T-29-15

2SC1570, 1571, 1571L

2003A

NPN Epitaxial Planar Silicon Transistors

Very Low Noise Amp Applications

Ⓔ431D

- The 2SC1570, 1571, 1571L are developed as very low-noise transistors and are especially suited for use in equalizer first stage of high-grade type stereo sets.

Absolute Maximum Ratings at Ta=25°C

		2SC1570	2SC1571	2SC1571L	unit
Collector to Base Voltage	V_{CBO}	55	40	40	V
Collector to Emitter Voltage	V_{CEO}	50	35	35	V
Emitter to Base Voltage	V_{EBO}		5		V
Collector Current	I_C		100		mA
Allowable Power Dissipation	P_C		200		mW
Junction Temperature	Tj		125		°C
Storage Temperature	T_{stg}		-55 to +150		°C

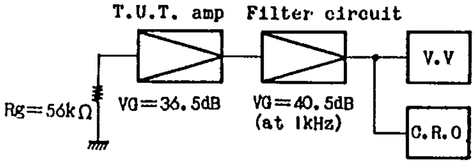
Electrical Characteristics at Ta=25°C

				min	typ	max	unit
Collector Cutoff Current	I_{CBO}	V_{CB}=18V,I_E=0				0.1	uA
Emitter Cutoff Current	I_{EBO}	V_{EB}=3V,I_C=0				0.1	uA
DC Current Gain	h_{FE}	V_{CE}=6V,I_C=1mA		160*		960*	
Gain Bandwidth Product	f_T	V_{CE}=6V,I_C=1mA			100		MHz
Output Capacitance	C_{ob}	V_{CB}=6V,f=1MHz			3		pF
C-E Saturation Voltage	$V_{CE(sat)}$	I_C=50mA,I_B=5mA				0.5	V
Base to Emitter Voltage	V_{BE}	V_{CE}=2V,I_C=1mA			0.58	0.80	V
C-B Breakdown Voltage	$V_{(BR)CBO}$	I_C=10uA,I_E=0	[C1570]	55			V
		" "	[C1571,1571L]	40			V
C-E Breakdown Voltage	$V_{(BR)CEO}$	I_C=1mA,R_{BE}=∞	[C1570]	50			V
		" "	[C1571,1571L]	35			V
E-B Breakdown Voltage	$V_{(BR)EBO}$	I_E=10uA,I_C=0		5			V
Noise Voltage		at test circuit	[C1570,1571]			40	mV
		Vcc=30V,I_C=1mA	[C1571L]			65	mV
		Rg=56kohm,VG=77dB (at 1kHz)					
Noise Peak Level		" "	[C1570,1571]			280	mV
		" "	[C1571L]			450	mV

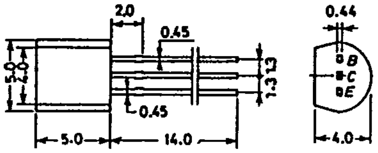
*:The 2SC1570,1571,1571L are classified by 1mA h_{FE} as follows:

160	F	320	280	G	560	480	H	960

Noise Test Circuit



Case Outline 2003A
(unit:mm)



