

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

	<u>SYMBOL</u>		<u>UNITS</u>
Collector-Emitter Voltage	V_{CEO}	400	V
Collector-Emitter Voltage	V_{CEV}	600	V
Emitter-Base Voltage	V_{EBO}	8.0	V
Collector Current	I_C	40	A
Peak Collector Current	I_{CM}	80	A
Base Current	I_B	20	A
Peak Base Current	I_{BM}	40	A
Power Dissipation ($T_C=25^\circ\text{C}$)	P_D	250	W
Operating and Storage Junction Temperature	T_J, T_{stg}	-65 to +200	$^\circ\text{C}$
Thermal Resistance	θ_{JC}	0.7	$^\circ\text{C/W}$

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

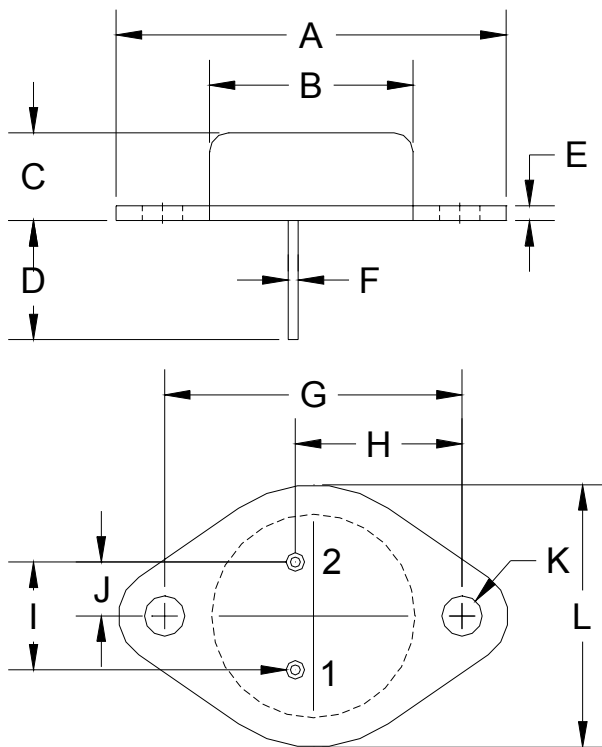
<u>SYMBOL</u>	<u>TEST CONDITIONS</u>	<u>MIN</u>	<u>MAX</u>	<u>UNITS</u>
I_{CEV}	$V_{CE}=600\text{V}, V_{BE}(\text{OFF})=1.5\text{V}$		0.25	mA
I_{CEV}	$V_{CE}=600\text{V}, V_{BE}(\text{OFF})=1.5\text{V}, T_C=150^\circ\text{C}$		5.0	mA
I_{CER}	$V_{CE}=600\text{V}, R_{BE}=50\Omega, T_C=100^\circ\text{C}$		5.0	mA
I_{EBO}	$V_{EB}=2.0\text{V}$		175	mA
BV_{CEO}	$I_C=100\text{mA}$	400		V
$V_{CE}(\text{SAT})$	$I_C=20\text{A}, I_B=1.0\text{A}$		2.2	V
$V_{CE}(\text{SAT})$	$I_C=20\text{A}, I_B=1.0\text{A}, T_C=100^\circ\text{C}$		2.5	V
$V_{CE}(\text{SAT})$	$I_C=40\text{A}, I_B=5.0\text{A}$		5.0	V
$V_{BE}(\text{SAT})$	$I_C=20\text{A}, I_B=1.2\text{A}$		2.5	V
$V_{BE}(\text{SAT})$	$I_C=20\text{A}, I_B=1.2\text{A}, T_C=100^\circ\text{C}$		2.5	V
h_{FE}	$V_{CE}=5.0\text{V}, I_C=10\text{A}$	50	600	
V_F	$I_F=20\text{A}$		5.0	V
C_{ob}	$V_{CB}=10\text{V}, I_E=0, f=1.0\text{kHz}$	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	μs
t_r	$V_{BE(off)}=5.0V$, $t_P=50\mu s$, Duty Cycle $\leq 2.0\%$	-	0.40	1.2	μs
t_s		-	0.90	2.5	μs
t_f		-	0.30	0.9	μs
t_{SV}	$I_{CM}=20A$, $V_{CEM}=250V$, $I_{B1}=1.0A$,	-	1.9	4.4	μs
t_C	$V_{BE(off)}=5.0V$, $T_C=100^\circ C$	-	0.6	2.0	μs
t_{fi}		-	0.3	-	μs
t_{SV}	$I_{CM}=20A$, $V_{CEM}=250V$, $I_{B1}=1.0A$,	-	1.0	-	μs
t_C	$V_{BE(off)}=5.0V$, $T_C=25^\circ C$	-	0.3	-	μs
t_{fi}		-	0.15	-	μs

TO-3 PACKAGE - MECHANICAL OUTLINE

DIMENSIONS				
SYMBOL	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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