MJE13003

SILICON
NPN POWER TRANSISTOR

TO-126 CASE

Central Semiconductor Corp.

www.centralsemi.com

DESCRIPTION:

The CENTRAL SEMICONDUCTOR MJE13003 is a silicon NPN power transistor designed for high speed power switching applications.

MARKING: FULL PART NUMBER

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

	SYMBOL		UNITS
Collector-Emitter Voltage	V_{CEO}	400	V
Collector-Emitter Voltage	V_{CEV}	700	V
Emitter-Base Voltage	V_{EBO}	9.0	V
Continuous Collector Current	I_C	1.5	A
Peak Collector Current	I_{CM}	3.0	A
Continuous Base Current	I_B	0.75	A
Peak Base Current	I_{BM}	1.5	A
Continuous Emitter Current	I_E	2.25	A
Peak Emitter Current	I_{EM}	4.5	A
Power Dissipation	P_D	40	W
Power Dissipation (T_A=25°C)	P_D	1.4	W
Operating and Storage Junction Temperature	T_J, T_{stg}	-65 to +150	°C
Thermal Resistance	Θ_{JA}	89.0	°C/W
Thermal Resistance	Θ_{JC}	3.12	°C/W

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

SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNITS
I_{CEV}	V_{CE}=700V, $V_{BE(OFF)}$=1.5V			1.0	mA
I_{CEV}	V_{CE}=700V, $V_{BE(OFF)}$=1.5V, T_C=100°C			5.0	mA
I_{EBO}	V_{EB}=9.0V			1.0	mA
BV_{CEO}	I_C=10mA	400			V
$V_{CE(SAT)}$	I_C=0.5A, I_B=0.1A			0.5	V
$V_{CE(SAT)}$	I_C=1.0A, I_B=0.25A			1.0	V
$V_{CE(SAT)}$	I_C=1.5A, I_B=0.5A			3.0	V
$V_{BE(SAT)}$	I_C=0.5A, I_B=0.1A			1.0	V
$V_{BE(SAT)}$	I_C=1.0A, I_B=0.25A			1.2	V
h_{FE}	V_{CE}=2.0V, I_C=0.5A	8.0		40	
h_{FE}	V_{CE}=2.0V, I_C=1.0A	5.0		25	
f_T	V_{CE}=10V, I_C=100mA, f=1.0MHz	4.0			MHz
C_{ob}	V_{CB}=10V, I_E=0, f=100kHz		40		pF

R1 (23-October 2013)

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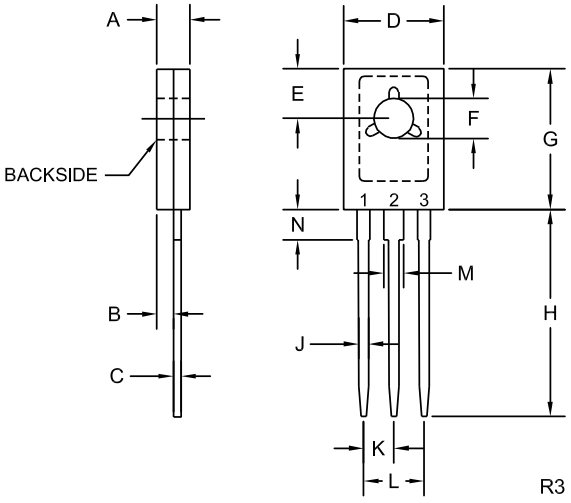
ELECTRICAL CHARACTERISTICS - Continued: (T_C=25°C unless otherwise noted)

SYMBOL	TEST CONDITIONS	TYP	MAX	UNITS
t_d	Resistive Load		0.1	μs
t_r	V_{CC}=125V, I_C=1.0A, I_{B1}=I_{B2}=0.2A		1.0	μs
t_s	tp=25μs, Duty Cycle ≤ 1.0%		4.0	μs
t_f			0.7	μs
t_{sv}	Inductive Load		4.0	μs
t_c	I_C=1.0A, V_{clamp}=300V, I_{B1}=0.2A		0.75	μs
t_{fi}	$V_{BE(off)}$=5.0V, T_C=100°C	0.15		μs

TO-126 CASE - MECHANICAL OUTLINE



DIMENSIONS				
	INCHES		MILLIMETERS	
SYMBOL	MIN	MAX	MIN	MAX
A	0.094	0.110	2.40	2.80
B	0.050		1.27	
C	0.015	0.030	0.38	0.75
D	0.291	0.335	7.40	8.50
E	0.148		3.75	
F	0.118	0.134	3.00	3.40
G	0.413	0.472	10.50	12.00
H	0.618		15.70	
J	0.024	0.035	0.62	0.90
K	0.089		2.25	
L	0.177		4.50	
M	0.045	0.055	1.14	1.40
N	0.083		2.10	

TO-126 (REV:R3)

LEAD CODE:
1) Base
2) Collector
3) Emitter

MARKING:
FULL PART NUMBER

OUTSTANDING SUPPORT AND SUPERIOR SERVICES

PRODUCT SUPPORT

Central's operations team provides the highest level of support to insure product is delivered on-time.

- Supply management (Customer portals)
- Inventory bonding
- Consolidated shipping options
- Custom bar coding for shipments
- Custom product packing

DESIGNER SUPPORT/SERVICES

Central's applications engineering team is ready to discuss your design challenges. Just ask.

- Free quick ship samples (2nd day air)
- Online technical data and parametric search
- SPICE models
- Custom electrical curves
- Environmental regulation compliance
- Customer specific screening
- Up-screening capabilities
- Special wafer diffusions
- PbSn plating options
- Package details
- Application notes
- Application and design sample kits
- Custom product and package development

REQUESTING PRODUCT PLATING

1. If requesting Tin/Lead plated devices, add the suffix " TIN/LEAD" to the part number when ordering (example: 2N2222A TIN/LEAD).
2. If requesting Lead (Pb) Free plated devices, add the suffix " PBFREE" to the part number when ordering (example: 2N2222A PBFREE).

CONTACT US

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