

**RoHS
Compliant**



Features

High DC Cur H_{fe} =3500 (Typ.)@ I_c =5A DC
 Collector-Emitter Sustaining Voltage @ 100 mA
 $V_{CE0(sus)}$ =80V DC (Min.)--- 2N6058
 =100V DC (Min.)--- 2N6059, 2N6052

Monolithic Construction with Built-In Base-Emitter Shunt Resistors

APPLICATIONS: General-purpose amplifier and low frequency switching applications.

ABSOLUTE MAXIMUM RATINGS ($T_a = 25^\circ\text{C}$)

Rating	Symbol	2N6051 2N6058	2N6059	Units
Collector - Emitter Voltage	V_{CE0}	80	100	V DC
Collector - Base Voltage	V_{CB}	80	100	V DC
Emitter Base Voltage	V_{EB}	5		V DC
Collector Current - Continuous Peak	I_c	12 20		A_{DC}
Base Current	I_b	0.2		A_{DC}
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	150		Watts
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-65°C to +200°C		°C

Thermal Characteristics

Characteristic	Symbol	Rating	Unit
Thermal Resistance, Junction to case	R_{j-c}	1.17	°C/W

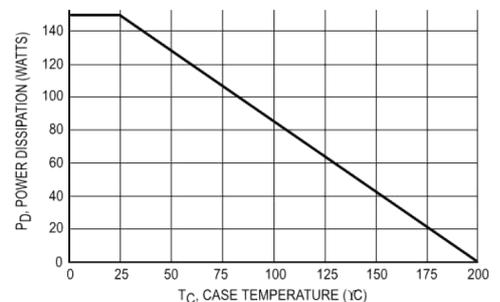


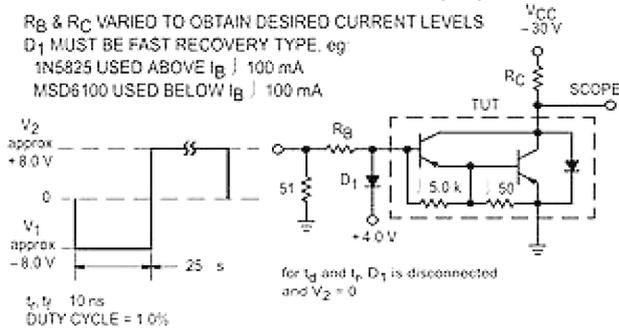
Figure 1. Power Derating

Electrical Characteristics at T_a = 25°C unless otherwise specified)

Description	Symbol	Min	Max	Units	
Off Characteristics					
Collector Emitter Sustaining Voltage (1) (I _c = 100mADC, I _B = 0)	2N6051 2N6058 2N6059	V _{CEO(sus)}	80 100	- -	V DC
Collector Cut Off Current (V _{CE} = 40V DC, I _B = 0) (V _{CE} = 50V DC, I _B = 0)	2N6051 2N6058 2N6059	I _{CEO}	- -	1 1	mA DC
Collector Cut Off Current (V _{CE} = Rated V _{CEO} , V _{BE(off)} = 1.5V DC (V _{CE} = Rated V _{CEO} , V _{BE(off)} = 1.5V DC, T _C = 150°C)		I _{CEX}	-	0.5 5	mA DC
Emitter Cut Off Current (V _{BE} = 5V DC, I _c = 0)		I _{EBO}	-	2	mA DC
On Characteristics (1)					
DC Current Gain (I _c = 6A DC, V _{CE} = 3 V _{DC}) (I _c = 12A DC, V _{CE} = 3 V _{DC})		h _{FE}	750 100	18 -	-
Collector Emitter Saturation Voltage (I _c = 6A DC, I _B = 24m ADC) (I _c = 12A DC, V _{CE} = 120m ADC)		V _{CE(sat)}	- -	2 3	V DC
Base Emitter Saturation Voltage (I _c = 12A DC, I _B = 120m ADC)		V _{BE(sat)}	-	4	V DC
Base Emitter on Voltage (I _c = 6A DC, V _{CE} = 3 V _{DC})		V _{BE(on)}	-	2.8	V DC
Dynamic Characteristics					
Magnitude of Common Emitter Small Signal, Short Circuit, Forward Current Transfer Ratio (I _c = 5A DC, V _{CE} = 3 V _{DC} , f = 1 MHz)		h _{fe1}	4	-	MHz
Output Capacitance (V _{CB} = 10V DC, I _E = 0, f = 0.1 MHz)	2N6051 2N6058, 2N6059	C _{OB}	- -	500 300	pF
Small Signal Current Gain (I _c = 5A DC, V _{CE} = 3 V _{DC} , f = 1 MHz)		h _{fe}	300	-	-

