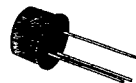


S G S-THOMSON

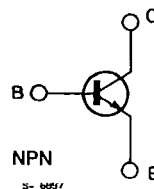
HIGH-SPEED SATURATED SWITCH

DESCRIPTION

The 2N2369A is a silicon planar epitaxial NPN transistor in Jedec TO-18 metal case. It is designed specifically for high-speed saturated switching applications at current levels from 100 μ A to 100 mA.



TO-18

INTERNAL SCHEMATIC DIAGRAM**ABSOLUTE MAXIMUM RATINGS**

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-base Voltage ($I_E = 0$)	40	V
V_{CES}	Collector-emitter Voltage ($V_{BE} = 0$)	40	V
V_{CEO}	Collector-emitter Voltage ($I_B = 0$)	15	V
V_{EBO}	Emitter-base Voltage ($I_C = 0$)	4.5	V
I_C	Collector Current	0.2	A
I_{CM}	Collector Current (10 μ s pulse)	0.5	A
P_{tot}	Total Power Dissipation at $T_{amb} \leq 25^\circ\text{C}$	0.36	W
	at $T_{case} \leq 25^\circ\text{C}$	1.2	W
	at $T_{case} \leq 100^\circ\text{C}$	0.68	W
T_{stg}, T_J	Storage and Junction Temperature	- 65 to 200	$^\circ\text{C}$

THERMAL DATA

R _{th j-case}	Thermal Resistance Junction-case	Max	146	°C/W
R _{th j-amb}	Thermal Resistance Junction-ambient	Max	486	°C/W

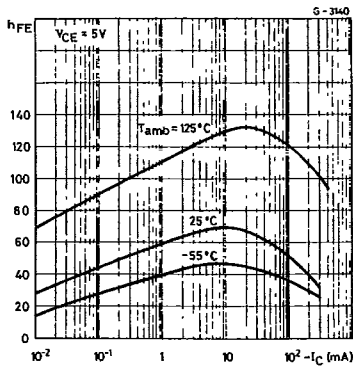
ELECTRICAL CHARACTERISTICS (T_{amb} = 25 °C unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I _{CBO}	Collector Cutoff Current (I _E = 0)	V _{CB} = 20 V T _{amb} = 150 °C			30	μA
I _{CES}	Collector Cutoff Current (V _{BE} = 0)	V _{CE} = 20 V			0.4	μA
V _{(BR)CBO}	Collector-base Breakdown Voltage (I _E = 0)	I _C = 10 μA	40			V
V _{(BR)CES}	Collector-emitter Breakdown Voltage (V _{BE} = 0)	I _C = 10 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	4.5			V
V _{CE(sat)*}	Collector-emitter Saturation Voltage	I _C = 10 mA I _B = 1 mA I _C = 30 mA I _B = 3 mA I _C = 100 mA I _B = 10 mA I _C = 10 mA I _B = 1 mA T _{amb} = 125 °C		0.14 0.17 0.28 0.19	0.2 0.25 0.5 0.3	V V V V
V _{BE(sat)*}	Base-emitter Saturation Voltage	I _C = 10 mA I _B = 1 mA I _B = 30 mA I _B = 3 mA I _C = 100 mA I _B = 10 mA I _C = 10 mA I _B = 1 mA T _{amb} = -55 to 125 °C	0.7 0.59	0.8 0.9 1.1	0.85 1.15 1.6	V V V V
h _{FE*}	DC Current Gain	I _C = 10 mA V _{CE} = 0.35 V I _C = 10 mA V _{CE} = 1 V I _C = 30 mA V _{CE} = 0.4 V I _C = 100 mA V _{CE} = 1 V	40 40 30 20	63 66 71	120 120	
h _{FE*}	DC Current Gain	I _C = 10 mA T _{amb} = -55 °C V _{CE} = 0.35 V	20	50		
f _T	Transition Frequency	I _C = 10 mA f = 100 MHz V _{CE} = 10 V	500	675		MHz
C _{CBO}	Collector-base Capacitance	I _E = 0 f = 1 MHz V _{CB} = 5 V		2.3	4	pF
t _{s**}	Storage Time	I _C = 10 mA V _{CC} = 10 V I _{B1} = - I _{B2} = 10 mA		6	13	ns
t _{on**}	Turn-on Time	I _C = 10 mA I _{B1} = 3 mA V _{CC} = 3 V		9	12	ns
t _{off**}	Turn-off Time	I _C = 10 mA I _{B1} = 3 mA V _{CC} = 3 V I _{B2} = -1.5 mA		13	18	ns

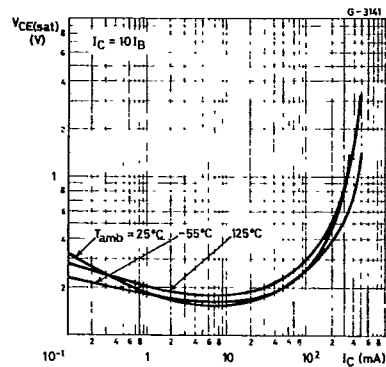
* Pulsed : pulse duration = 300 μs, duty cycle = 1 %.

