

**MJ11028, MJ11030,
MJ11032 (NPN)
MJ11029, MJ11033 (PNP)**

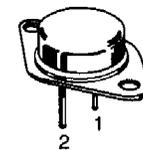
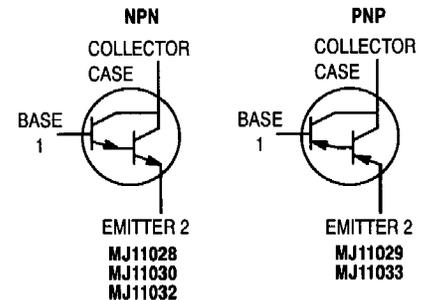
**High-Current
Complementary Silicon
Power Transistors**

High-Current Complementary Silicon Power Transistors are for use as output devices in complementary general purpose amplifier applications.

Features

- High DC Current Gain - $h_{FE} = 1000$ (Min) @ $I_C = 25$ Adc
 $h_{FE} = 400$ (Min) @ $I_C = 50$ Adc
- Curves to 100 A (Pulsed)
- Diode Protection to Rated I_C
- Monolithic Construction with Built-In Base-Emitter Shunt Resistor
- Junction Temperature to +200°C

**50 AMPERE
COMPLEMENTARY
DARLINGTON POWER
TRANSISTORS
60 - 120 VOLTS
300 WATTS**



(TO-3)

MAXIMUM RATINGS ($T_J = 25^\circ\text{C}$ unless otherwise noted)

Rating	Symbol	Value	Unit
Collector-Emitter Voltage MJ11028/29 MJ11030 MJ11032/33	V_{CEO}	60 90 120	Vdc
Collector-Base Voltage MJ11028/29 MJ11030 MJ11032/33	V_{CBO}	60 90 120	Vdc
Emitter-Base Voltage	V_{EBO}	5.0	Vdc
Collector Current - Continuous - Peak (Note 1)	I_C	50 100	Adc
Base Current - Continuous	I_B	2.0	Adc
Total Power Dissipation @ $T_C = 25^\circ\text{C}$ Derate Above 25°C @ $T_C = 100^\circ\text{C}$	P_D	300 1.71	W W/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-55 to +200	$^\circ\text{C}$

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Maximum Lead Temperature for Soldering Purposes for ≤ 10 seconds	T_L	275	$^\circ\text{C}$
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	0.58	$^\circ\text{C}/\text{W}$

Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

1. Pulse Test: Pulse Width = 5 μs , Duty Cycle $\leq 10\%$.



MJ11028, MJ11030, MJ11032 (NPN)

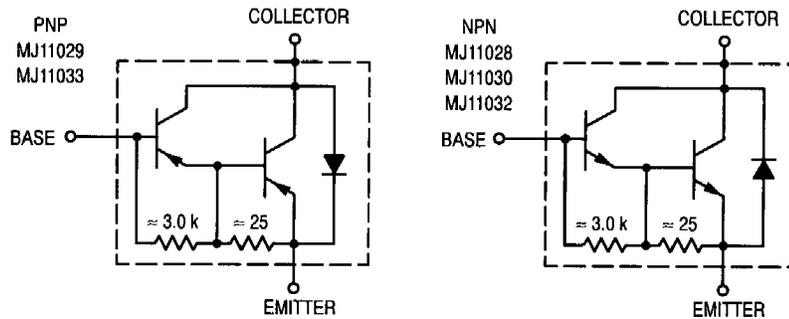


Figure 1. Darlingtons Circuit Schematic

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

Characteristic	Symbol	Min	Max	Unit	
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage (Note 1) ($I_C = 1.00\text{ mAdc}$, $I_B = 0$)	MJ11028, MJ11029 MJ11030 MJ11032, MJ11033	$V_{(BR)CEO}$	60 90 120	– – –	Vdc
Collector-Emitter Leakage Current ($V_{CE} = 60\text{ Vdc}$, $R_{BE} = 1\text{ k}\Omega$) ($V_{CE} = 90\text{ Vdc}$, $R_{BE} = 1\text{ k}\Omega$) ($V_{CE} = 120\text{ Vdc}$, $R_{BE} = 1\text{ k}\Omega$) ($V_{CE} = 60\text{ Vdc}$, $R_{BE} = 1\text{ k}\Omega$, $T_C = 150^\circ\text{C}$) ($V_{CE} = 120\text{ Vdc}$, $R_{BE} = 1\text{ k}\Omega$, $T_C = 150^\circ\text{C}$)	MJ11028, MJ11029 MJ11030 MJ11032, MJ11033 MJ11028, MJ11029 MJ11032, MJ11033	I_{CER}	– – – – –	2 2 2 10 10	mAdc
Emitter Cutoff Current ($V_{BE} = 5\text{ Vdc}$, $I_C = 0$)		I_{EBO}	–	5	mAdc
Collector-Emitter Leakage Current ($V_{CE} = 50\text{ Vdc}$, $I_B = 0$)		I_{CEO}	–	2	mAdc
ON CHARACTERISTICS (Note 1)					
DC Current Gain ($I_C = 25\text{ Adc}$, $V_{CE} = 5\text{ Vdc}$) ($I_C = 50\text{ Adc}$, $V_{CE} = 5\text{ Vdc}$)		h_{FE}	1 k 400	18 k –	–
Collector-Emitter Saturation Voltage ($I_C = 25\text{ Adc}$, $I_B = 250\text{ mAdc}$) ($I_C = 50\text{ Adc}$, $I_B = 500\text{ mAdc}$)		$V_{CE(sat)}$	– –	2.5 3.5	Vdc
Base-Emitter Saturation Voltage ($I_C = 25\text{ Adc}$, $I_B = 200\text{ mAdc}$) ($I_C = 50\text{ Adc}$, $I_B = 300\text{ mAdc}$)		$V_{BE(sat)}$	– –	3.0 4.5	Vdc

1. Pulse Test: Pulse Width $\leq 300\ \mu\text{s}$, Duty Cycle $\leq 2.0\%$.