* Indicates JEDEC Registered Data

(1) Pulse Test: Pulse Width = 300µs, Duty Cycle = 2%



For NPN test circuit reverse diode and voltage polarities.

Figure 2. Switching Times Test Circuit

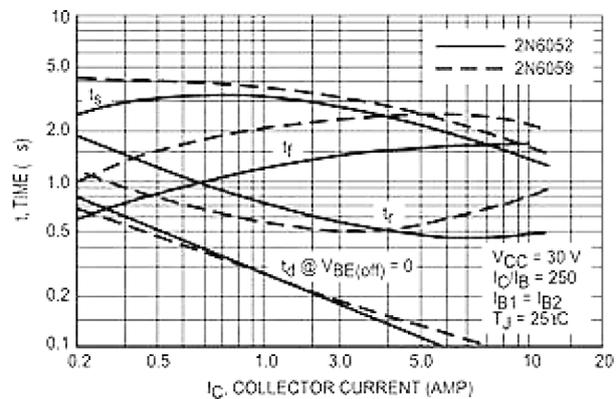


Figure 3. Switching Times

Typical Characteristics Curves

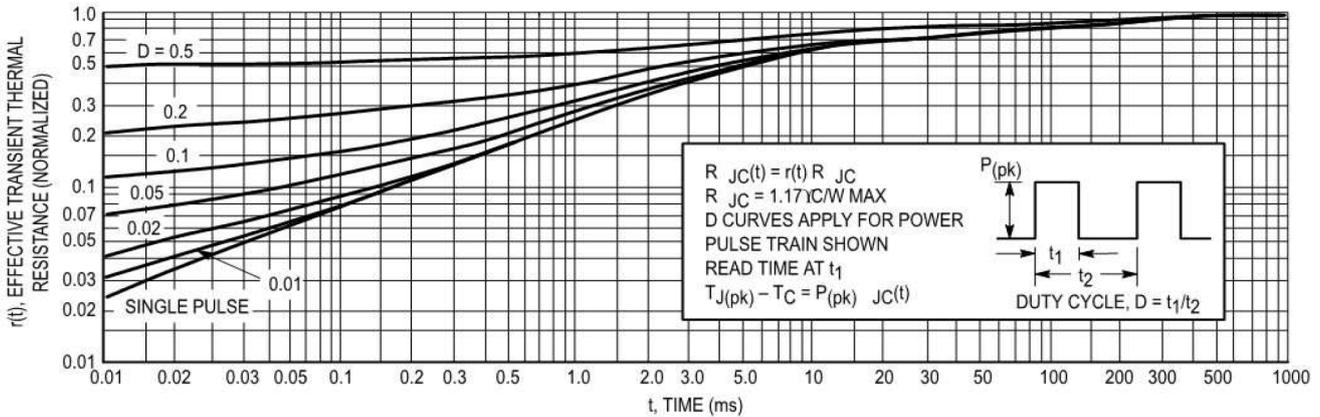


Figure 4. Thermal Response

