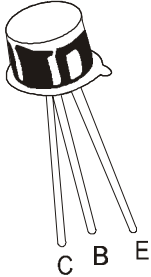


**NPN SILICON PLANAR SWITCHING TRANSISTOR**

**2N708**



**TO-18  
Metal Can Package**

**Switching Transistor**

**ABSOLUTE MAXIMUM RATINGS**

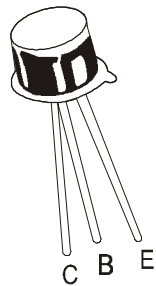
DESCRIPTION	SYMBOL	VALUE	UNIT
Collector Emitter Voltage	$V_{CEO}$	15	V
Collector Emitter Voltage	$V_{CER}$	20	V
Collector Base Voltage	$V_{CBO}$	40	V
Emitter Base Voltage	$V_{EBO}$	5.0	V
Collector Current Continuous	$I_C$	200	mA
Power Dissipation @ $T_a=25^\circ\text{C}$	$P_D$	360	mW
Derate Above $25^\circ\text{C}$		2.1	mW/ $^\circ\text{C}$
Power Dissipation @ $T_c=25^\circ\text{C}$	$P_D$	1.2	W
@ $T_c=100^\circ\text{C}$		680	mW
Derate above $25^\circ\text{C}$		6.9	mW/ $^\circ\text{C}$
Derate above $100^\circ\text{C}$		6.9	mW/ $^\circ\text{C}$
Operating And Storage Junction Temperature Range	$T_j, T_{stg}$	- 65 to +200	$^\circ\text{C}$

**THERMAL CHARACTERISTICS**

Junction to Case	$R_{th(j-c)}$	145	$^\circ\text{C/W}$
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**ELECTRICAL CHARACTERISTICS ( $T_a=25^\circ\text{C}$  unless specified otherwise )**

DESCRIPTION	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Collector Emitter Voltage	$V_{CER(sus)}$	$I_C=30\text{mA}, R_{BE} \leq 10\Omega$	20			V
Collector Emitter Sustaining Voltage	$V_{CEO(sus)}$	$I_C=30\text{mA}, I_B=0$	15			V
Collector Base Voltage	$V_{CBO}$	$I_C=1\mu\text{A}, I_E=0$	40			V
Emitter Base Voltage	$V_{EBO}$	$I_E=10\mu\text{A}, I_C=0$	5.0			V
Collector Cut Off Current	$I_{CEX}$	$V_{CE}=20\text{V}, V_{BE}=0.25\text{V}, T_a=+125^\circ\text{C}$			10	$\mu\text{A}$
Collector Cut Off Current	$I_{CBO}$	$V_{CB}=20\text{V}, I_E=0$			25	nA
		$V_{CB}=20\text{V}, I_E=0, T_a=150^\circ\text{C}$			15	$\mu\text{A}$
Emitter Cut off Current	$I_{EBO}$	$V_{BE}=4\text{V}, I_C=0$			80	nA
DC Current Gain	$h_{FE}$	$I_C=0.5\text{mA}, V_{CE}=1\text{V}$	15			
		$I_C=10\text{mA}, V_{CE}=1\text{V}$	30		120	
		$I_C=10\text{mA}, V_{CE}=1\text{V}, T_a=-55^\circ\text{C}$	15			

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

DESCRIPTION	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Collector Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=10\text{mA}, I_B=1\text{mA}$			0.4	V
		$I_C=7\text{mA}, I_B=0.7\text{mA}, T_a = -55^\circ\text{C to } +125^\circ\text{C}$			0.4	V
Base Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=10\text{mA}, I_B=1\text{mA}$	0.72		0.8	V
		$I_C=7\text{mA}, I_B=0.7\text{mA}, T_a = -55^\circ\text{C}$			0.9	V

## SMALL SIGNAL CHARACTERISTICS

DESCRIPTION	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Transition Frequency	$f_T$	$I_C=10\text{mA}, V_{CE}=10\text{V}, f=100\text{MHz}$	300			MHz
Output Capacitance	$C_{obo}$	$V_{CB}=10\text{V}, I_E=0, 100\text{kHz}, \leq f \leq 1\text{MHz}$			6	pF
Extrinsic Base Resistance	$r_{b'}$	$I_C=10\text{mA}, V_{CE}=10\text{V}, f=300\text{MHz}$			50	$\Omega$

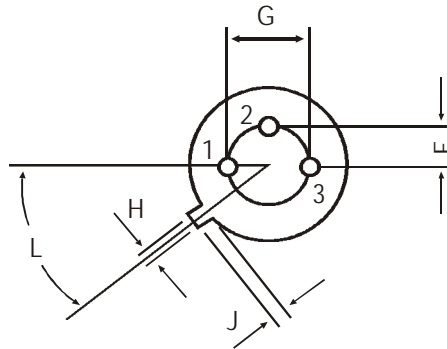
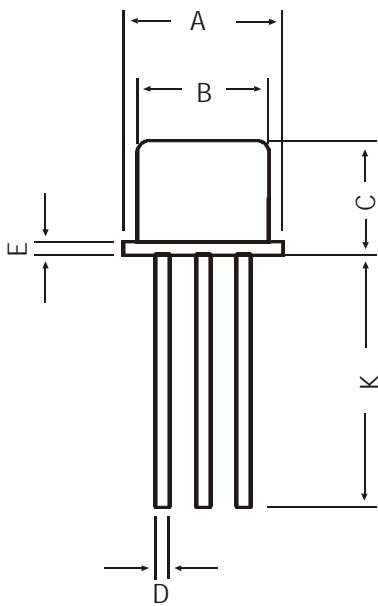
## SWITCHING TIME

DESCRIPTION	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Storage Time	$t_s$	$I_C=I_{B1}=I_{B2}=10\text{mA}$			25	ns
Turn On Time	$t_{on}$	$V_{BE} = -2\text{V}, I_C=10\text{mA}, I_{B1}=3\text{mA}$			40	ns
Turn Off Time	$t_{off}$	$I_C=10\text{mA}, I_{B1}=3\text{mA}, I_{B2} = -1\text{mA}$			70	ns

2N708

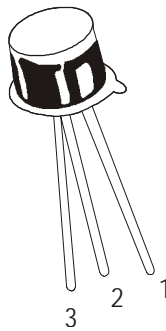
TO-18  
Metal Can Package

TO-18 Metal Can Package



All dimensions in mm.

DIM	MIN	MAX
A	5.24	5.84
B	4.52	4.97
C	4.31	5.33
D	0.40	0.53
E	—	0.76
F	—	1.27
G	—	2.97
H	0.91	1.17
J	0.71	1.21
K	12.70	—
L	45 DEG	



PIN CONFIGURATION

1. EMITTER
2. BASE
3. COLLECTOR

Packing Detail

PACKAGE	STANDARD PACK		INNER CARTON BOX		OUTER CARTON BOX		
	Details	Net Weight/Qty	Size	Qty	Size	Qty	Gr Wt
TO-18	1K/polybag	350 gm/1K pcs	3" x 7.5" x 7.5"	5K	17" x 15" x 13.5"	80K	34 kgs

### Disclaimer

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