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

B. Base
C. Collector
E. Emitter

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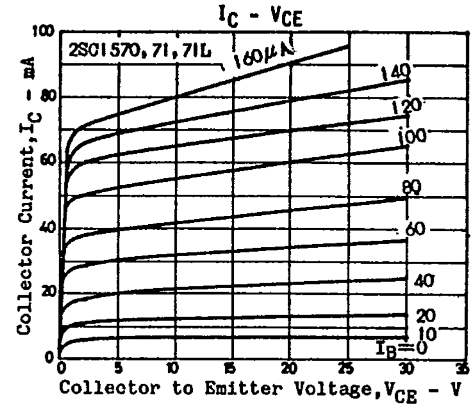
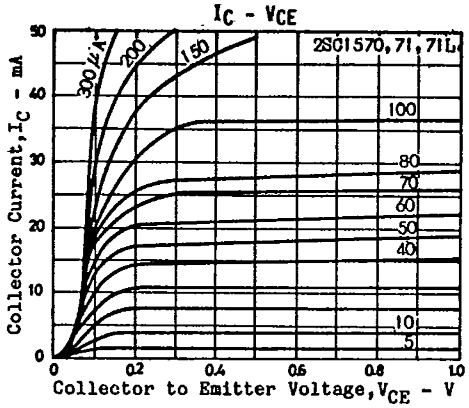
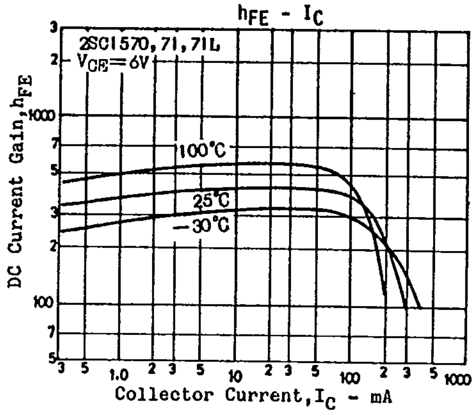
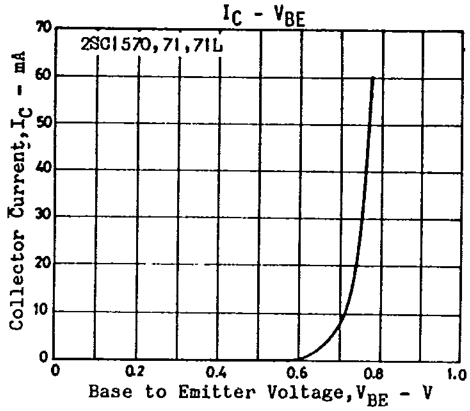
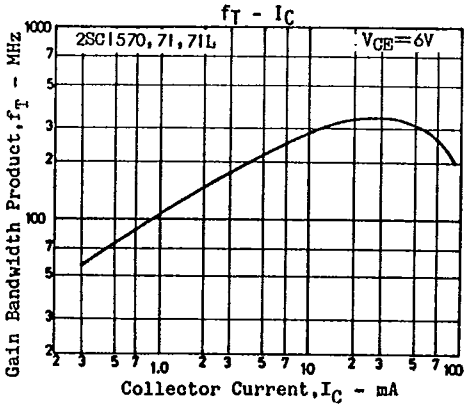
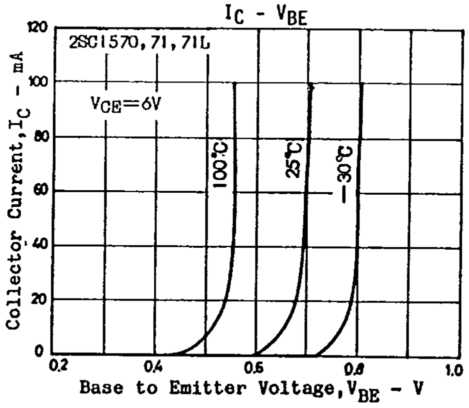

IC - VCE
2SC1570,71,71L
160μA
140
120
100
80
60
40
20
10
IB=0
Collector Current,IC - mA
0
20
40
60
80
100
Collector to Emitter Voltage,VCE - V
0
5
10
15
20
25
30
35

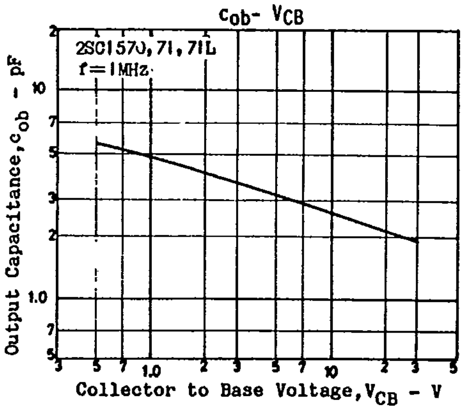

IC - VCE
2SC1570,71,71L
300μA
200
150
100
80
70
60
50
40
10
5
Collector Current,IC - mA
0
10
20
30
40
50
Collector to Emitter Voltage,VCE - V
0
0.2
0.4
0.6
0.8
1.0

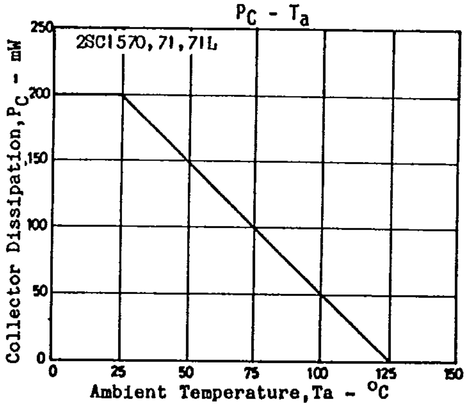

hFE - IC
2SC1570,71,71L
VCE=6V
100°C
25°C
−30°C
DC Current Gain,hFE
5
7
100
2
3
5
7
1000
2
3
Collector Current,IC - mA
3
5
1.0
2
3
5
10
2
3
5
100
2
3
5
1000


IC - VBE
2SC1570,71,71L
Collector Current,IC - mA
0
10
20
30
40
50
60
70
Base to Emitter Voltage,VBE - V
0
0.2
0.4
0.6
0.8
1.0


fT - IC
2SC1570,71,71L
VCE=6V
Gain Bandwidth Product,fT - MHz
2
3
5
7
100
2
3
5
7
1000
Collector Current,IC - mA
2
3
5
7
1.0
2
3
5
7
10
2
3
5
7
100


