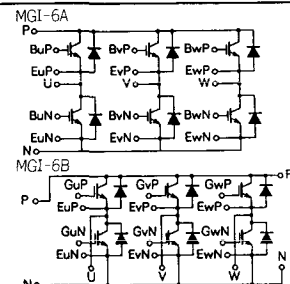
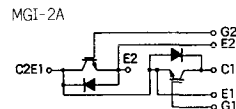
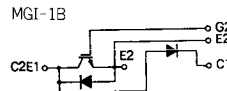
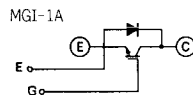


トランジスタ・モジュール (シリコンNチャネル IGBT)

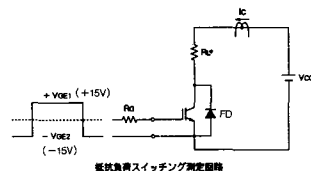
- フリーホイール・ダイオード付
- 絶縁形

■等価回路

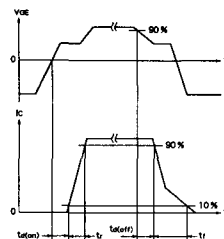
注1. $T_c = 25^\circ\text{C}$. 注2. AC, 1分間。

型 名	最 大 定 格 (T _J = 25℃)										電 氣 的 特 性 (T _J = 25℃)															
	V _{CES}	V _{GSS}	I _C	I _{CP}	I _F	I _{FP}	P _C	T _J	T _{stg}	V _{ISO}	I _{GSS}		I _{CES}		V _{CES}		V _{GE (OFF)}				V _{CE (SAT)}					
			(注1)	(1ms)	(注1)	(1ms)	(注1)				(注2)	(nA)	V _{GE}	(mA)	V _{CE}	(V)	I _C	(V)		V _{CE}	I _C	(V)		V _{GE}	I _C	
	(V)	(V)	(A)	(A)	(A)	(A)	(W)	(℃)	(℃)	(V)	最大	最小	最大	V _{CE}	最小	最大	最小	最大	最小	最大	最小	最大	最小	最大	(V)	(A)
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



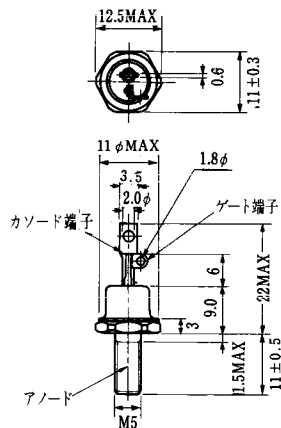
スイッチング時間測定波形

注3. スwitching時間は抵抗負荷時の値。

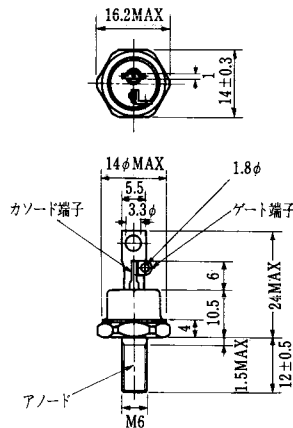
注4. FD: フリーホール・ダイオード。

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)						R _G	I _C	V _{CC}	V _F (V)	I _F	t _{rr} (ns)	I _F	di/dt (A/μs)	R _{thJA} (1-α) (°C/W)						
標準	V _{CE} (V)	V _{BE} (V)	t _r	t _d (ON) 最大	t _f									t _d (OFF) 最大	(Ω)	(A)				
10000	10	0	300	150	350	400	13	50	300	2.5	50	200	50	-100	0.5	1.0	MG1-2A	M-4A2D	FD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	FD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	FD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	FD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	FD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	FD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	FD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	FD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	FD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	FD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	FD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	FD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	FD付	CM300E3Y-12E
80000	10	0	700	400	350	800	1.6	400	300	2.5	400	200	400	-800	0.11	0.24	MG1-1A	M-9B1C	FD付	CM300HA-12E
10000	10	0	700	400	350	800	1.6	400	300	2.5	400	200	400	-800	0.085	0.18	MG1-1A	M-9B1C	FD付	CM400HA-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	FD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	FD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	FD付, 3相ブリッジ接続	CM100TF-12E

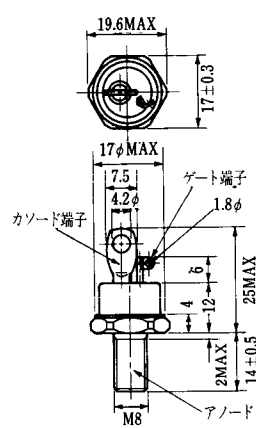
FD-1



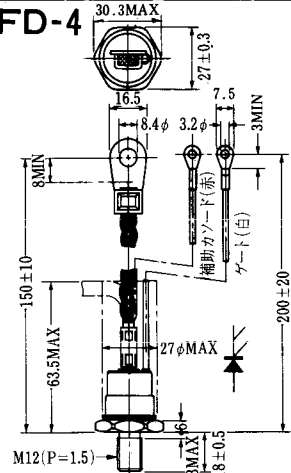
FD-2



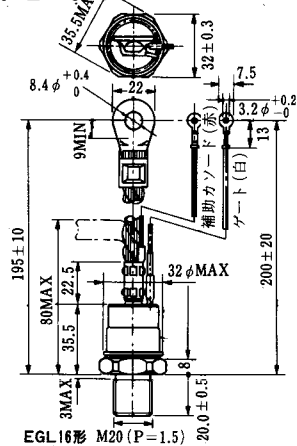
FD-3



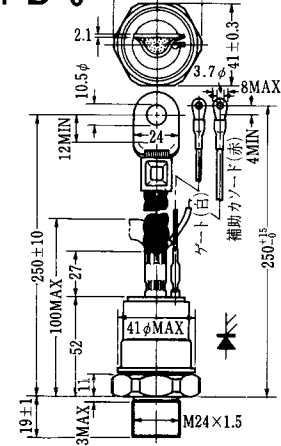
FD-4



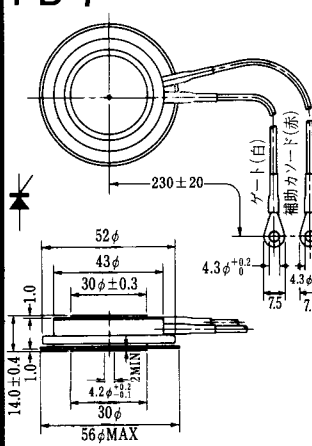
FD-5



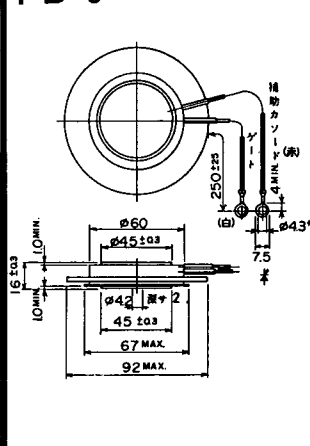
FD-6



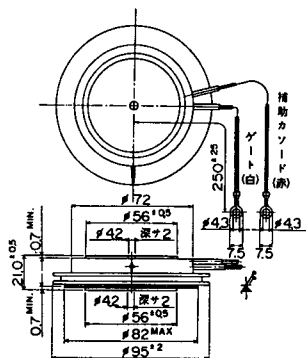
FD-7



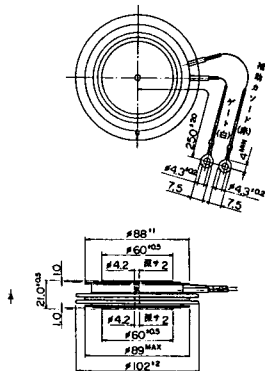
FD-8



FD-9

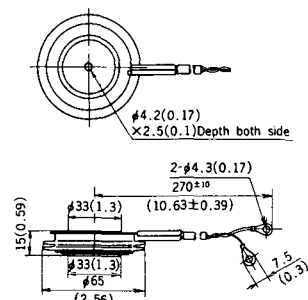
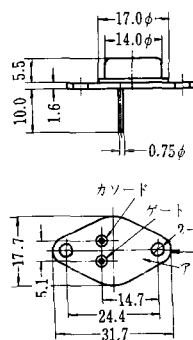
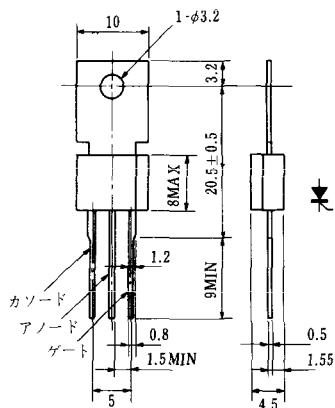


