

# Central<sup>TM</sup> Semiconductor Corp.

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Manufacturers of World Class Discrete Semiconductors

MJE220 THRU MJE225

NPN SILICON POWER TRANSISTOR

JEDEC TO-126 CASE

## DESCRIPTION

The CENTRAL SEMICONDUCTOR MJE220 series types are NPN silicon power transistors manufactured by the epitaxial-base process designed for general purpose amplifier and switching applications.

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

	SYMBOL	MJE220 MJE221 MJE222	MJE223 MJE224 MJE225	UNIT
Collector-Base Voltage	$V_{CB0}$	60	80	V
Collector-Emitter Voltage	$V_{CE0}$	40	60	V
Emitter-Base Voltage	$V_{EB0}$	7.0	7.0	V
Collector Current	$I_C$	4.0	4.0	A
Collector Current (PEAK)	$I_{CM}$	8.0	8.0	A
Base Current	$I_B$	1.0	1.0	A
Power Dissipation	$P_D$	1.5	1.5	W
Power Dissipation ( $T_C=25^\circ\text{C}$ )	$P_D$	15	15	W
Operating and Storage Junction Temperature	$T_J, T_{STG}$	-65 TO +150		$^\circ\text{C}$
Thermal Resistance	$\theta_{JA}$	83.4		$^\circ\text{C/W}$
Thermal Resistance	$\theta_{JC}$	8.34		$^\circ\text{C/W}$

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

SYMBOL	TEST CONDITIONS		MIN	MAX	UNIT
$I_{CB0}$	$V_{CB}=60\text{V}$	(MJE220, MJE221, MJE222)		0.1	$\mu\text{A}$
$I_{CB0}$	$V_{CB}=80\text{V}$	(MJE223, MJE224, MJE225)		0.1	$\mu\text{A}$
$I_{CB0}$	$V_{CB}=60\text{V}, T_C=125^\circ\text{C}$	(MJE220, MJE221, MJE222)		0.1	mA
$I_{CB0}$	$V_{CB}=80\text{V}, T_C=125^\circ\text{C}$	(MJE223, MJE224, MJE225)		0.1	mA
$I_{EB0}$	$V_{BE}=7.0\text{V}$			0.1	$\mu\text{A}$
$BV_{CE0}$	$I_C=10\text{mA}$	(MJE220, MJE221, MJE222)	40		V
$BV_{CE0}$	$I_C=10\text{mA}$	(MJE223, MJE224, MJE225)	60		V
$V_{CE(SAT)}$	$I_C=500\text{mA}, I_B=50\text{mA}$			0.3	V
$V_{CE(SAT)}$	$I_C=1.0\text{A}, I_B=100\text{mA}$	(MJE221, MJE224)		0.6	V
$V_{CE(SAT)}$	$I_C=2.0\text{A}, I_B=200\text{mA}$	(MJE220, MJE223)		0.8	V
$V_{CE(SAT)}$	$I_C=4.0\text{A}, I_B=1.0\text{A}$			2.5	V
$V_{BE(SAT)}$	$I_C=2.0\text{A}, I_B=200\text{mA}$			1.8	V
$V_{BE(ON)}$	$V_{CE}=1.0\text{V}, I_C=500\text{mA}$			1.5	V
$h_{FE}$	$V_{CE}=1.0\text{V}, I_C=200\text{mA}$	(MJE220, MJE223)	40	200	
$h_{FE}$	$V_{CE}=1.0\text{V}, I_C=200\text{mA}$	(MJE221, MJE224)	40	150	
$h_{FE}$	$V_{CE}=1.0\text{V}, I_C=200\text{mA}$	(MJE222, MJE225)	25	-	
$h_{FE}$	$V_{CE}=1.0\text{V}, I_C=1.0\text{A}$	(MJE221, MJE224)	20	-	
$h_{FE}$	$V_{CE}=1.0\text{V}, I_C=1.0\text{A}$	(MJE222, MJE225)	10	-	
$h_{FE}$	$V_{CE}=1.0\text{V}, I_C=2.0\text{A}$	(MJE220, MJE223)	20	-	
$f_T$	$V_{CE}=10\text{V}, I_C=100\text{mA}, f=10\text{MHz}$		10 TYP		MHz
$C_{ob}$	$V_{CB}=10\text{V}, I_E=0, f=0.1\text{MHz}$			50	pF