IC - VBE
2SC1570,71,71L
VCE=6V
100°C
25°C
−30°C
Collector Current,IC - mA
0
20
40
60
80
100
120
Base to Emitter Voltage,VBE - V
0.2
0.4
0.6
0.8
1.0


Cob - VCB
2SC1570,71,71L
f=1MHz
Output Capacitance,Cob - pF
5
7
1.0
2
3
5
7
10
2
Collector to Base Voltage,VCB - V
3
5
7
1.0
2
3
5
7
10
2
3
5


PC - Ta
2SC1570,71,71L
Collector Dissipation,PC - mW
0
50
100
150
200
250
Ambient Temperature,Ta - °C
0
25
50
75
100
125
150

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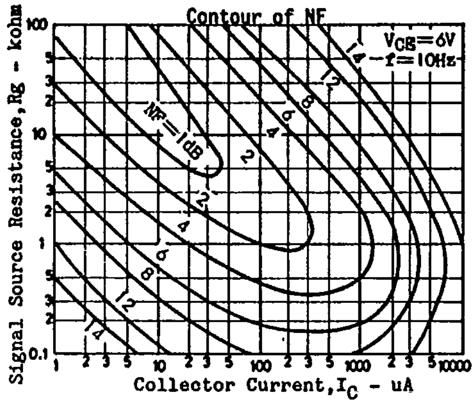
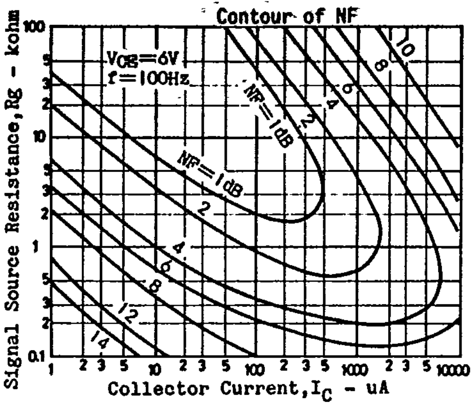
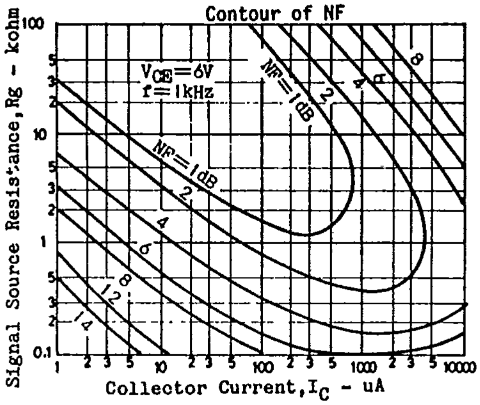

Contour of NF
VCE=6V
f=10Hz
NF=1dB
2
4
6
8
12
14
Signal Source Resistance,Rg - kohm
100
5
3
2
10
5
3
2
1
.5
.3
.2
0.1
1 2 3 5 10 2 3 5 100 2 3 5 1000 2 3 5 10000
Collector Current,IC - uA


Contour of NF
VCE=6V
f=100Hz
NF=1dB
2
4
6
8
10
12
14
Signal Source Resistance,Rg - kohm
100
5
3
2
10
5
3
2
1
.5
.3
.2
0.1
1 2 3 5 10 2 3 5 100 2 3 5 1000 2 3 5 10000
Collector Current,IC - uA


Contour of NF
VCE=6V
f=1kHz
NF=1dB
2
4
6
8
12
14
Signal Source Resistance,Rg - kohm
100
5
3
2
10
5
3
2
1
.5
.3
.2
0.1
1 2 3 5 10 2 3 5 100 2 3 5 1000 2 3 5 10000
Collector Current,IC - uA

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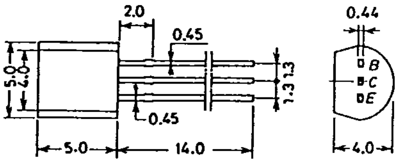
CASE OUTLINES AND ATTACHMENTS