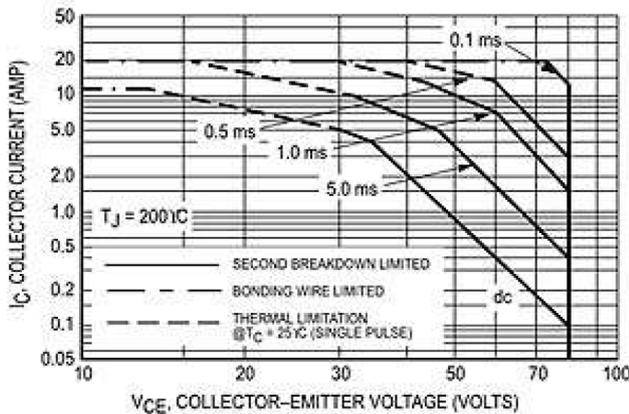


Figure 5. 2N6058, 2N6051

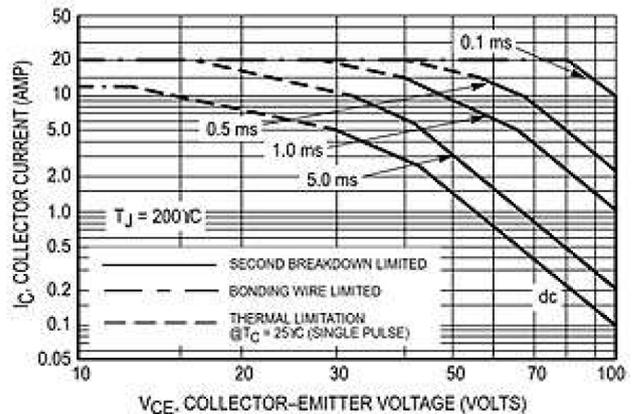


Figure 6. 2N6052, 2N6059

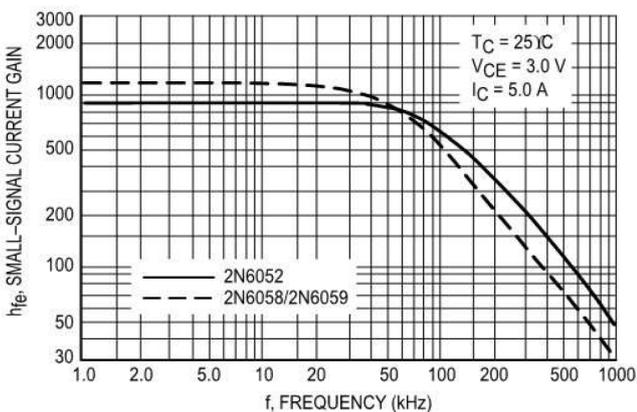


Figure 7. Small-Signal Current Gain

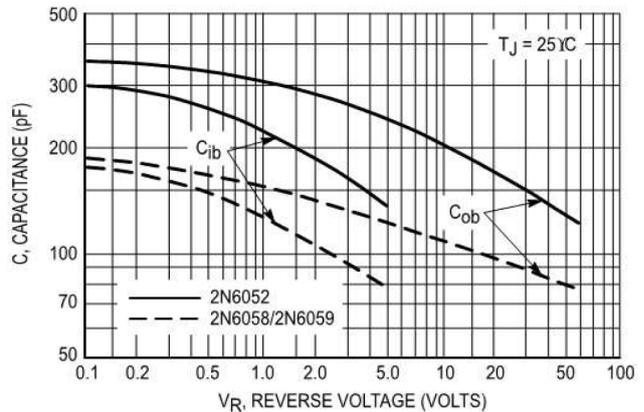


Figure 8. Capacitance

Typical Characteristics Curves

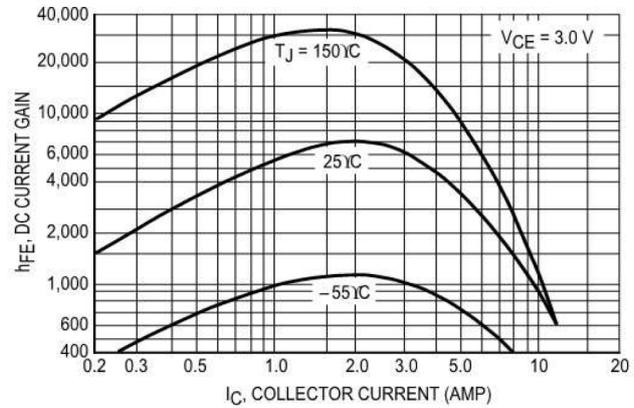
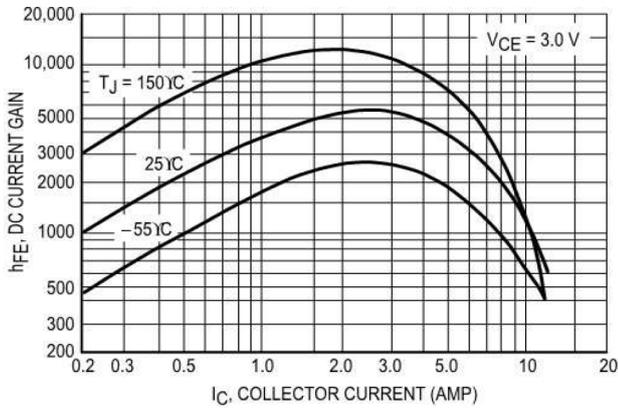


