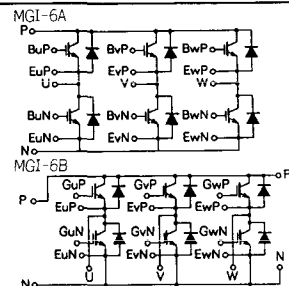
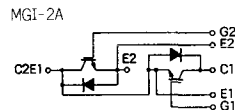
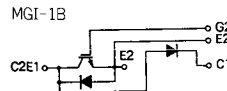
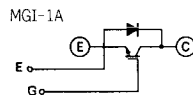


トランジスタ・モジュール (シリコンNチャネル IGBT)

- フリーホイール・ダイオード付
- 絶縁形

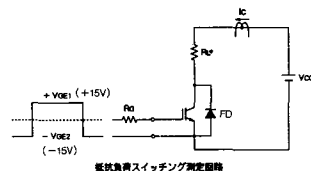
■等価回路



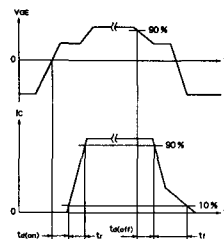
注1. $T_c = 25^\circ\text{C}$. 注2. AC, 1分間。

型 名	最 大 定 格 (T _J =25℃)										電 氣 的 特 性 (T _J =25℃)													
	V _{CES}	V _{GES}	I _C	I _{CP}	I _F	I _{FP}	P _C	T _J	T _{stg}	V _{ISO}	I _{GES}	I _{CES}	V _{CES}	V _{GE(OFF)}	V _{CES}	I _C	V _{CE(SAT)}	I _C						
	(V)	(V)	(注1)	(1ms)	(注1)	(1ms)	(注1)	(W)	(℃)	(℃)	(注2)	(nA)	V _{GE}	(mA)	V _{CE}	(V)	(mA)	(V)	(V)	(V)	(V)	(V)	(A)	
	最 大											最 大	最 大	最 大	最 小	最 小	最 大	最 大	最 大	最 大	最 大	最 大		
CM50DY-12E	600	±20	50	100	50	100	250	150	-40~125	2500	±500	±20	1.0	600			3.5	6.5	10	5.0	3.5	15	50	
CM75DY-12E	600	±20	75	150	75	150	310	150	-40~125	2500	±500	±20	1.0	600			3.5	6.5	10	7.5	3.5	15	75	
CM100DY-12E	600	±20	100	200	100	200	400	150	-40~125	2500	±500	±20	1.0	600			3.5	6.5	10	10	3.5	15	100	
CM150DY-12E	600	±20	150	300	150	300	600	150	-40~125	2500	±500	±20	1.0	600			3.5	6.5	10	15	3.5	15	150	
CM200DY-12E	600	±20	200	400	200	400	780	150	-40~125	2500	±500	±20	1.0	600			3.5	6.5	10	20	3.5	15	200	
CM300DY-12E	600	±20	300	600	300	600	1100	150	-40~125	2500	±500	±20	1.0	600			3.5	6.5	10	30	3.5	15	300	
CM400DY-12E	600	±20	400	800	400	800	1500	150	-40~125	2500	±500	±20	1.0	600			3.5	6.5	10	40	3.5	15	400	
CM50E3Y-12E	600	±20	50	100	50	100	250	150	-40~125	2500	±500	±20	1.0	600			3.5	6.5	10	5.0	3.5	15	50	
CM75E3Y-12E	600	±20	75	150	75	150	310	150	-40~125	2500	±500	±20	1.0	600			3.5	6.5	10	7.5	3.5	15	75	
CM100E3Y-12E	600	±20	100	200	100	200	400	150	-40~125	2500	±500	±20	1.0	600			3.5	6.5	10	10	3.5	15	100	
CM150E3Y-12E	600	±20	150	300	150	300	600	150	-40~125	2500	±500	±20	1.0	600			3.5	6.5	10	15	3.5	15	150	
CM200E3Y-12E	600	±20	200	400	200	400	780	150	-40~125	2500	±500	±20	1.0	600			3.5	6.5	10	20	3.5	15	200	
CM300E3Y-12E	600	±20	300	600	300	600	1100	150	-40~125	2500	±500	±20	1.0	600			3.5	6.5	10	30	3.5	15	300	
CM300HA-12E	600	±20	300	600	300	600	1100	150	-40~125	2500	±500	±20	1.0	600			3.5	6.5	10	30	3.5	15	300	
CM400HA-12E	600	±20	400	800	400	800	1500	150	-40~125	2500	±500	±20	1.0	600			3.5	6.5	10	40	3.5	15	400	
CM50TF-12E	600	±20	50	100	50	100	250	150	-40~125	2500	±500	±20	1.0	600			3.5	6.5	10	5.0	3.5	15	50	
CM75TF-12E	600	±20	75	150	75	150	310	150	-40~125	2500	±500	±20	1.0	600			3.5	6.5	10	7.5	3.5	15	75	
CM100TF-12E	600	±20	100	200	100	200	400	150	-40~125	2500	±500	±20	1.0	600			3.5	6.5	10	10	3.5	15	100	

■スイッチング時間測定回路と波形



低抵抗負荷スイッチング測定回路



スイッチング時間測定波形

注3. スwitchング時間は抵抗負荷時の値。

注4. FD: フリーホール・ダイオード。

C ₁₀₀ (f = 1 MHz)										エミッタ・コレクタ間ダイオード						熱抵抗		等 価 回 路	外形図	記 事	型 名
スイッチング時間 (ns)										V _{CE} (V)		t _{rr} (ns)		R _{thJA} (1-θ) (°C/W)							
標準	V _{CE} (V)	V _{BE} (V)	t _r 最大	t _d (ON) 最大	t _f 最大	t _d (OFF) 最大	R _G (Ω)	I _C (A)	V _{CC} (V)	V _{CE} (V)	I _F (A)	t _{rr} (ns)	I _F (A)	di/dt (A/μs)	トランジスタ部 最大	ダイオード部 最大					
10000	10	0	300	150	350	400	13	50	300	2.5	50	200	50	-100	0.5	1.0	MG1-2A	M-4A2D	F D付, 直列接続	CM50DY-12E	
15000	10	0	300	150	350	400	8.3	75	300	2.5	75	200	75	-150	0.4	0.9	MG1-2A	M-4A2D	F D付, 直列接続	CM75DY-12E	
20000	10	0	300	150	350	400	6.3	100	300	2.5	100	200	100	-200	0.31	0.7	MG1-2A	M-4A2D	F D付, 直列接続	CM100DY-12E	
30000	10	0	700	400	350	600	4.2	150	300	2.5	150	200	150	-300	0.21	0.47	MG1-2A	M-4C2A	F D付, 直列接続	CM150DY-12E	
40000	10	0	700	400	350	700	3.1	200	300	2.5	200	200	200	-400	0.16	0.35	MG1-2A	M-4C2A	F D付, 直列接続	CM200DY-12E	
60000	10	0	700	400	350	800	2.1	300	300	2.5	300	200	300	-600	0.11	0.24	MG1-2A	M-9D2A	F D付, 直列接続	CM300DY-12E	
80000	10	0	700	400	350	800	1.6	400	300	2.5	400	200	400	-800	0.085	0.18	MG1-2A	M-10A2C	F D付, 直列接続	CM400DY-12E	
10000	10	0	300	150	350	400	13	50	300	2.5	50	200	50	-100	0.5	1.0	MG1-1B	M-4A2E	F D付	CM50E3Y-12E	
15000	10	0	300	150	350	400	8.3	75	300	2.5	75	200	75	-150	0.4	0.9	MG1-1B	M-4A2E	F D付	CM75E3Y-12E	
20000	10	0	300	150	350	400	6.3	100	300	2.5	100	200	100	-200	0.31	0.7	MG1-1B	M-4A2E	F D付	CM100E3Y-12E	
30000	10	0	700	400	350	600	4.2	150	300	2.5	150	200	150	-300	0.21	0.47	MG1-1B	M-4C2B	F D付	CM150E3Y-12E	
40000	10	0	700	400	350	700	3.1	200	300	2.5	200	200	200	-400	0.16	0.35	MG1-1B	M-4C2B	F D付	CM200E3Y-12E	
60000	10	0	700	400	350	800	2.1	300	300	2.5	300	200	300	-600	0.11	0.24	MG1-1B	M-9D2B	F D付	CM300E3Y-12E	
80000	10	0	700	400	350	800	1.6	400	300	2.5	400	200	400	-800	0.085	0.18	MG1-1A	M-9B1C	F D付	CM300HA-12E	
10000	10	0	300	150	350	400	13	50	300	2.5	50	200	50	-100	0.5	1.0	MG1-6A	M-2B6C	F D付, 3相ブリッジ接続	CM50TF-12E	
15000	10	0	300	150	350	400	8.3	75	300	2.5	75	200	75	-150	0.4	0.9	MG1-6B	M-12B6A	F D付, 3相ブリッジ接続	CM75TF-12E	
20000	10	0	300	150	350	400	6.3	100	300	2.5	100	200	100	-200	0.31	0.7	MG1-6B	M-12B6A	F D付, 3相ブリッジ接続	CM100TF-12E	

FD-1



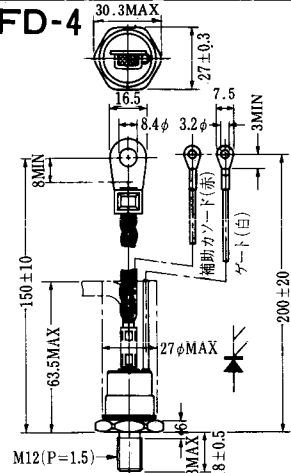
FD-2



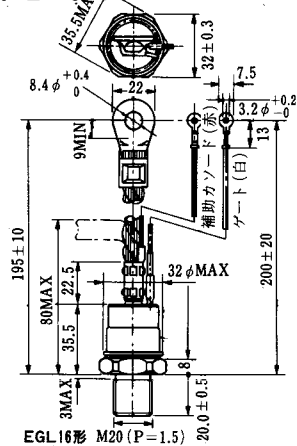
FD-3



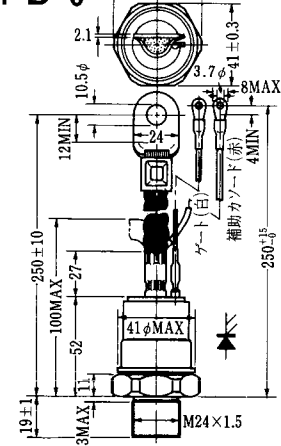
FD-4



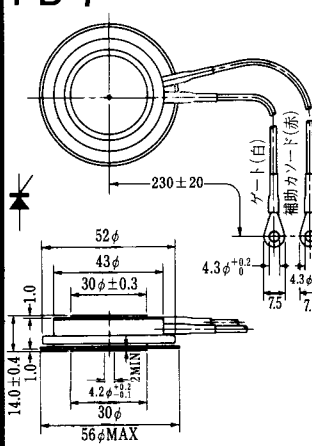
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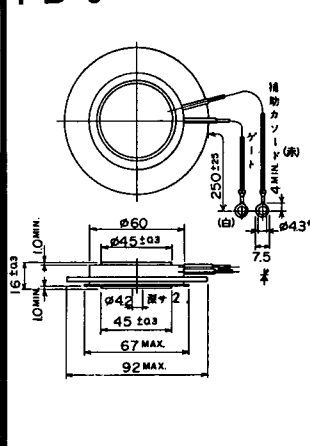
FD-6



FD-7



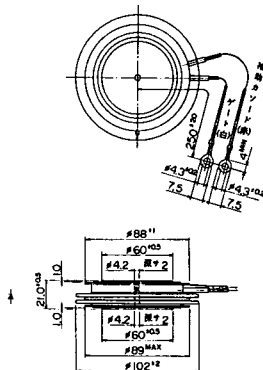
FD-8



FD-9



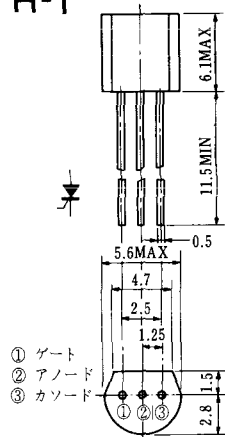
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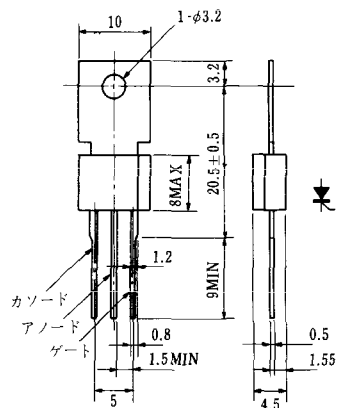
FD-11

FD-12

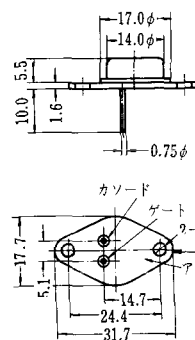
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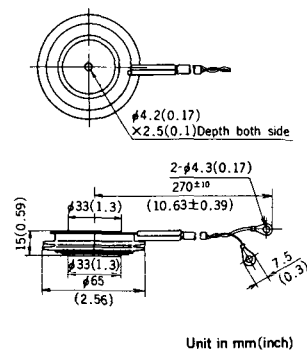
H-2