- ●All of Sanyo 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]

unit:mm

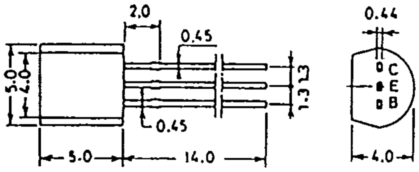


JEDEC: TO-92
EIAJ : SC-43
SANYO: NP

B. Base
C. Collector
E. Emitter

Case Outline—[2004A]

unit:mm

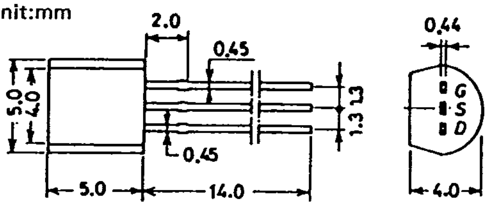


JEDEC: TO-92
EIAJ : SC-43
SANYO: NP

C. Collector
E. Emitter
B. Base

Case Outline—[2005A]

unit:mm

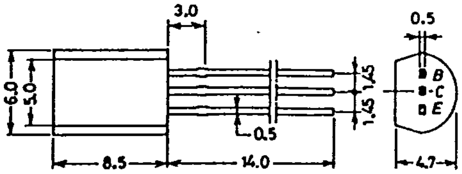


JEDEC: TO-92
EIAJ : SC-43
SANYO: NP

G: Gate
S: Source
D: Drain

Case Outline—[2006A]

unit:mm

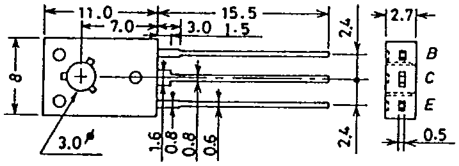


EIAJ: SC-51
SANYO: MP

B: Base
C: Collector
E: Emitter

Case Outline—[2009A]

unit:mm

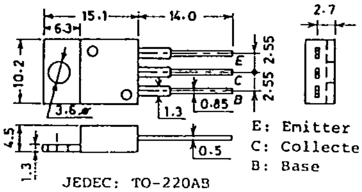


JEDEC: TO-126

B: Base
C: Collector
E: Emitter

Case Outline—[2010A]

unit:mm

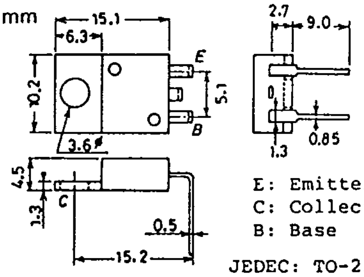


JEDEC: TO-220AB
EIAJ: SC-46

E: Emitter
C: Collecter
B: Base

Case Outline—[2012]

unit:mm

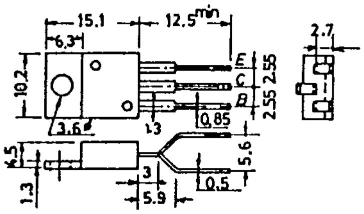


E: Emitter
C: Collector
B: Base

JEDEC: TO-220AA
EIAJ : SC-45

Case Outline—[2013]

unit:mm



JEDEC TO-220

B: Base
C: Collector
E: Emitter

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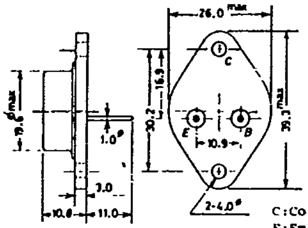
Case Outline—[2017]

unit:mm

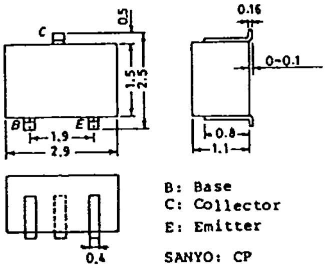


EIAJ TC-3,TB-3
JEDEC. TO-3

C:Collector
E:Emitter
B.Base

Case Outline—[2018A]

unit:mm

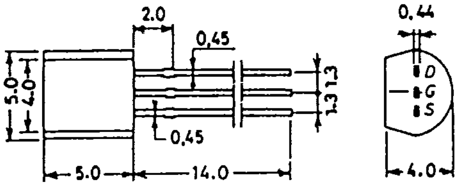


B: Base
C: Collector
E: Emitter

SANYO: CP

Case Outline—[2019A]

unit:mm

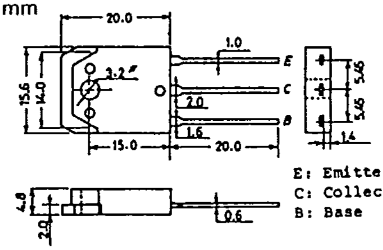


JEDEC: TO-92
EIAJ : SC-43
SANYO: NP

D: Drain
G: Gate
S: Source

Case Outline—[2022]

unit:mm

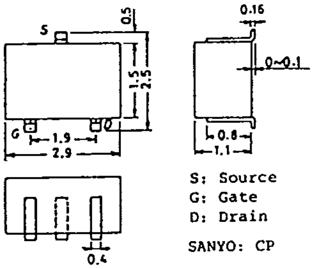


E: Emitter
C: Collector
B: Base

SANYO: TO3PB

Case Outline—[2024A]

