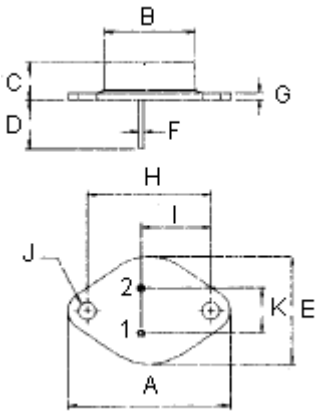
MJ11016

designed for use as output devices in complementary general purpose amplifier applications.

Features:

- High gain darlington performance.
- High DC current gain hFE = 1000(Minimum) at I_c = 20 A.
- Monolithic construction with built-in base-emitter shunt resistor.

TO-3

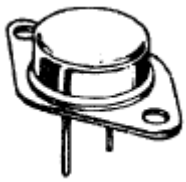


Pin 1. Base
2. Emitter
3. Collector (Case)

Dimensions	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

NPN
MJ11016

30 Ampere
Complementary Silicon
Power Darlington Transistor
60-120 Volts
200 Watts



TO-3

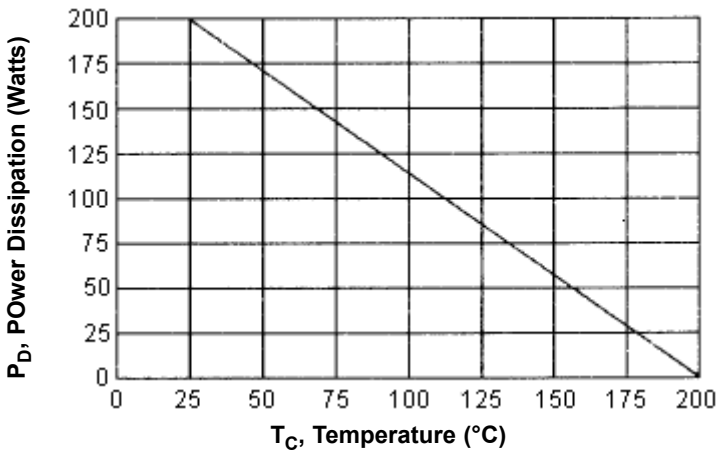
Maximum Ratings

Characteristic	Symbol	MJ11016	Unit
Collector-Emitter Voltage	V_{CEO}	120	V
COIlector-Base Voltage	V_{CBO}	120	
Emitter-Base Voltage	V_{EBO}	5.0	
Collector Current-Continuous -Peak	I_C I_{CM}	30 50	A
Base Current	I_B	1.0	
Total Power Dissipation @TC= 25°C Derate above 25°C	P_D	200 1.15	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	0.87	°C/W

Power Derating



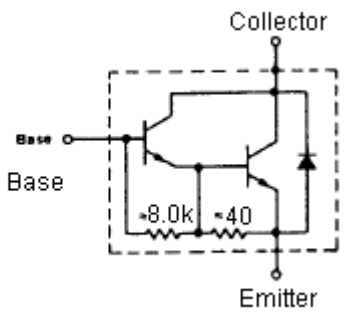
Electrical Characteristics (T_C = 25°C unless otherwise noted)

Characteristic		Symbol	Minimum	Maximum	Unit
Off Characteristics					
Collector-Emitter Sustaining Voltage (1) (I_C= 100mA, I_B = 0)	MJ11016	$V_{EO\ (sus)}$	120	-	V
Collector Cutoff Current (V_{CE} = 50 V, I_B = 0.0)		I_{CEO}	-	1.0	mA
Collector-Emitter Leakage Current (V_{CE} = 120V, R_{BE} = 1.0KΩ) (V_{CE} = 120V, R_{BE} = 1.0KΩ, T_C = 125°C)	MJ11016 MJ11016	I_{CER}	-	1.0 5.0	
Emitter Cutoff Current (V_{EB} = 5.0V, I_C = 0)		I_{EBO}	-	5.0	
On Characteristrics (1)					
DC Current Gain (I_c = 20A,V_{CE} = 5.0V) (I_c = 30A,V_{CE} = 5.0V)		h_{FE}	1000 200	-	-
Collector-Emitter Saturation Voltage (I_c = 20A, I_B = 200mA) (I_c = 30A, I_B = 300mA)		$V_{CE\ (sat)}$	-	3.0 4.0	V
Base-Emitter Saturation Voltage (I_c = 20A, I_B = 200mA) (I_c = 30A, I_B = 300mA))		$V_{BE\ (sat)}$	-	3.5 5.0	
Dynamic Characteristics					
Small-Signal Current Gain (I_c = 10A, V_{CE} = 3.0V, f =1.0MHz)		$\|h_{fe}\|$	4.0	-	-

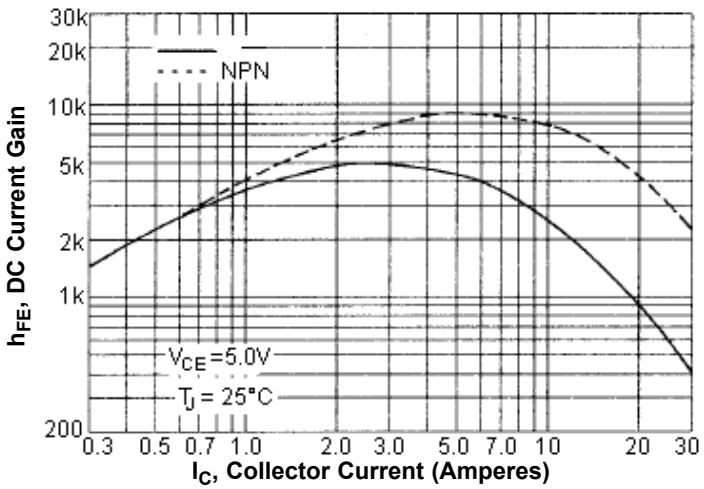
(1) Pulse Test : Pulse Width = 300μs, Duty Cycle 2.0%.
(2) $f_T = |h_{fe}| \bullet f_{test}$.

