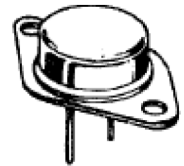




Features

- High DC current gain - $h_{FE} = 1,000$ (minimum) at $I_C = 20A$ DC
- Monolithic construction with built-in base emitter shunt resistor
- Junction temperature to $+200^{\circ}C$



(TO-3)
Case 1-07
Style 1

Absolute Maximum Ratings

Parameter	Symbol	Values	Unit
Collector-Emitter Voltage	V_{CEO}	120	V
Collector - Base Voltage	V_{CB}		
Emitter-Base Voltage	V_{EB}		
Collector Current	I_C	30	A DC
Base Current	I_B	1	
Total Power Dissipation at $T_C = 25^{\circ}C$ Derate above $25^{\circ}C$ at $T_C = 100^{\circ}C$	P_D	200 1.15	W W / $^{\circ}C$
Operating and Storage Junction Temperature Range	T_J, T_{STG}	-65 to +200	$^{\circ}C$

Thermal Characteristics

Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	1.17	$^{\circ}C / W$
Maximum Lead Temperature for Soldering Purposes for ≤ 10 Seconds	T_L	275	$^{\circ}C$

Stresses exceeding maximum ratings may damage the device. Maximum ratings are stress ratings only. Functional operation above the recommended operating conditions is not implied. Extended exposure to stresses above the recommended operating conditions may affect device reliability

Electrical Characteristics ($T_C = 25^{\circ}C$ unless otherwise noted)

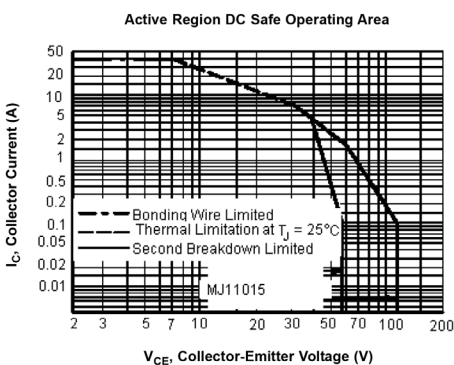
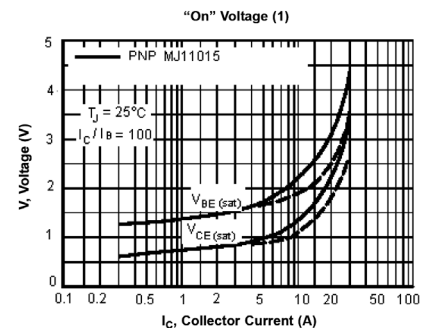
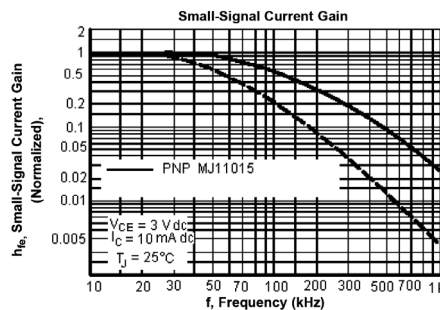
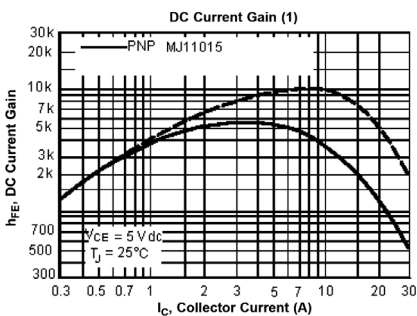
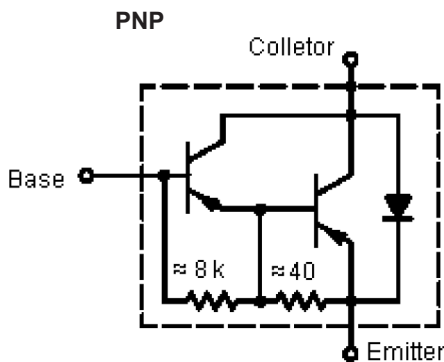
Parameter	Symbol	Minimum	Maximum	Unit
Off Characteristics				
Collector-Emitter Sustaining Voltage (1) ($I_C = 100mA$ DC, $I_B = 0$)	$V_{CEO (SUS)}$	120	-	V DC
Collector - Emitter Leakage Current ($V_{CE} = 120V$ DC, $R_{BE} = 1k\Omega$) ($V_{CE} = 120V$ DC, $R_{BE} = 1k\Omega$, $T_C = 150^{\circ}C$)	I_{CER}	-	1 5	mA DC
Emitter Cut off Current ($V_{BE} = 5V$ DC, $I_C = 0$)	I_{EBO}	-	5	
Emitter-Base Cut off Current ($V_{EB} = 8V$, $I_C = 0$)	I_{CEO}	-	1	
On Characteristics (1)				
DC Current Gain ($I_C = 20A$ DC, $V_{CE} = 5V$ DC ($I_C = 30A$ DC, $V_{CE} = 5V$ DC)	h_{FE}	1,000 200	- -	-
Collector-Emitter Saturation Voltage ($I_C = 20A$ DC, $I_B = 200mA$ DC) ($I_C = 30A$ DC, $I_B = 300mA$ DC)	$V_{CE (sat)}$	-	3 4	V DC

