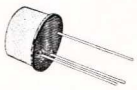
SGS-THOMSON
MICROELECTRONICS

2N2845

HIGH-SPEED SATURATED SWITCH

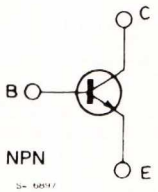
DESCRIPTION

The 2N2845 is a silicon planar epitaxial NPN transistor in Jedec TO-18 metal case. It is intended for high speed switching applications at collector currents up to 500 mA.



TO-18

INTERNAL SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-base Voltage (I_E = 0)	60	V
V_{CEO}	Collector-emitter Voltage (I_B = 0)	30	V
V_{EBO}	Emitter-base Voltage (I_C = 0)	5	V
I_C	Collector Current	500	mA
P_{tot}	Total Power Dissipation at $T_{amb} \leq 25$ °C at $T_{case} \leq 25$ °C at $T_{case} \leq 100$ °C	0.36 1.2 0.68	W W W
T_{stg}, T_j	Storage and Junction Temperature	– 55 to 200	°C

THERMAL DATA

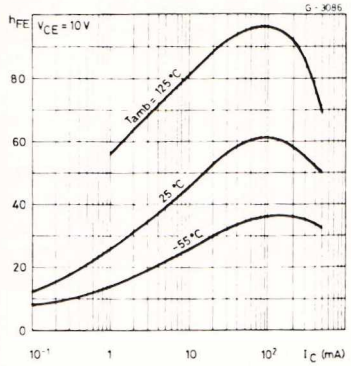
$R_{th\ j\text{-}case}$	Thermal Resistance Junction-case	Max	146	°C/W
$R_{th\ j\text{-}amb}$	Thermal Resistance Junction-ambient	Max	486	°C/W

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

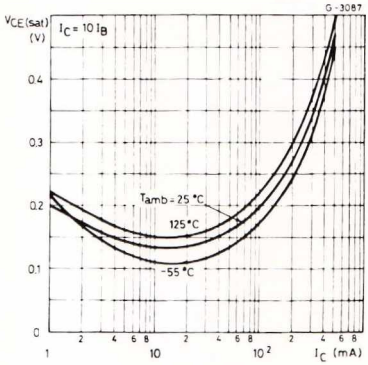
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CBO}	Collector Cutoff Current (I_E = 0)	V_{CB} = 30 V V_{CB} = 30 V T_{amb} = 125 °C			200 200	nA µA
$V_{(BR)\ CBO}$	Collector-base Breakdown Voltage (I_E = 0)	I_C = 0.1 mA	60			V
$V_{(BR)\ CEO}$*	Collector-emitter Breakdown Voltage (I_B = 0)	I_C = 30 mA	30			V
$V_{(BR)\ EBO}$	Emitter-base Breakdown Voltage (I_C = 0)	I_E = 0.1 mA	5			V
$V_{CE\ (sat)}$*	Collector-emitter Saturation Voltage	I_C = 50 mA I_B = 5 mA I_C = 150 mA I_B = 15 mA I_C = 500 mA I_B = 50 mA		0.16 0.22 0.48	 0.4 1	V V V
$V_{BE\ (sat)}$ *	Base-emitter Saturation Voltage	I_C = 50 mA I_B = 5 mA I_C = 150 mA I_B = 15 mA I_C = 500 mA I_B = 50 mA		0.78 0.85 1.12	 1.2 1.6	V V V
h_{FE}*	DC Current Gain	I_C = 50 mA V_{CE} = 10 V I_C = 150 mA V_{CE} = 10 V I_C = 500 mA V_{CE} = 10 V I_C = 500 mA V_{CE} = 1 V	 30 20 10	60 60 50 30	 120	
f_T	Transition Frequency	I_C = 50 mA V_{CE} = 10 V f = 100 MHz	250	350		MHz
C_{CBO}	Collector-base Capacitance	I_E = 0 V_{CB} = 10 V f = 1 MHz		6	8	pF
t_{on}	Turn-on Time	I_C = 150 mA I_{B1} = 15 mA V_{CC} = 10 V		18	40	ns
t_{off}	Turn-off Time	I_C = 150 mA V_{CC} = 10 V $I_{B1} = -I_{B2}$ = 15 mA		25	40	ns

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

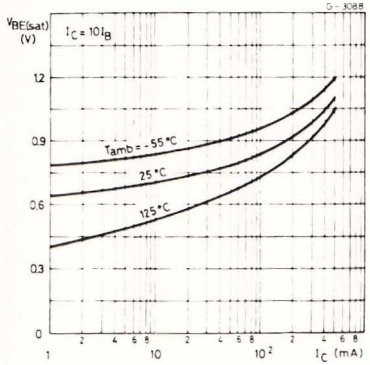
DC Current Gain.



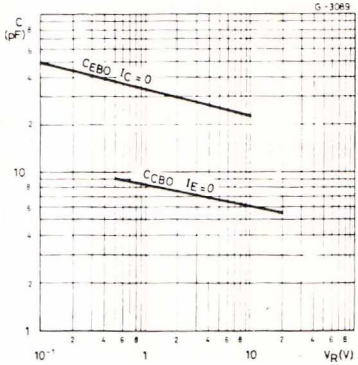
Collector-emitter Saturation Voltage.



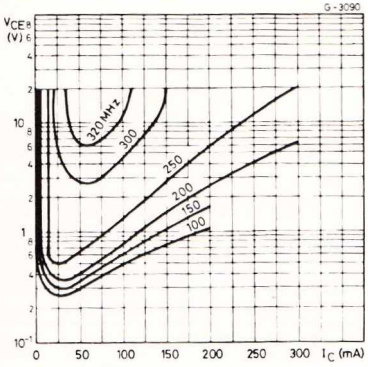
Base-emitter Saturation Voltage.



Emitter-base and Collector-base Capacitances.



Contours of Constant Transition Frequency.



Switching Characteristics.