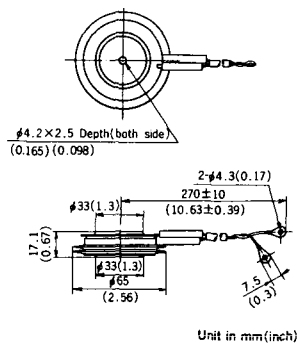
H-3



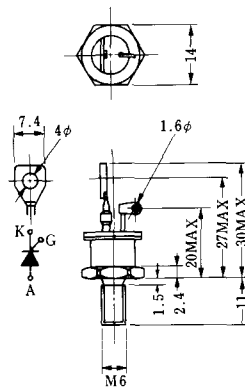
H-4



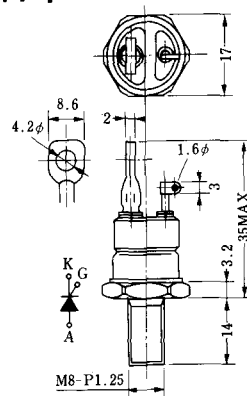
H-5



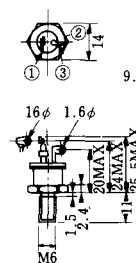
H-6



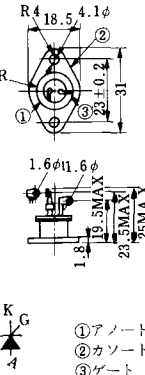
H-7



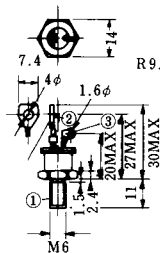
H-8A



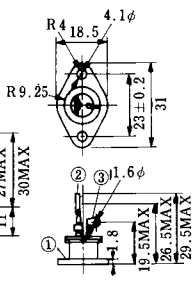
H-8B



H-9A

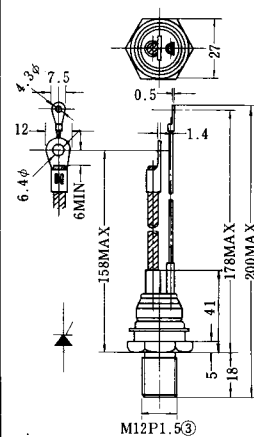


H-9B

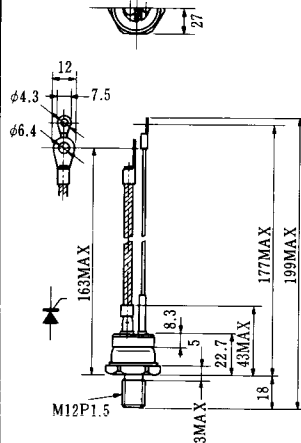


- ① アノード
- ② カソード
- ③ ゲート

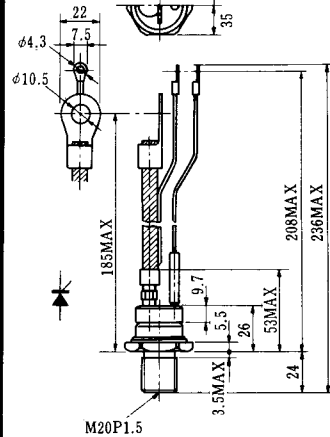
H-10



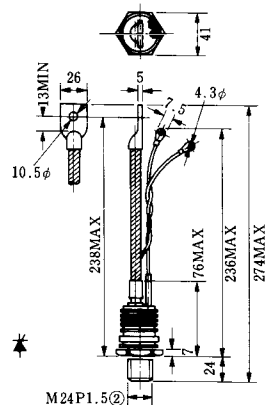
H-11



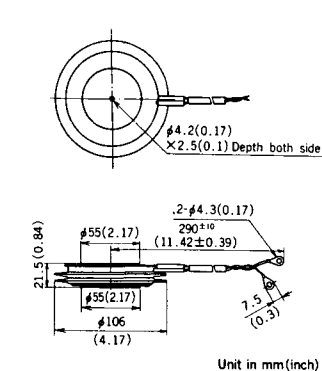
H-12



H-13

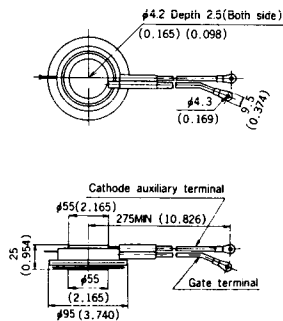


H-14



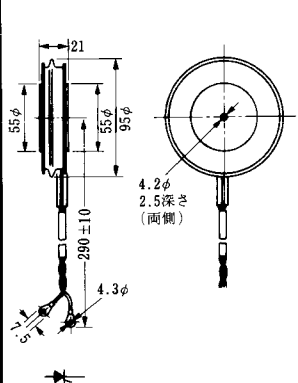
Unit in mm (inch)

H-15

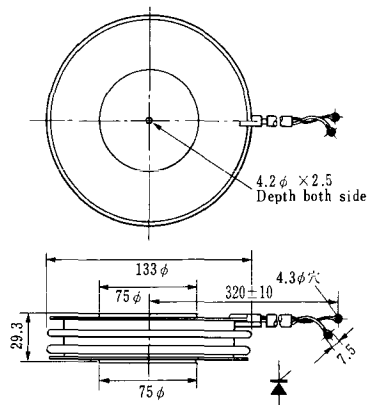


Unit in mm (inch)

H-16



H-17



H-18



H-19



H-20

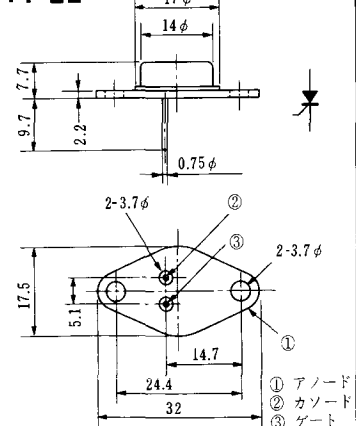


H-21



Unit in mm (inch)

H-22



H-23



H-24



H-25



H-26



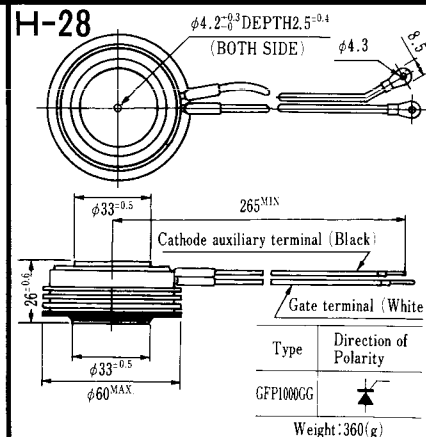
Type	Direction of polarity
CA12	

H-27



Type	Direction of polarity
CF11V	

H-28



Note: The thickness is a dimension in press at the rated mounting force.

H-29



Note : The thickness is a dimension in press at the rated mounting force. Weight: 870(g)

H-30



Note : The thickness is a dimension in press at the rated mounting force. Weight: 1,460(g)

HT-1

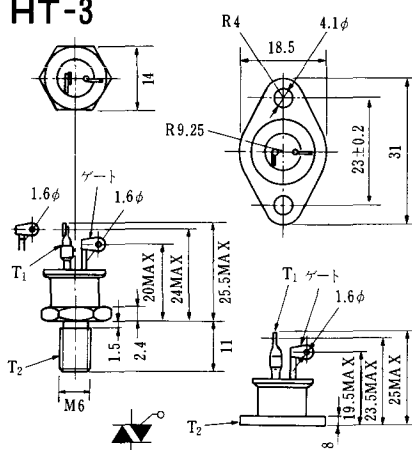


Unit in mm (inch)

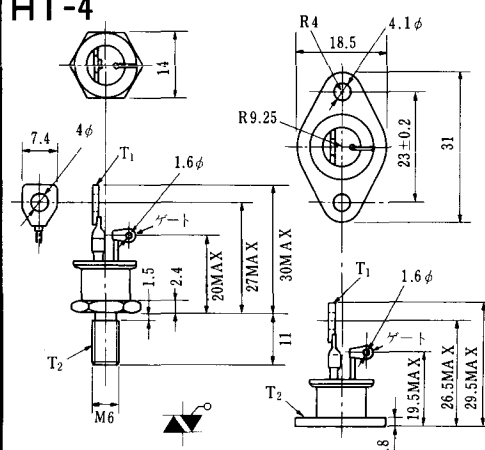
HT-2



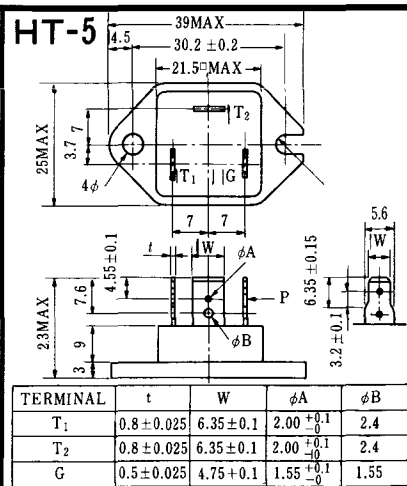
HT-3



HT-4



HT-5



《寸法図単位：mm》

M-1



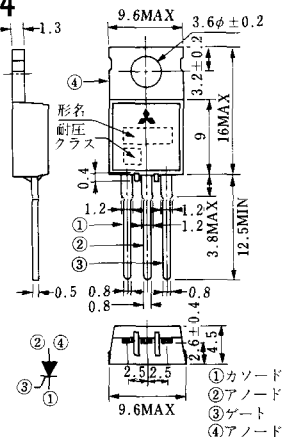
M-2



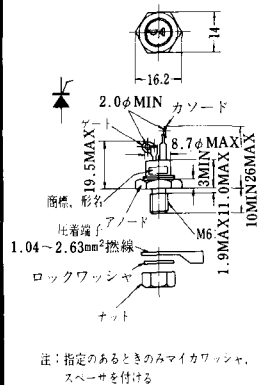
M-3



M-4



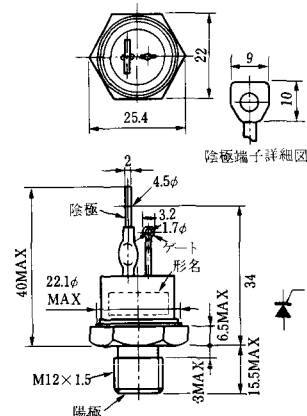
M-5



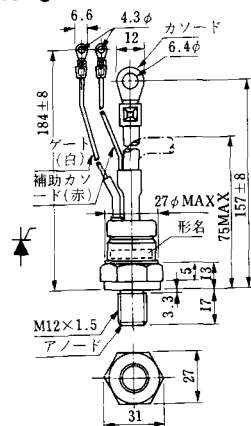
M-6



M-7



M-8



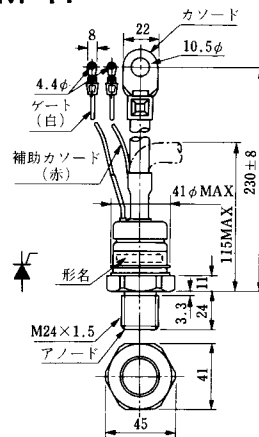
M-9



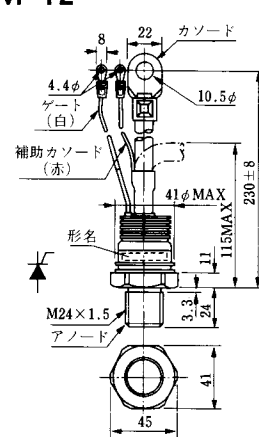
M-10



M-11



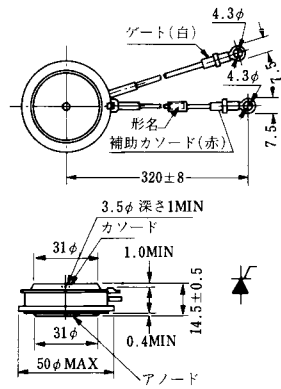
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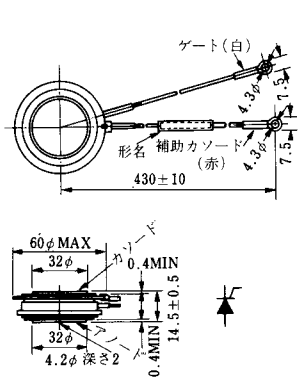
M-13



