

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

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Manufacturers of World Class Discrete Semiconductors

www.centrasemi.com

MJ10023

NPN SILICON  
POWER DARLINGTON TRANSISTOR

JEDEC TO-3 CASE

## DESCRIPTION

The CENTRAL SEMICONDUCTOR MJ10023 is a Silicon NPN Power Darlington Transistor, mounted in a hermetically sealed metal case, designed for high voltage, high speed, power applications.

## MAXIMUM RATINGS (T<sub>A</sub>=25°C unless otherwise noted)

	SYMBOL		UNITS
Collector-Emitter Voltage	V <sub>CEO</sub>	400	V
Collector-Emitter Voltage	V <sub>CEV</sub>	600	V
Emitter-Base Voltage	V <sub>EBO</sub>	8.0	V
Collector Current	I <sub>C</sub>	40	A
Peak Collector Current	I <sub>CM</sub>	80	A
Base Current	I <sub>B</sub>	20	A
Peak Base Current	I <sub>BM</sub>	40	A
Power Dissipation (T <sub>C</sub> =25°C)	P <sub>D</sub>	250	W
Operating and Storage Junction Temperature	T <sub>J</sub> , T <sub>stg</sub>	-65 to +200	°C
Thermal Resistance	θ <sub>JC</sub>	0.7	°C/W

## ELECTRICAL CHARACTERISTICS (T<sub>A</sub>=25°C unless otherwise noted)

SYMBOL	TEST CONDITIONS	MIN	MAX	UNITS
I <sub>CEV</sub>	V <sub>CE</sub> =600V, V <sub>BE(OFF)</sub> =1.5V		0.25	mA
I <sub>CEV</sub>	V <sub>CE</sub> =600V, V <sub>BE(OFF)</sub> =1.5V, T <sub>C</sub> =150°C		5.0	mA
I <sub>CER</sub>	V <sub>CE</sub> =600V, R <sub>BE</sub> =50Ω, T <sub>C</sub> =100°C		5.0	mA
I <sub>EBO</sub>	V <sub>EB</sub> =2.0V		175	mA
BV <sub>CEO</sub>	I <sub>C</sub> =100mA	400		V
V <sub>CE(SAT)</sub>	I <sub>C</sub> =20A, I <sub>B</sub> =1.0A		2.2	V
V <sub>CE(SAT)</sub>	I <sub>C</sub> =20A, I <sub>B</sub> =1.0A, T <sub>C</sub> =100°C		2.5	V
V <sub>CE(SAT)</sub>	I <sub>C</sub> =40A, I <sub>B</sub> =5.0A		5.0	V
V <sub>BE(SAT)</sub>	I <sub>C</sub> =20A, I <sub>B</sub> =1.2A		2.5	V
V <sub>BE(SAT)</sub>	I <sub>C</sub> =20A, I <sub>B</sub> =1.2A, T <sub>C</sub> =100°C		2.5	V
h <sub>FE</sub>	V <sub>CE</sub> =5.0V, I <sub>C</sub> =10A	50	600	
V <sub>F</sub>	I <sub>F</sub> =20A		5.0	V
C <sub>ob</sub>	V <sub>CB</sub> =10V, I <sub>E</sub> =0, f=1.0kHz	150	600	pF

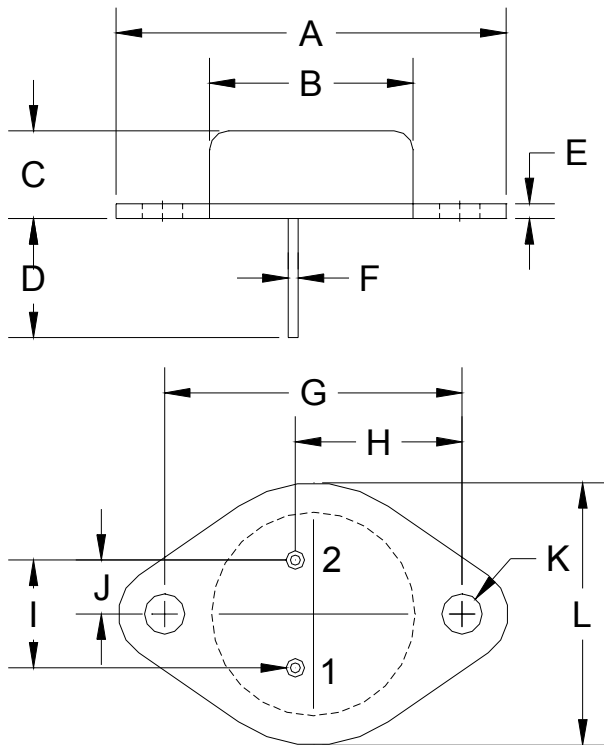
(SEE REVERSE SIDE)

R0

ELECTRICAL CHARACTERISTICS (CONTINUED)

SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNITS
$t_d$	$V_{CC}=250V, I_C=20A, I_{B1}=1.0A, V_{BE(off)}=5.0V$	-	0.03	0.2	$\mu s$
$t_r$	$V_{BE(off)}=5.0V, t_P=50\mu s, \text{Duty Cycle} \leq 2.0\%$	-	0.40	1.2	$\mu s$
$t_s$		-	0.90	2.5	$\mu s$
$t_f$		-	0.30	0.9	$\mu s$
$t_{SV}$	$I_{CM}=20A, V_{CEM}=250V, I_{B1}=1.0A,$	-	1.9	4.4	$\mu s$
$t_C$	$V_{BE(off)}=5.0V, T_C=100^\circ C$	-	0.6	2.0	$\mu s$
$t_{fi}$		-	0.3	-	$\mu s$
$t_{SV}$	$I_{CM}=20A, V_{CEM}=250V, I_{B1}=1.0A,$	-	1.0	-	$\mu s$
$t_C$	$V_{BE(off)}=5.0V, T_C=25^\circ C$	-	0.3	-	$\mu s$
$t_{fi}$		-	0.15	-	$\mu s$

TO-3 PACKAGE - MECHANICAL OUTLINE



SYMBOL	DIMENSIONS			
	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	1.516	1.573	38.50	39.96
B (DIA)	0.748	0.875	19.00	22.23
C	0.250	0.450	6.35	11.43
D	0.433	0.516	11.00	13.10
E	0.054	0.065	1.38	1.65
F	0.035	0.045	0.90	1.15
G	1.177	1.197	29.90	30.40
H	0.650	0.681	16.50	17.30
I	0.420	0.440	10.67	11.18
J	0.205	0.225	5.21	5.72
K (DIA)	0.151	0.172	3.84	4.36
L	0.984	1.050	25.00	26.67

TO-3 (REV: R1)

R1

Lead Code:

- 1) Base
- 2) Emitter
- Case) Collector

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