

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

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Manufacturers of World Class Discrete Semiconductors

2N3678

NPN SILICON TRANSISTOR

JEDEC TO-39 CASE

## DESCRIPTION

The CENTRAL SEMICONDUCTOR 2N3678 is a Silicon NPN Epitaxial Planar Transistor designed for high speed switching applications.

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

	SYMBOL		UNIT
Collector-Base Voltage	V <sub>CB0</sub>	75	V
Collector Emitter Voltage	V <sub>CEO</sub>	55	V
Emitter-Base Voltage	V <sub>EBO</sub>	6.0	V
Collector Current	I <sub>C</sub>	800	mA
Power Dissipation	P <sub>D</sub>	0.8	W
Power Dissipation (T <sub>C</sub> =25°C)	P <sub>D</sub>	4.0	W
Operating and Storage Junction Temperature	T <sub>J</sub> , T <sub>stg</sub>	-65 TO +200	°C
Thermal Resistance	θ <sub>JA</sub>	218	°C/W
Thermal Resistance	θ <sub>JC</sub>	43	°C/W

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

SYMBOL	TEST CONDITIONS	MIN	MAX	UNIT
I <sub>CB0</sub>	V <sub>CB</sub> =60V		10	nA
I <sub>CB0</sub>	V <sub>CB</sub> =60V, T <sub>A</sub> =150°C		10	μA
I <sub>CEV</sub>	V <sub>CE</sub> =60V, V <sub>EB</sub> =3.0V		10	nA
I <sub>BL</sub>	V <sub>CE</sub> =60V, V <sub>EB</sub> =3.0V		20	nA
I <sub>EBO</sub>	V <sub>EB</sub> =3.0V		10	nA
BV <sub>CB0</sub>	I <sub>C</sub> =10μA	75		V
BV <sub>CEO</sub>	I <sub>C</sub> =10mA	55		V
BV <sub>EBO</sub>	I <sub>E</sub> =10μA	6.0		V
V <sub>CE</sub> (SAT)	I <sub>C</sub> =150mA, I <sub>B</sub> =15mA		0.4	V
V <sub>CE</sub> (SAT)	I <sub>C</sub> =500mA, I <sub>B</sub> =50mA		1.0	V
V <sub>BE</sub> (SAT)	I <sub>C</sub> =150mA, I <sub>B</sub> =15mA	0.6	1.2	V
V <sub>BE</sub> (SAT)	I <sub>C</sub> =500mA, I <sub>B</sub> =50mA		2.0	V
h <sub>FE</sub>	V <sub>CE</sub> =10V, I <sub>C</sub> =100μA	20		
h <sub>FE</sub>	V <sub>CE</sub> =10V, I <sub>C</sub> =1.0mA	25		
h <sub>FE</sub>	V <sub>CE</sub> =10V, I <sub>C</sub> =10mA	35		
h <sub>FE</sub>	V <sub>CE</sub> =10V, I <sub>C</sub> =150mA	40	120	
h <sub>FE</sub>	V <sub>CE</sub> =10V, I <sub>C</sub> =500mA	25		
h <sub>FE</sub>	V <sub>CE</sub> =1.0V, I <sub>C</sub> =150mA	20		
f <sub>T</sub>	V <sub>CE</sub> =20V, I <sub>C</sub> =20mA, f=100MHz	250		MHz
C <sub>ob</sub>	V <sub>CB</sub> =10V, I <sub>E</sub> =0		8.0	pF
C <sub>ib</sub>	V <sub>EB</sub> =2.0V, I <sub>C</sub> =0		30	pF
t <sub>on</sub>	V <sub>CC</sub> =30V, I <sub>C</sub> =150mA, I <sub>B1</sub> =15mA		40	ns
t <sub>off</sub>	V <sub>CC</sub> =6.0V, I <sub>C</sub> =150mA, I <sub>B1</sub> =I <sub>B2</sub> =15mA		250	ns