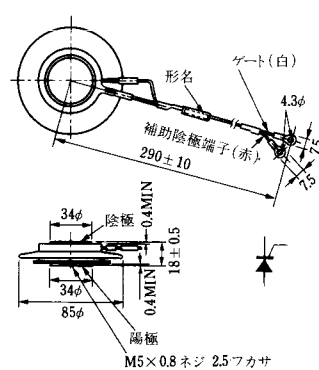
M-14



M-15



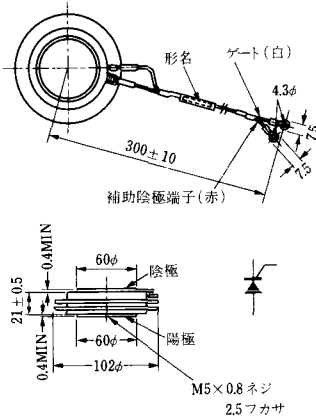
M-16



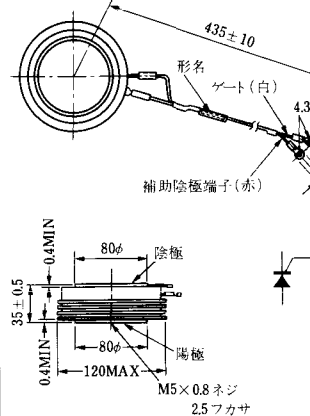
M-17



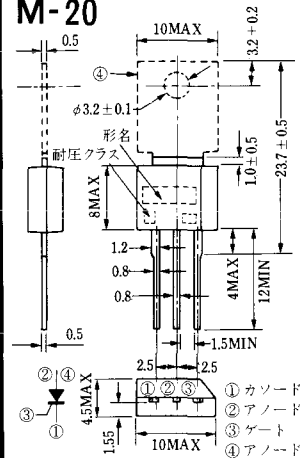
M-18



M-19



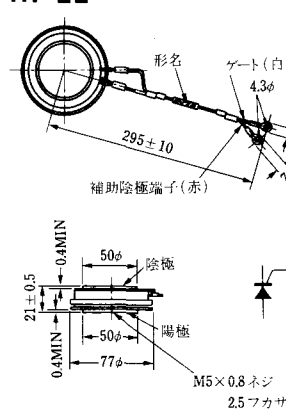
M-20



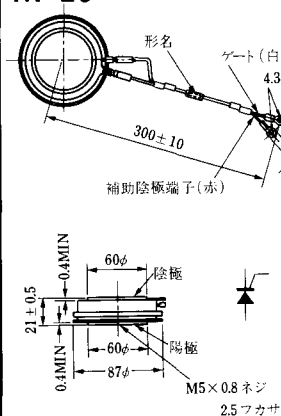
M-21



M-22



M-23



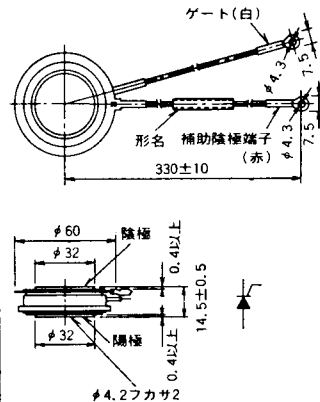
M-24



M-25



M-26



M-27



M-28



M-29



M-30



M-31



M-32



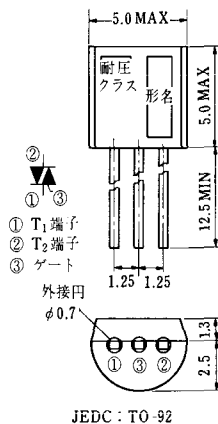
M-33



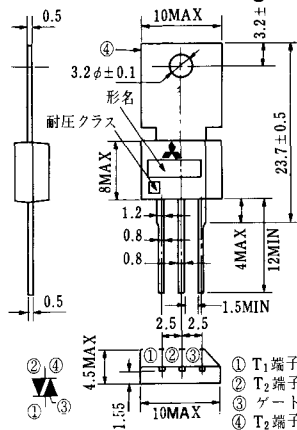
M-34



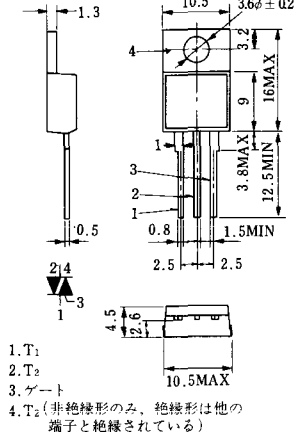
MT-1



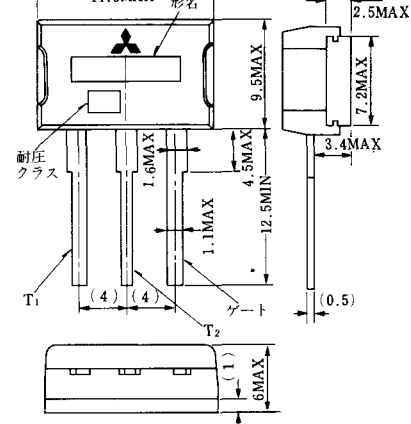
MT-2



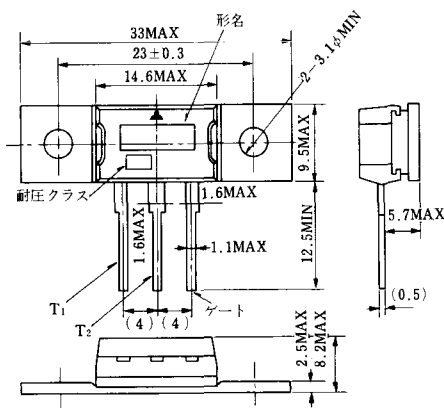
MT-3



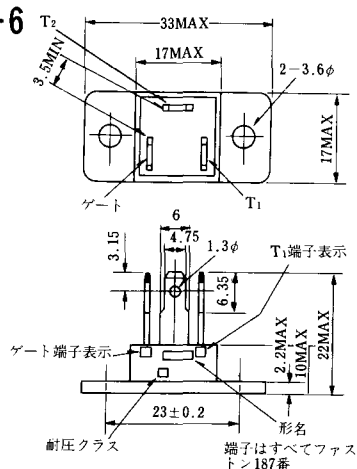
MT-4



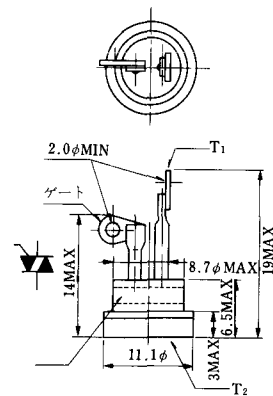
MT-5



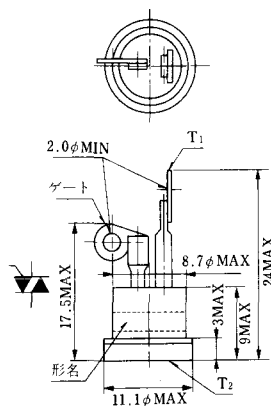
MT-6



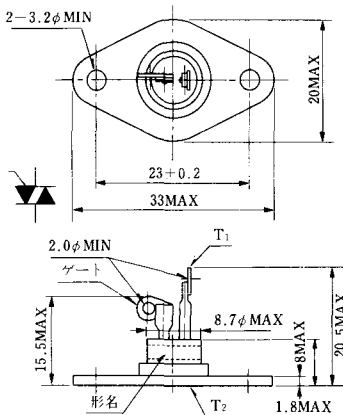
MT-7



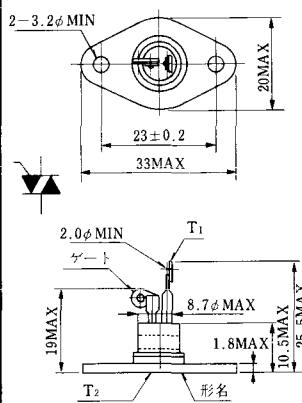
MT-8



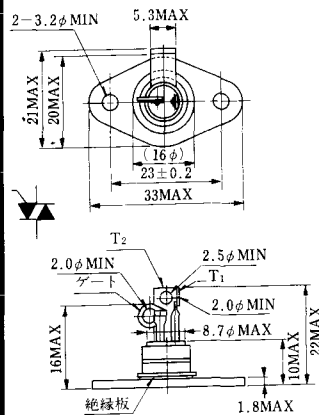
MT-9



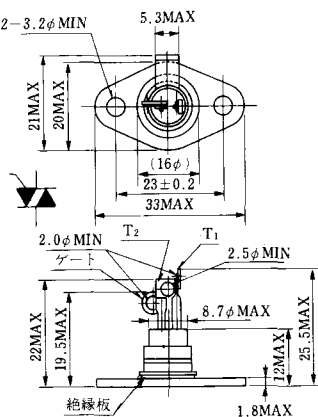
MT-10



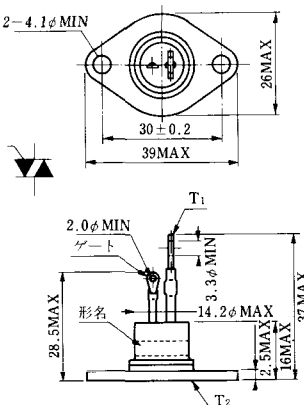
MT-11



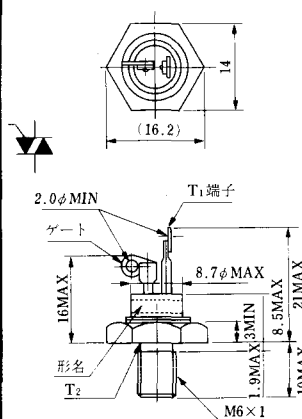
MT-12



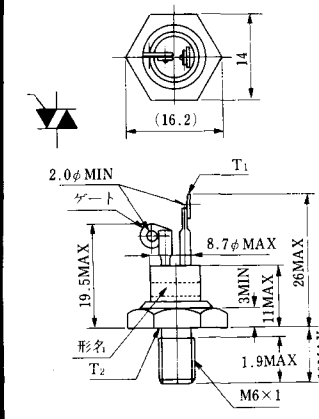
MT-13



MT-14



MT-15



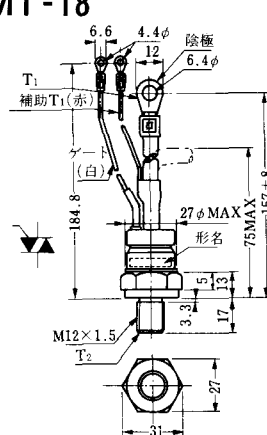
MT-16



MT-17



MT-18



MT-19



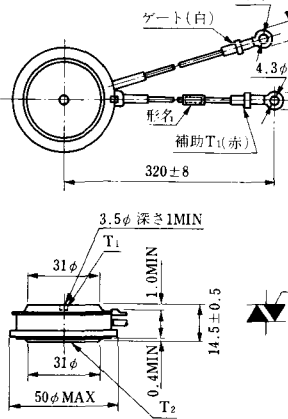
MT-20



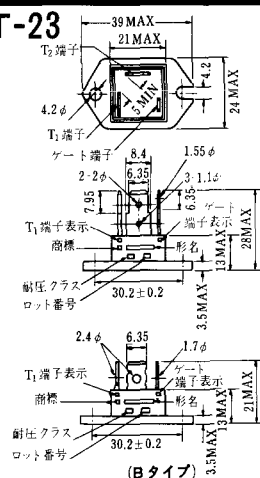
MT-21



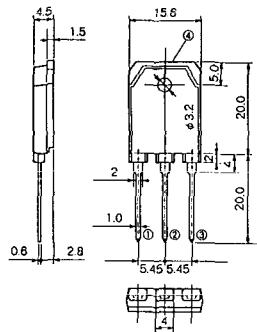
MT-22



MT-23



MT-24



TO-3P

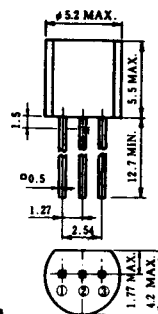
- ① T1 端子
- ② T2 端子
- ③ ゲート端子
- ④ T2 端子

N-1



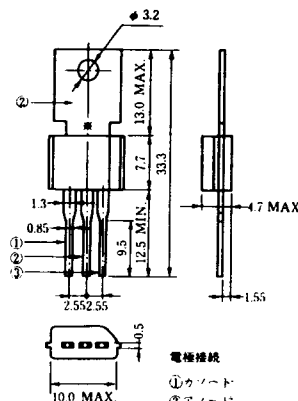
電極接続
① カソード
② ゲート
③ アノード

N-2



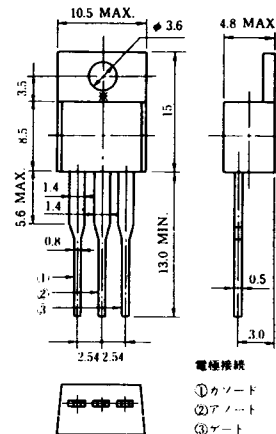
電極接続
① ヤート
② アノード
③ カソード

N-3



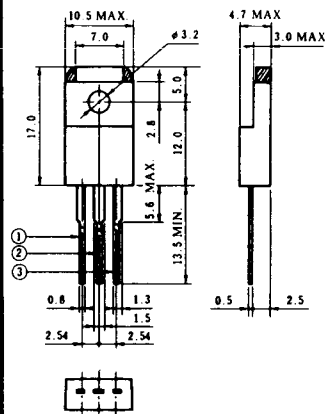
電極接続
① カソード
② アノード
③ ゲート

N-4

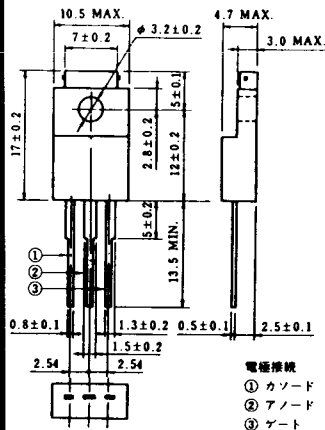


電極接続
① カソード
② アノード
③ ゲート

N-5

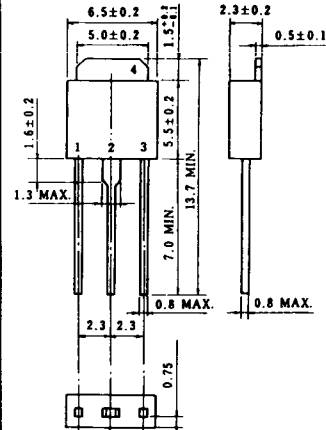


N-6

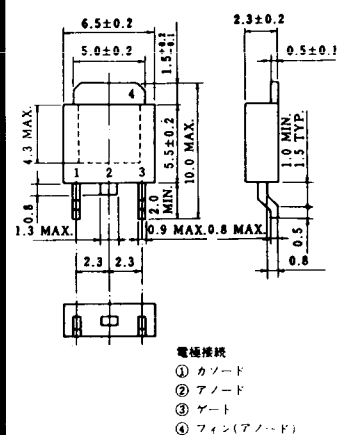


電極接続
① カソード
② アノード
③ ゲート

N-7



N-8



電極接続
① カソード
② アノード
③ ゲート
④ フィン(アノード)

N-9



電極接続

K : カソード

A : アノード

G : ゲート

NA-1



電極接続

1. ゲート
2. アノード
3. カソード

JEDEC: TO-92

NA-2



電極接続

1. カソード
2. アノード
3. ゲート

JEDEC: TO-202AA



Technical drawings of the 1000 Series 1/2. The top drawing is a top view of a hexagonal nut with a central hole, showing dimensions (21.0) for the hex width across flats and 19.0 ± 0.3 for the hex width across flats. The bottom drawing is a side view of the nut, showing dimensions 8.0 for the hex height, $\phi 3.6$ for the central hole diameter, and 1.8 for the nut height. The bottom drawing also shows a side view of a bolt with dimensions 4.0 ± 0.5 for the bolt height, 2.2 MAX for the bolt head diameter, and 11.0 ± 0.5 for the bolt length. The bolt is labeled M6 x 1.0.