FD-10

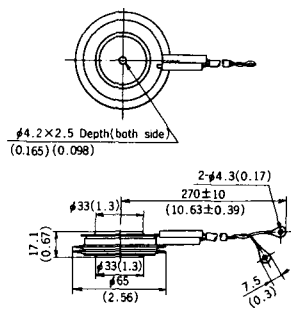


FD-11

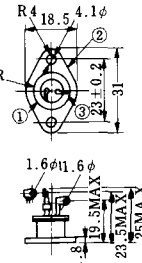
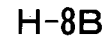
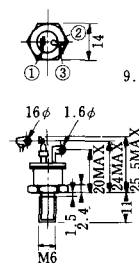
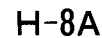
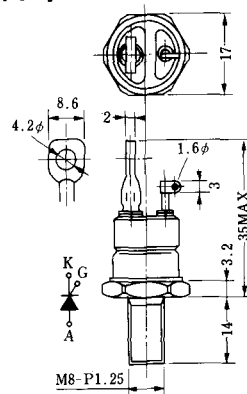
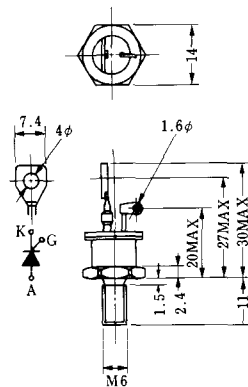
FD-12



Unit in mm(inch)

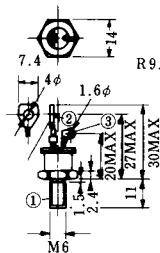


Unit in mm(inch)

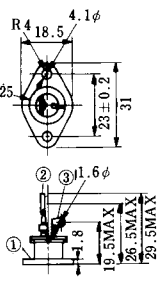


- ①アノード
- ②カソード
- ③ゲート

H-9A

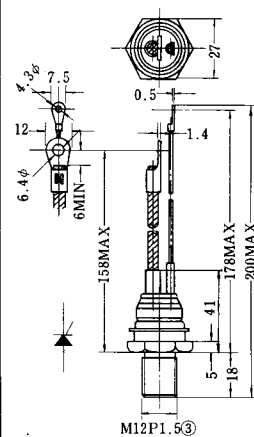


H-9B

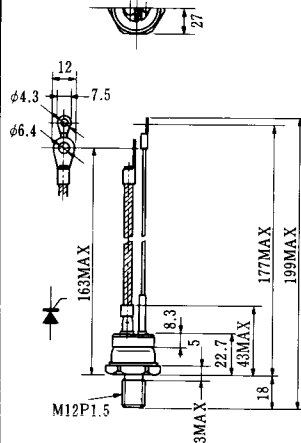


- ① アノード
- ② カソード
- ③ ゲート

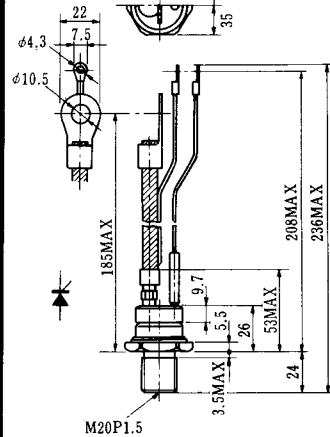
H-10



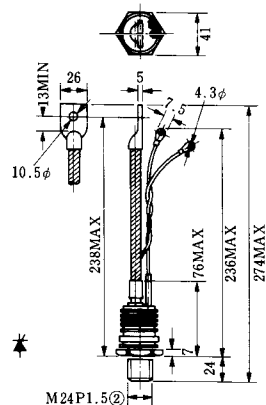
H-11



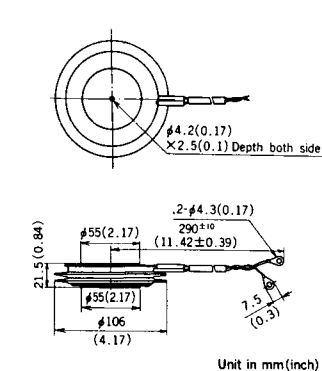
H-12



H-13

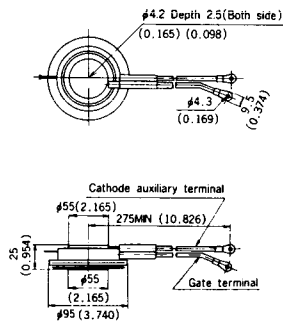


H-14



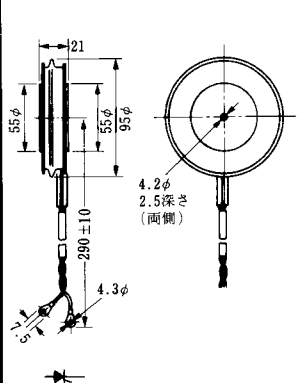
Unit in mm (inch)

H-15

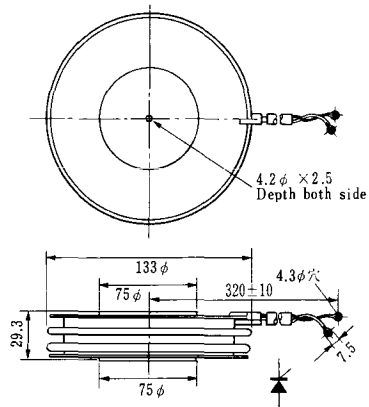


Unit in mm (inch)

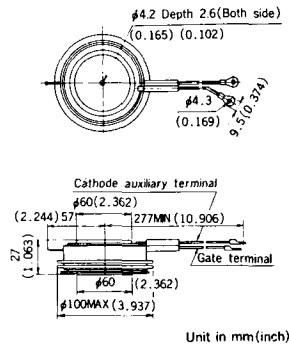
H-16



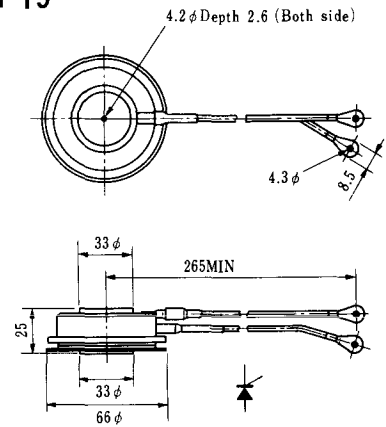
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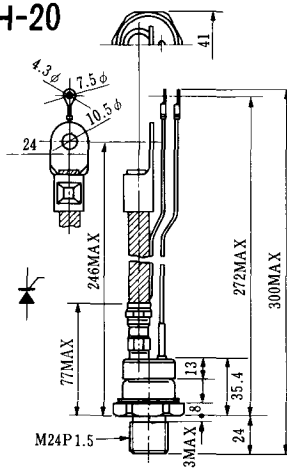
H-18



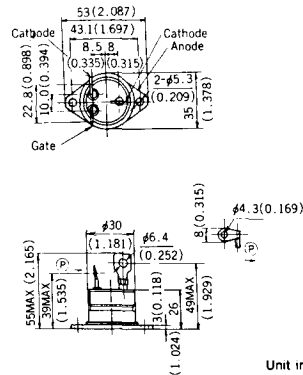
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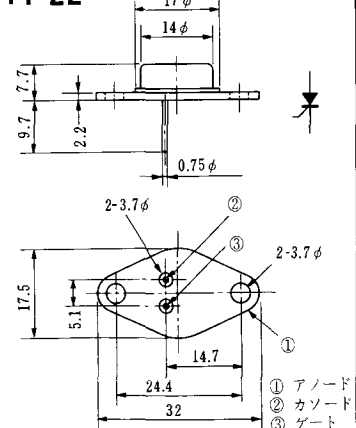
H-20



