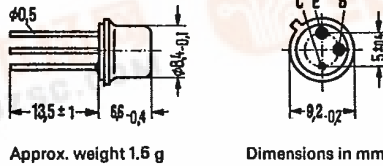


25C D ■ 8235605 0004831 0 ■ SIEG T-35-15
NPN Silicon Planar Transistors **BSY 34**
BSY 58
 SIEMENS AKTIENGESELLSCHAFT

BSY 34 and BSY 58 are double diffused epitaxial NPN silicon planar transistors in TO 39 case (5 C 3 DIN 41873). The collectors are electrically connected to the cases. The transistors are intended for use as high-speed switches and in particular for driving magnetic cores.

Type	Ordering code
BSY 34	Q60218-Y34
BSY 58	Q60218-Y58



Approx. weight 1.6 g

Dimensions in mm

Maximum ratings		BSY 34	BSY 58	
Collector-emitter voltage	V_{CEO}	40	25	V
Collector-emitter voltage	V_{CES}	60	50	V
Collector-base voltage	V_{CBO}	60	50	V
Emitter-base voltage	V_{EBO}	5	5	V
Collector current	I_C	600	600	mA
Base current	I_B	200	200	mA
Junction temperature	T_j	200	200	°C
Storage temperature range	T_{stg}	-65 to +200	-65 to +200	°C
Total power dissipation ($T_{case} \leq 45^\circ C$)	P_{tot}	2.6	2.6	W

Thermal resistance				
Junction to ambient air	R_{thJA}	≤ 220	≤ 220	K/W
Junction to case	R_{thJC}	≤ 60	≤ 60	K/W

Static characteristics ($T_{amb} = 25^\circ C$; $V_{CE} = 1 V$)

Type	BSY 34			BSY 58		
	h_{FE} I_C/I_B	$V_{BEsat}^{(1)}$ V	$V_{CEsat}^{(1)}$ V	h_{FE} I_C/I_B	$V_{BEsat}^{(1)}$ V	$V_{CEsat}^{(1)}$ V
1	23	0.62	-	23	0.62	-
10	37	0.7	-	37	0.7	-
100	42 (> 25)*	0.85	0.17	42 (> 17)*	0.85	0.17
500	25 (> 10)	1.2 (< 1.5)*	0.6 (< 1)*	25	1.2 (< 1.5)*	0.6 (< 1.5)*

1) The transistor is saturated to such an extent that the DC current gain decreases to $h_{FE} = 10$.
 * AQL = 0.65%



— SIEMENS AKTIENGESELLSCHAFT —

Static characteristics

	BSY 34			BSY 58	°C
	T_{amb}	150	25	25	
Collector cutoff current ($V_{CBO} = 50\text{ V}$)	I_{CBO}	$<7 \cdot 10^4$	$<70^*$	$<120^*$	nA
Collector-emitter breakdown voltage ($I_{CEO} = 10\text{ mA}$)	$V_{(BR)CEO}$		>40	>25	V
Collector-emitter breakdown voltage ($I_{CES} = 10\text{ }\mu\text{A}$)	$V_{(BR)CES}$		>60	>50	V
Collector-base breakdown voltage ($I_{CBO} = 100\text{ }\mu\text{A}$)	$V_{(BR)CBO}$		>60	>50	V
Emitter-base breakdown voltage ($I_{EBO} = 100\text{ }\mu\text{A}$)	$V_{(BR)EBO}$		>5	>5	V

Dynamic characteristics ($T_{amb} = 25^\circ\text{C}$)

Transition frequency ($I_C = 30\text{ mA}$; $V_{CE} = 10\text{ V}$; $f = 100\text{ MHz}$)					
Collector-base capacitance ($V_{CBO} = 10\text{ V}$)	C_{CBO}		4.5 (<6)	4.5 (<6)	pF
Emitter-base capacitance ($V_{EBO} = 1\text{ V}$)	C_{EBO}		22	22	pF

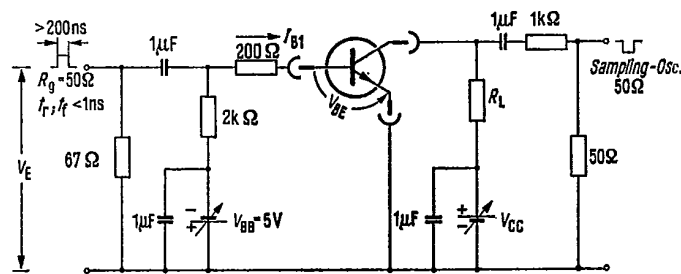
Switching times

Operating point: $I_C = 150\text{ mA}$; $I_{B1} = 15\text{ mA}$ $-I_{B2} = 15\text{ mA}$; $R_L = 150\text{ }\Omega$					
t_{on}			30	35	ns
t_{off}			50	60	ns