unit:mm

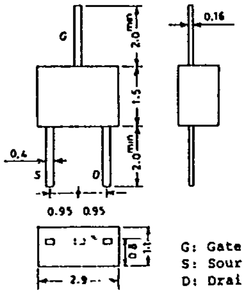


S: Source
G: Gate
D: Drain

SANYO: CP

Case Outline—[2025]

unit:mm

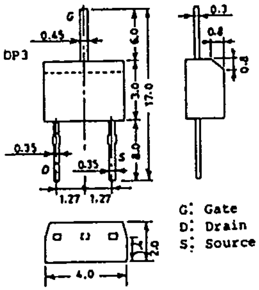


G: Gate
S: Source
D: Drain

Case Outline—[2026]

unit:mm

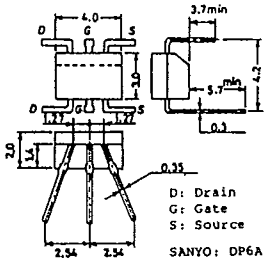
SANYO: DP3



G: Gate
D: Drain
S: Source

Case Outline—[2027A]

unit:mm

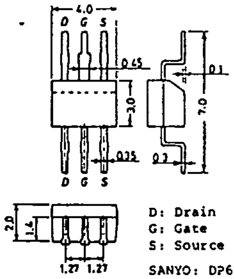


D: Drain
G: Gate
S: Source

SANYO: DP6A

Case Outline—[2028A]

unit:mm

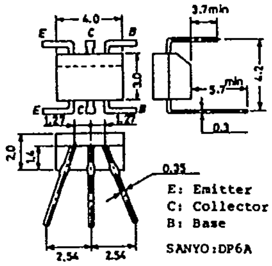


D: Drain
G: Gate
S: Source

SANYO: DP6B

Case Outline—[2029A]

unit:mm



E: Emitter
C: Collector
B: Base

SANYO:DP6A

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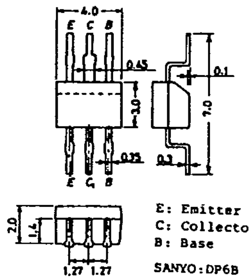
Case Outline—[2030A]

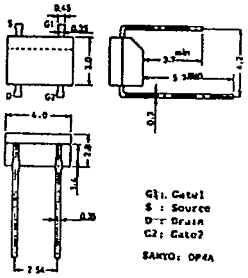
unit:mm



E: Emitter
C: Collector
B: Base
SANYO: DP6B

Case Outline—[2031A]

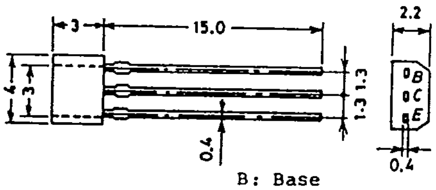
unit:mm



G1: Gate1
S : Source
D : Drain
G2: Gate2
SANYO: DP4A

Case Outline—[2033]

unit:mm

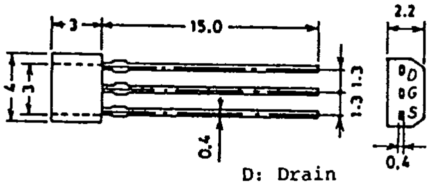


B: Base
C: Collector
E: Emitter

SANYO: SPA

Case Outline—[2034]

unit:mm

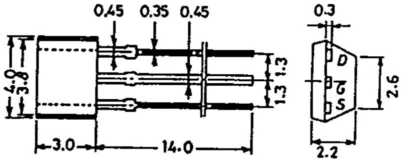


D: Drain
G: Gate
S: Source

SANYO: SPA

Case Outline—[2037]

unit:mm

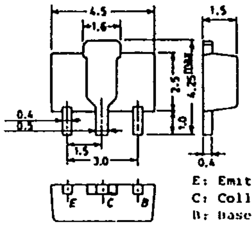


D: Drain
G: Gate
S: Source

SANYO: SP'

Case Outline—[2038]

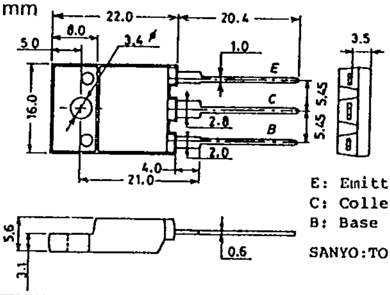
unit:mm



E: Emitter
C: Collector
B: Base
SANYO: PCP

Case Outline—[2039]