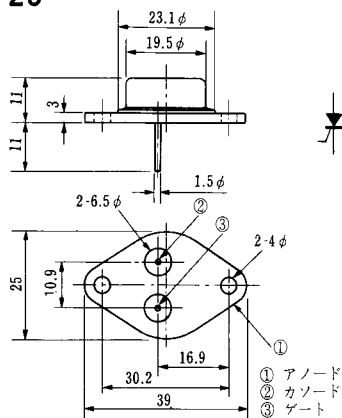
H-21



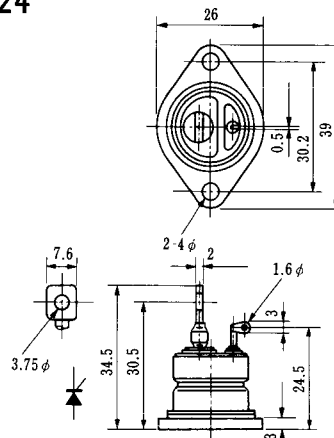
H-22



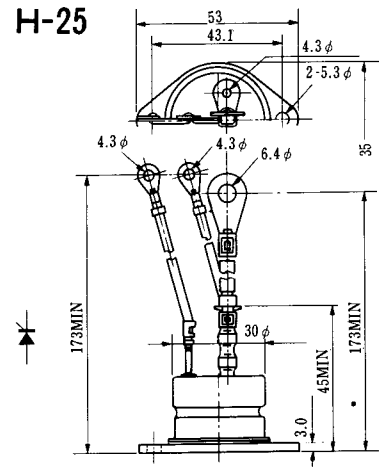
H-23



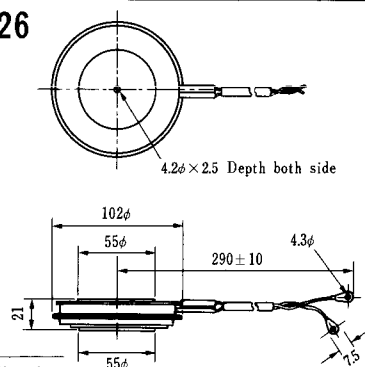
H-24



H-25

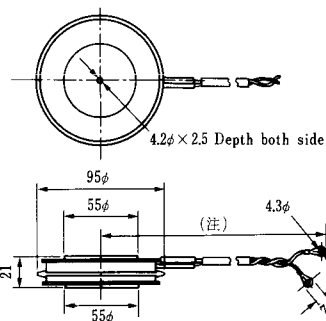


H-26



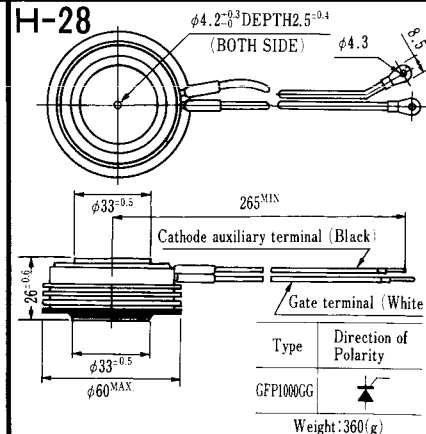
Type	Direction of polarity
CA12	

H-27



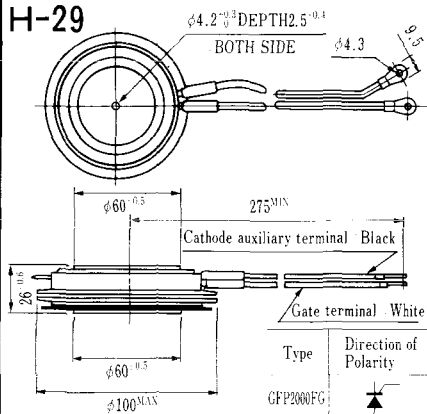
Type	Direction of polarity
CF11V	

H-28



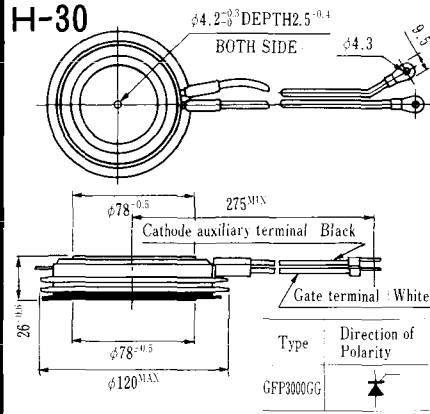
Note: The thickness is a dimension in press at the rated mounting force.

H-29



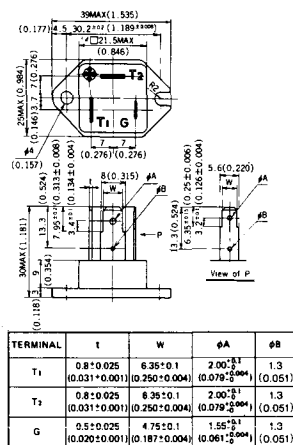
Note : The thickness is a dimension in press at the rated mounting force.

H-30



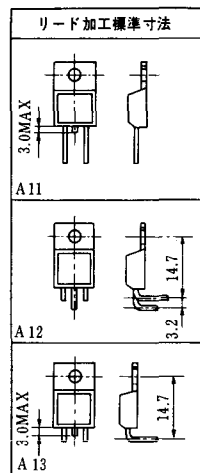
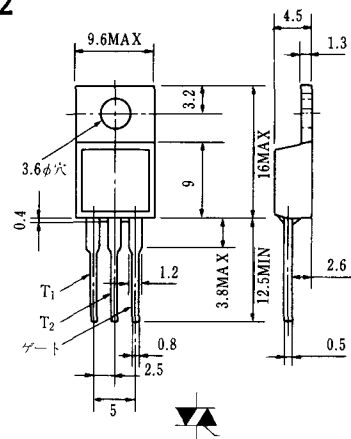
Note : The thickness is a dimension in press at the rated mounting force.

HT-1

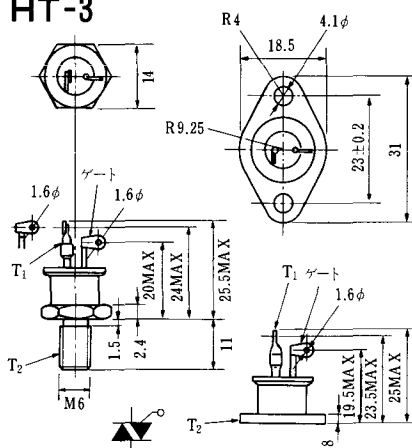


Unit in mm (inch)

