



# 2SA1699

## High-Voltage Driver Applications

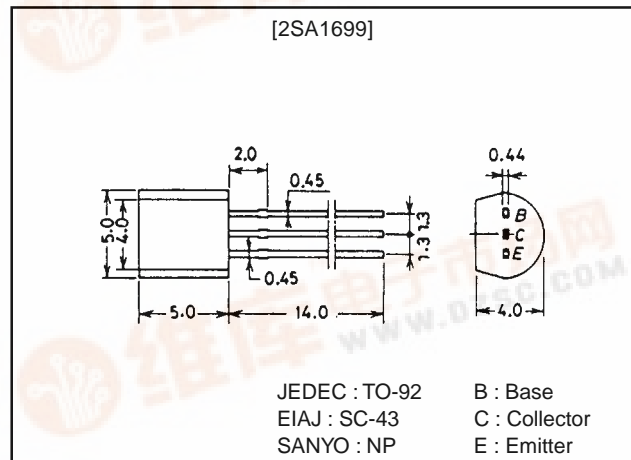
### Features

- High breakdown voltage.
- Adoption of MBIT process.
- Excellent  $h_{FE}$  linearity.

### Package Dimensions

unit:mm

2003A



### Specifications

#### Absolute Maximum Ratings at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	$V_{CB0}$		-400	V
Collector-to-Emitter Voltage	$V_{CEO}$		-400	V
Emitter-to-Base Voltage	$V_{EBO}$		-5	V
Collector Current	$I_C$		-200	mA
Collector Current (Pulse)	$I_{CP}$		-400	mA
Collector Dissipation	$P_C$		600	mW
Junction Temperature	$T_j$		150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$		-55 to +150	$^\circ\text{C}$

#### Electrical Characteristics at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	$I_{CBO}$	$V_{CB} = -300\text{V}, I_E = 0$			-0.1	$\mu\text{A}$
Emitter Cutoff Current	$I_{EBO}$	$V_{EB} = -4\text{V}, I_C = 0$			-0.1	$\mu\text{A}$
DC Current Gain	$h_{FE}$	$V_{CE} = -10\text{V}, I_C = -50\text{mA}$	60*		200*	
Gain-Bandwidth Product	$f_T$	$V_{CE} = -30\text{V}, I_C = -10\text{mA}$		70		MHz
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = -50\text{mA}, I_B = -5\text{mA}$			-0.8	V
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = -50\text{mA}, I_B = -5\text{mA}$			-1.0	V

Continued on next page.

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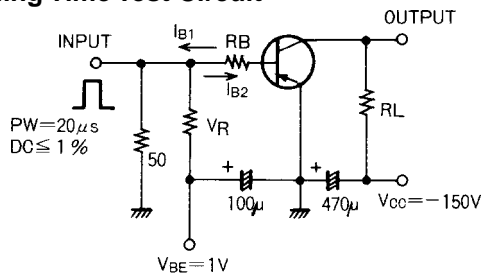
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C = -10\mu A, I_E = 0$	-400			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = -1mA, R_{BE} = \infty$	-400			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = -10\mu A, I_C = 0$	-5			V
Collector Output Capacitance	$C_{ob}$	$V_{CB} = -30V, f = 1MHz$		5		pF
Reverse Transfer Capacitance	$C_{re}$	$V_{CB} = -30V, f = 1MHz$		4		pF
Turn-ON Time	$t_{on}$	See specified Test Circuit		0.25		$\mu s$
Turn-OFF Time	$t_{off}$	See specified Test Circuit		5		$\mu s$