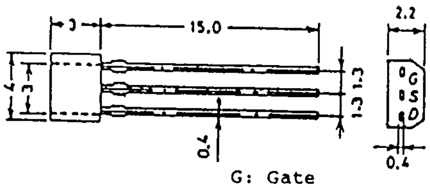
unit:mm



E: Emitter
C: Collector
B: Base
SANYO: TO3PML

Case Outline—[2040]

unit:mm

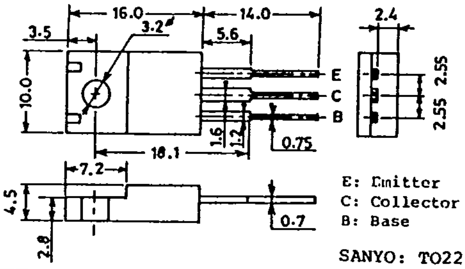


G: Gate
S: Source
D: Drain

SANYO: SPA

Case Outline—[2041]

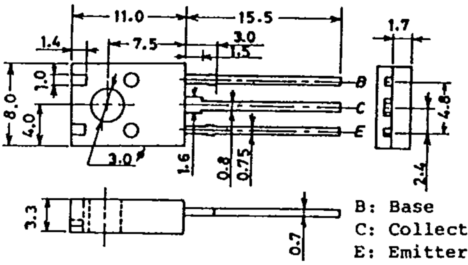
unit:mm



E: Emitter
C: Collector
B: Base

SANYO: TO220ML

Case Outline—[2042A] unit:mm



B: Base
C: Collector
E: Emitter

SANYO: TO126ML

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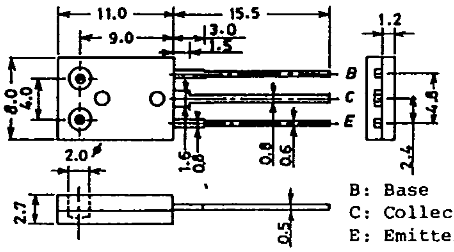
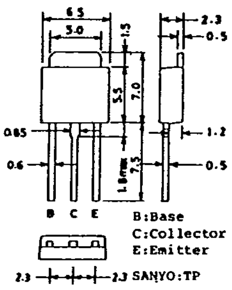
Case Outline—[2043A] unit:mm



