

EPITAXIAL-BASE NPN/PNP



MJE800 MJE700
MJE801 MJE701
MJE802 MJE702
MJE803 MJE703

MEDIUM POWER DARLINGTONS

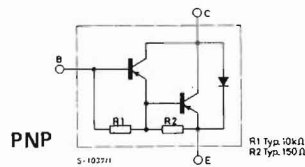
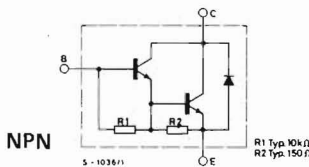
The MJE800, MJE801, MJE802 and MJE803 are silicon epitaxial-base NPN power transistors in monolithic Darlington configuration and are mounted in Jedec TO-126 plastic package. They are intended for use in medium power linear and switching applications.

The complementary PNP types (the MJE700, MJE701, MJE702 and MJE703 respectively) have same characteristics of NPN types but voltage and current values are negative.

ABSOLUTE MAXIMUM RATINGS

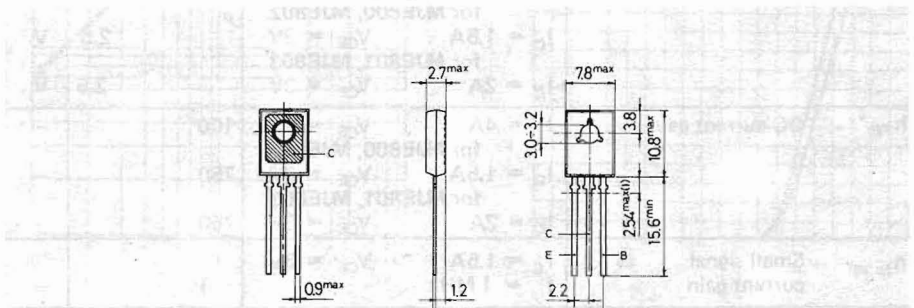
		MJE800 MJE801	MJE802 MJE803
V_{CBO}	Collector-base voltage ($I_E = 0$)	60V	80V
V_{CEO}	Collector-emitter voltage ($I_B = 0$)	60V	80V
V_{EBO}	Emitter-base voltage ($I_C = 0$)	5V	
I_C	Collector current	4A	
I_B	Base current	0.1A	
P_{tot}	Total power dissipation at $T_{case} \leq 25^\circ C$	40W	
T_{stg}	Storage temperature	-60 to 150 °C	
T_j	Junction temperature	150 °C	

INTERNAL SCHEMATIC DIAGRAMS



MECHANICAL DATA

Dimensions in mm



(1) Within this region the cross-section of the leads is uncontrolled

TO-126 (SOT-32)



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THERMAL DATA

$R_{th\ j-case}$	Thermal resistance junction-case	max	3.13	°C/W
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ELECTRICAL CHARACTERISTICS ($T_{case} = 25\text{ °C}$ unless otherwise specified)

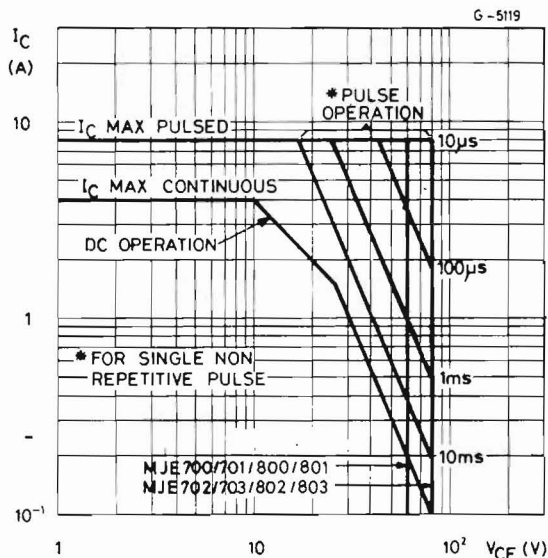
Parameter	Test conditions	Min.	Typ.	Max.	Unit
I_{CBO} Collector cutoff current ($I_E = 0$)	$V_{CB} = \text{rated } V_{CBO}$ $V_{CB} = \text{rated } V_{CBO}$ $T_{case} = 100\text{ °C}$		100		μA
			500		μA
I_{CEO} Collector cutoff current ($I_B = 0$)	$V_{CE} = \text{rated } V_{CEO}$		100		μA
I_{EBO} Emitter cutoff current ($I_C = 0$)	$V_{EB} = 5V$		2		mA
$V_{CEO(sus)}^*$ Collector-emitter sustaining voltage ($I_B = 0$)	$I_C = 50mA$ for MJE800, MJE801 for MJE802, MJE803	60		80	V
					V
$V_{CE(sat)}^*$ Collector-emitter saturation voltage	$I_C = 4A$ $I_B = 40mA$ for MJE800, MJE802 $I_C = 1.5A$ $I_B = 30mA$ for MJE801, MJE803 $I_C = 2A$ $I_B = 40mA$		3		V
			2.5		V
			2.8		V
V_{BE}^* Base-emitter voltage	$I_C = 4A$ $V_{CE} = 3V$ for MJE800, MJE802 $I_C = 1.5A$ $V_{CE} = 3V$ for MJE801, MJE803 $I_C = 2A$ $V_{CE} = 3V$		3		V
			2.5		V
			2.5		V
h_{FE}^* DC current gain	$I_C = 4A$ $V_{CE} = 3V$ for MJE800, MJE802 $I_C = 1.5A$ $V_{CE} = 3V$ for MJE801, MJE803 $I_C = 2A$ $V_{CE} = 3V$	100			—
		750			—
		750			—
h_{fe} Small signal current gain	$I_C = 1.5A$ $V_{CE} = 3V$ $f = 1\text{ MHz}$	1			—