NI-3

NI-4

NI-5

NI-6

[illegible]

NI-7

NI-8

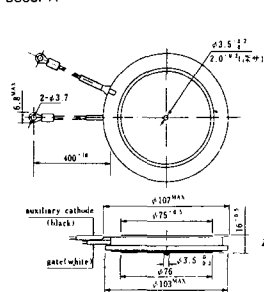
NI-16

503PLF
503PLH



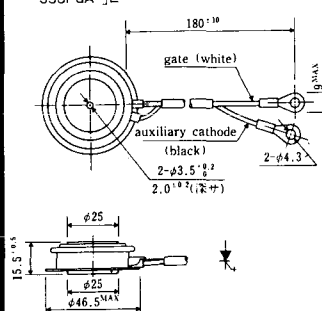
NI-17

3003PA



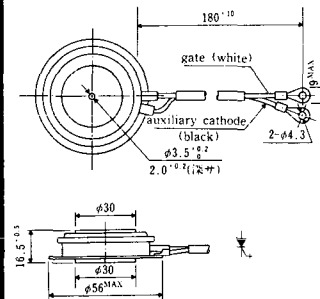
NI-18

353PGA「E



NI-19

603PGA, 603PGA「A, 803PGA



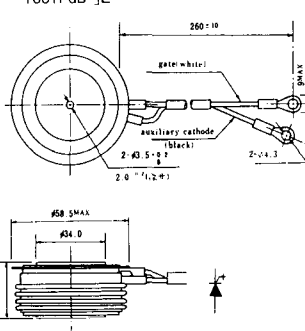
NI-20

603PGA「E



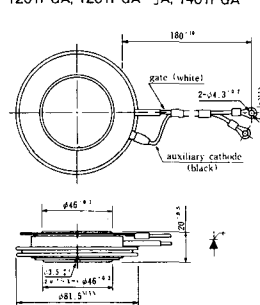
NI-21

1001PGB「E



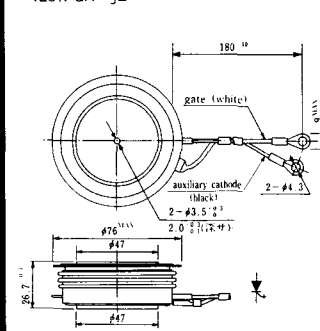
NI-22

1201PGA, 1201PGA「A, 1401PGA



NI-23

1201PGA「E



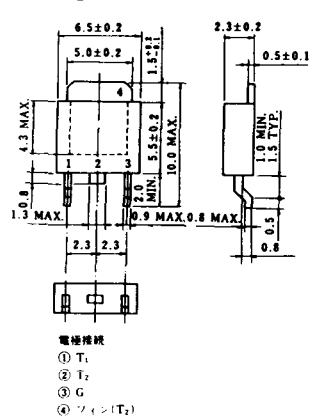
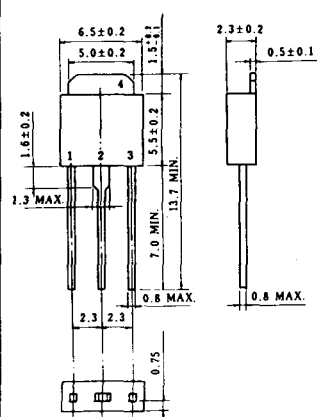
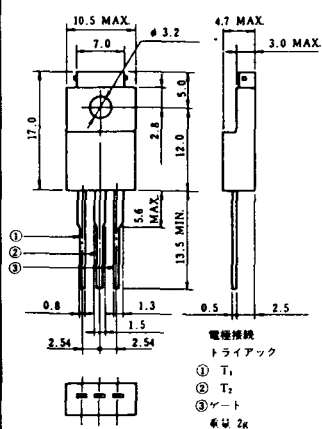
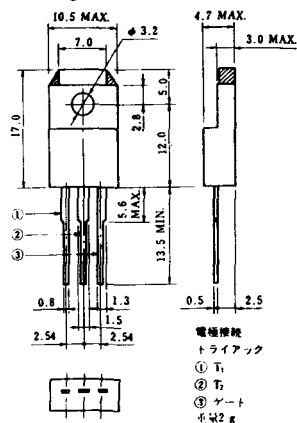
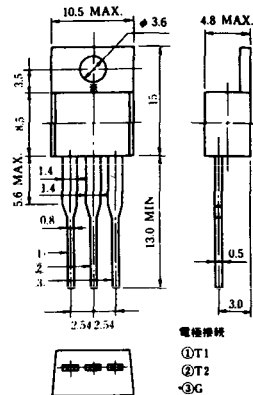
NI-24

2001PGB^r JE



NI-25

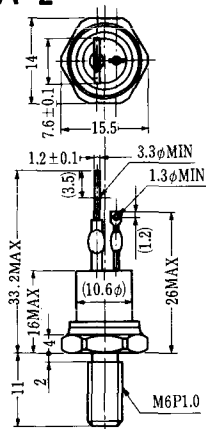
NI-26



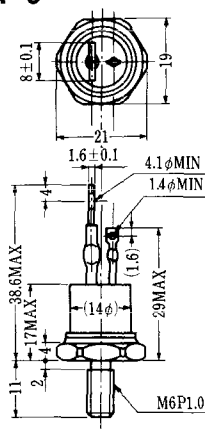
SA-1



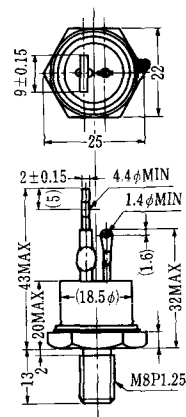
SA-2



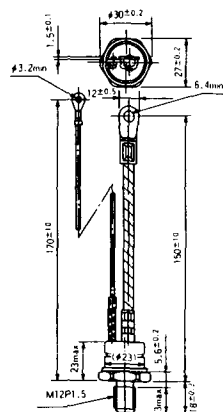
SA-3



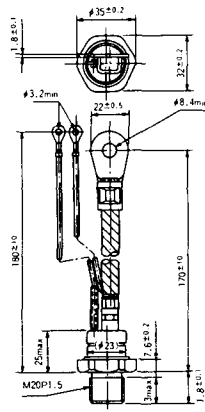
SA-4



SA-5



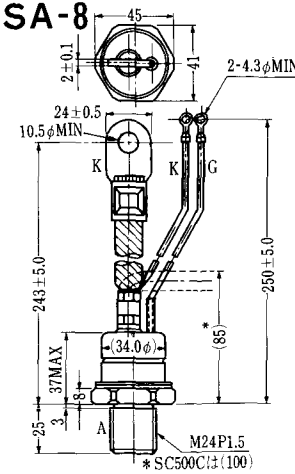
SA-6



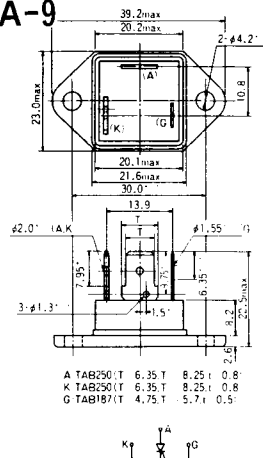
SA-7



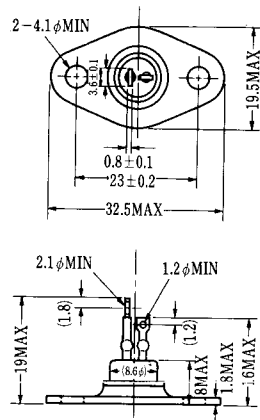
SA-8



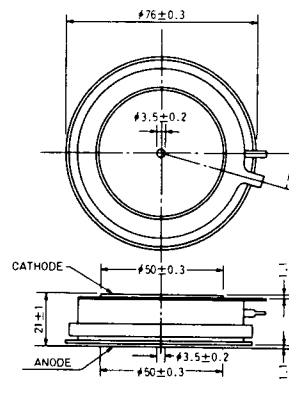
SA-9



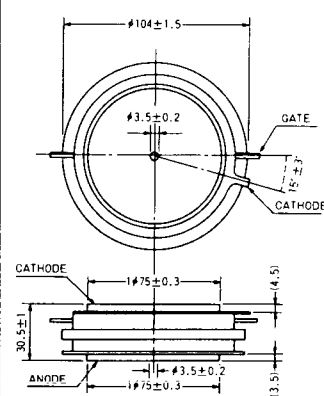
SA-10



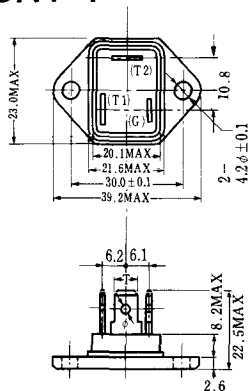
SA-11



SA-12

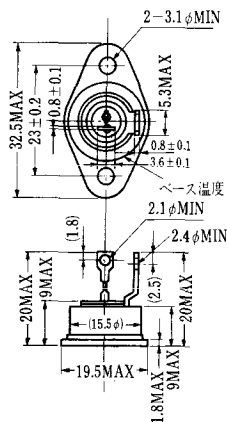


SAT-1

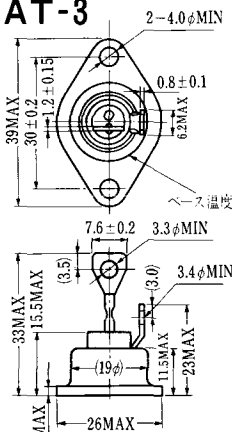


T1端子:ファストン250($T=6.35$, $t=0.8$, $\phi=1.65$)
T2端子:ファストン250($T=6.35$, $t=0.8$, $\phi=1.65$)
G端子:ファストン187($T=4.75$, $t=0.5$, $\phi=1.3$)

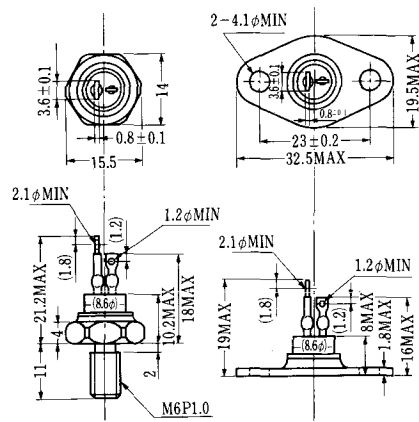
SAT-2



SAT-3



SAT-4



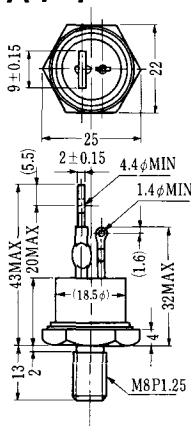
SAT-5



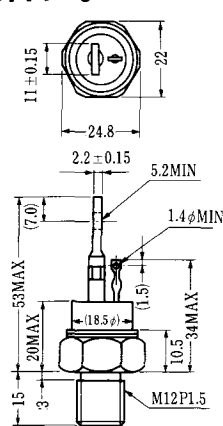
SAT-6



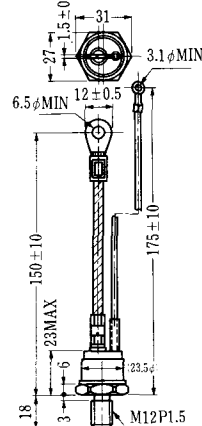
SAT-7



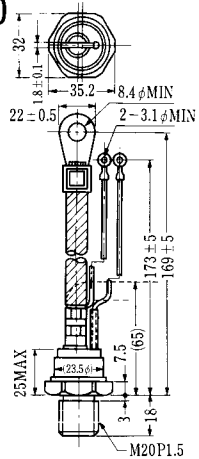
SAT-8



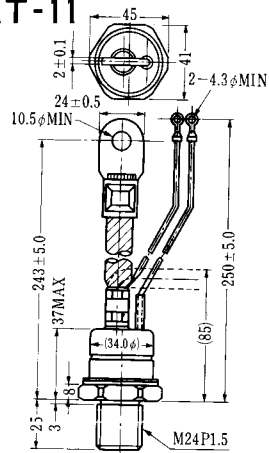
SAT-9.