B: Base
C: Collector
E: Emitter

SANYO: TO126LP

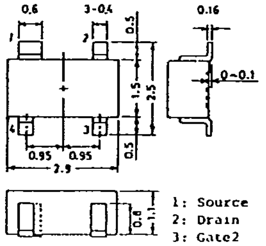
Case Outline—[2045]
unit:mm



B:Base
C:Collector
E:Emitter

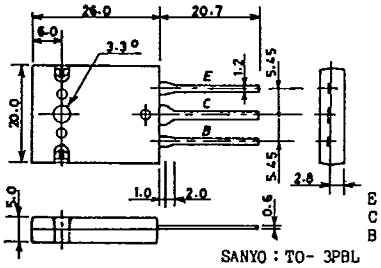
SANYO:TP

Case Outline—[2046]
unit:mm



1: Source
2: Drain
3: Gate2
4: Gate1

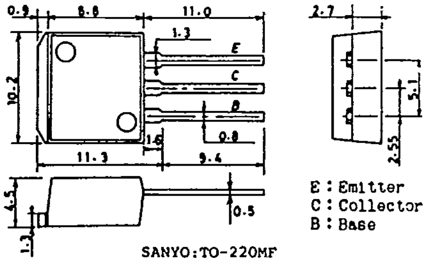
Case Outline—[2048] unit:mm



E : Emitter
C : Collector
B : Base

SANYO : TO- 3PBL

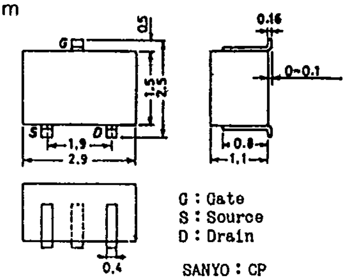
Case Outline—[2049]
unit:mm



E : Emitter
C : Collector
B : Base

SANYO:TO-220MF

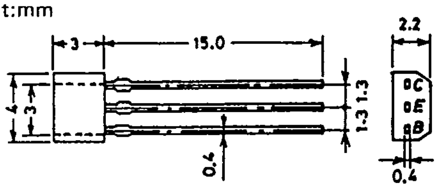
Case Outline—[2050]
unit:mm



G : Gate
S : Source
D : Drain

SANYO : CP

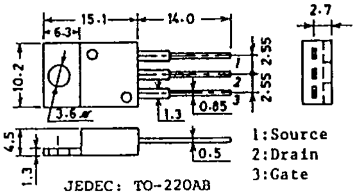
Case Outline—[2051]
unit:mm



C : Collector
E : Emitter
B : Base

SANYO: SPA

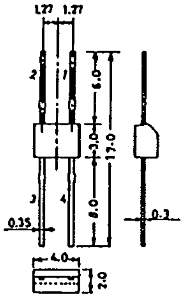
Case Outline—[2052A]
unit:mm



1:Source
2:Drain
3:Gate

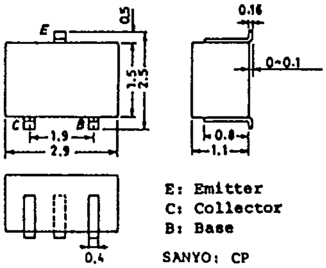
JEDEC: TO-220AB
EIAJ: SC-46

Case Outline—[2053]
unit:mm



1:Drain
2:Source
3:Gate 1
4:Gate 2

Case Outline—[2054]
unit:mm

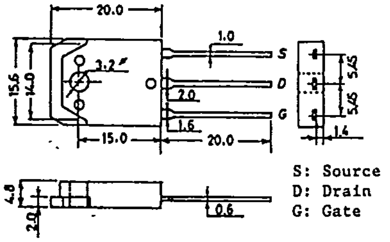


E: Emitter
C: Collector
B: Base

SANYO: CP

T-91-20

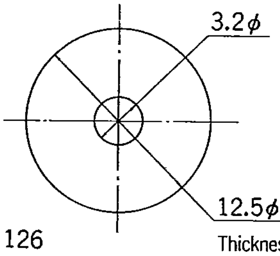
Case Outline–[2056] unit:mm



S: Source
D: Drain
G: Gate

SANYO: TO3PB

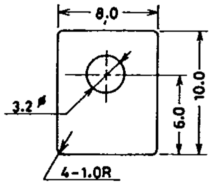
Case Outline–[0004]
unit:mm



SANYO IS-126

Thickness : 0.075

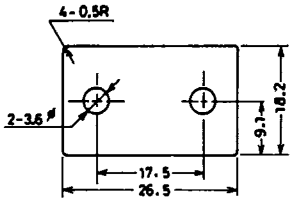
Case Outline–[0005]
unit:mm



Thickness : 0.075

SANYO IS-126A Mica

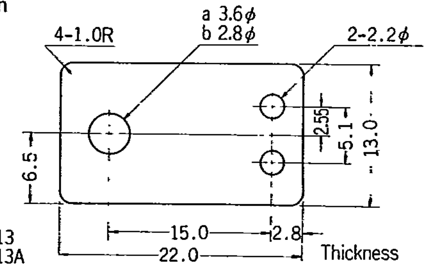
Case Outline–[0006]
unit:mm



Thickness : 0.05~0.1

SANYO IS-20MA Mica

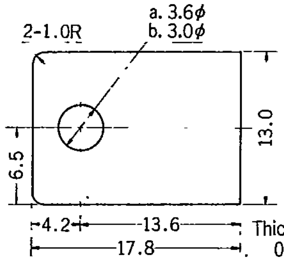
Case Outline–[0007]
unit:mm



a.IS-313
b.IS-313A

Thickness
0.10~0.05

Case Outline–[0008]
unit:mm

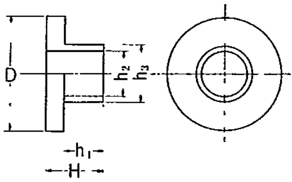


a. IS-313B
b. IS-313D

Thickness
0.10~0.05

SANYO

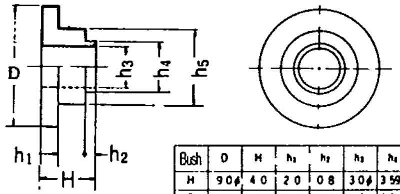
Case Outline–[0009]
unit:mm



Bush	D	H	h_1	h_2	h_3
A	8.0ϕ	4.0	2.8	3.1ϕ	3.89ϕ
B	8.0ϕ	3.0	1.8	3.1ϕ	3.89ϕ
C	8.0ϕ	5.7	4.5	3.1ϕ	3.89ϕ
D	8.0ϕ	2.7	1.5	3.1ϕ	3.89ϕ
E	8.0ϕ	3.4	2.2	3.1ϕ	3.89ϕ
F	8.0ϕ	4.0	2.8	3.0ϕ	3.59ϕ
K	16.0ϕ	3.4	1.4	3.1ϕ	6.0ϕ
L	6.0ϕ	3.1	1.5	2.6ϕ	3.5ϕ
M	6.0ϕ	3.1	1.5	3.0ϕ	3.59ϕ
P	6.0ϕ	2.3	1.1	3.0ϕ	3.59ϕ