Internal Schematic Diagram

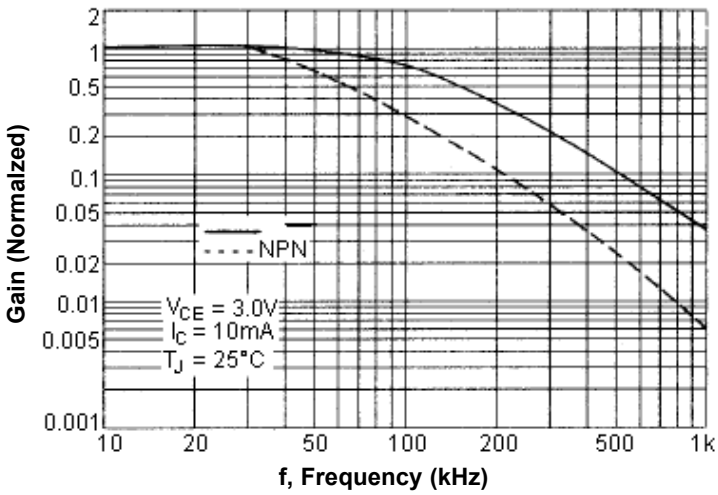
PNP
MJ11016



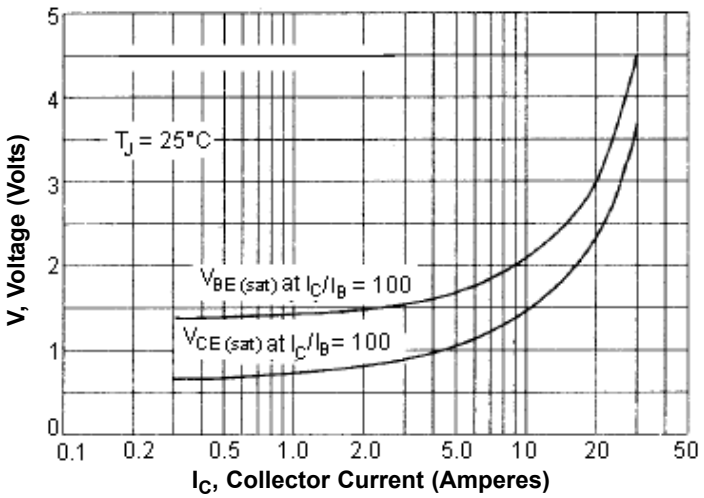
DC Current Gain



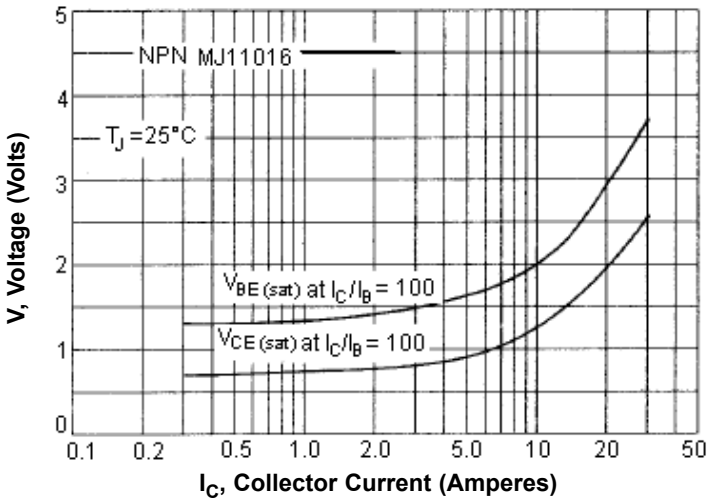
Small-Signal Current Gain



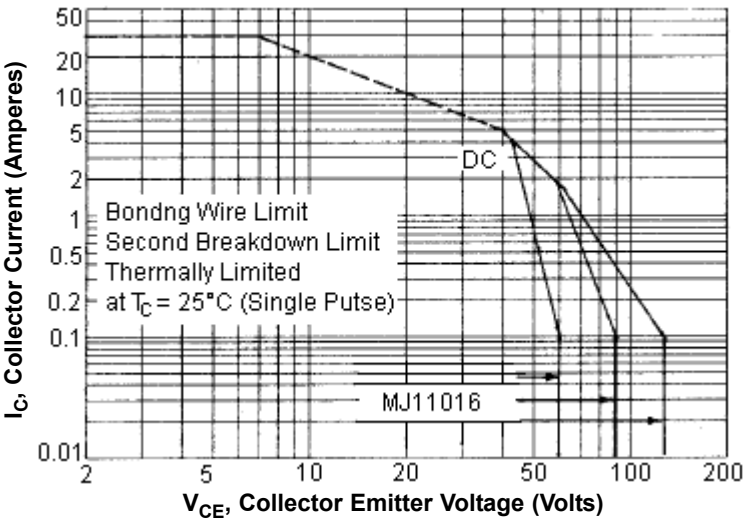
"ON" Voltages



"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.

Part Number Table

Description	Part Number
Darlington Transistor, TO-3	MJ11016

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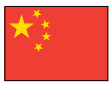

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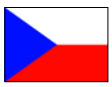

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