** See test circuit.

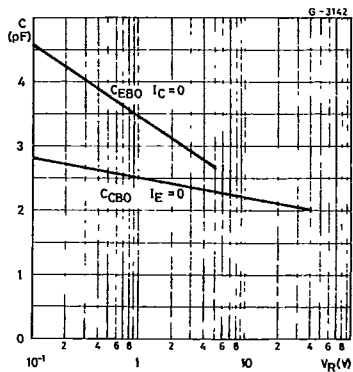
DC Current Gain.



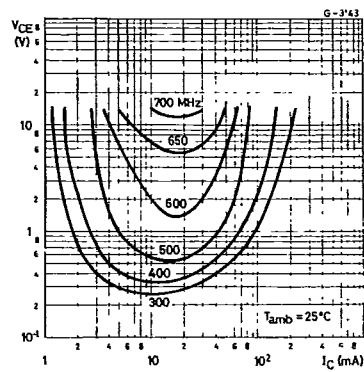
Collector-emitter Saturation Voltage.



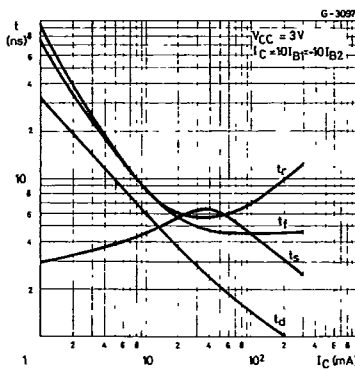
Collector-base and Emitter-base capacitances.



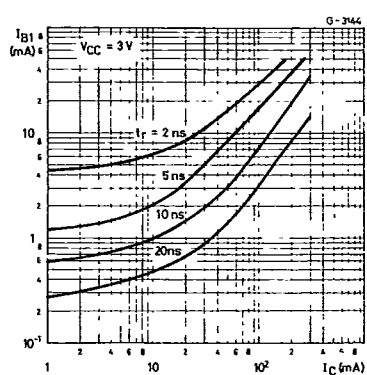
Contours of Constant Transition Frequency.



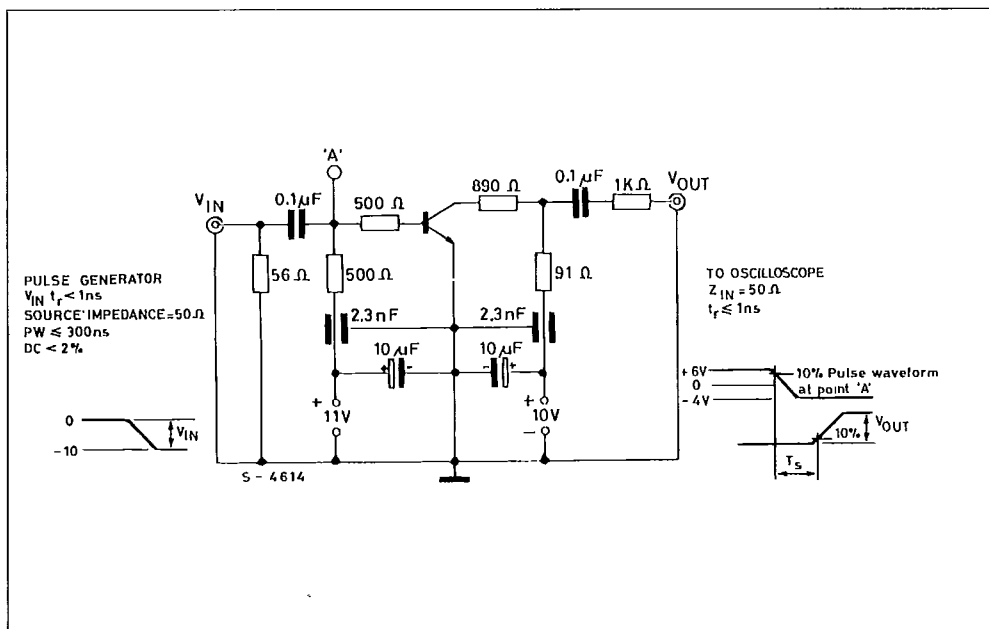
Switching Characteristics.



Switching Characteristics.



T-35-09



Test Circuit for t_{on} , t_{off}