SANYO Bush

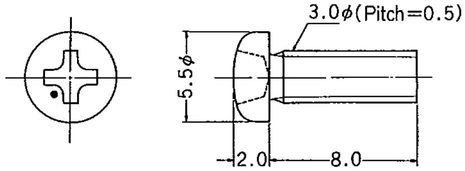
Case Outline–[0010]
unit:mm



Bush	D	H	h_1	h_2	h_3	h_4	h_5
H	9.0ϕ	4.0	2.0	0.8	3.0ϕ	3.59ϕ	5.6ϕ
T	9.0ϕ	5.8	2.0	2.6	3.0ϕ	3.59ϕ	5.6ϕ
UB	16.0ϕ	6.8	1.5	3.3	3.0ϕ	3.89ϕ	8.0ϕ

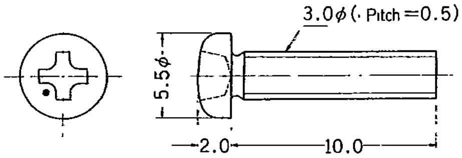
SANYO Bush

Case Outline–[0011]
unit:mm



JIS No.B1111 M3×0.5

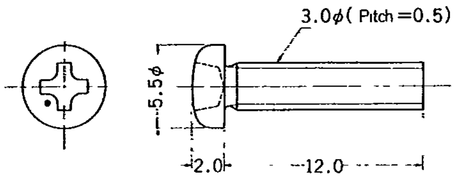
Case Outline–[0012]
unit:mm



JIS No.B1111 M3×0.5

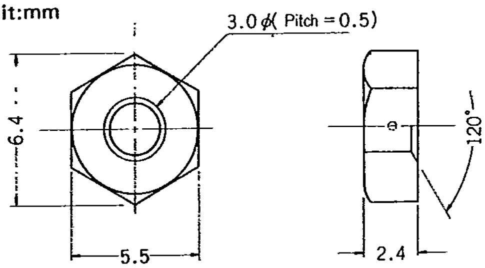
T-91-20

Case Outline–[0013]
unit:mm



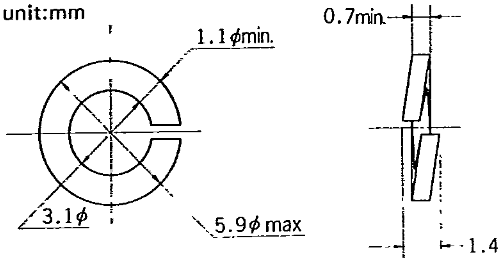
JIS No.B1111 M3×0.5

Case Outline–[0014]
unit:mm



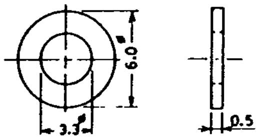
JIS No. B1181 M3×0.5

Case Outline–[0015]
unit:mm



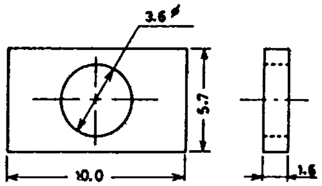
JIS No. B 1251 Spring washer (M3)

Case Outline–[0016]
unit:mm



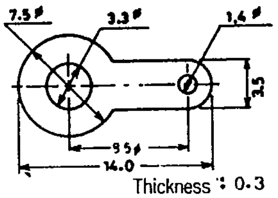
JIS No.B1252 Flat washer

Case Outline–[0017]
unit:mm



JIS No.G3141 Rectangular washer

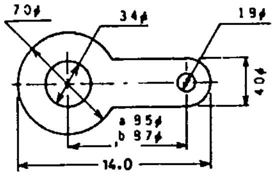
Case Outline–[0018]
unit:mm



Thickness : 0.3

SANYO Lug 1.4

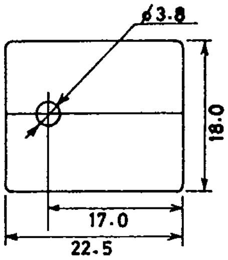
Case Outline–[0019]
unit:mm



Thickness : 0.3

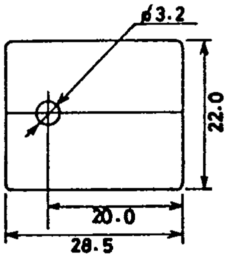
SANYO Lug 1.8φ

Case Outline–[0020]
unit:mm



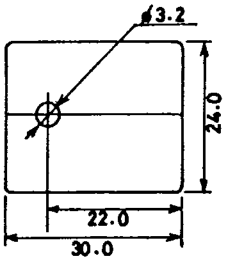
SANYO IS-3MP Mica

Case Outline–[0021]
unit:mm



SANYO IS-MPC Mica

Case Outline–[0022]
unit:mm



SANYO IS-3PBL Mica