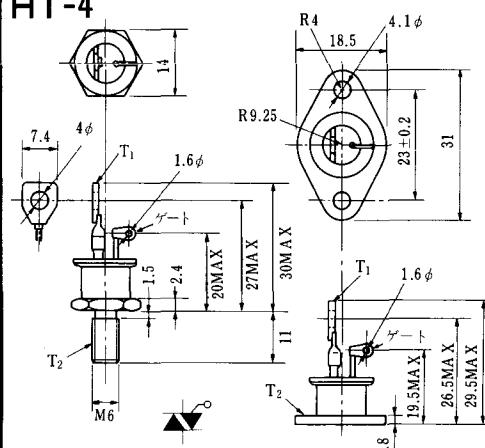
HT-2



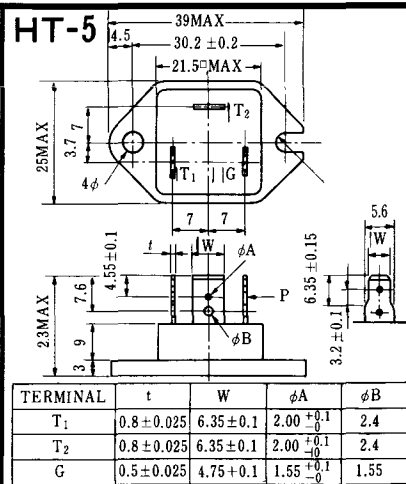
HT-3



HT-4

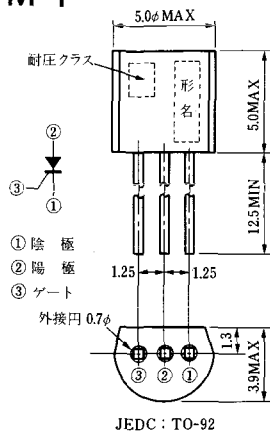


HT-5

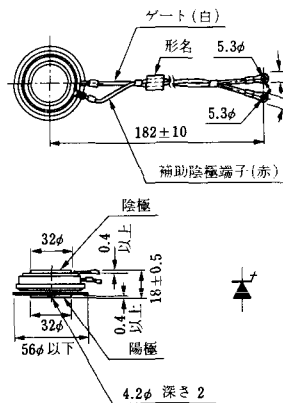


《寸法図単位：mm》

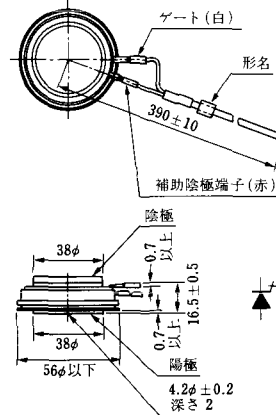
M-1



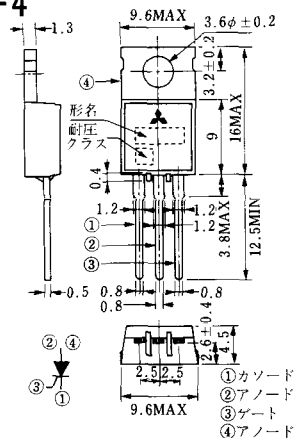
M-2



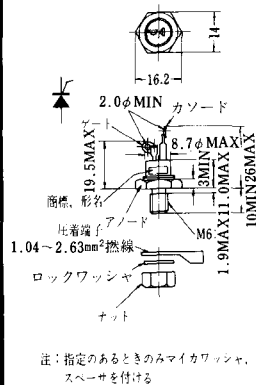
M-3



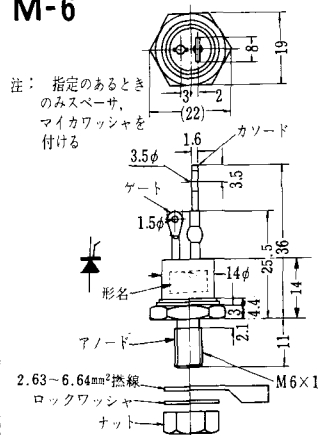
M-4



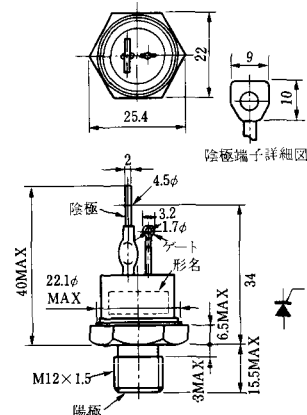
M-5



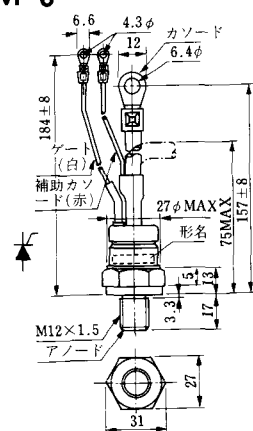
M-6



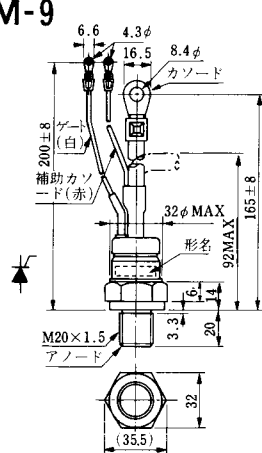
M-7



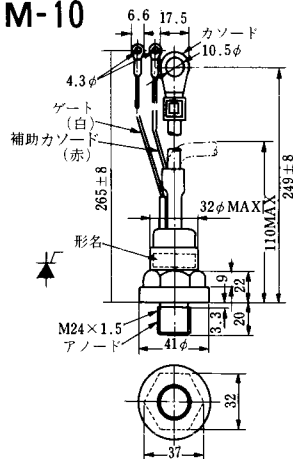
M-8



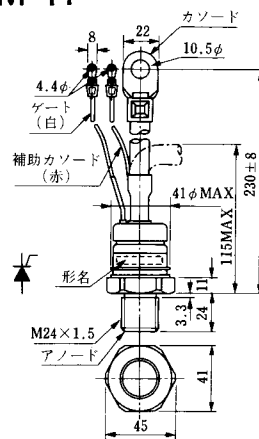
M-9



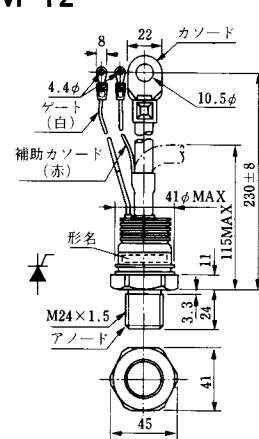
M-10



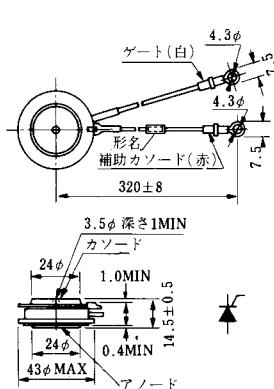
M-11



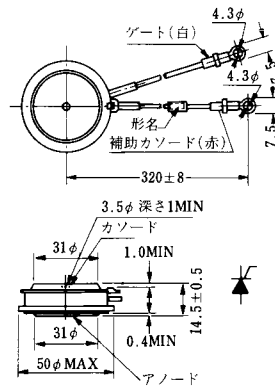
M-12



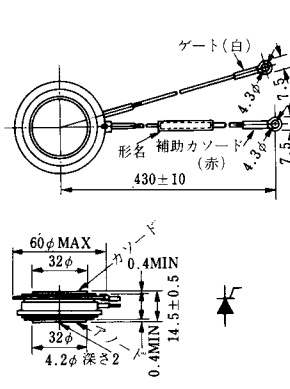
M-13



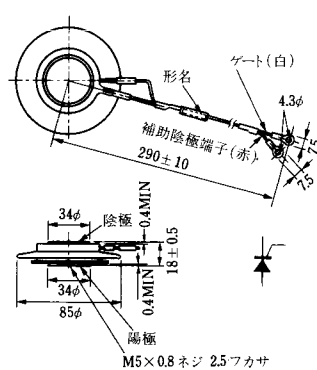
M-14



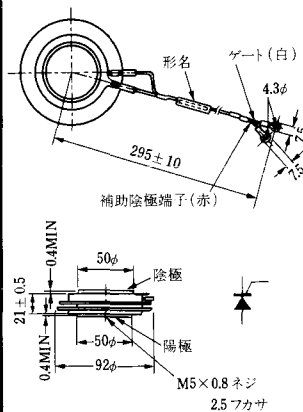
M-15



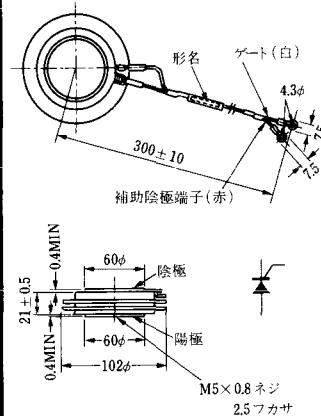
M-16



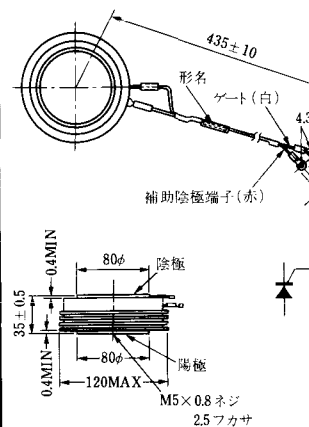
M-17



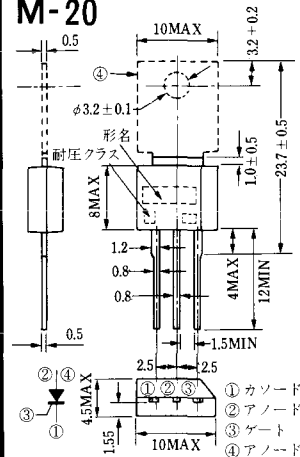
M-18



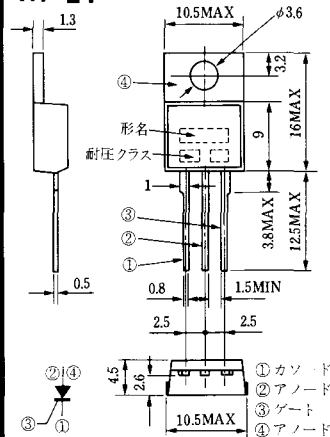
M-19



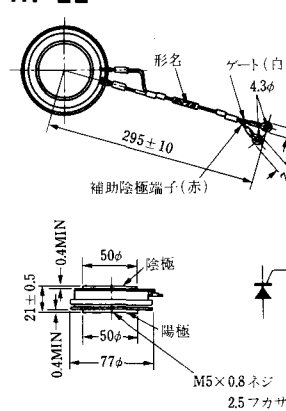