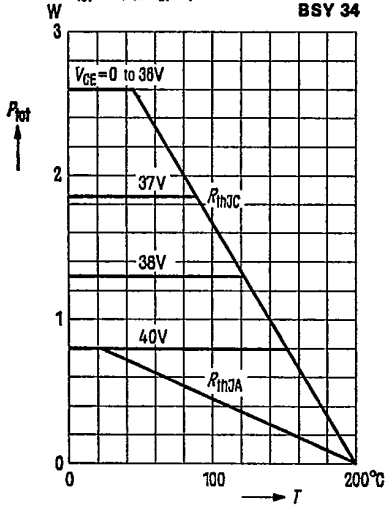
Operating point: $I_C = 500\text{ mA}$; $I_{B1} = 50\text{ mA}$; $-I_{B2} = 25\text{ mA}$; $V_E = 15\text{ V}$ $R_L = 80\text{ }\Omega$ for BSY 34 ($V_{CC} = 40\text{ V}$) $R_L = 50\text{ }\Omega$ for BSY 58 ($V_{CC} = 25\text{ V}$)					
t_{on}			30 (<50)	35 (<65)	ns
t_{off}			65 (<95)	65 (<110)	ns

* AQL = 0.65%

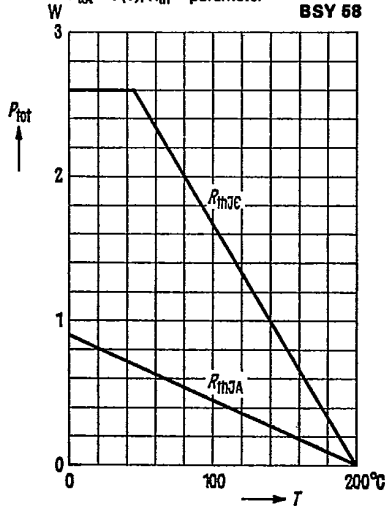
Test circuit for switching times



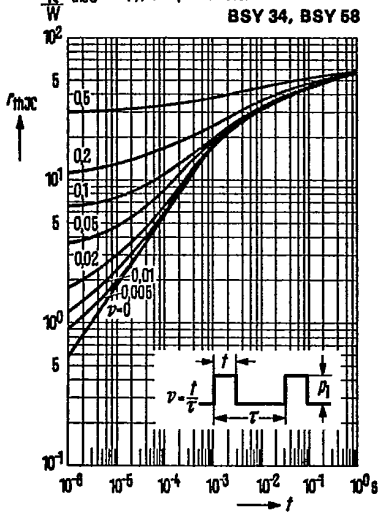
Total perm. power dissipation
 versus temperature
 $P_{tot} = f(T)$; R_{th} = parameter



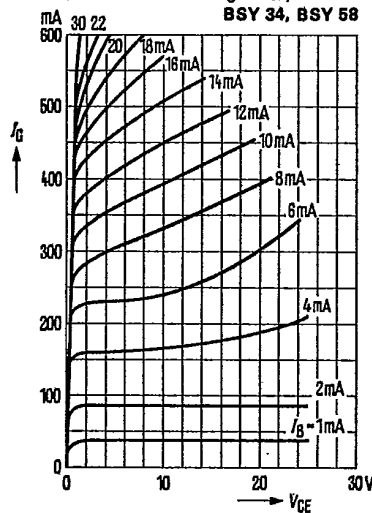
Total perm. power dissipation
 versus temperature
 $P_{tot} = f(T)$; R_{th} = parameter

