

No.2973

2SA1699

PNP Epitaxial Planar Silicon Transistor

High-Voltage Driver Applications

Features

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

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

Collector to Base Voltage	V_{CBO}	-400	V	unit
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 $T_a = 25^\circ\text{C}$

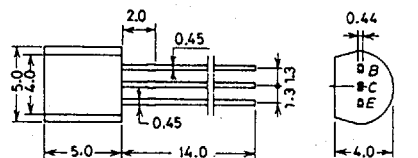
			min	typ	max	unit
Collector Cutoff Current	I_{CBO}	$V_{CB} = -300\text{V}, I_E = 0$			-0.1	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB} = -4\text{V}, I_C = 0$			-0.1	μA
DC Current Gain	h_{FE}	$V_{CE} = -10\text{V}, I_C = -50\text{mA}$	60*		200*	
Gain-Bandwidth Product	f_T	$V_{CE} = -30\text{V}, I_C = -10\text{mA}$		70		MHz
C-E Saturation Voltage	$V_{CE(sat)}$	$I_C = -50\text{mA}, I_B = -5\text{mA}$			-0.8	V
B-E Saturation Voltage	$V_{BE(sat)}$	$I_C = -50\text{mA}, I_B = -5\text{mA}$			-1.0	V
C-B Breakdown Voltage	$V_{(BR)CBO}$	$I_C = -10\mu\text{A}, I_E = 0$	-400			V
C-E Breakdown Voltage	$V_{(BR)CEO}$	$I_C = -1\text{mA}, R_{BE} = \infty$	-400			V
E-B Breakdown Voltage	$V_{(BR)EBO}$	$I_E = -10\mu\text{A}, I_C = 0$	-5			V

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

60 D 120	100 E 200
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Case Outline 2003A
(unit: mm)



JEDEC: TO-92
EIAJ : SC-43
SANYO: NP

B. Base
C. Collector
E. Emitter

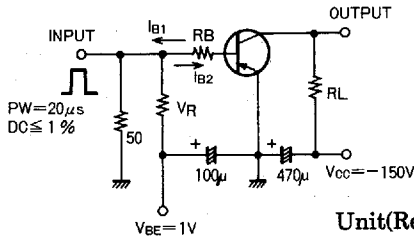
Specifications and information herein are subject to change without notice.

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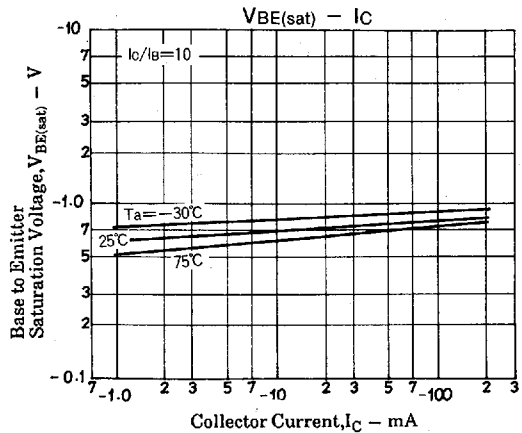
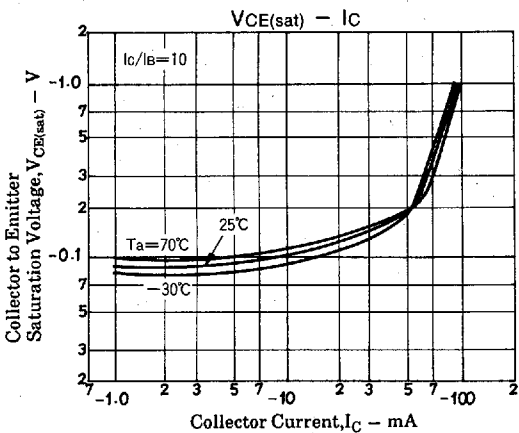
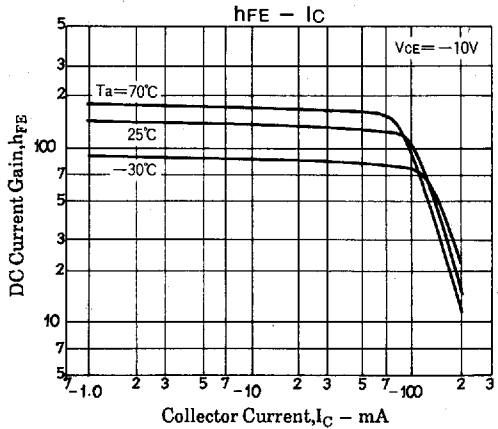
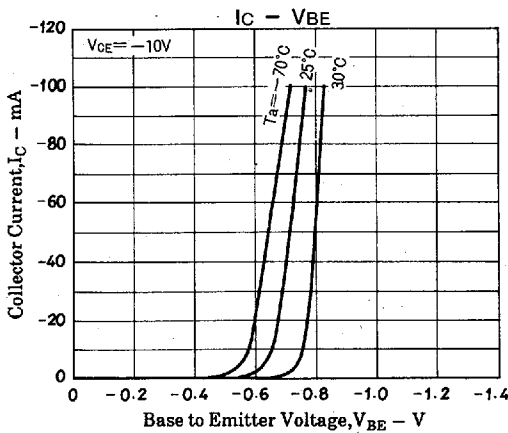
			min	typ	max	unit
Output Capacitance	C_{ob}	$V_{CB} = -30V, f = 1MHz$		5		pF
Reverse Transfer Capacitance	C_{re}	$V_{CB} = -30V, f = 1MHz$		4		pF
Turn-ON Time	t_{on}	(See specified Test Circuit.)		0.25		μs
Turn-OFF Time	t_{off}			5		μs