M-20



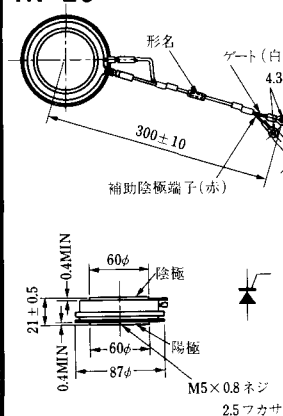
M-21



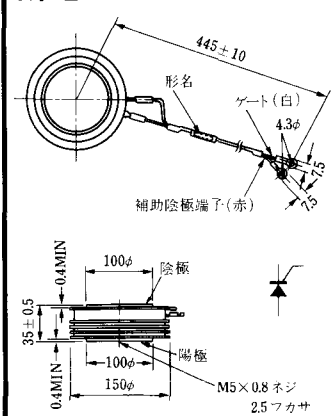
M-22



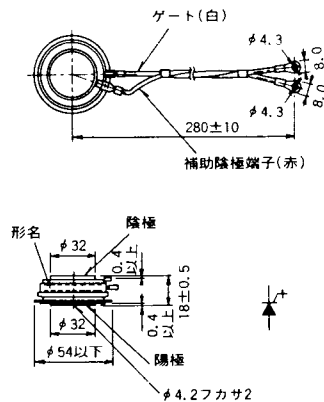
M-23



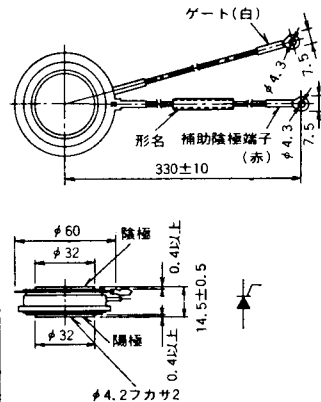
M-24



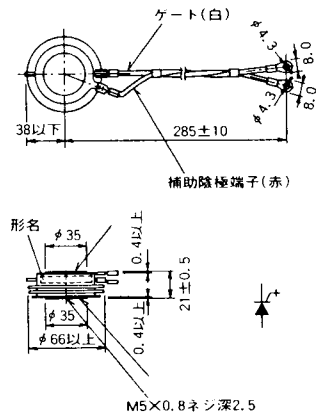
M-25



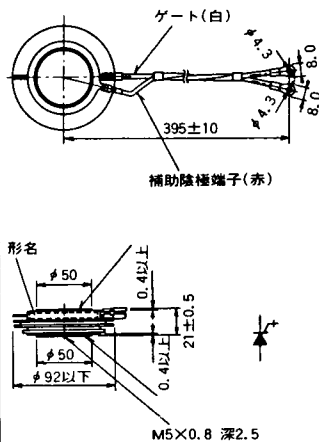
M-26



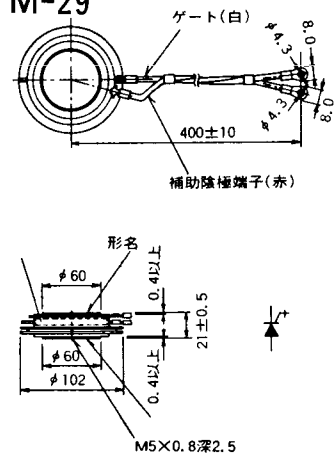
M-27



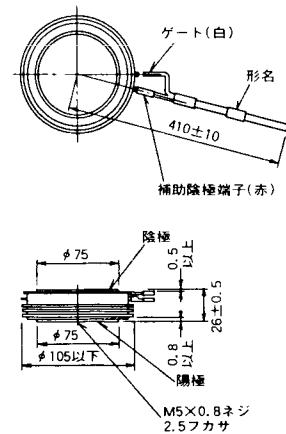
M-28



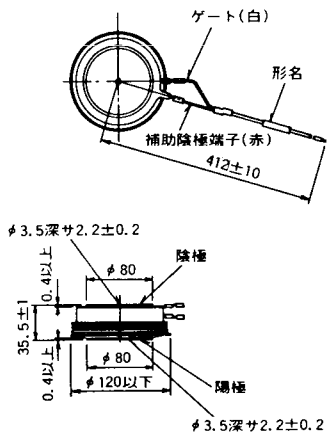
M-29



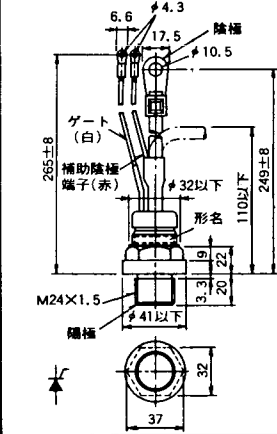
M-30



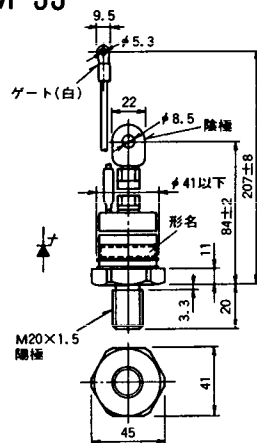
M-31



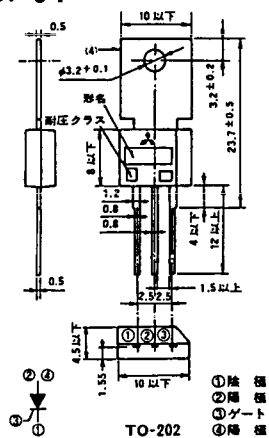
M-32



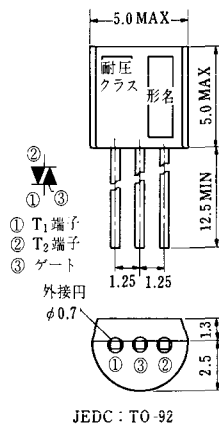
M-33



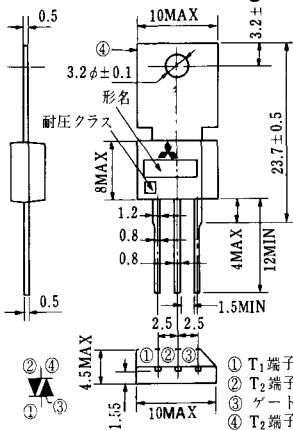
M-34



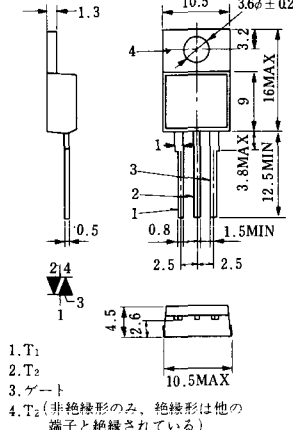
MT-1



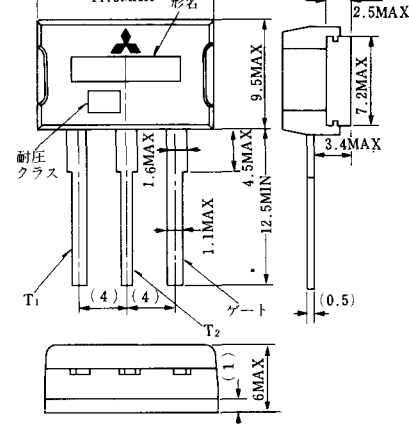
MT-2



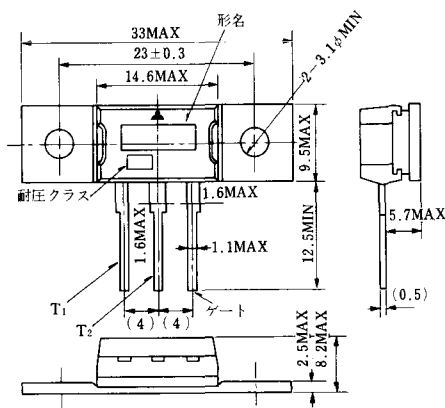
MT-3



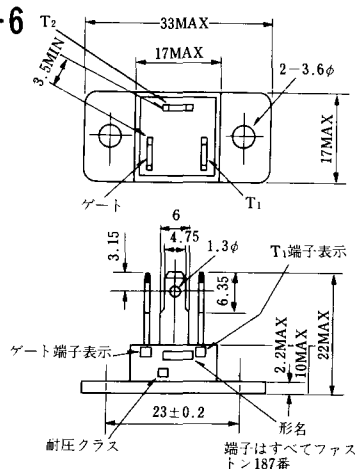
MT-4



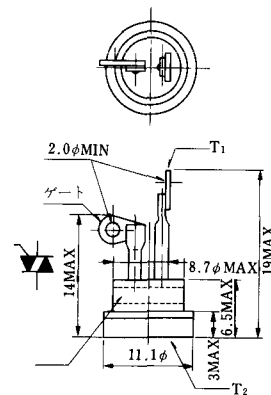
MT-5



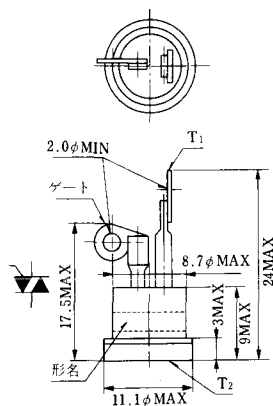
MT-6



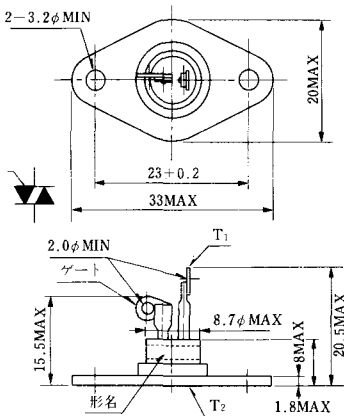
MT-7



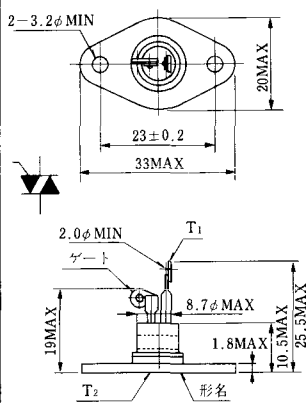
MT-8



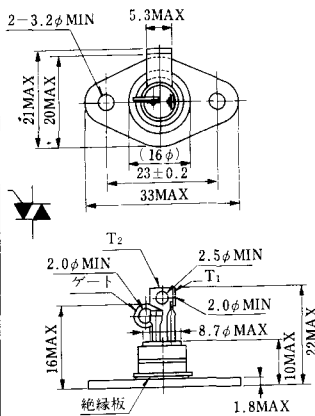
MT-9



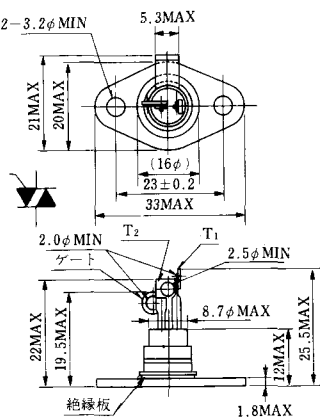
