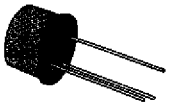
SGS-THOMSON MICROELECTRONICS

2N708

HIGH-SPEED SATURATED SWITCH

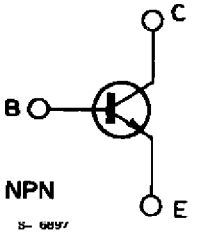
DESCRIPTION

The 2N708 is a silicon planar epitaxial NPN transistor in Jedec TO-18 metal case, designed for very fast switching applications.



TO-18

INTERNAL SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-base Voltage (I_E = 0)	40	V
V_{CEO}	Collector–emitter Voltage (I_B = 0)	15	V
V_{EBO}	Emitter–base Voltage (I_C = 0)	5	V
I_C	Collector Current	200	mA
P_{tot}	Total Power Dissipation at $T_{amb} \leq 25$ °C at $T_{case} \leq 25$ °C	0.36 1.2	W W
T_{stg}, T_g	Storage and Junction Temperature	– 65 to 200	°C

THERMAL DATA

$R_{th\ j\text{-}case}$	Thermal Resistance Junction-case	Max	146	°C/W
$R_{th\ j\text{-}amb}$	Thermal Resistance Junction-ambient	Max	486	°C/W

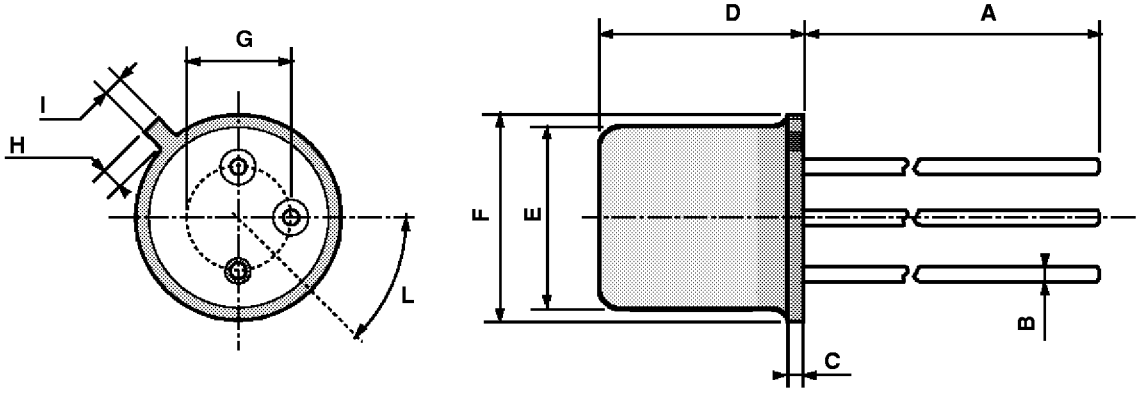
ELECTRICAL CHARACTERISTICS (T_{amb} = 25 °C unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CBO}	Collector Cutoff Current (I_E = 0)	V_{CB} = 20 V V_{CB} = 20 V T_{amb} = 150 °C			25 15	nA µA
$V_{(BR)CBO}$	Collector–base Breakdown Voltage (I_E = 0)	I_C = 100 µA	40			V
$V_{(BR)CEO}$*	Collector–emitter Breakdown Voltage (I_B = 0)	I_C = 10 mA	15			V
$V_{(BR)EBO}$	Emitter–base Breakdown Voltage (I_C = 0)	I_E = 10 µA	5			V
I_{EBO}	Emitter Cutoff Current (Ic = 0)	V_{EB} = 4 V			100	nA
$V_{CE(sat)}$*	Collector–emitter Saturation Voltage	I_C = 10 mA I_B = 1 mA			0.4	V
$V_{BE(sat)}$*	Base–emitter Saturation Voltage	I_C = 10 mA I_B = 1 mA			0.9	V
h_{FE}*	DC Current Gain	I_C = 0.5 mA V_{CE} = 1 V I_C = 10 mA V_{CE} = 1 V T_{amb} = – 55 °C I_C = 10 mA V_{CE} = 1 V	15 30 15		 120 	– – –
h_{fe}	High Frequency Current Gain	I_C = 10 mA V_{CE} = 10 V f = 100 MHz	3			–
C_{CBO}	Collector–base Capacitance	I_E = 0 V_{CB} = 10 V f = 1 MHz			6	pF
t_s	Storage Time	I_C = 10 mA V_{CC} = 10 V I_{B1} = – I_{B2} = 10 mA			25	ns
t_{on}	Turn–on Time	I_C = 10 mA V_{CC} = 10 V I_{B1} = 3 mA			40	ns
t_{off}	Turn–off Time	I_C = 10 mA V_{CC} = 10 V I_{B1} = 3 mA I_{B2} = – 1 mA			75	ns

* Pulsed : pulse duration = 300 µs, duty cycle = 1 %.

TO-18 MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A		12.7			0.500	
B			0.49			0.019
D			5.3			0.208
E			4.9			0.193
F			5.8			0.228
G	2.54			0.100		
H			1.2			0.047
I			1.16			0.045
L	45°			45°		



0016043