Switching Time Test Circuit

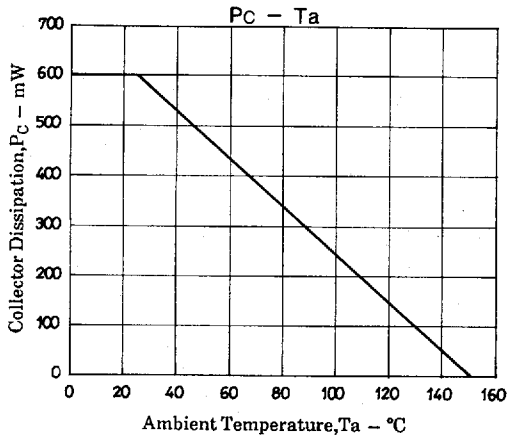
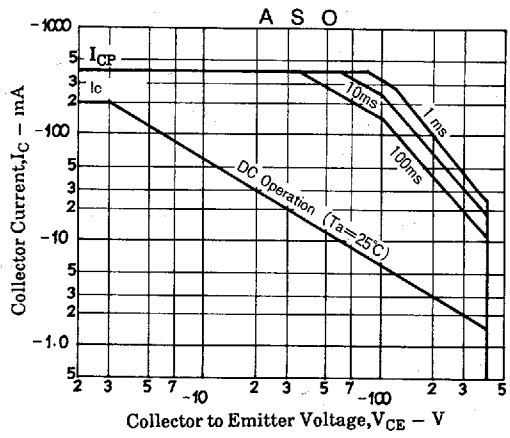
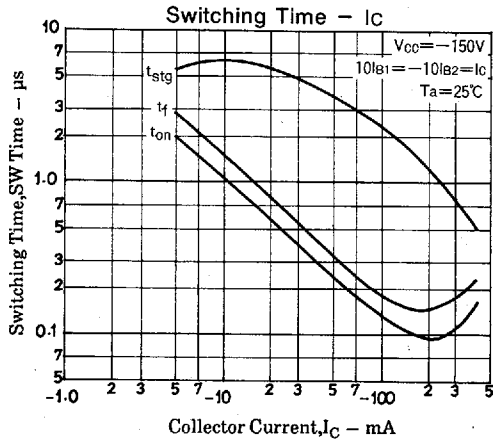


Unit(Resistance : Ω , Capacitance : F)

$-10I_{B1} = 10I_{B2} = I_C = -50mA$
 $R_L = 3k\Omega, R_B = 200\Omega$ at $I_C = -50mA$



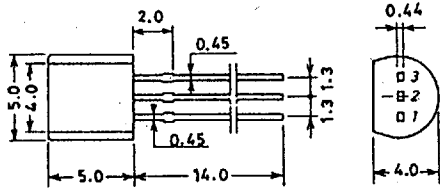
7997076 0015620 799



CASE OUTLINES OF LEAD FORMED SMALL SIGNAL TRANSISTORS

- All of Sanyo lead formed small signal transistor case outlines are illustrated below.
- All dimensions are in mm, and dimensions which are not followed by min. or max. are represented by typical values.
- No marking is indicated.

