

MJE700/701/702/703 NPN EPITAXIAL SILICON DARLINGTON TRANSISTOR

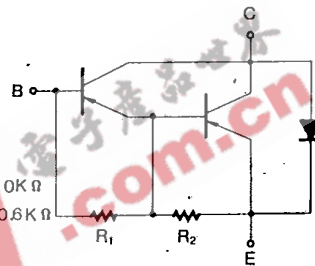
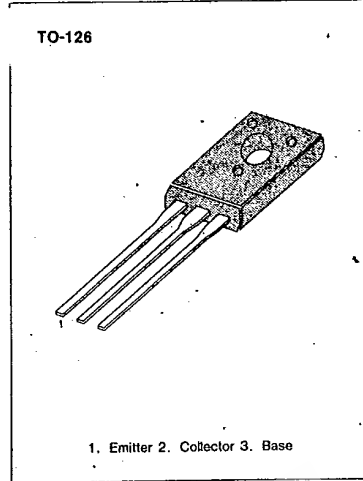
T-33-31

HIGH DC CURRENT GAIN
MIN $h_{FE} = 750$ @ $I_C = -1.5$ and -2.0 A DC
MONOLITHIC CONSTRUCTION WITH
BUILT-IN BASE-EMITTER RESISTORS

• Complementary to MJE800/801/802/803

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

Characteristic	Symbol	Rating	Unit
Collector-Base Voltage	V_{CBO}	-60	V
:MJE700/701		-80	V
:MJE702/703			
Collector-Emitter Voltage	V_{CEO}	-60	V
:MJE700/701		-80	V
:MJE702/703			
Emitter-Base Voltage	V_{EBO}	-5	V
Collector Current	I_C	-4	A
Base Current	I_B	-0.1	A
Collector Dissipation	P_C	40	W
Junction Temperature	T_j	150	$^\circ\text{C}$
Storage Temperature	T_{stg}	-55~150	$^\circ\text{C}$



ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

Characteristic	Symbol	Test Condition	Min	Max	Unit
Collector Emitter Breakdown Voltage	BV_{CEO}	$I_C = -50\text{mA}, I_B = 0$	-60		V
:MJE700/701			-80		V
:MJE702/703					
Collector Cutoff Current	I_{CBO}	$V_{CE} = -60\text{V}, I_B = 0$		-100	μA
:MJE700/701		$V_{CE} = -80\text{V}, I_B = 0$		-100	μA
:MJE702/703		$V_{CB} = \text{Rated } BV_{CEO}, I_E = 0$		-500	μA
Collector Cutoff Current	I_{CBO}	$V_{CB} = \text{Rated } BV_{CEO}, I_E = 0$		-500	μA
Emitter Cutoff Current	I_{EBO}	$V_{BE} = -5\text{V}, I_C = 0$		-2	mA
DC Current Gain	h_{FE}	$V_{CE} = -3\text{V}, I_C = -1.5\text{A}$	750		
:MJE701/703		$V_{CE} = -3\text{V}, I_C = -2\text{A}$	750		
:ALL DEVICES		$V_{CE} = -3\text{V}, I_C = -4\text{A}$	100		
Collector-Emitter Saturation Voltage:	$V_{CE(sat)}$	$I_C = -1.5\text{A}, I_B = -30\text{mA}$		-2.5	V
:MJE700/702		$I_C = -2\text{A}, I_B = -40\text{mA}$		-2.8	V
:MJE701/703		$I_C = -4\text{A}, I_B = -40\text{mA}$		-3	V
:ALL DEVICES					
Base-Emitter On Voltage	$V_{BE(on)}$	$V_{CE} = -3\text{V}, I_C = -1.5\text{A}$		-2.5	V
:MJE700/702		$V_{CE} = -3\text{V}, I_C = -2\text{A}$		-2.5	V
:MJE701/703		$V_{CE} = -3\text{V}, I_C = -4\text{A}$		-3	V
:ALL DEVICES					

MJE800/801/802/803

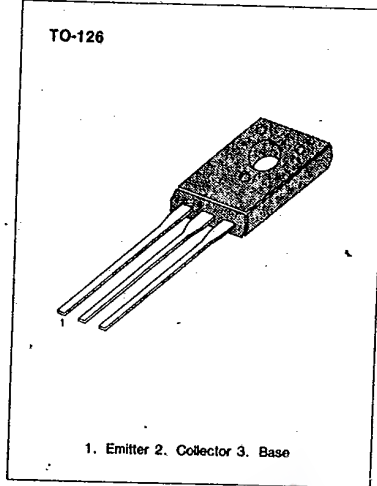
NPN EPITAXIAL SILICON DARLINGTON TRANSISTOR

HIGH DC CURRENT GAIN
MIN $h_{FE} = 750$ @ $I_C = -1.5$ and $-2.0A$ DC
MONOLITHIC CONSTRUCTION WITH BUILT-IN BASE-EMITTER RESISTORS