MT-10



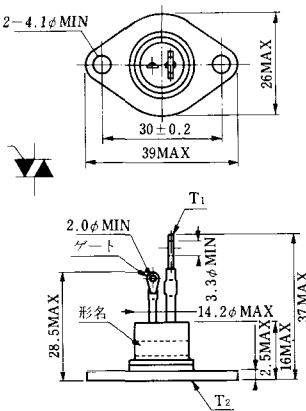
MT-11



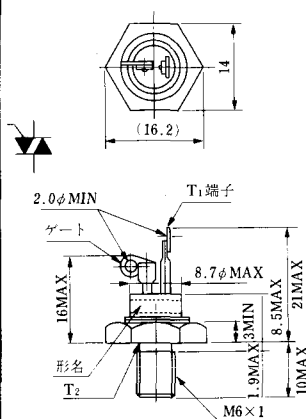
MT-12



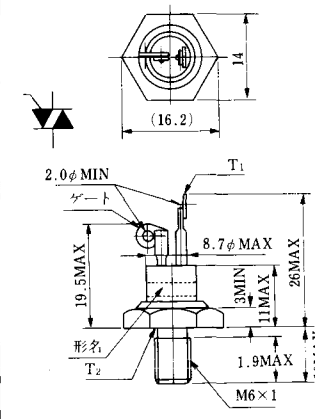
MT-13



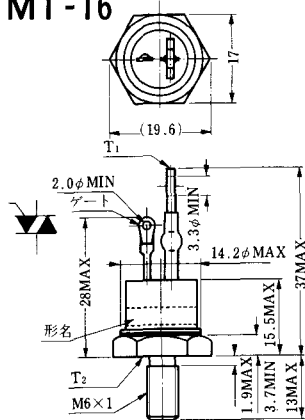
MT-14



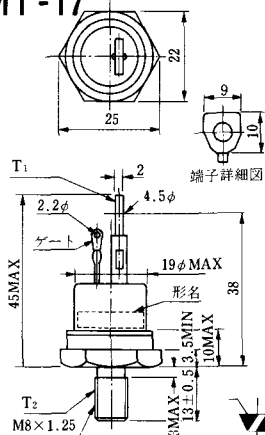
MT-15



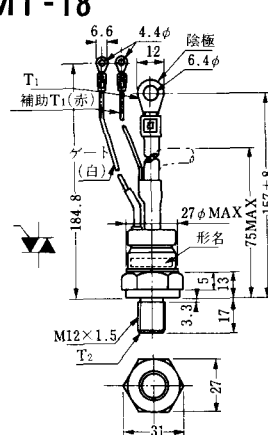
MT-16



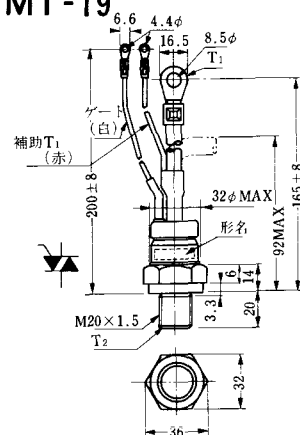
MT-17



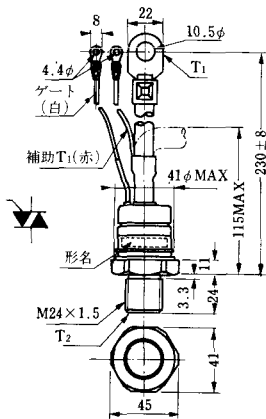
MT-18



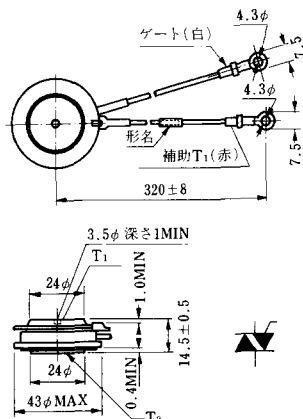
MT-19



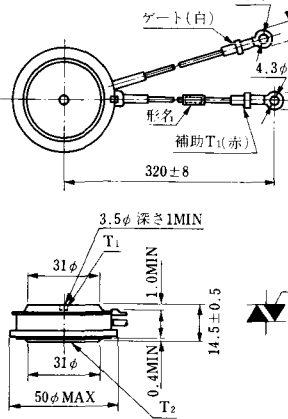
MT-20



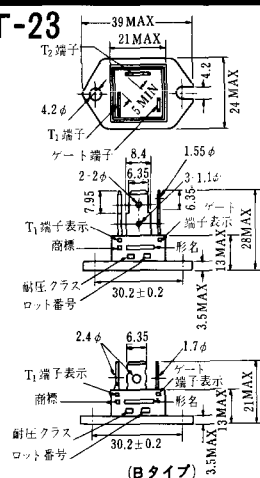
MT-21



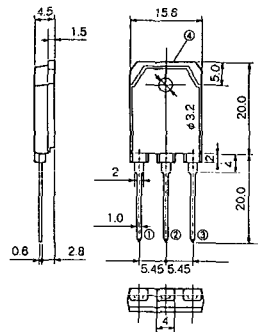
MT-22



MT-23



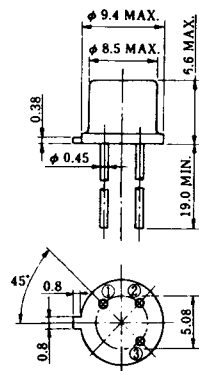
MT-24



TO - 3P

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

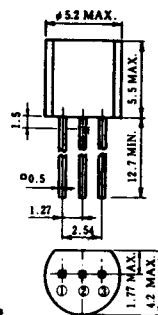
N-1



電極接続

- ① カソード
- ② ゲート
- ③ アノード

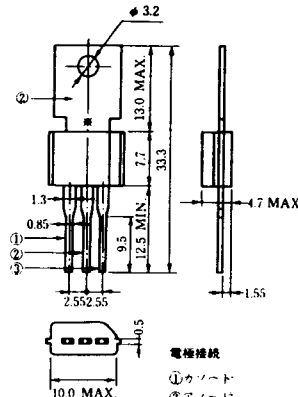
N-2



電極接続

- ① ヤート
- ② アノード
- ③ カソード

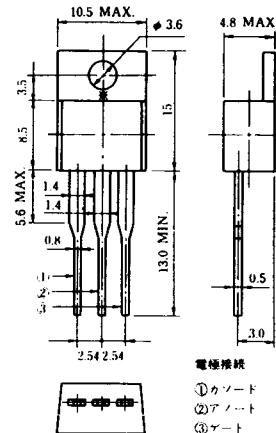
N-3



電極接続

- ① カソード
- ② アノード
- ③ ゲート

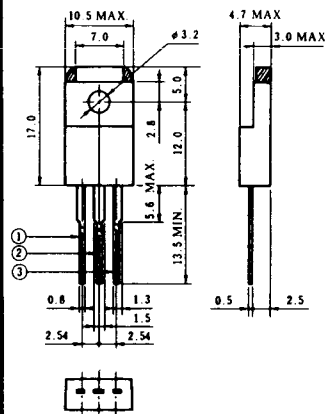
N-4



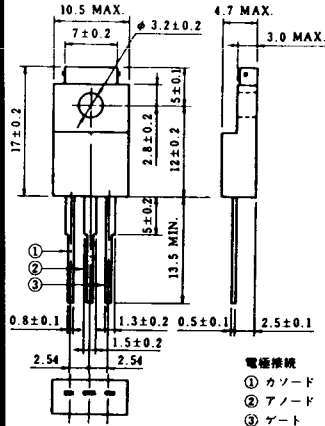
電極接続

- ① カソード
- ② アノード
- ③ ゲート

N-5



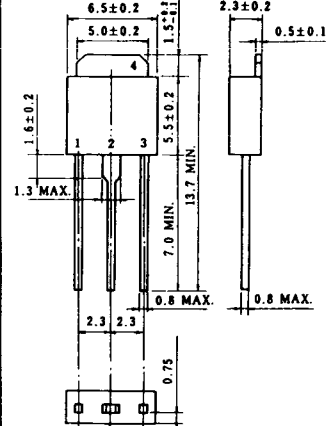
N-6



