

New Jersey Semi-Conductor Products, Inc.

20 STERN AVE.
SPRINGFIELD, NEW JERSEY 07081
U.S.A.

TELEPHONE: (973) 376-2922
(212) 227-6005
FAX: (973) 376-8960

COMPLEMENTARY SILICON POWER DARLINGTON TRANSISTORS

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

FEATURES:

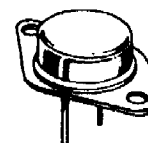
- * High Gain Darlington Performance
- * High DC Current Gain $h_{FE} = 1000(\text{Min}) @ I_C = 20 \text{ A}$
- * Monolithic Construction with Built-in Base-Emitter Shunt Resistor

PNP	NPN
MJ11011	MJ11012
MJ11013	MJ11014
MJ11015	MJ11016

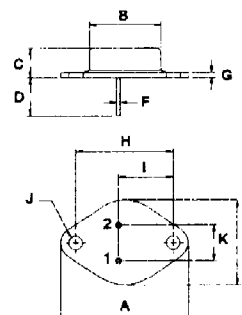
30 AMPERE
COMPLEMENTARY
SILICON POWER
DARLINGTON TRANSISTOR
60-120 VOLTS
200 WATTS

MAXIMUM RATINGS

Characteristic	Symbol	MJ11011	MJ11013	MJ11015	Unit
		MJ11012	MJ11014	MJ11016	
Collector-Emitter Voltage	V_{CEO}	60	90	120	V
Collector-Base Voltage	V_{CBO}	60	90	120	V
Emitter-Base Voltage	V_{EBO}	5.0			V
Collector Current-Continuous -Peak	I_C	30			A
	I_{CM}	50			
Base Current	I_B	1.0			A
Total Power Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	200			W W/°C
		1.15			
Operating and Storage Junction Temperature Range	T_J, T_{STG}	- 65 to +200			°C



TO-3

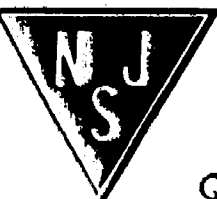
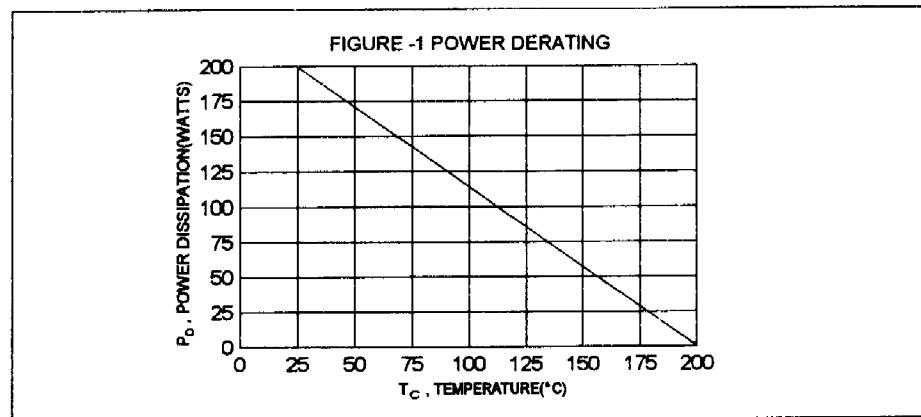


PIN 1. BASE
2. EMITTER
COLLECTOR(CASE)

DIM	MILLIMETERS	
	MIN	MAX
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

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance Junction to Case	$R_{\theta jc}$	0.87	°C/W



NJ Semi-Conductors reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by NJ Semi-Conductors is believed to be both accurate and reliable at the time of going to press. However, NJ Semi-Conductors assumes no responsibility for any errors or omissions discovered in its use. NJ Semi-Conductors encourages customers to verify that datasheets are current before placing orders.

Quality Semi-Conductors

MJ11011, MJ11013, MJ11015 PNP / MJ11012, MJ11014, MJ11016 NPN

ELECTRICAL CHARACTERISTICS ($T_c = 25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Min	Max	Unit
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OFF CHARACTERISTICS

Collector - Emitter Sustaining Voltage (1) ($I_c = 100\text{ mA}$, $I_B = 0$)	MJ11011, MJ11012 MJ11013, MJ11014 MJ11015, MJ11016	$V_{CE(sus)}$	60 90 120	V
Collector Cutoff Current ($V_{CE} = 50\text{ V}$, $I_B = 0.0$)		I_{CEO}		1.0 mA
Collector-Emitter Leakage Current ($V_{CE} = 60\text{ V}$, $R_{BE} = 1.0\text{ k ohm}$) ($V_{CE} = 90\text{ V}$, $R_{BE} = 1.0\text{ k ohm}$) ($V_{CE} = 120\text{ V}$, $R_{BE} = 1.0\text{ k ohm}$) ($V_{CE} = 60\text{ V}$, $R_{BE} = 1.0\text{ k ohm}$, $T_c = 125^\circ\text{C}$) ($V_{CE} = 90\text{ V}$, $R_{BE} = 1.0\text{ k ohm}$, $T_c = 125^\circ\text{C}$) ($V_{CE} = 120\text{ V}$, $R_{BE} = 1.0\text{ k ohm}$, $T_c = 125^\circ\text{C}$)	MJ11011, MJ11012 MJ11013, MJ11014 MJ11015, MJ11016 MJ11011, MJ11012 MJ11013, MJ11014 MJ11015, MJ11016	I_{CER}		1.0 1.0 1.0 5.0 5.0 5.0 mA
Emitter Cutoff Current ($V_{EB} = 5.0\text{ V}$, $I_C = 0$)		I_{EBO}		5.0 mA

ON CHARACTERISTICS (1)

DC Current Gain ($I_c = 20\text{ A}$, $V_{CE} = 5.0\text{ V}$) ($I_c = 30\text{ A}$, $V_{CE} = 5.0\text{ V}$)		h_{FE}	1000 200	
Collector-Emitter Saturation Voltage ($I_c = 20\text{ A}$, $I_B = 200\text{ mA}$) ($I_c = 30\text{ A}$, $I_B = 300\text{ mA}$)		$V_{CE(sat)}$		3.0 4.0 V
Base-Emitter Saturation Voltage ($I_c = 20\text{ A}$, $I_B = 200\text{ mA}$) ($I_c = 30\text{ A}$, $I_B = 300\text{ mA}$)		$V_{BE(sat)}$		3.5 5.0 V

DYNAMIC CHARACTERISTICS

Small-Signal Current Gain ($I_c = 10\text{ A}$, $V_{CE} = 3.0\text{ V}$, $f = 1.0\text{ MHz}$)		$ h_{fe} $	4.0	
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(1) Pulse Test: Pulse width = 300 us , Duty Cycle $\leq 2.0\%$

(2) $f_T = |h_{fe}| \cdot f_{max}$

