

CentralTM Semiconductor Corp.

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Manufacturers of World Class Discrete Semiconductors

www.centrasemi.com

MJE13004
MJE13005

NPN SILICON
POWER TRANSISTOR

JEDEC TO-220 CASE

DESCRIPTION

The CENTRAL SEMICONDUCTOR MJE13004 and MJE13005 are Silicon NPN Power Transistors, designed for high speed power switching applications.

MAXIMUM RATINGS (T_C=25°C unless otherwise noted)

	SYMBOL	MJE13004	MJE13005	UNITS
Collector-Emitter Voltage	V _{CEO}	300	400	V
Collector-Emitter Voltage	V _{CEV}	600	700	V
Emitter-Base Voltage	V _{EBO}		9.0	V
Collector Current	I _C		4.0	A
Peak Collector Current	I _{CM}		8.0	A
Base Current	I _B		2.0	A
Peak Base Current	I _{BM}		4.0	A
Power Dissipation (T _A =25°C)	P _D		2.0	W
Power Dissipation	P _D		75	W
Operating and Storage Junction Temperature	T _J , T _{stg}		-65 to +150	°C
Thermal Resistance	θ _{JA}		62.5	°C/W
Thermal Resistance	θ _{JC}		1.67	°C/W

ELECTRICAL CHARACTERISTICS (T_C=25°C unless otherwise noted)

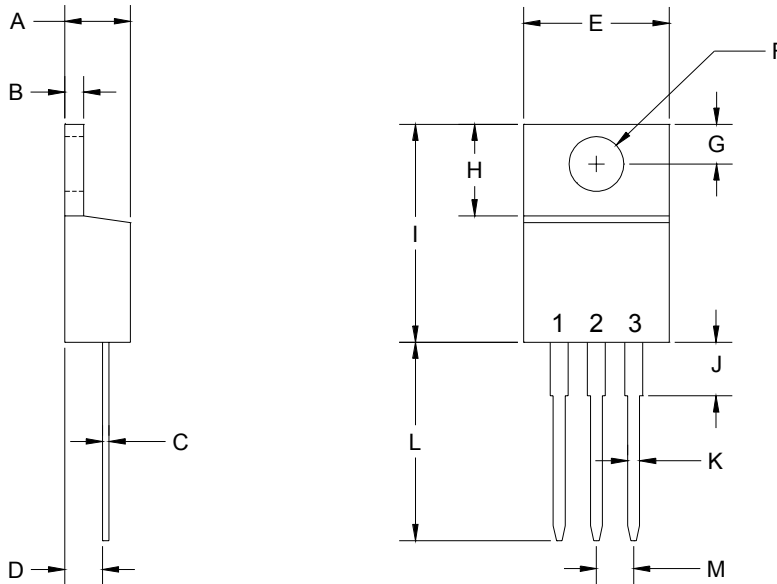
SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNITS
I _{CEV}	V _{CE} =600V, V _{BE(OFF)} =1.5V (MJE13004)			1.0	mA
I _{CEV}	V _{CE} =600V, V _{BE(OFF)} =1.5V, T _C =100°C (MJE13004)			5.0	mA
I _{CEV}	V _{CE} =700V, V _{BE(OFF)} =1.5V (MJE13005)			1.0	mA
I _{CEV}	V _{CE} =700V, V _{BE(OFF)} =1.5V, T _C =100°C (MJE13005)			5.0	mA
I _{EBO}	V _{EB} =9.0V			1.0	mA
BV _{CEO}	I _C =10mA (MJE13004)	300			V
BV _{CEO}	I _C =10mA (MJE13005)	400			V
V _{CE(SAT)}	I _C =1.0A, I _B =0.2A			0.5	V
V _{CE(SAT)}	I _C =2.0A, I _B =0.5A			0.6	V
V _{CE(SAT)}	I _C =4.0A, I _B =1.0A			1.0	V
V _{CE(SAT)}	I _C =2.0A, I _B =0.5A, T _C =100°C			1.0	V
V _{BE(SAT)}	I _C =1.0A, I _B =0.2A			1.2	V
V _{BE(SAT)}	I _C =2.0A, I _B =0.5A			1.6	V
V _{BE(SAT)}	I _C =2.0A, I _B =0.5A, T _C =100°C			1.5	V
h _{FE}	V _{CE} =5.0V, I _C =1.0A	10		60	
h _{FE}	V _{CE} =5.0V, I _C =2.0A	8.0		40	

(SEE REVERSE SIDE)

ELECTRICAL CHARACTERISTICS (CONTINUED)

<u>SYMBOL</u>	<u>TEST CONDITIONS</u>	<u>MIN</u>	<u>TYP</u>	<u>MAX</u>	<u>UNITS</u>
f_T	$V_{CE}=10V, I_C=500mA, f=1.0MHz$	4.0			MHz
C_{ob}	$V_{CB}=10V, I_E=0, f=1.0kHz$		65		pF
t_d	$V_{CC}=125V, I_C=2.0A, I_{B1}=I_{B2}=0.4A$			0.1	μs
t_r	$t_p=25\mu s, \text{Duty Cycle} \leq 1.0\%$			0.7	μs
t_s				4.0	μs
t_f				0.9	μs
t_{sv}	$I_C=2.0A, V_{clamp}=300V, I_{B1}=0.4A,$			4.0	μs
t_c	$V_{BE(off)}=5.0V, T_C=100^\circ C$			0.9	μs
t_{fi}			0.15		μs

TO-220 PACKAGE - MECHANICAL OUTLINE



SYMBOL	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.176	0.190	4.48	4.82
B	0.045	0.055	1.15	1.39
C	0.014	0.026	0.35	0.65
D	0.083	0.106	2.10	2.70
E	0.394	0.417	10.01	10.60
F (DIA)	0.140	0.157	3.55	4.00
G	0.100	0.118	2.54	3.00
H	0.230	0.270	5.85	6.85
I	0.560	0.625	14.23	15.87
J	-	0.250	-	6.35
K	0.025	0.038	0.64	0.96
L	0.500	0.579	12.70	14.70
M	0.090	0.110	2.29	2.79

TO-220 (REV: R1)

Lead Code:

R1

- 1) Base
- 2) Collector
- 3) Emitter

Tab is Common to Pin 2

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