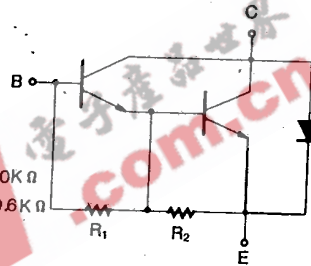
• Complementary to MJE700/701/702/703

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

Characteristic	Symbol	Rating	Unit
Collector-Base Voltage	V_{CBO}	60	V
:MJE800/801		80	V
:MJE802/803			
Collector-Emitter Voltage	V_{CEO}	60	V
:MJE800/801		80	V
:MJE802/803			
Emitter-Base Voltage	V_{EBO}	5	V
Collector Current	I_C	4	A
Base Current	I_B	0.1	A
Collector Dissipation	P_C	40	W
Junction Temperature	T_J	150	$^\circ C$
Storage Temperature	T_{stg}	-55~150	$^\circ C$



3



ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ C$)

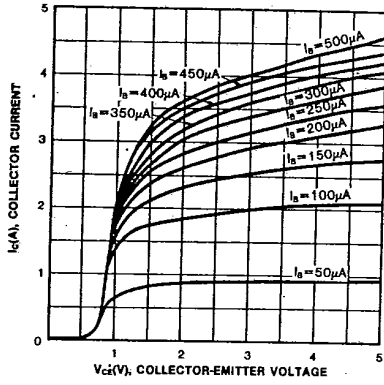
Characteristic	Symbol	Test Condition	Min	Max	Unit
Collector Emitter Breakdown Voltage	BV_{CEO}	$I_C = 50mA, I_B = 0$	60		V
:MJE800/801			80		V
:MJE802/803					
Collector Cutoff Current	I_{CEO}	$V_{CE} = 60V, I_B = 0$		100	μA
:MJE800/801		$V_{CE} = 80V, I_B = 0$		100	μA
:MJE802/803		$V_{CE} = \text{Rated } BV_{CEO}, I_E = 0$		100	μA
Collector Cutoff Current	I_{CBO}	$V_{CB} = \text{Rated } BV_{CEO}, I_E = 0$		500	μA
Emitter Cutoff Current	I_{EBO}	$T_C = 100^\circ C$			
DC Current Gain	h_{FE}	$V_{BE} = 5V, I_C = 0$		2	mA
:MJE800/802		$V_{CE} = 3V, I_C = 1.5A$	750		
:MJE801/803		$V_{CE} = 3V, I_C = 2A$	750		
:ALL DEVICES		$V_{CE} = 3V, I_C = 4A$	100		
Collector-Emitter Saturation Voltage:	$V_{CE(sat)}$				
:MJE800/802		$I_C = 1.5A, I_B = 30mA$		2.5	V
:MJE801/803		$I_C = 2A, I_B = 40mA$		2.8	V
:ALL DEVICES		$I_C = 4A, I_B = 40mA$		3	V
Base-Emitter On Voltage	$V_{BE(on)}$				
:MJE800/802		$V_{CE} = 3V, I_C = 1.5A$		2.5	V
:MJE801/803		$V_{CE} = 3V, I_C = 2A$		2.5	V
:ALL DEVICES		$V_{CE} = 3V, I_C = 4A$		3	V