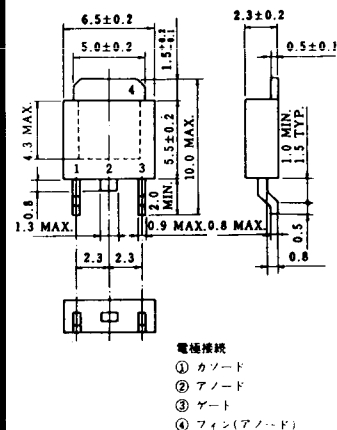
電極接続

- ① カソード
- ② アノード
- ③ ゲート

N-7



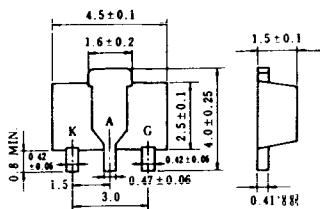
N-8



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



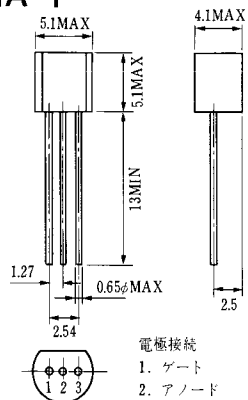
電極接続

K : カソード

A : アノード

G : ゲート

NA-1

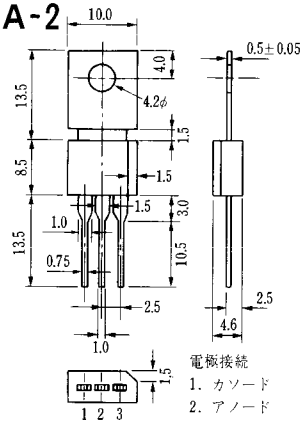


電極接続

1. ゲート
2. アノード
3. カソード

JEDEC: TO-92

NA-2



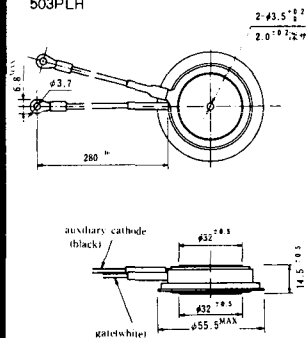
電極接続

1. カソード
2. アノード
3. ゲート

JEDEC: TO-202AA

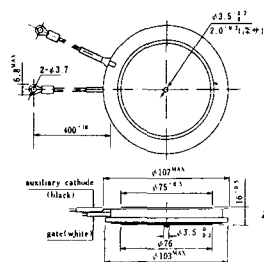
NI-16

503PLF
503PLH



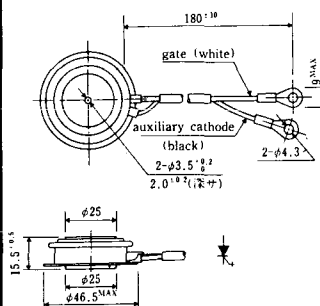
NI-17

3003PA



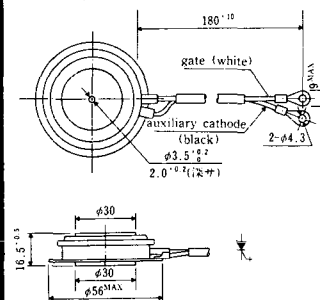
NI-18

353PGA「E



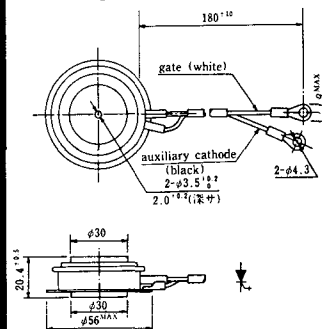
NI-19

603PGA, 603PGA「A, 803PGA



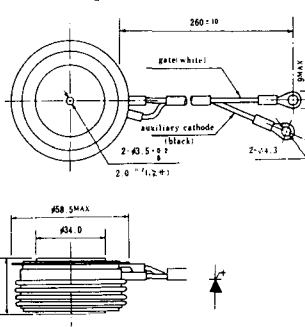
NI-20

603PGA「E



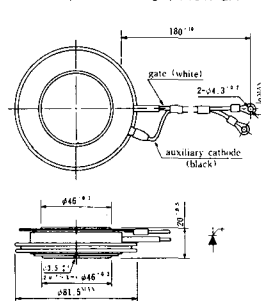
NI-21

1001PGB「E



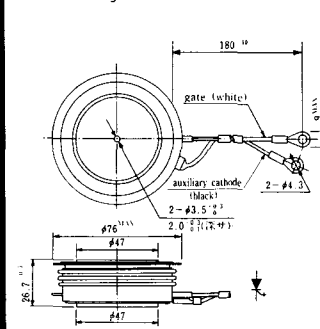
NI-22

1201PGA, 1201PGA「A, 1401PGA



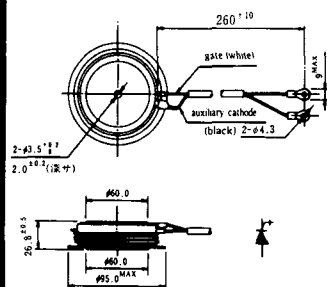
NI-23

1201PGA「E



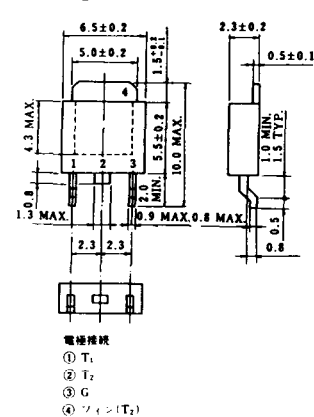
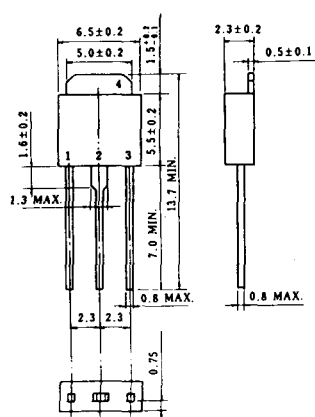
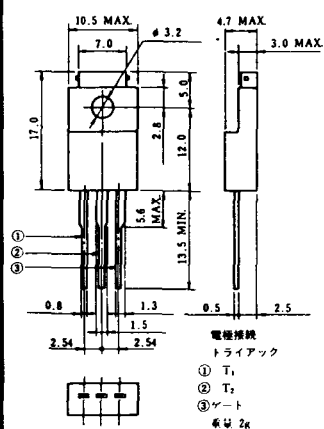
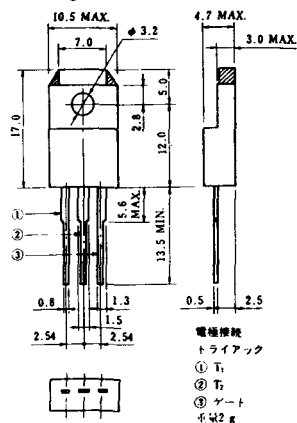
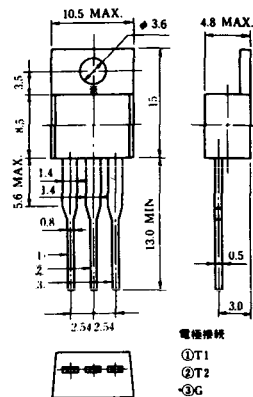
NI-24