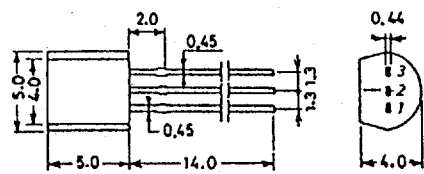
Case Outline 2003A/2003B (unit : mm)



JEDEC : TO-92
EIAJ : SC-43
SANYO : NP

1 : Emitter
2 : Collector
3 : Base

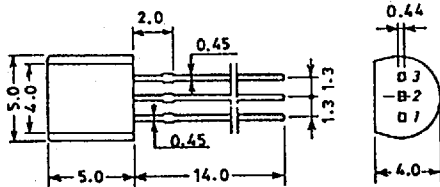
Case Outline 2019A/2019B (unit : mm)



JEDEC : TO-92
EIAJ : SC-43
SANYO : NP

1 : Source
2 : Gate
3 : Drain

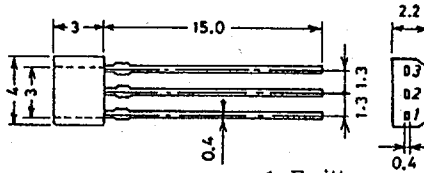
Case Outline 2004A (unit : mm)



JEDEC : TO-92
EIAJ : SC-43
SANYO : NP

1 : Base
2 : Emitter
3 : Collector

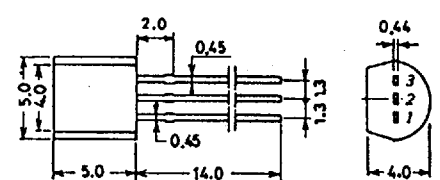
Case Outline 2033 (unit : mm)



1 : Emitter
2 : Collector
3 : Base

SANYO : SPA

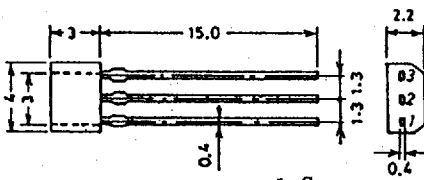
Case Outline 2005A (unit : mm)



JEDEC : TO-92
EIAJ : SC-43
SANYO : NP

1 : Drain
2 : Source
3 : Gate

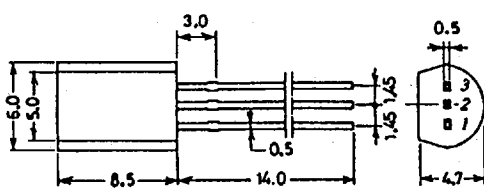
Case Outline 2034/2034A (unit : mm)



1 : Source
2 : Gate
3 : Drain

SANYO : SPA

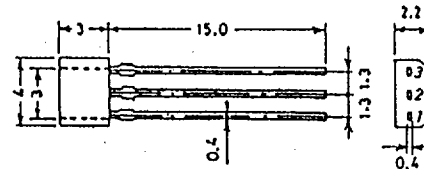
Case Outline 2006A (unit : mm)



EIAJ : SC-51
SANYO : MP

1 : Emitter
2 : Collector
3 : Base

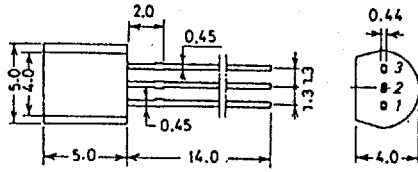
Case Outline 2040 (unit : mm)



1 : Drain
2 : Source
3 : Gate

SANYO : SPA

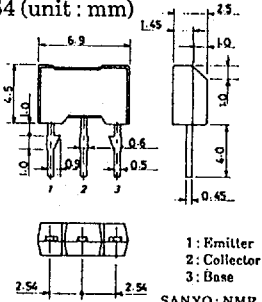
Case Outline 2061 (unit : mm)



JEDEC : TO-92
EIAJ : SC-43
SANYO : NP

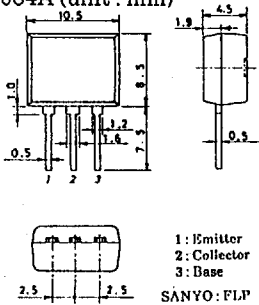
1: Emitter
2: Base
3: Collector

Case Outline 2064 (unit : mm)



1: Emitter
2: Collector
3: Base
SANYO : NMP

Case Outline 2084A (unit : mm)



1: Emitter
2: Collector
3: Base
SANYO : FLP