MJE800/801/802/803

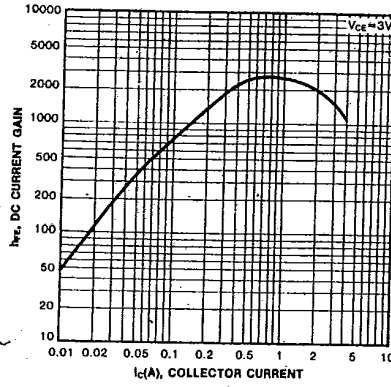
NPN EPITAXIAL SILICON DARLINGTON TRANSISTOR

T-33-29

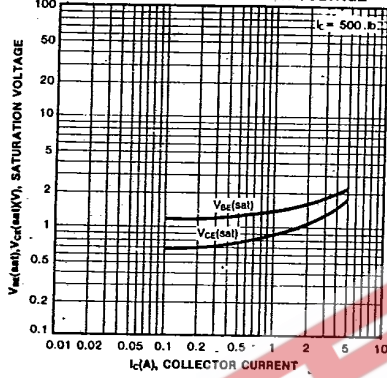
STATIC CHARACTERISTIC



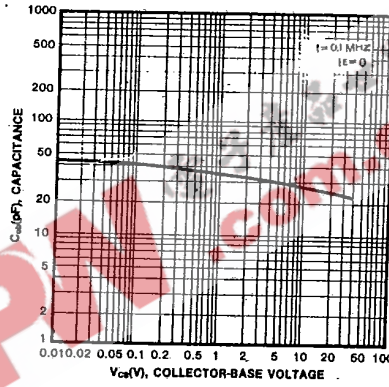
DC CURRENT GAIN



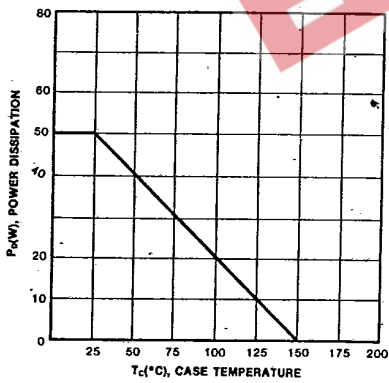
COLLECTOR-EMITTER SATURATION VOLTAGE
BASE-EMITTER SATURATION VOLTAGE



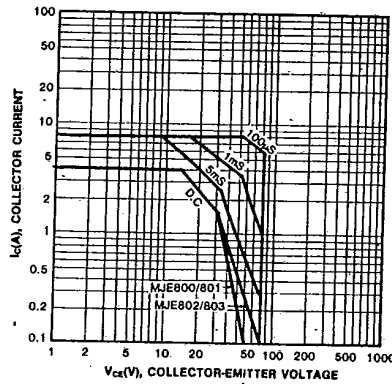
COLLECTOR OUTPUT CAPACITANCE



POWER DERATING



SAFE OPERATING AREA



MJE2955T

PNP SILICON TRANSISTOR

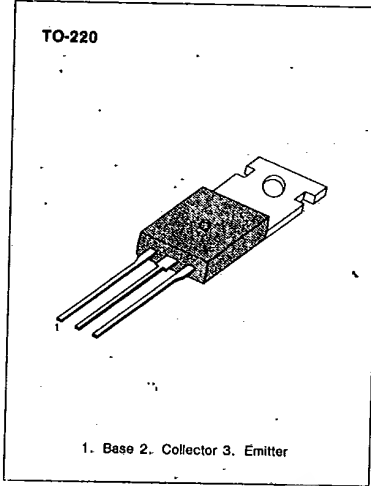
T-33-21

**GENERAL PURPOSE AND SWITCHING APPLICATIONS
DC CURRENT GAIN SPECIFIED TO 10 AMPERES**

- High Current Gain-Bandwidth Product ($f_T = 2\text{MHz (MIN)}$)

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

Characteristic	Symbol	Rating	Unit
Collector-Base Voltage	V_{CBO}	-70	V
Collector-Emitter Voltage	V_{CEO}	-60	V
Emitter-Base Voltage	V_{EBO}	-5	V
Collector Current	I_C	-10	A
Base Current	I_B	-6	A
Collector Dissipation ($T_C = 25^\circ\text{C}$)	P_C	75	W
Collector Dissipation ($T_a = 25^\circ\text{C}$)	P_C	0.6	W
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature	T_{stg}	-55~150	$^\circ\text{C}$



3

ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

Characteristic	Symbol	Test Condition	Min	Max	Unit
Collector Emitter Sustaining Voltage	$V_{CEO(sus)}$	$I_C = -200\text{mA}, I_B = 0$	-60		V
Collector Cutoff Current	I_{CEO}	$V_{CE} = -30\text{V}, I_B = 0$		-700	μA
Collector Cutoff Current	I_{CEX}	$V_{CE} = -70\text{V}, V_{BE(off)} = 1.5\text{V}$		-1	mA
		$V_{CE} = -70\text{V}, V_{BE(off)} = 1.5\text{V}$ $T_C = 150^\circ\text{C}$		-5	mA
Emitter Cutoff Current	I_{EBO}	$V_{EB} = -5\text{V}, I_C = 0$		-5	mA
*DC Current Gain	β_{FE}	$V_{CE} = -4\text{V}, I_C = -4\text{A}$	20	100	
		$V_{CE} = -4\text{V}, I_C = -10\text{A}$	5		
*Collector Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = -4\text{A}, I_B = -0.4\text{A}$		-1.1	V
		$I_C = -10\text{A}, I_B = -3.3\text{A}$		-8	V
*Base Emitter On Voltage	$V_{BE(on)}$	$V_{CE} = -4\text{V}, I_C = -4\text{A}$		-1.8	V
Current Gain Bandwidth Product	f_T	$V_{CE} = -10\text{V}, I_C = -500\text{mA}, f = 500\text{KHz}$	2		MHz

* Pulse test: $PW \leq 300\mu\text{s}$, duty cycle $\leq 2\%$ Pulse

MJE2955T

PNP SILICON TRANSISTOR

T-33-21