Figure 9. DC Current Gain

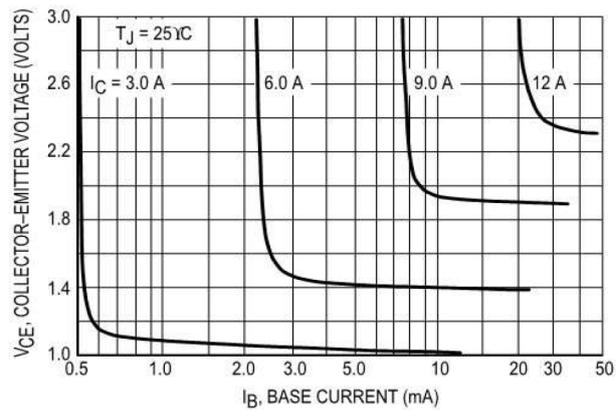
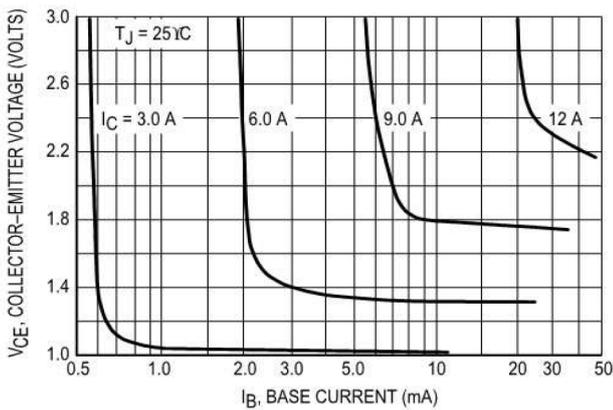
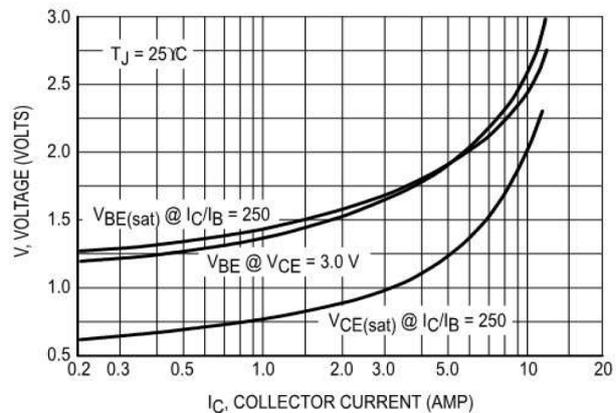
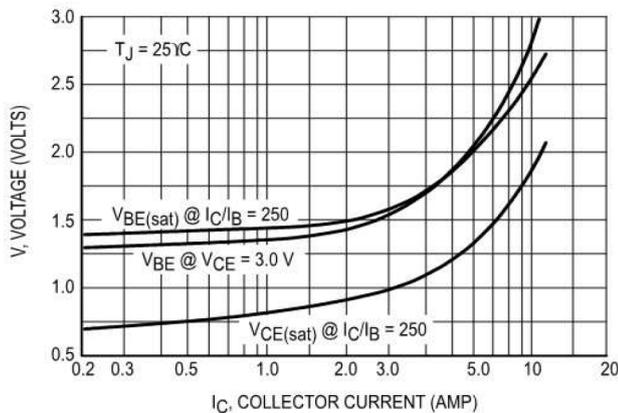
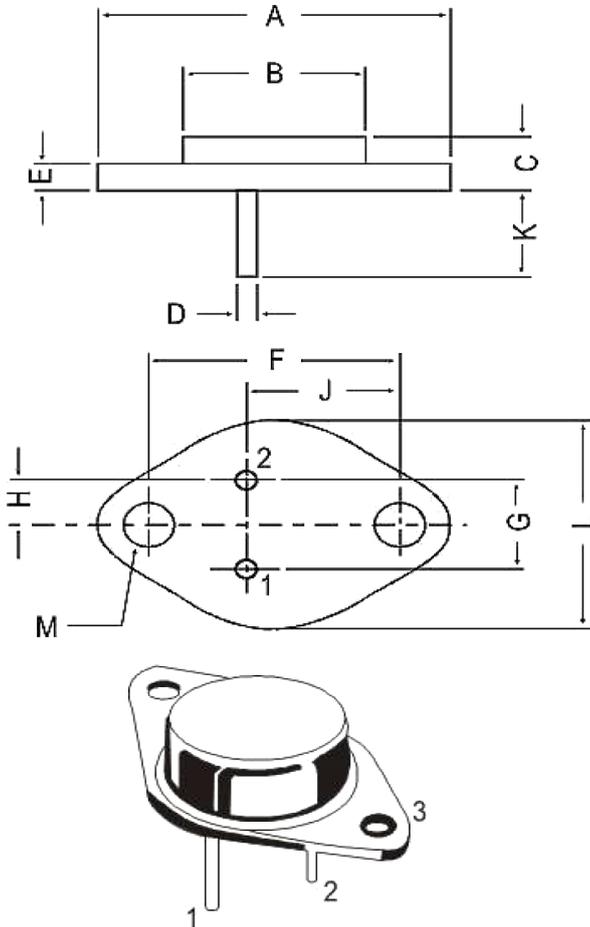


Figure 10. Collector Saturation Region



Package Details

TO-3



Dimensions : Millimetres

PIN CONFIGURATION

- 1. BASE
- 2. EMITTER
- 3. COLLECTOR

Dim	Min.	Max.
A	-	39.37
B	-	22.22
C	6.35	8.5
D	0.96	1.09
E	-	1.77
F	29.9	30.4
G	10.69	11.18
H	5.2	5.72
J	16.64	17.15
K	11.15	12.25
L	-	26.67
M	3.84	4.19

Part Number Table

Description	Part Number
Silicon Darlington Complimentary Power Transistor, PNP, 80V, 12A, TO-3	2N6051
Silicon Darlington Complimentary Power Transistor, NPN, 80V, 12A, TO-3	2N6058
Silicon Darlington Complimentary Power Transistor, NPN, 100V, 12A, TO-3	2N6059

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