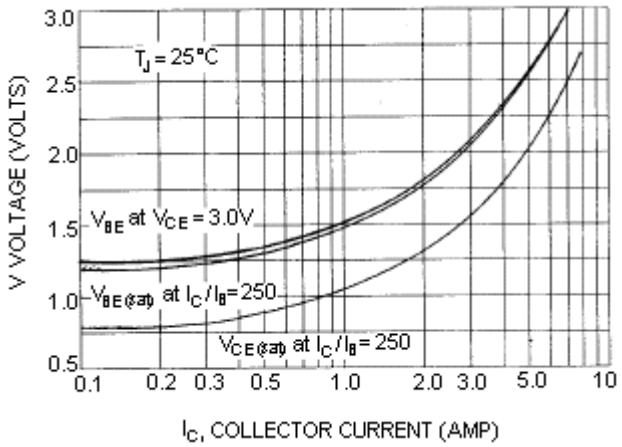
DC Current Gain



Collector Saturation Region

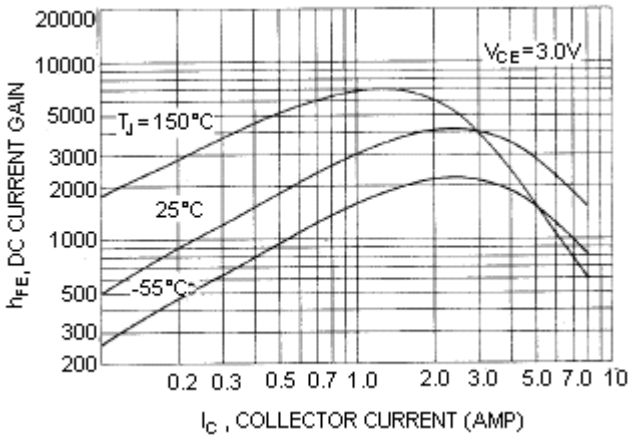


"ON" Voltages

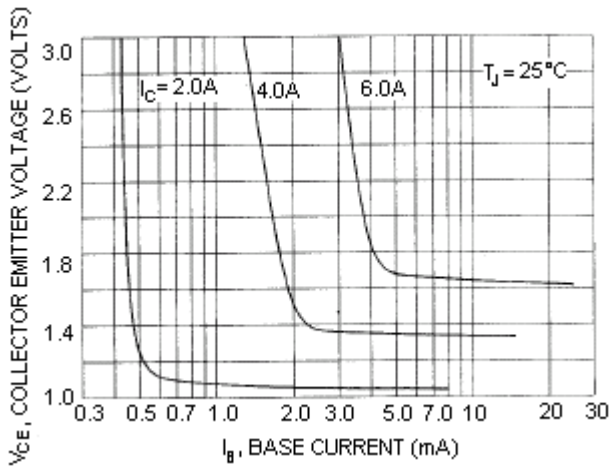


NPN 2N6056

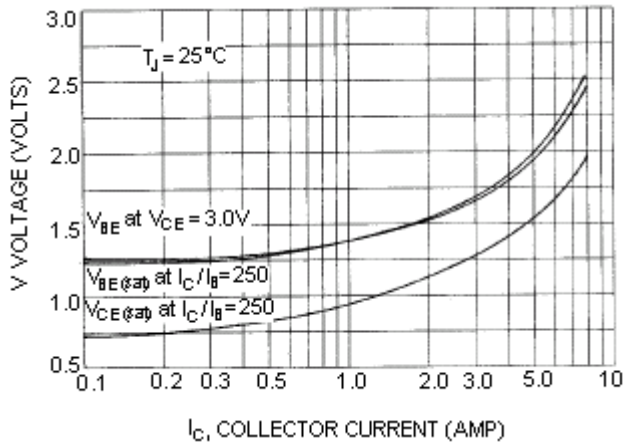
DC Current Gain



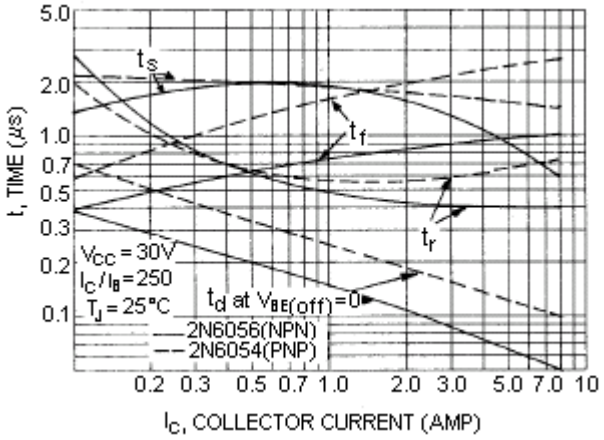
Collector Saturation Region



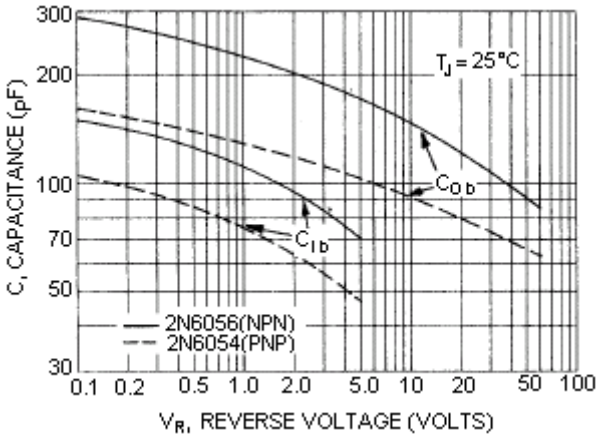
"ON" Voltages



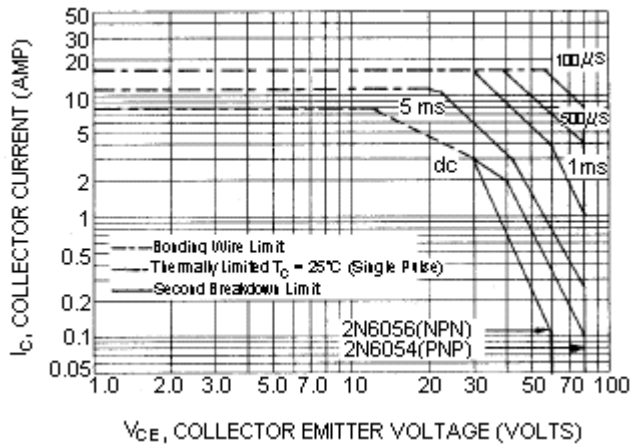
Switching Time



Capacitances



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 $T_{J(PK)}$ ≤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.

Part Number

$I_{C(av)}$ maximum (A)	V_{CEO} maximum (V)	h_{FE} minimum	I_c (A)	P_{tot} at 25°C (W)	Package	Type	Part Number
8	80	750	4	100	TO-3	NPN	2N6056
						PNP	2N6054

Order Mutliple = 1

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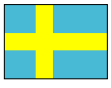

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