

Silicon NPN Power Transistors

2SC3038

DESCRIPTION

- With TO-220C package
- High breakdown voltage  
:  $V_{CBO}=500V(\text{Min})$
- Wide area of safe operation
- Fast switching speed

APPLICATIONS

- 400V/4A switching regulator applications

PINNING

PIN	DESCRIPTION
1	Base
2	Collector;connected to mounting base
3	Emitter

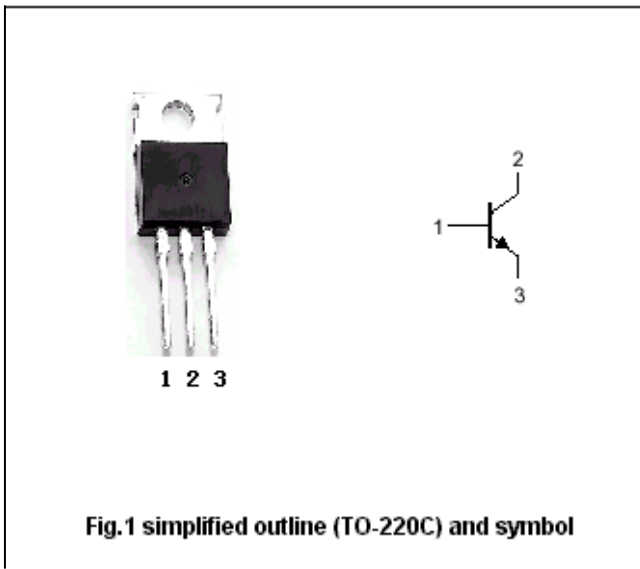


Fig.1 simplified outline (TO-220C) and symbol

Absolute maximum ratings( $T_a=25^{\circ}C$ )

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$V_{CBO}$	Collector-base voltage	Open emitter	500	V
$V_{CEO}$	Collector-emitter voltage	Open base	400	V
$V_{EBO}$	Emitter-base voltage	Open collector	7	V
$I_C$	Collector current		4	A
$I_{CP}$	Collector current-pulse	$PW \leq 300 \mu s, \text{Duty cycle} \leq 10\%$	8	A
$I_B$	Base current		1.5	A
$P_C$	Collector power dissipation		1.75	W
		$T_C=25^{\circ}C$	40	
$T_j$	Junction temperature		150	$^{\circ}C$
$T_{stg}$	Storage temperature		-55~150	$^{\circ}C$

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## CHARACTERISTICS

T<sub>j</sub>=25°C unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP.	MAX	UNIT
V <sub>(BR)CEO</sub>	Collector-emitter breakdown voltage	I <sub>C</sub> =5mA ; R <sub>BE</sub> =∞	400			V
V <sub>(BR)CBO</sub>	Collector-base breakdown voltage	I <sub>C</sub> =1mA ; I <sub>E</sub> =0	500			V
V <sub>(BR)EBO</sub>	Emitter-base breakdown voltage	I <sub>E</sub> =1mA ; I <sub>C</sub> =0	7			V
V <sub>CE(sat)</sub>	Collector-emitter saturation voltage	I <sub>C</sub> =2A ; I <sub>B</sub> =0.4A			1.0	V
V <sub>BE(sat)</sub>	Base-emitter saturation voltage	I <sub>C</sub> =2A ; I <sub>B</sub> =0.4A			1.5	V
I <sub>CBO</sub>	Collector cut-off current	V <sub>CB</sub> =400V ; I <sub>E</sub> =0			10	μ A
I <sub>EBO</sub>	Emitter cut-off current	V <sub>EB</sub> =5V ; I <sub>C</sub> =0			10	μ A
h <sub>FE-1</sub>	DC current gain	I <sub>C</sub> =0.4A ; V <sub>CE</sub> =5V	15		50	
h <sub>FE-2</sub>	DC current gain	I <sub>C</sub> =2A ; V <sub>CE</sub> =5V	8			
f <sub>T</sub>	Transition frequency	I <sub>C</sub> =0.4A ; V <sub>CE</sub> =10V		20		MHz
C <sub>OB</sub>	Output capacitance	f=1MHz ; V <sub>CB</sub> =10V		40		pF

## Switching times

t <sub>on</sub>	Turn-on time	V <sub>CC</sub> =200V ; I <sub>C</sub> =3A I <sub>B1</sub> =0.6A ; I <sub>B2</sub> =-0.6A ; R <sub>L</sub> =66.6 Ω			1.0	μ s
t <sub>stg</sub>	Storage time				2.5	μ s
t <sub>f</sub>	Fall time				1.0	μ s

◆ h<sub>FE-1</sub> Classifications

L	M	N
15-30	20-40	30-50

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PACKAGE OUTLINE

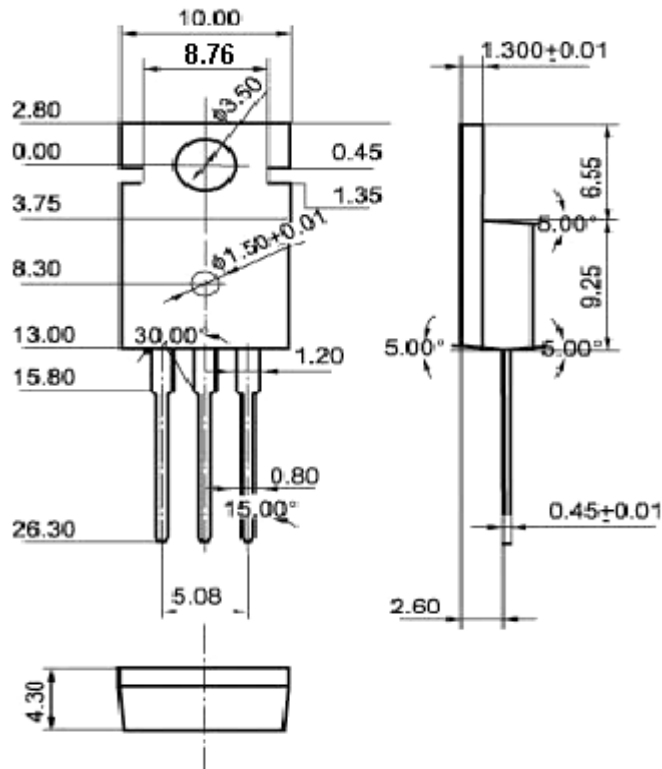


Fig.2 Outline dimensions (unindicated tolerance: ±0.10 mm)