Darlington Power Transistor

Parameter	Symbol	Minimum	Maximum	Unit
Base - Emitter Saturation Voltage ($I_c = 20A$ DC, $I_b = 200mA$ DC) ($I_c = 30A$ DC, $I_b = 300mA$ DC)	$V_{BE(sat)}$	-	3.5 5	V DC
Dynamic Characteristics				
Current Gain-Bandwidth Product (2) ($I_c = 10A$, $V_{CE} = 3V$ DC, $f = 1MHz$)	h_{fe}	4	-	MHz

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

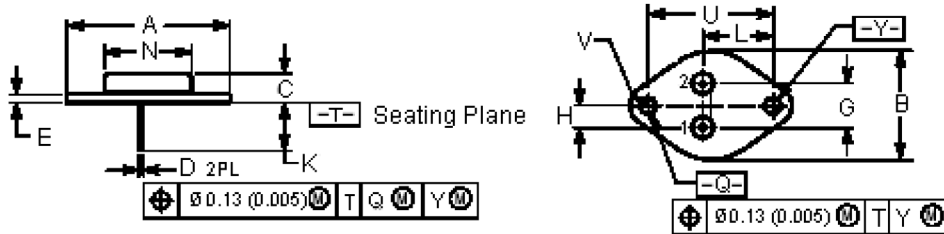
Darlington Circuit Schematic



There are two limitations on the power handling ability of a transistor average junction temperature and secondary breakdown. Safe operating area curves indicate $I_c - V_{CE}$ limits of the transistor that must be observed for reliable operations e.g., the transistor must not be subjected to greater dissipation than the curves indicate.

At high case temperatures, thermal limitations will reduce the power that can be handled to values less than the limitations imposed by secondary breakdown

Diagram



Dimensions	Minimum	Maximum
A	1.55 (39.37)	Reference
B	-	1.05 (26.67)
C	0.25 (6.35)	0.335 (8.51)
D	0.038 (0.97)	0.043 (1.09)
E	0.055 (1.4)	0.07 (1.77)
G	0.43 (10.92)	BSC
H	0.215 (5.46)	BSC
K	0.44 (11.18)	0.48 (12.19)
L	0.665 (16.89)	BSC
N	-	0.83 (21.08)
Q	0.151 (3.84)	0.165 (4.19)
U	1.187 (30.15)	BSC
V	0.131 (3.33)	0.188 (4.77)

Style 1:
 Pin 1. Base
 2. Emitter
 Collector (Case)

Dimensions : Inches (Millimetres)

Part Number Table

Description	Part Number
Darlington Transistor, TO-3	MJ11015

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