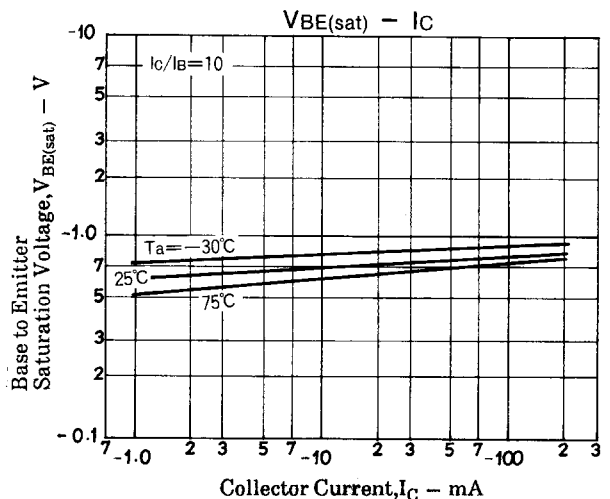
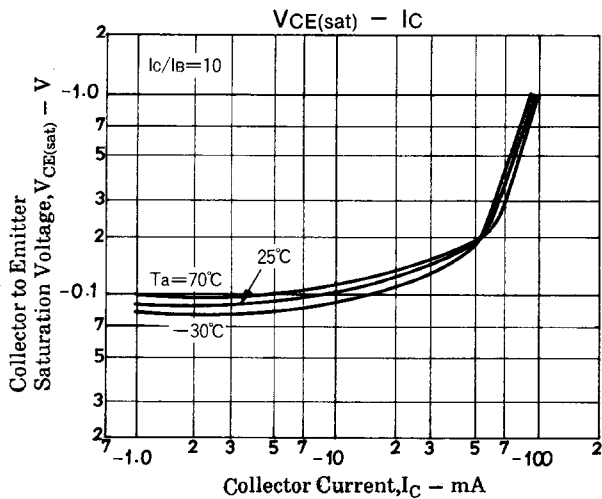
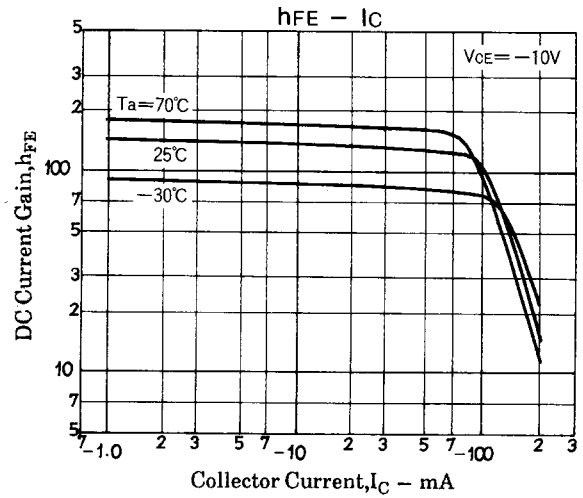
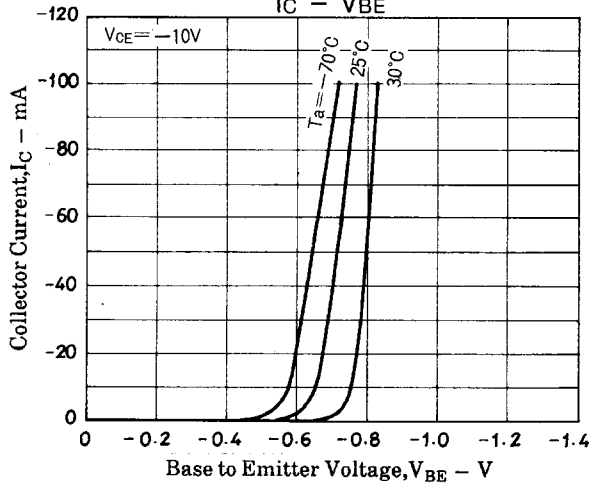
\* : The 2SA1699 is classified by 50mA  $h_{FE}$  as follows :

60	D	120	100	E	200
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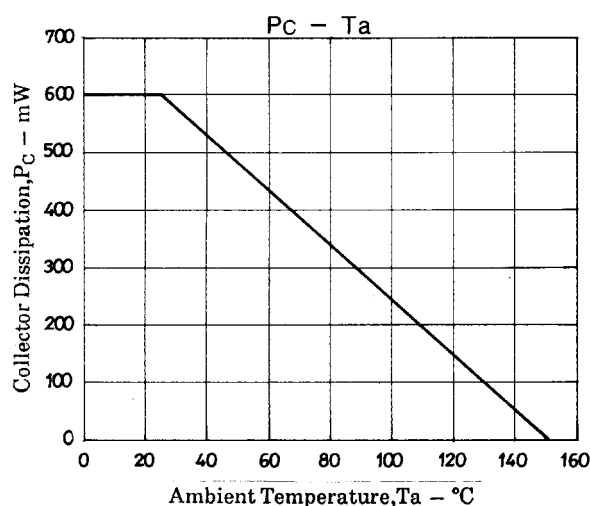
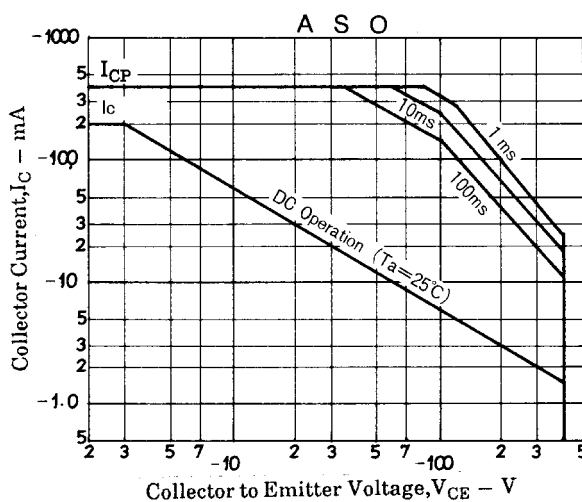
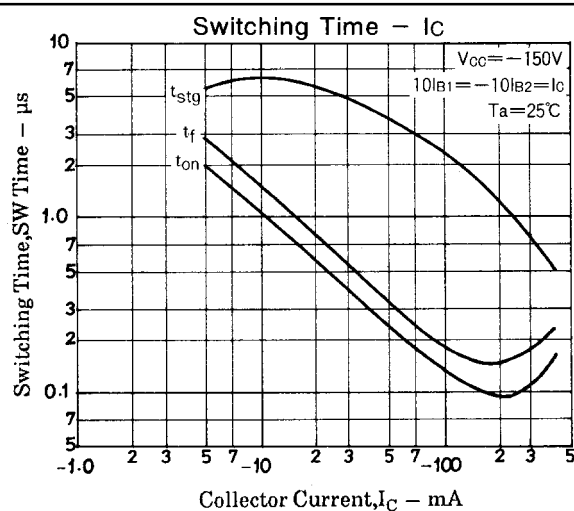
## Switching Time Test Circuit



$-10I_{B1} = 10I_{B2} = I_C = -50mA$   
 $R_L = 3k\Omega, R_B = 200\Omega$  at  $I_C = -50mA$   
 Unit (resistance :  $\Omega$ , capacitance : F)  
 $I_C - V_{BE}$



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