SAT-10



SAT-11



SY-1(1096A)



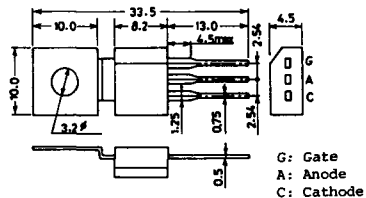
SY-2(1151)



SY-3(1104)



SY-4(1150)



1097A



G: Gate

1102



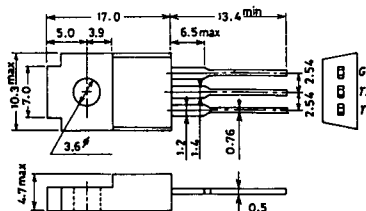
1141



1142



1144



1155

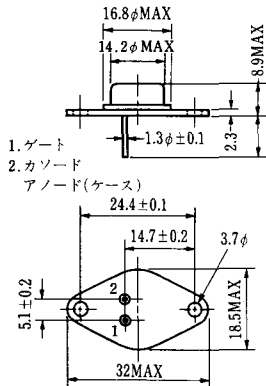


1192A

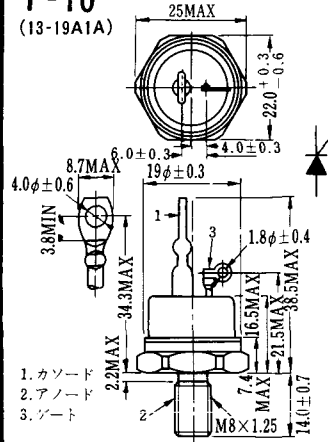


G: Gate

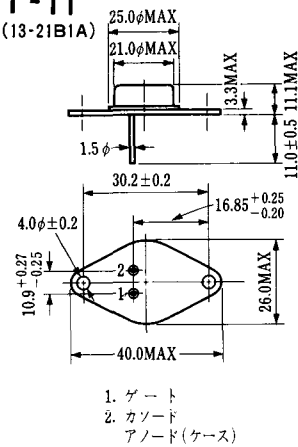
T-9 (13-14A1A)



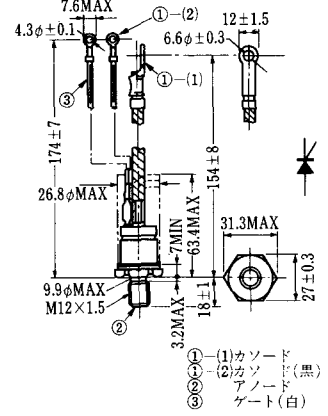
T-10 (13-19A1A)



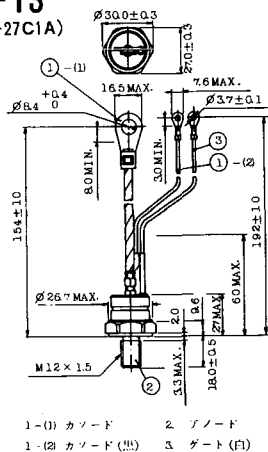
T-11 (13-21B1A)



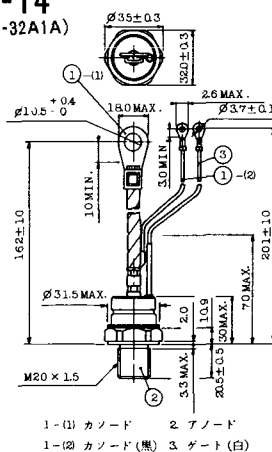
T-12 (13-27B1B)



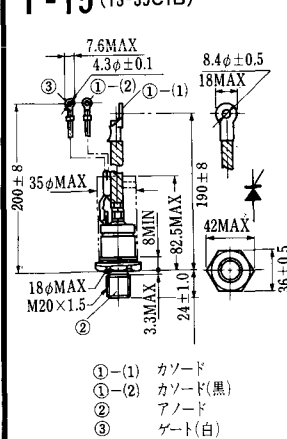
T-13 (13-27C1A)



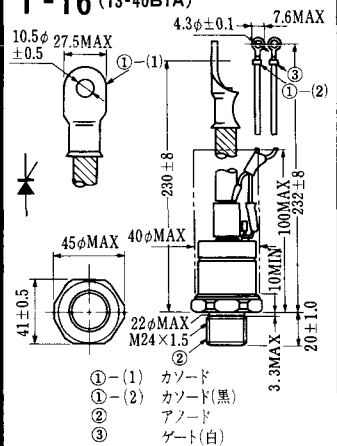
T-14 (13-32A1A)



T-15 (13-35C1B)



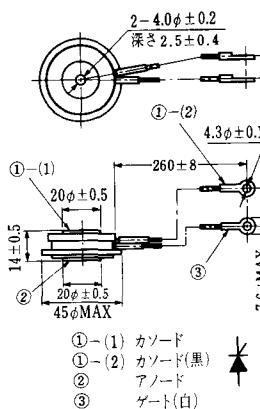
T-16 (13-40B1A)



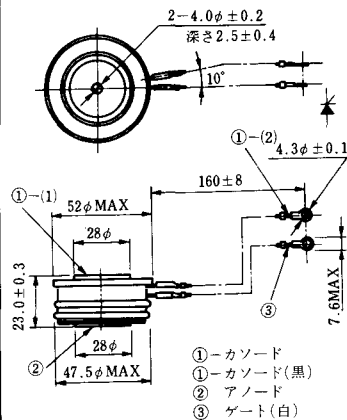
T-17 (13-42A1A)



T-18 (13-45D1A)



T-19 (13-52B1A)



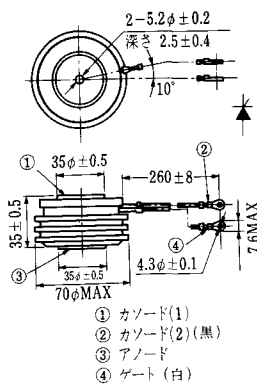
T-20 (13-52C1A)



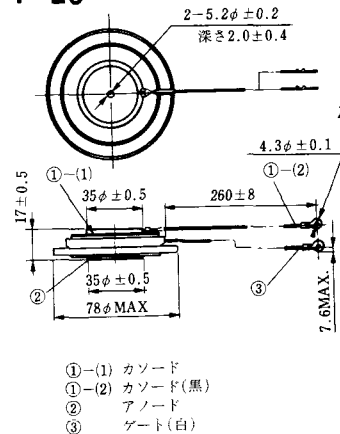
T-21 (13-60A1A)



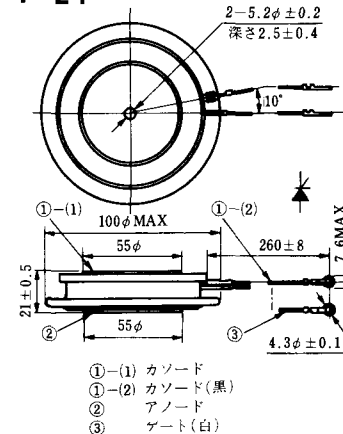
T-22 (13-70C1A)



T-23 (13-78A1A)



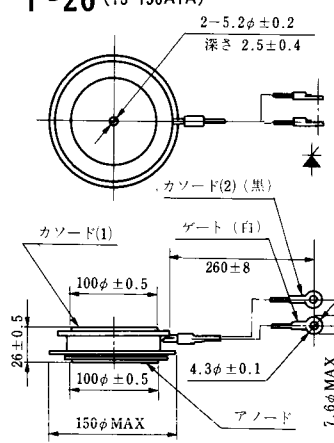
T-24 (13-100C1A)



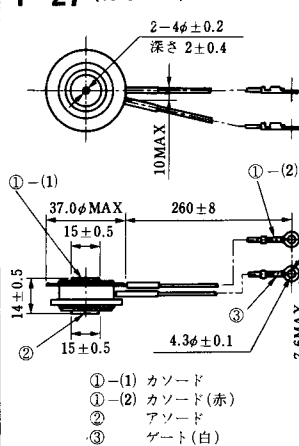
T-25 (13-120A2A)



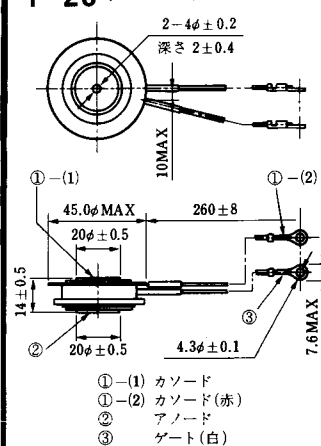
T-26 (13-150A1A)



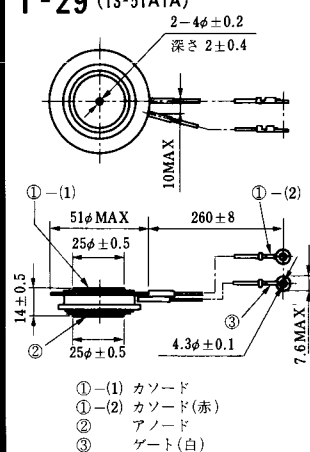
T-27 (13-37A1A)



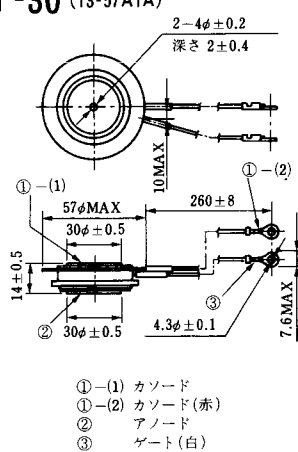
T-28 (13-45E1A)



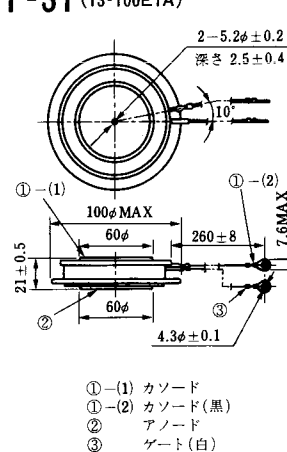
T-29 (13-51A1A)



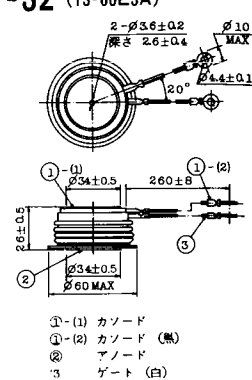
T-30 (13-57A1A)



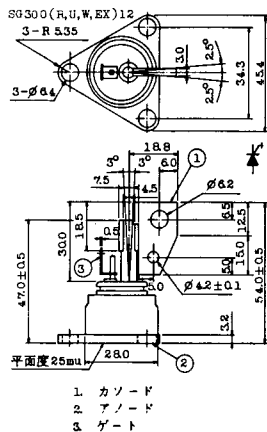
T-31 (13-100E1A)



T-32 (13-60E3A)



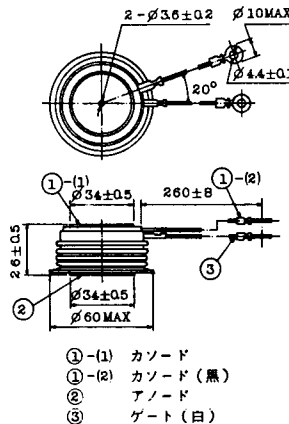
T-41 (13-28A2A)



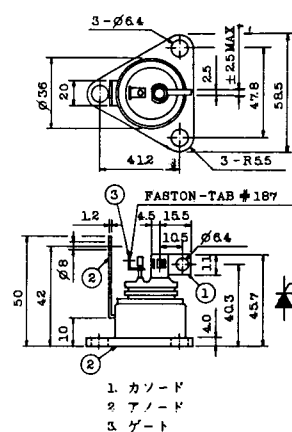
T-42 (13-45F1A)



T-43 (13-60E2A)



T-44 (13-36A1A)



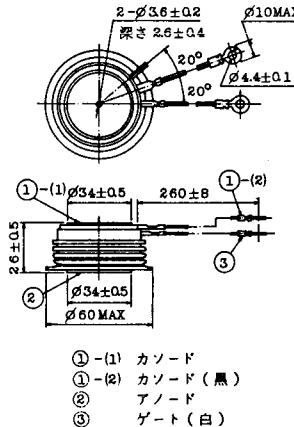
T-45 (13-51B1A)



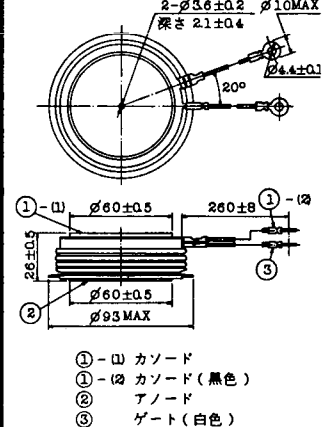
T-46 (13-36B1A)



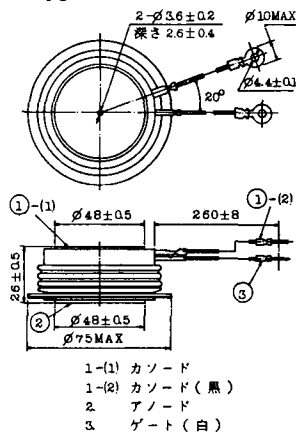
T-47 (13-60E1A)



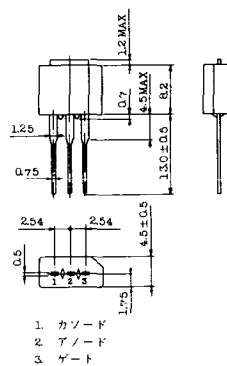
T-48 (13-93C1A)



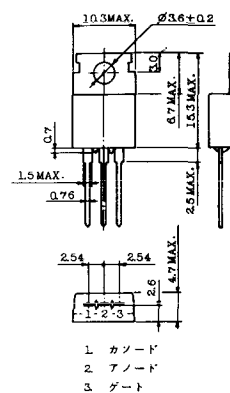
T-49 (13-75A1A)



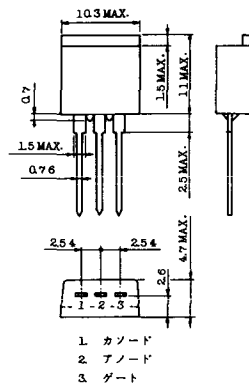
T-50 (13-10A3A)