* Pulsed: pulse duration = 300 μs , duty cycle = 1.5%

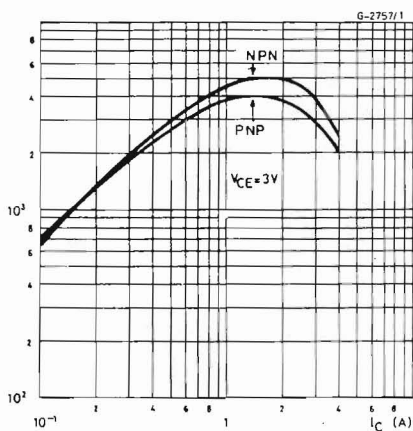


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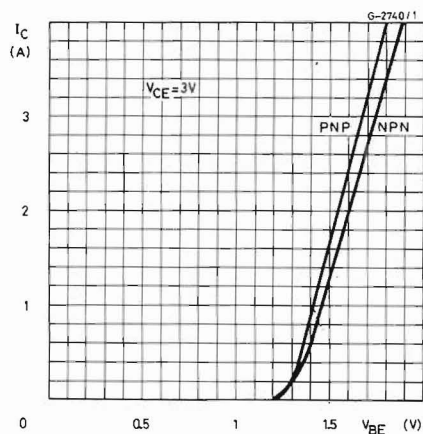
Safe operating areas



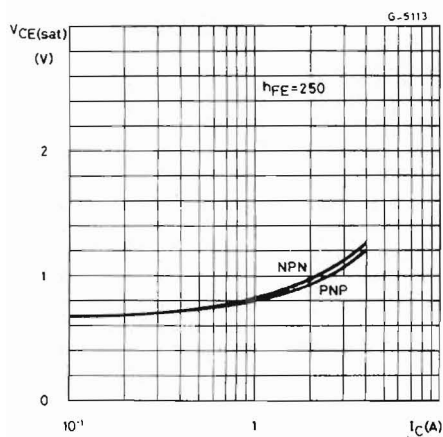
DC current gain



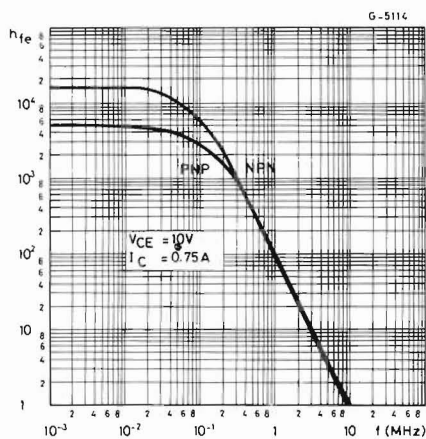
DC transconductance



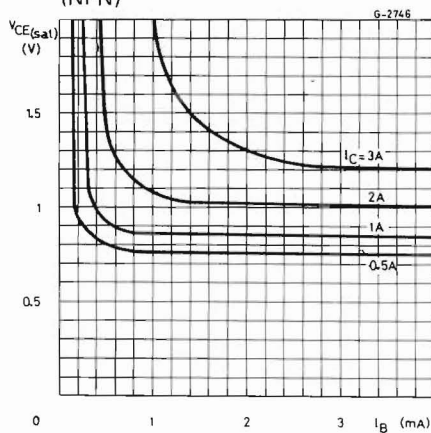
Collector-emitter saturation voltage



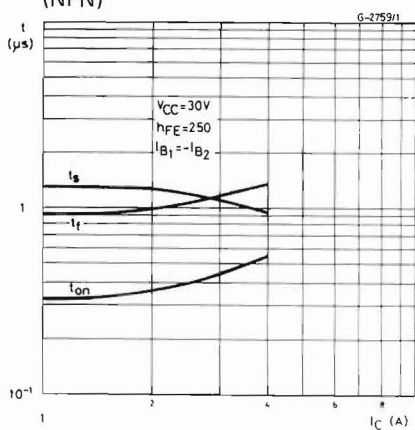
Small signal current gain



Collector-emitter saturation voltage (NPN)



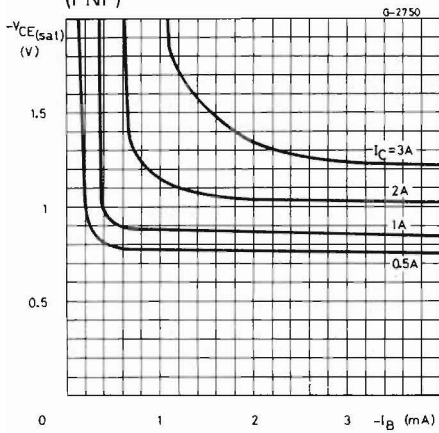
Saturated switching characteristics (NPN)





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Collector-emitter saturation voltage
(PNP)



Saturated switching characteristics
(PNP)

