

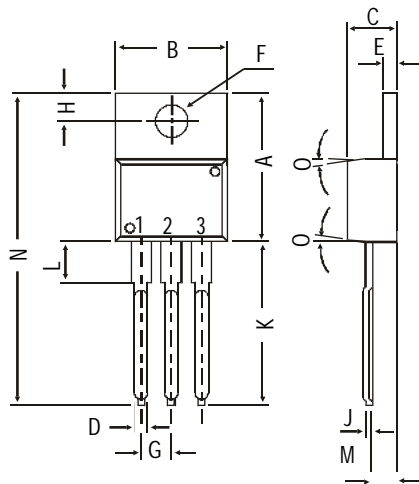
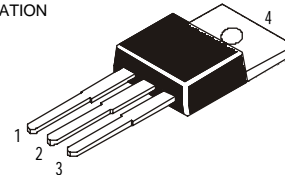
**TO-220 Plastic Package**

**CSC3968**

**CSC3968 NPN PLASTIC POWER TRANSISTOR**  
*High Voltage Switching Applications*

**PIN CONFIGURATION**

- 1. BASE
- 2. COLLECTOR
- 3. EMITTER
- 4. COLLECTOR



DIM	MIN.	MAX.
A	14.42	16.51
B	9.63	10.67
C	3.56	4.83
D		0.90
E	1.15	1.40
F	3.75	3.88
G	2.29	2.79
H	2.54	3.43
J		0.56
K	12.70	14.73
L	2.80	4.07
M	2.03	2.92
N		31.24
O		DEG 7

All dimensions in mm.

**ABSOLUTE MAXIMUM RATINGS**

Collector-base voltage (open emitter)	$V_{CB0}$	max.	400 V
Collector-emitter voltage (open base)	$V_{CEO}$	max.	400 V
Collector current (D.C.)	$I_C$	max.	2.0 A
Total power dissipation up to $T_C = 25^\circ\text{C}$	$P_{tot}$	max.	20 W
Junction temperature	$T_j$	max.	150 °C
Collector-emitter saturation voltage $I_C = 1\text{A}; I_B = 0.2\text{A}$	$V_{CEsat}$	max.	1.0 V
D.C. current gain $I_C = 0.1\text{A}; V_{CE} = 5\text{V}$	$h_{FE}$	min.	16
		max.	50

**RATINGS (at  $T_A=25^\circ\text{C}$  unless otherwise specified)**

**Limiting values**

Collector-base voltage (open emitter)	$V_{CB0}$	max.	400 V
Collector-emitter voltage (open base)	$V_{CEO}$	max.	400 V
Emitter-base voltage (open collector)	$V_{EBO}$	max.	7.0 V
Collector current (DC)	$I_C$	max.	2.0 A
Collector current (Pulse) (1)	$I_C$	max.	4.0 A

Total power dissipation up to $T_C = 25^\circ\text{C}$	$P_{tot}$	max.	20 W
Total power dissipation up to $T_A = 25^\circ\text{C}$	$P_{tot}$	max.	1.5 W
Junction temperature	$T_j$	max.	150 °C
Storage temperature	$T_{stg}$		-65 to +150 °C

**CHARACTERISTICS**

$T_{amb} = 25^\circ\text{C}$  unless otherwise specified

Collector cutoff current

$$I_E = 0; V_{CB} = 400\text{V}$$

$$I_{CBO} \quad \text{max.} \quad 10 \mu\text{A}$$

Emitter cut-off current

$$I_C = 0; V_{EB} = 7\text{V}$$

$$I_{EBO} \quad \text{max.} \quad 10 \mu\text{A}$$

Breakdown voltages

$$I_C = 1 \text{ mA}; I_B = 0$$

$$V_{CEO} \quad \text{min.} \quad 400 \text{ V}$$

$$I_C = 50 \mu\text{A}; I_E = 0$$

$$V_{CBO} \quad \text{min.} \quad 400 \text{ V}$$

$$I_E = 50 \mu\text{A}; I_C = 0$$

$$V_{EBO} \quad \text{min.} \quad 7.0 \text{ V}$$

Saturation voltages

$$I_C = 1 \text{ A}; I_B = 0.2 \text{ A}$$

$$V_{CEsat}^* \quad \text{max.} \quad 1.0 \text{ V}$$

$$V_{BEsat}^* \quad \text{max.} \quad 1.5 \text{ V}$$

D.C. current gain

$$I_C = 0.1\text{A}; V_{CE} = 5\text{V}^{**}$$

$$h_{FE} \quad \text{min.} \quad 16$$

$$\text{max.} \quad 50$$

Output capacitance at  $f = 1 \text{ MHz}$

$$I_E = 0; V_{CB} = 10\text{V}$$

$$C_o \quad \text{typ.} \quad 30 \text{ pF}$$

Transition frequency

$$I_C = 0.5\text{A}; V_{CE} = 10\text{V}; f = 5 \text{ MHz}$$

$$f_T^* \quad \text{typ.} \quad 10 \text{ MHz}$$

**Switching time**

$$I_C = 0.8\text{A}; R_L = 250\Omega$$

$$I_{B1} = -I_{B2} = 0.08\text{A}$$

$$V_{CC} = 200\text{V}$$

Turn on time

$$t_{on} \quad \text{max.} \quad 1.0 \mu\text{s}$$

Storage time

$$t_s \quad \text{max.} \quad 2.5 \mu\text{s}$$

Fall time

$$t_f \quad \text{max.} \quad 1.0 \mu\text{s}$$

(1) Single Pulse  $P_w = 10 \text{ ms}$

\* Pulse test

\*\*  $h_{FE}$  classification: A: 16-34 B: 25-50

## Customer Notes

### Disclaimer

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