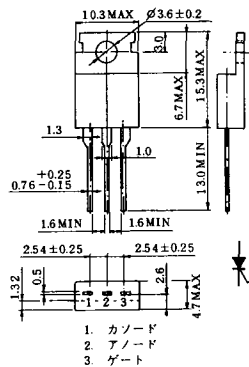
T-51 (13-10D1A)



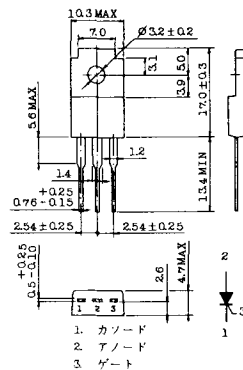
T-52 (13-10D2A)



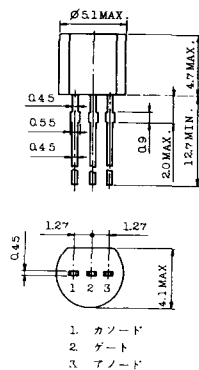
T-53 (13-10E1B)



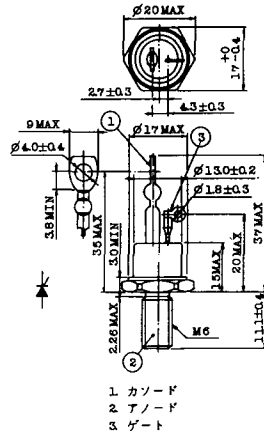
T-54 (13-10F1B)



T-55 (13-5A1D)



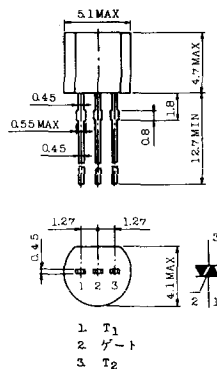
T-56 (13-13C1A)



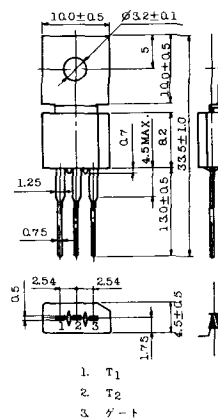
TT-1



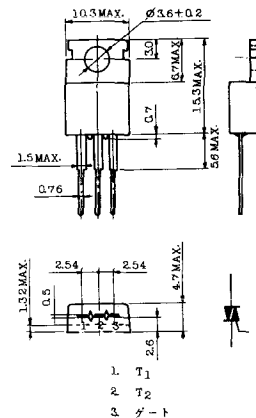
TT-2



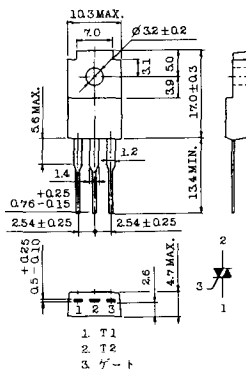
TT-3



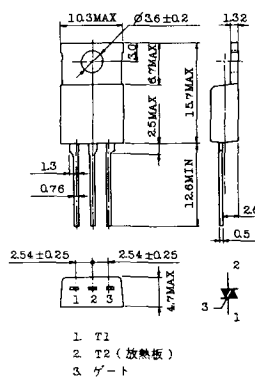
TT-4



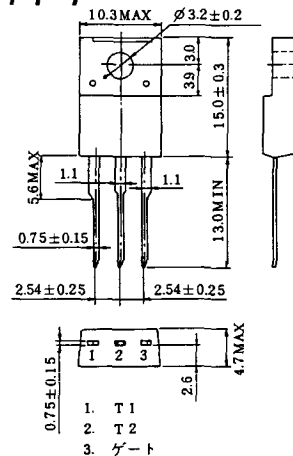
TT-5



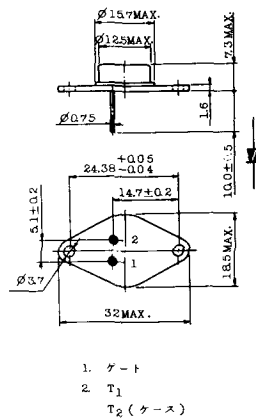
TT-6



TT-7



TT-8



TT-9



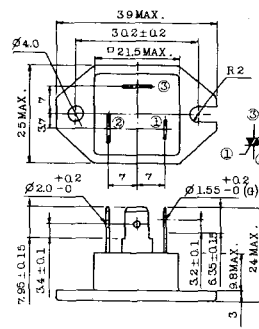
1. ゲート
2. T₁
3. T₂ (ケース)

TT-10



1. ゲート
2. T₁
3. T₂ (ケース)

TT-11



1. ゲート (ファストン端子 #187)
2. T₁ (" #250)
3. T₂ (" #250)

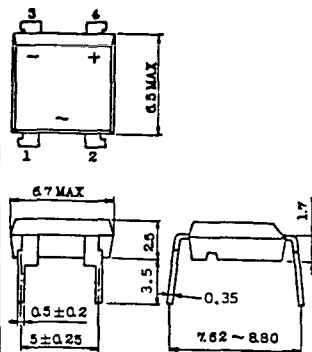
TT-12



ゲート端子詳細

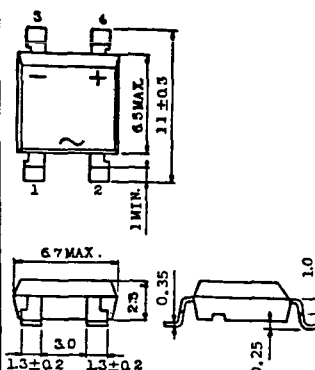
- ① ゲート (ファストン端子 #187)
- ② T₁ (" #250)
- ③ T₂ (" #250)

TT-13



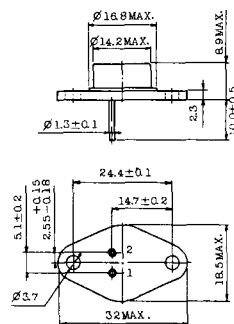
- 1, 2: T₂
- 3: GATE
- 4: T₁

TT-14



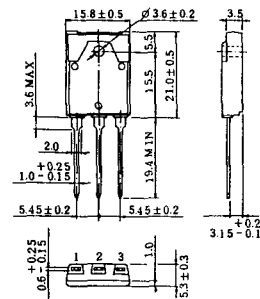
- 1, 2: T₂
- 3: GATE
- 4: T₁

TT-15 (13-14A1B)



1. ゲート
2. T₁
- T₂ (ケース)

TT-16 (13-16A1A)

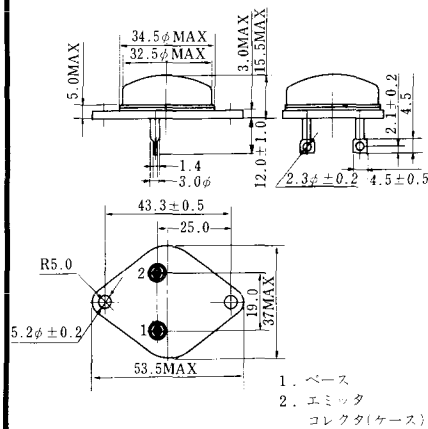


1. T₁
2. T₂
3. ゲート

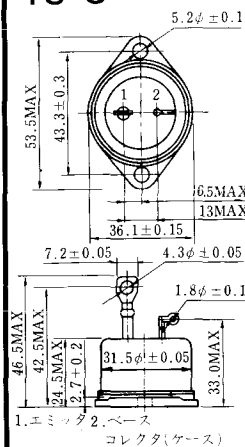
TS-1



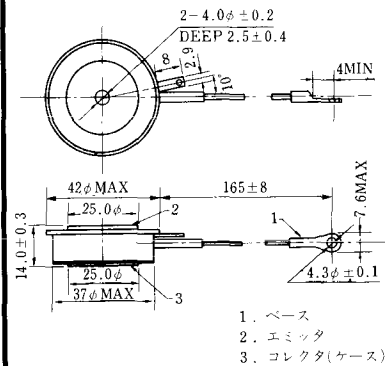
TS-2



TS-3



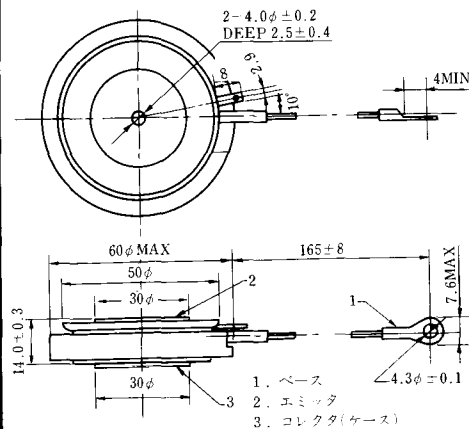
TS-4



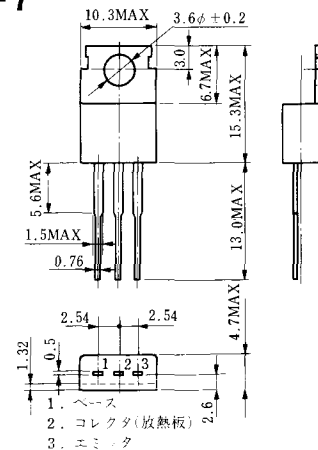
TS-5

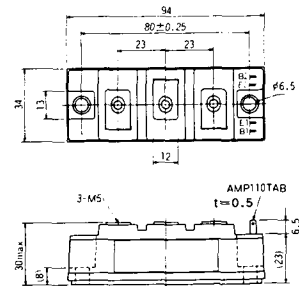
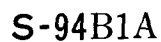
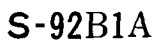
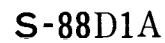
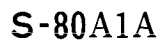


