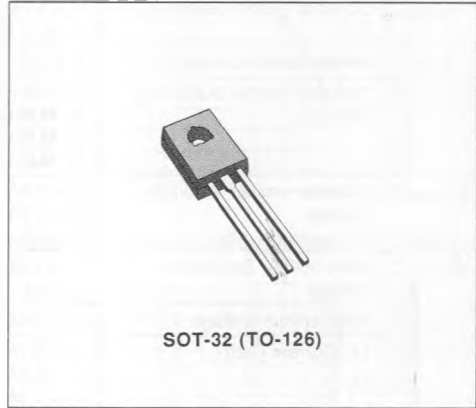


## COMPLEMENTARY POWER TRANSISTORS

### DESCRIPTION

The MJE 170, MJE171, MJE172 (PNP types) and MJE180, MJE181, MJE182 (NPN types) are silicon epitaxial planar, complementary transistors in Jedec TO-126 plastic package. they are designed for low power audio amplifier and low current, high speed switching applications.



### INTERNAL SCHEMATIC DIAGRAMS



### ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	PNP NPN	Value			Unit
			MJE170 MJE180	MJE171 MJE181	MJE172 MJE182	
$V_{CEO}$	Collector-emitter Voltage ( $I_B = 0$ )		40	60	80	V
$V_{CBO}$	Collector-base Voltage ( $I_E = 0$ )		60	80	100	V
$V_{EBO}$	Base-emitter Voltage ( $I_C = 0$ )		7			V
$I_C$	Collector Current		3			A
$I_{CM}$	Collector Peak Current		6			A
$I_B$	Base Current		1			A
$P_{tot}$	Total Power Dissipation at $T_{case} \leq 25^\circ\text{C}$		12.5			W
$T_{stg}$	Storage Temperature		- 65 to 150			$^\circ\text{C}$
$T_J$	Junction Temperature		150			$^\circ\text{C}$

For PNP types voltage and current values are negative.

**THERMAL DATA**

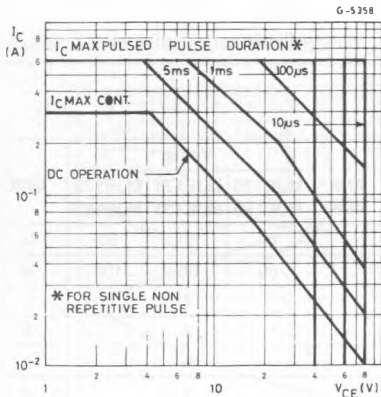
$R_{th\ j-amb}$	Thermal Resistance Junction-ambient	Max	83.4	$^{\circ}C/W$
$R_{th\ j-case}$	Thermal Resistance Junction-case	Max	10	$^{\circ}C/W$

**ELECTRICAL CHARACTERISTICS** ( $T_{case} = 25^{\circ}C$  unless otherwise specified)

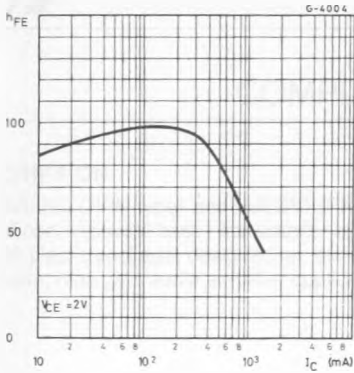
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$I_{CBO}$	Collector Cutoff Current ( $I_E = 0$ )	$V_{CB} = \text{rated } V_{CBO}$ $T_{case} = 150^{\circ}C$			0.1 0.1	$\mu A$ mA
$I_{EBO}$	Emitter Cutoff Current ( $I_C = 0$ )	$V_{EB} = 7\ V$			0.1	$\mu A$
$V_{CE(sus)}^*$	Collector-emitter Sustaining Voltage	$I_C = 10\ mA$ for <b>MJE170, MJE180</b> for <b>MJE171, MJE181</b> for <b>MJE172, MJE182</b>	40 60 80			V V V
$V_{CE(sat)}^*$	Collector-emitter Saturation Voltage	$I_C = 0.5A$ $I_B = 50mA$ $I_C = 1.5A$ $I_B = 0.15A$ $I_C = 3A$ $I_B = 0.6A$			0.3 0.9 1.7	V V V
$V_{BE(sat)}^*$	Base-emitter Saturation Voltage	$I_C = 1.5A$ $I_B = 0.15A$ $I_C = 3A$ $I_B = 0.6A$			1.5 2	V V
$V_{BE}^*$	Base-emitter Voltage	$I_C = 0.5A$ $V_{CE} = 1V$			1.2	V
$h_{FE}^*$	DC Current Gain	$I_C = 0.1A$ $V_{CE} = 1V$ $I_C = 0.5A$ $V_{CE} = 1V$ $I_C = 1.5A$ $V_{CE} = 1V$	50 30 12		250	
$f_T$	Transition Frequency	$I_C = 0.1A$ $V_{CE} = 10V$ $f = 10MHz$	50			MHz
$C_{CBO}$	Collector-base Capacitance	$V_{CB} = 10V ; I_E = 0 ; f = 0.1MHz$ for <b>MJE170, MJE172</b> for <b>MJE180, MJE182</b>			60 40	pF pF

\* Pulsed : pulse duration = 300  $\mu s$ , duty cycle < 1.5 %.  
For PNP types voltage and current values are negative.

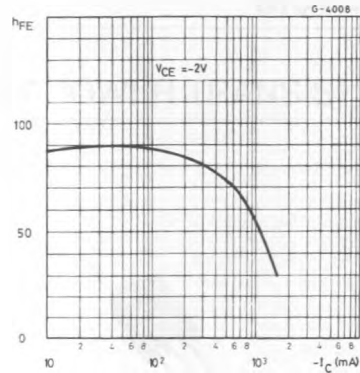
**Safe Operating Areas.**



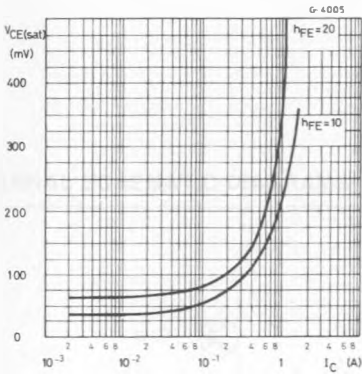
DC Current Gain (NPN types)



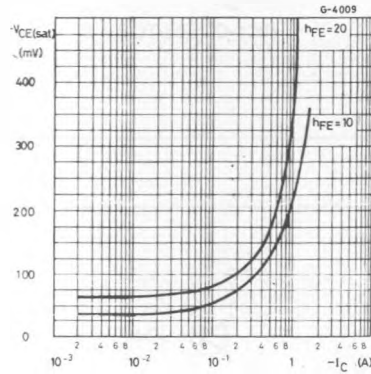
DC Current Gain (PNP types)



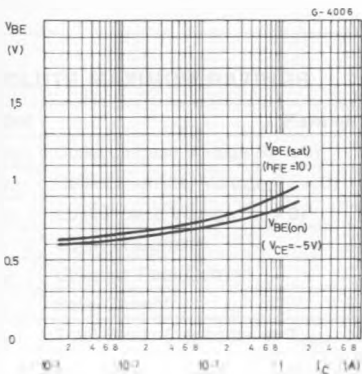
Collector-emitter saturation voltage (NPN types).



Collector-emitter Saturation Voltage (PNP types).



Base-emitter Voltage (NPN types).



Base-emitter Voltage (PNP types).