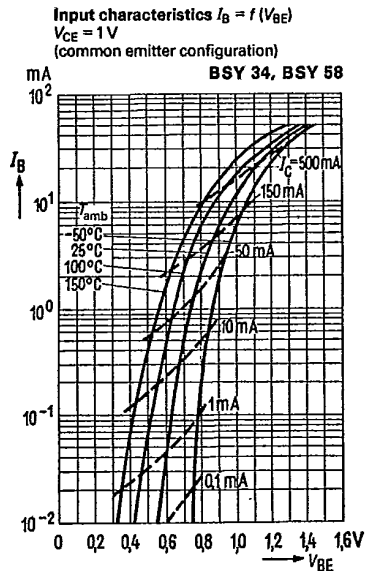
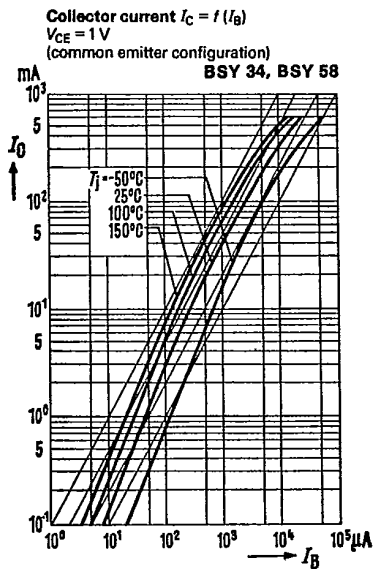
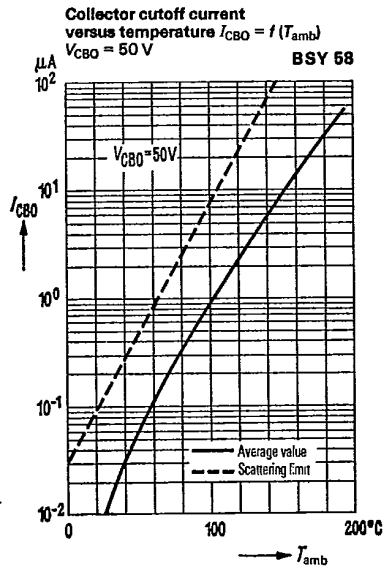
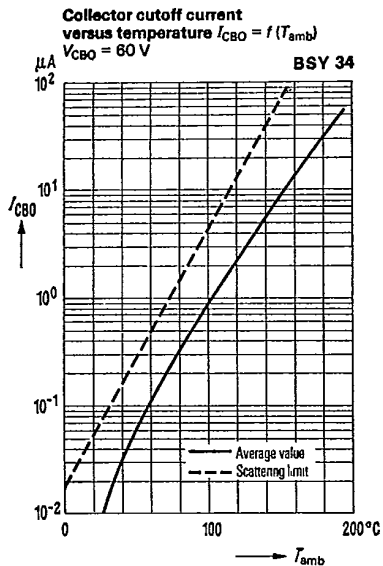


Permissible pulse load
 $r_{mJC} = f(t)$; v = parameter



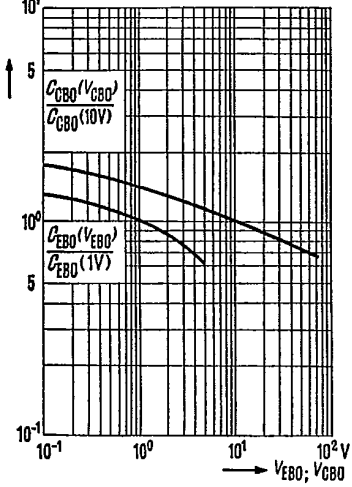
Output characteristics $I_C = f(V_{CE})$
 I_B = parameter
 (common emitter configuration)



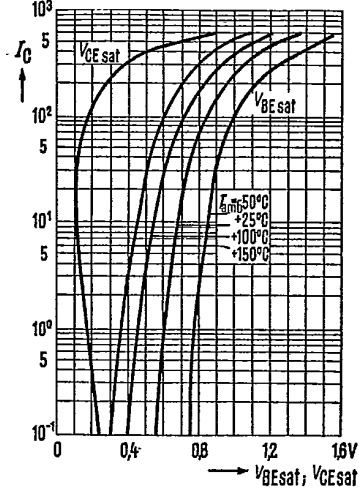


- SIEMENS AKTIENGESELLSCHAFT

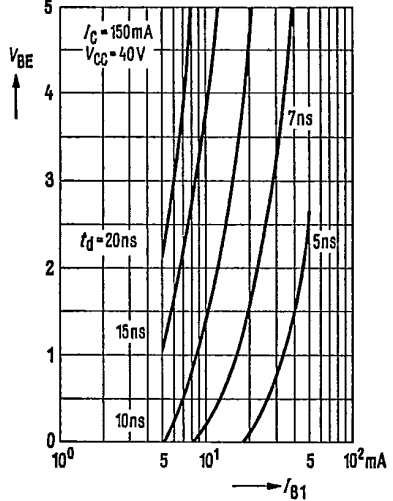
Collector-base capacitance
 $C_{CB0} = f(V_{CB0})$
Emitter-base capacitance
 $C_{EB0} = f(V_{EB0})$ **BSY 34, BSY 58**



Saturation voltages
 $V_{CEsat} = f(I_C); h_{FE} = 10$
 $V_{BEsat} = f(I_C); h_{FE} = 10$
 $T_{amb} = \text{parameter}$ **BSY 34, BSY 58**



Delay time t_d
 $I_C = 150 \text{ mA}; V_{CC} = 40 \text{ V}$ **BSY 34**



Rise time t_r
 $V_{CC} = 40 \text{ V}$ **BSY 34**