TS-6

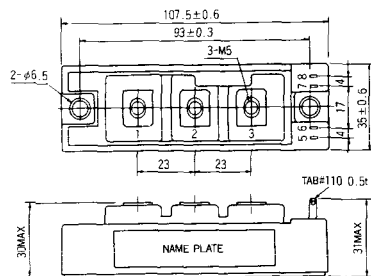


TS-7

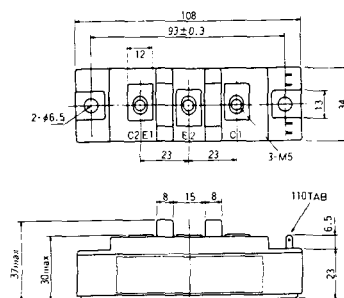




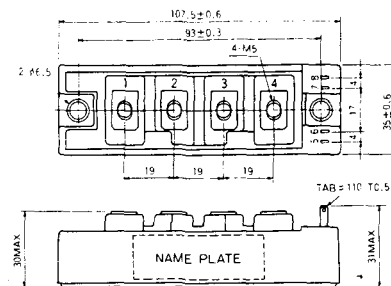
S-108B1A



S-108B1B



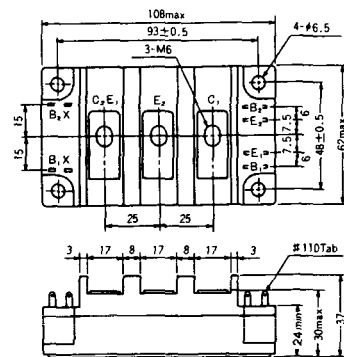
S-108B1C



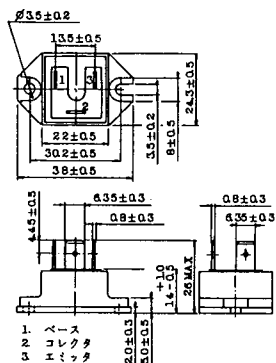
S-108B2A



S-108B2B



2-22B1A



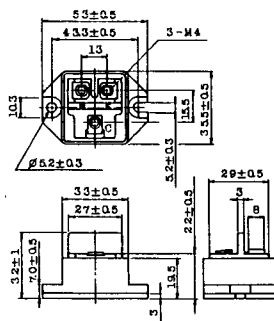
2-27A4A



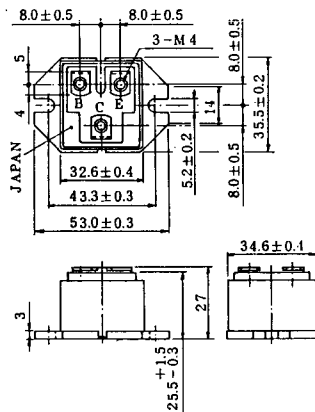
2-33C1A



2-33D1A



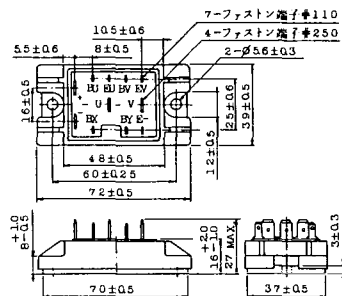
2-33F1A



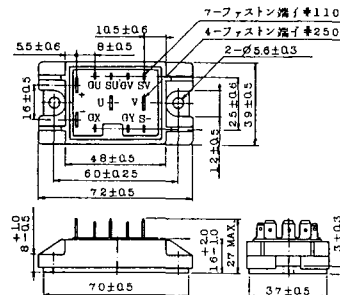
2-37A1A



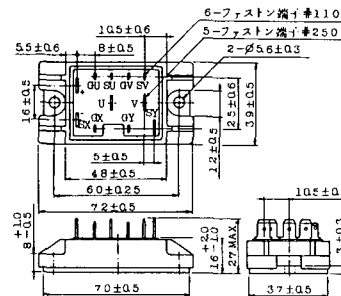
2-48A3A



2-48A3B



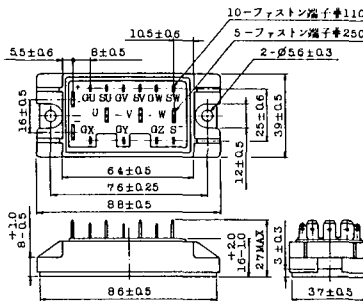
2-48A4A



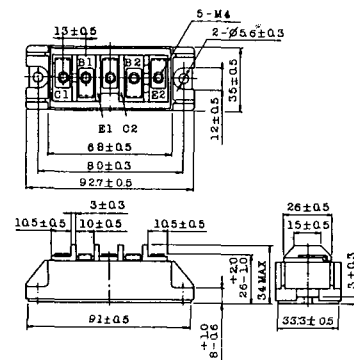
2-64A2A



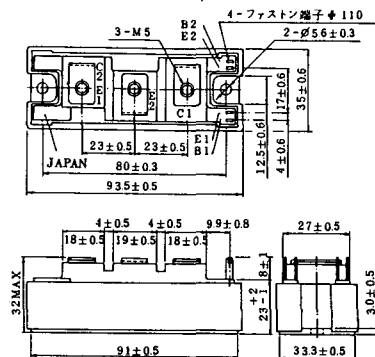
2-64A2B



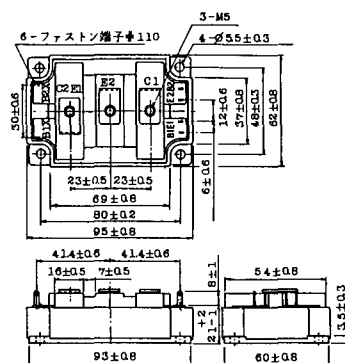
2-68A2A



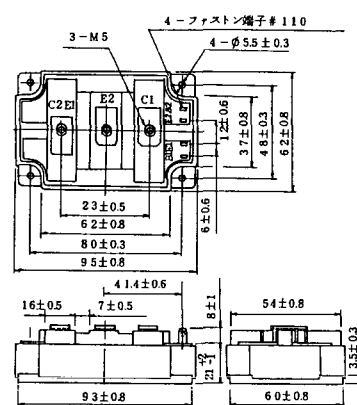
2-94D1A



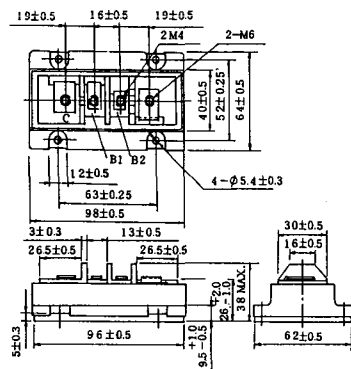
2-96A3A



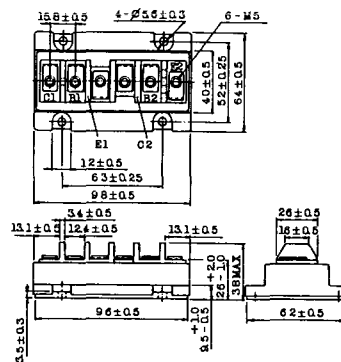
2-96A4A



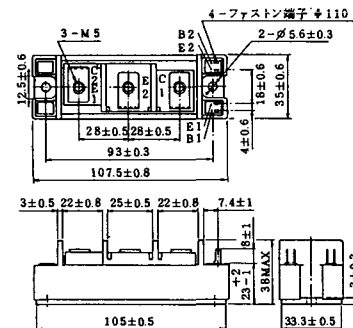
2-98B1A



2-98C2A



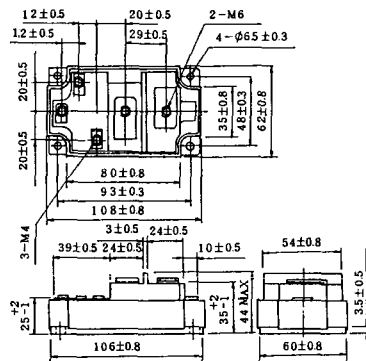
2-108A2A



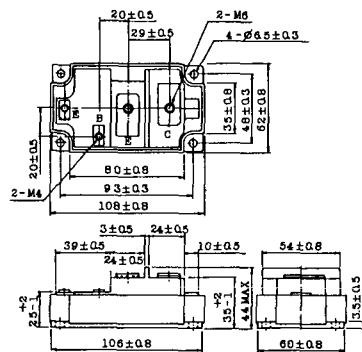
2-108B1A



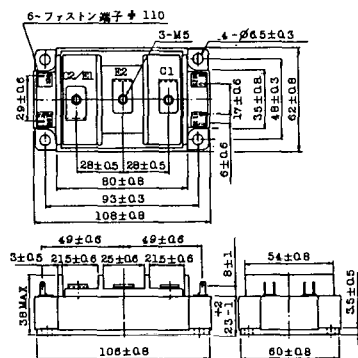
2-109A3A



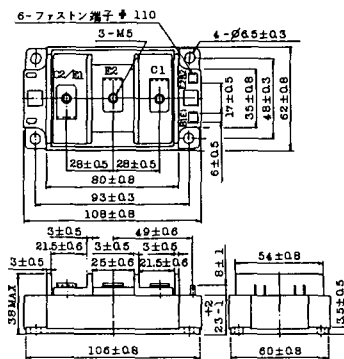
2-109A4A



2-109B3A



2-109B4A



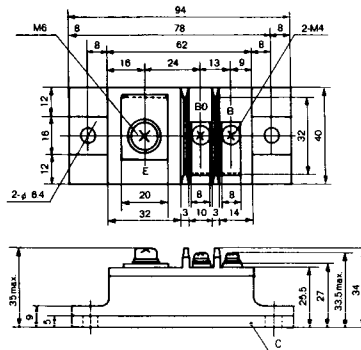
BBT-II

BBTII
1D200A-020



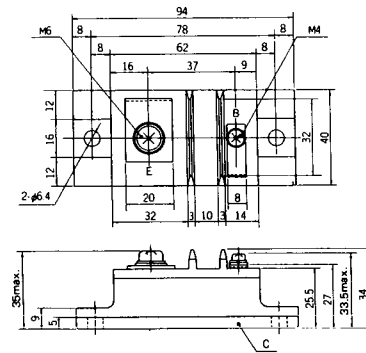
BBT-III

BBTIII
ETN31-055
ETN36-030
ETN36-030
ETN35-030



BBT-III

BBTIII
ETN01-055
ET1257

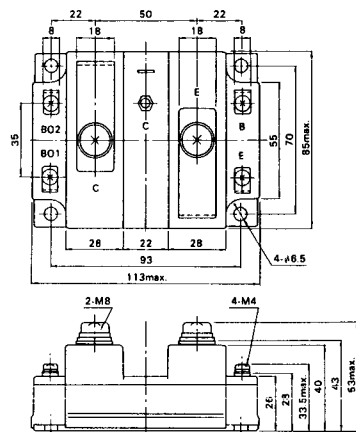


BBT-IV

BBTIV
1D500A-030



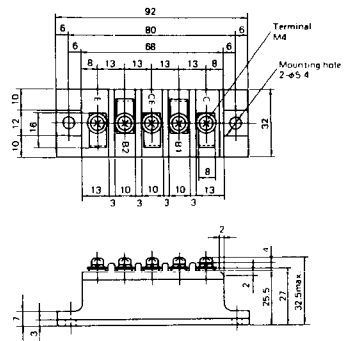
M-107



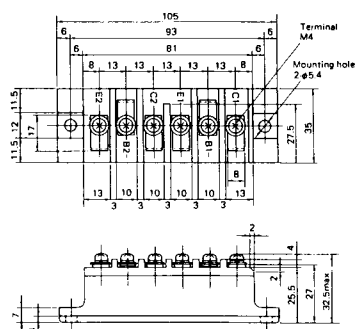
M-116



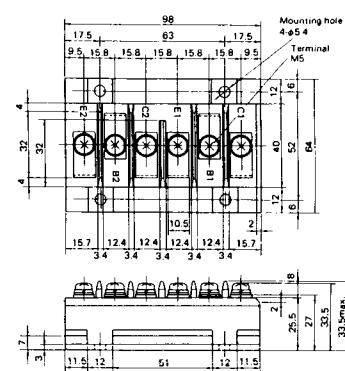
M-201



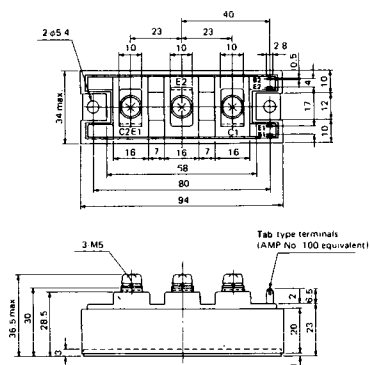
M-202



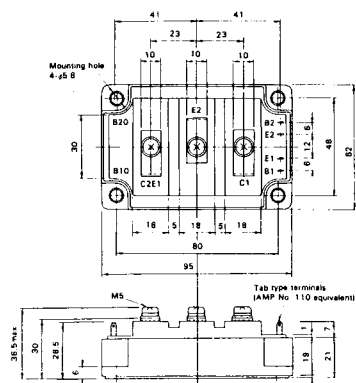
M-203



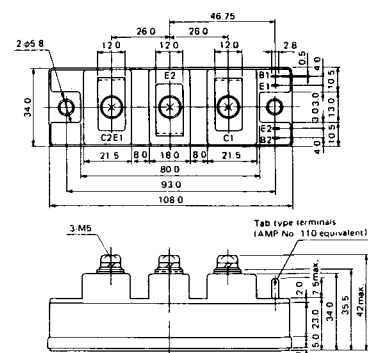
M-204



M-205



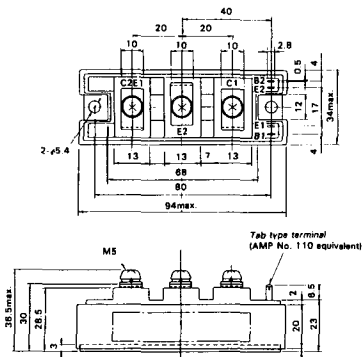
M-206



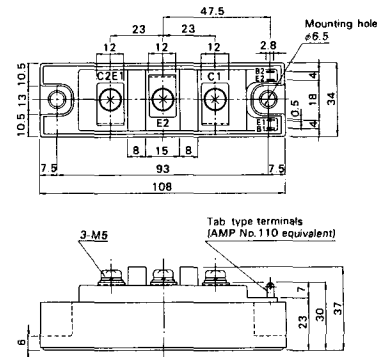
M-207



M-208



M-209



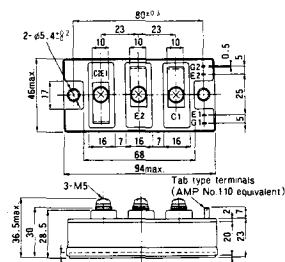
M-210



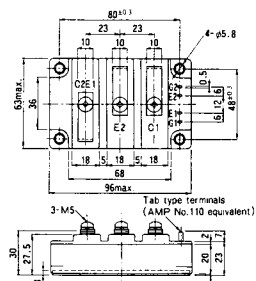
M-211



M-212

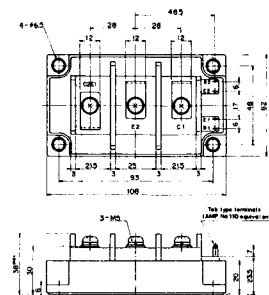


M-213

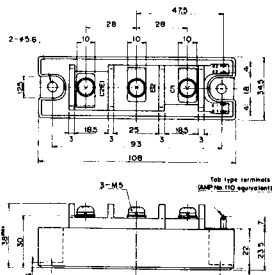


M-214

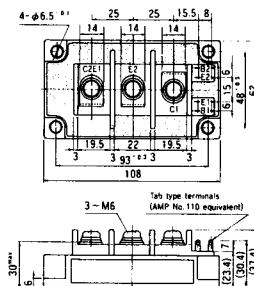
M-215



M-216



M-217



M-218



M-601



M-602



M-603



M-604



M-605



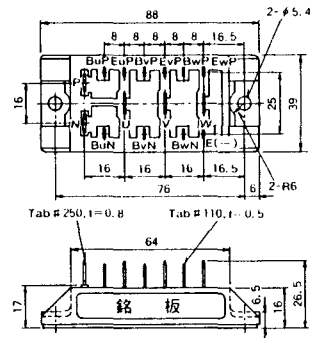
M-606



M-2E6A



M-2F6A



M-2G6A



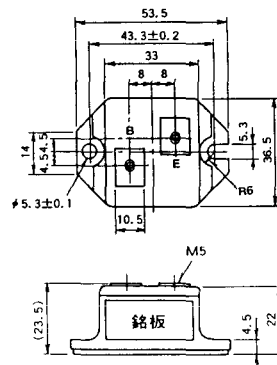
M-3A1A



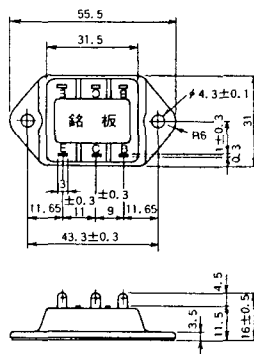
M-3B1A



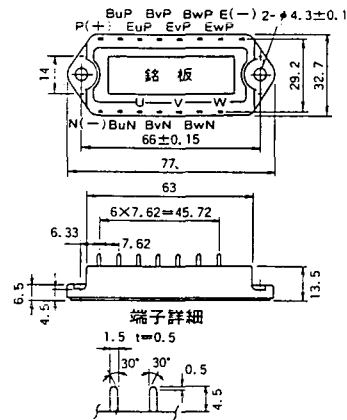
M-3B1B



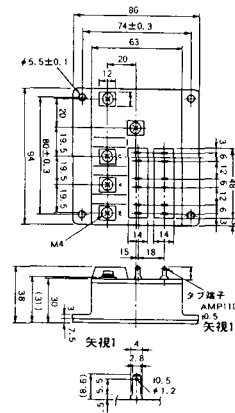
M-3C1A



M-3D6A



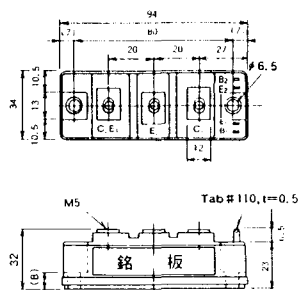
M-3E6A



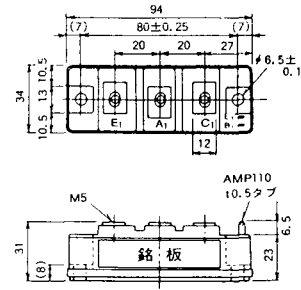
M-4A1A



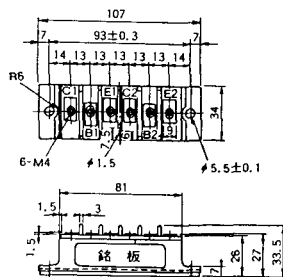
M-4A2A



M-4A1B



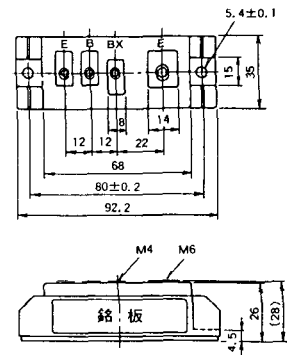
M-5C2A



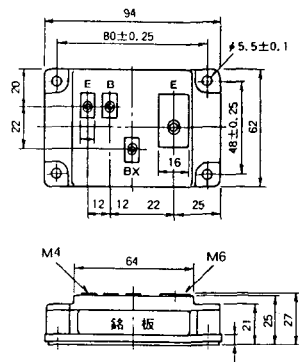
M-5D2A



M-6A1A



M-7A1A



M-7B1A



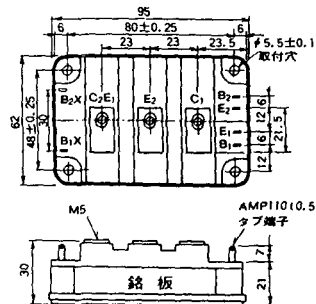
M-8A1A



M-8A1B



M-8A2A



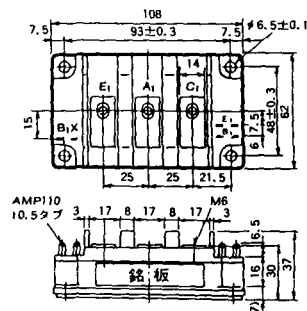
M-8A2B



M-8B2A



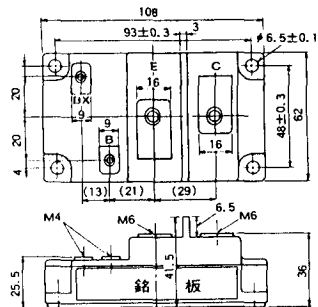
M-9A1A



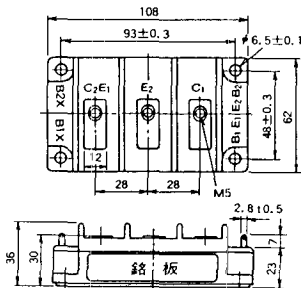
M-9A2A



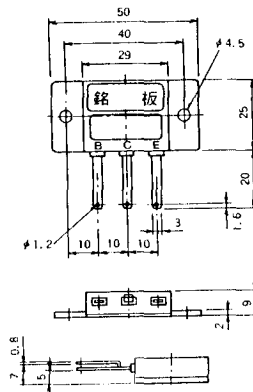
M-9B1A



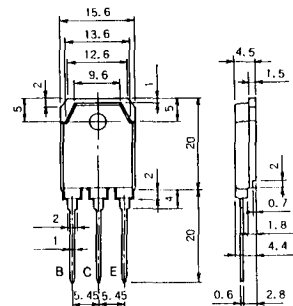
M-9C2A



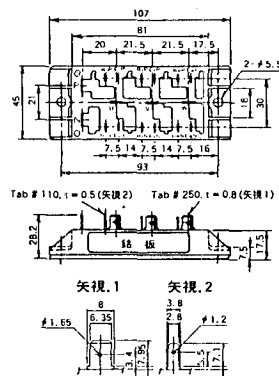
M-1A1B



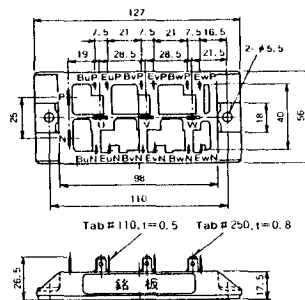
M-1A1C



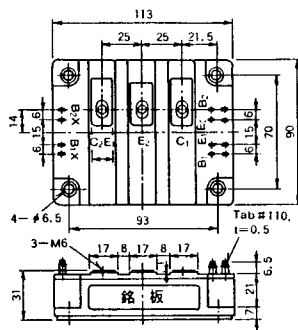
M-2E6B



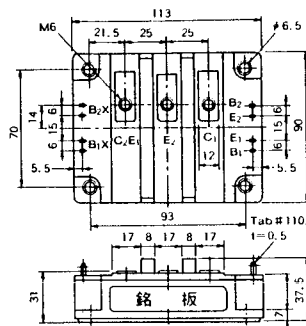
M-2E6C



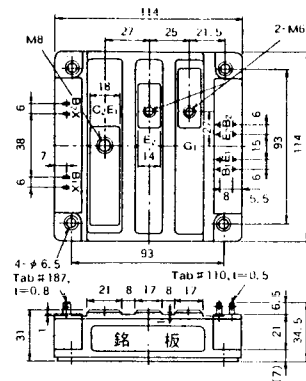
M-10A2A



M-10A2B



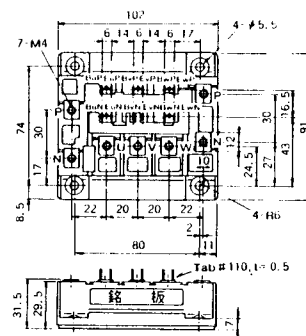
M-11A2A



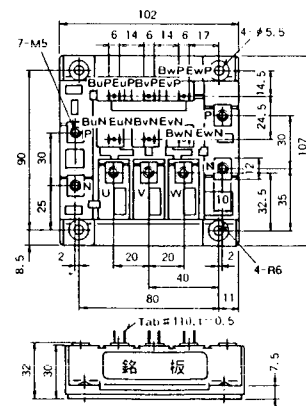
M-12A6A



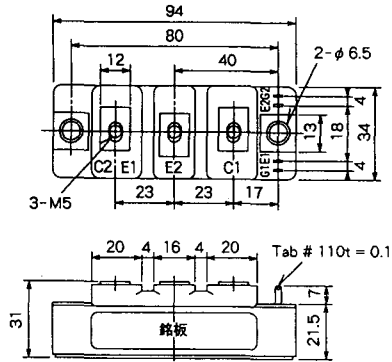
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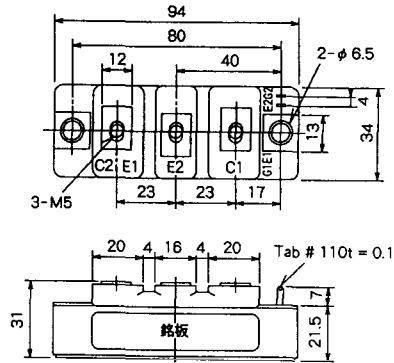
M-12B6B



M-4A2D



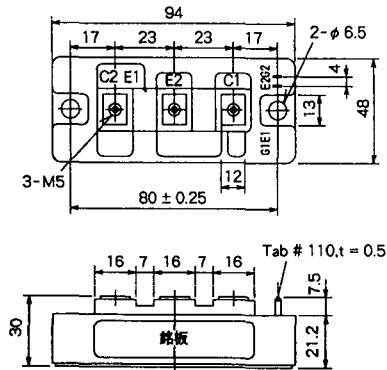
M-4A2E



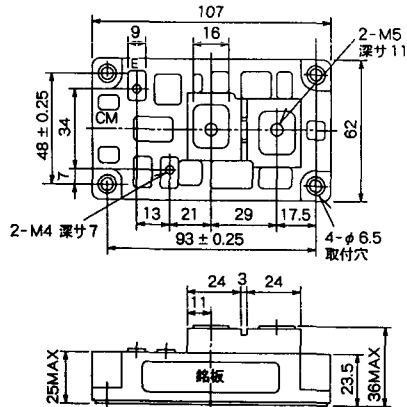
M-4C2A



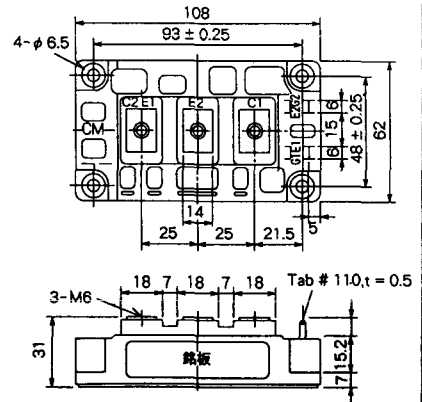
M-4C2B



M-9B1C



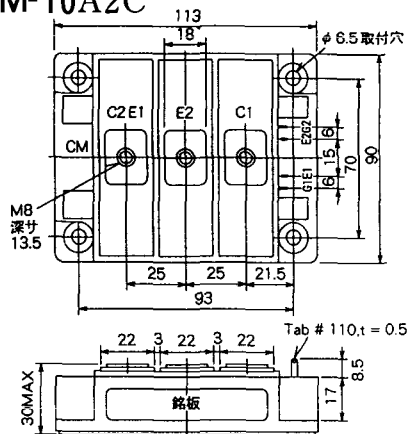
M-9D2A



M-9D2B



M-10A2C



H-101



Weight :480g

TERMINALS

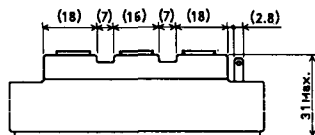
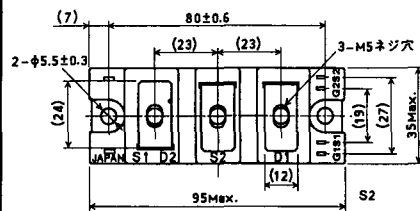
H-201



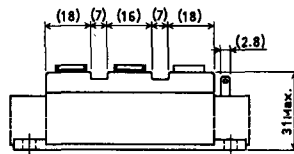
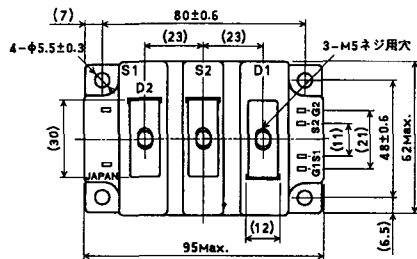
H-202



LF-J



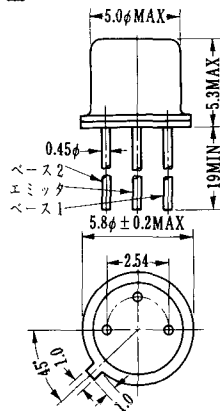
LF-K



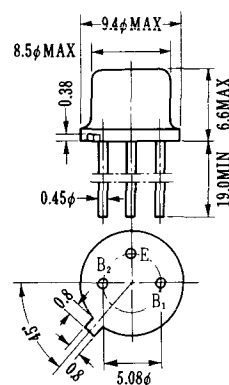
U-1



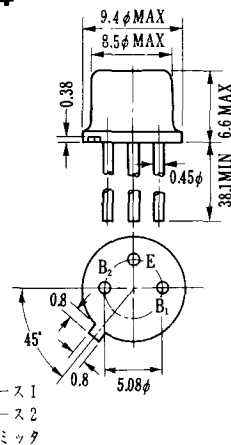
U-2



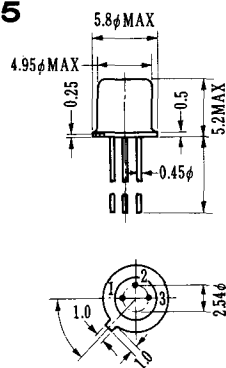
U-3



U-4

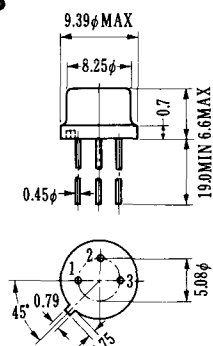


U-5



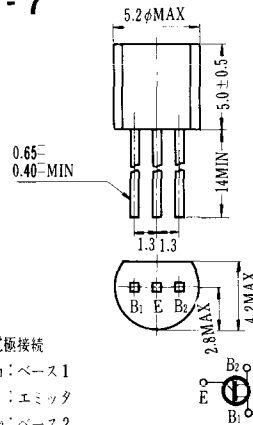
1. BASE 1
2. EMITTER
3. BASE 2 (CASE)

U-6



1. BASE (2)
2. EMITTER
3. BASE (1)

U-7



U-8