2001PGB[®] JE

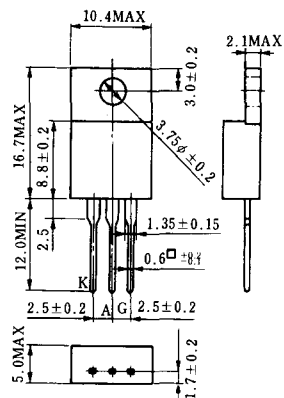


NI-25

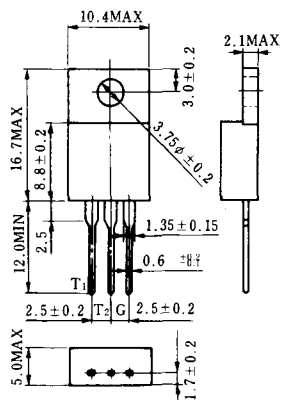
NI-26



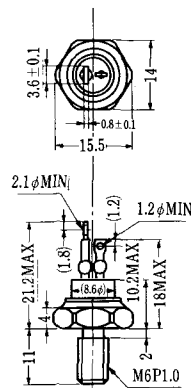
S-1



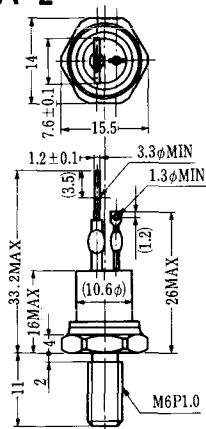
ST-1



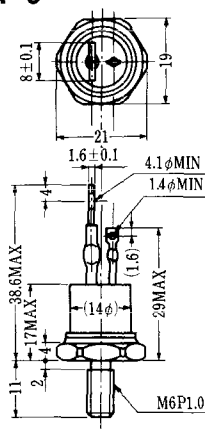
SA-1



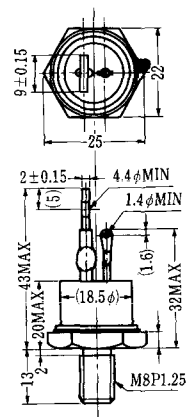
SA-2



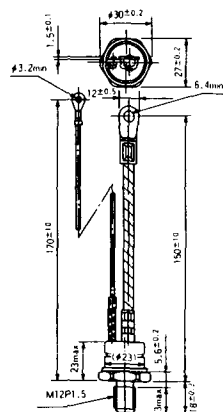
SA-3



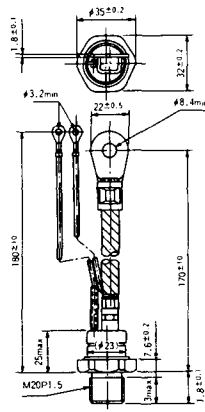
SA-4



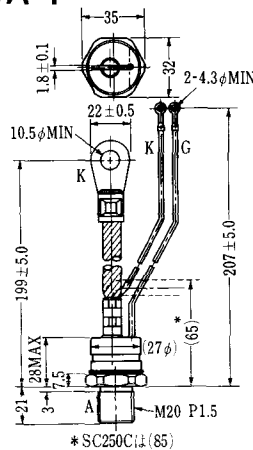
SA-5



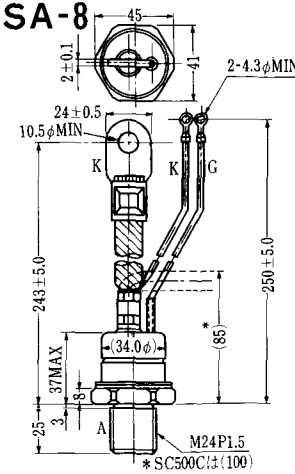
SA-6



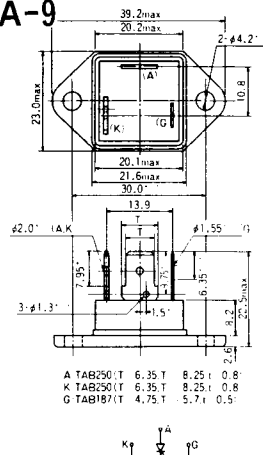
SA-7



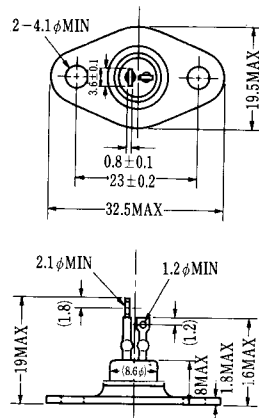
SA-8



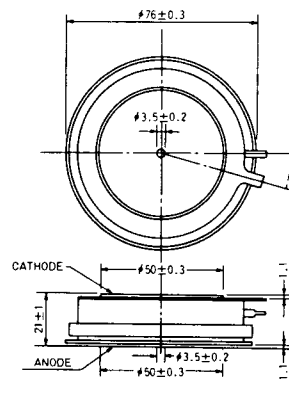
SA-9



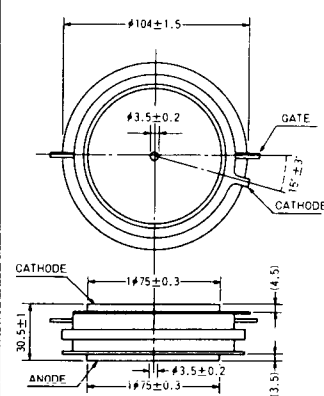
SA-10



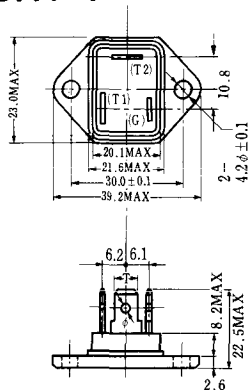
SA-11



SA-12

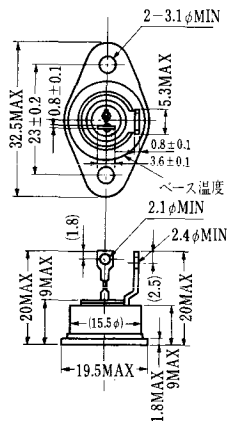


SAT-1

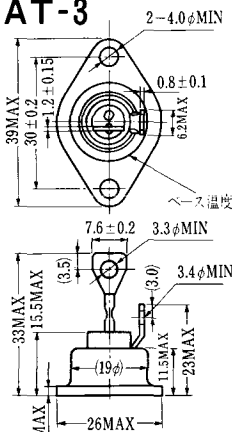


T1端子:ファストン250($T=6.35$, $t=0.8$, $\phi=1.65$)
T2端子:ファストン250($T=6.35$, $t=0.8$, $\phi=1.65$)
G端子:ファストン187($T=4.75$, $t=0.5$, $\phi=1.3$)

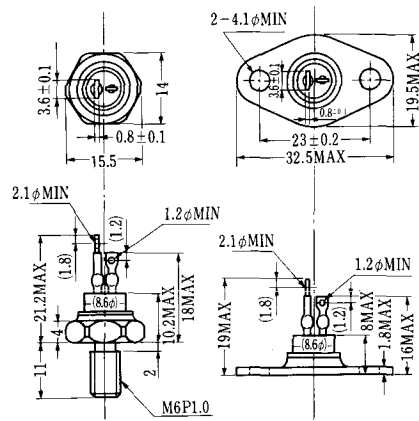
SAT-2



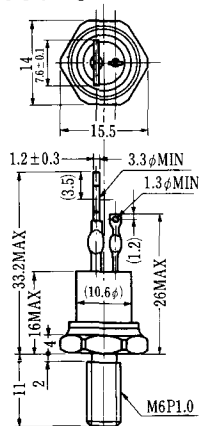
SAT-3



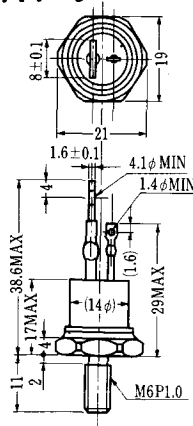
SAT-4



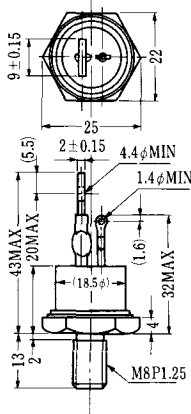
SAT-5



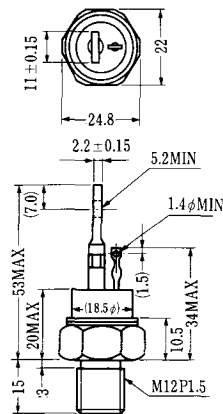
SAT-6



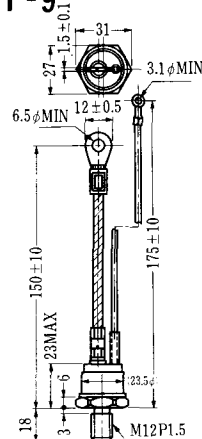
SAT-7



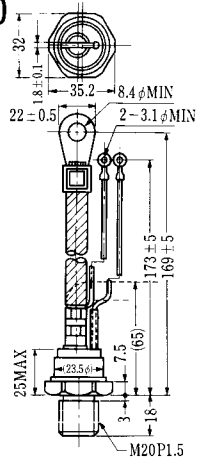
SAT-8



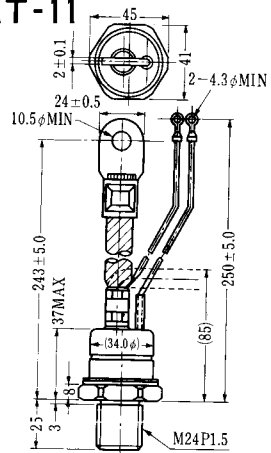
SAT-9



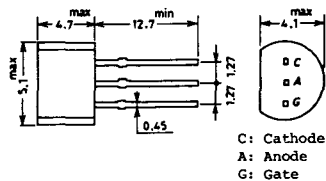
SAT-10



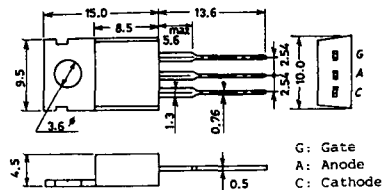
SAT-11



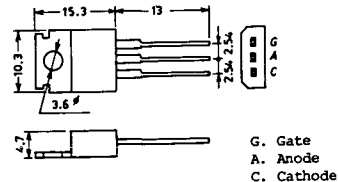
SY-1(1096A)



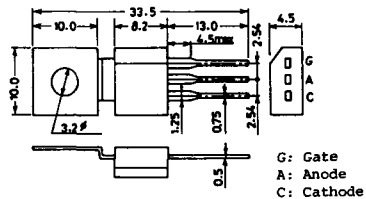
SY-2(1151)



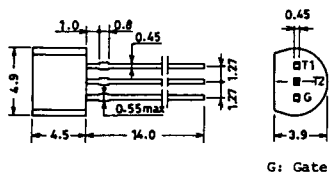
SY-3(1104)



SY-4(1150)

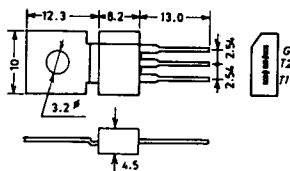


1097A

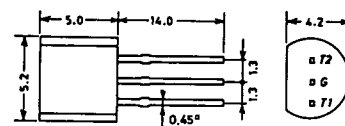


G: Gate

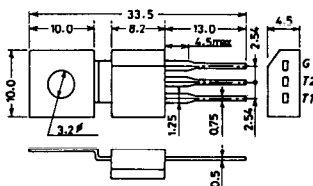
1102



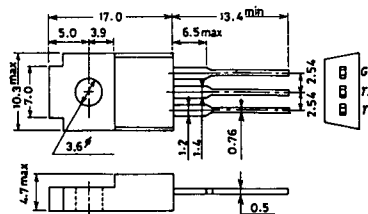
1141



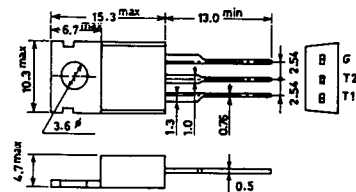
1142



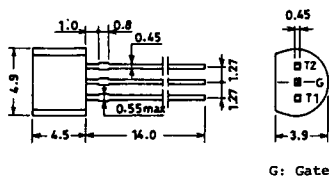
1144



1155

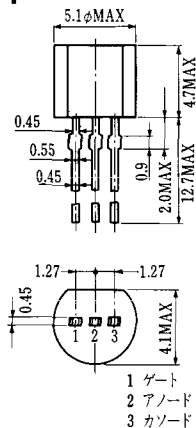


1192A

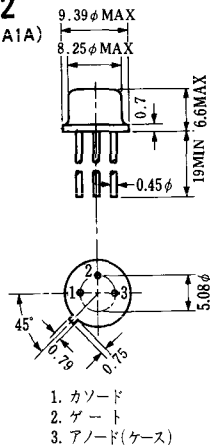


G: Gate

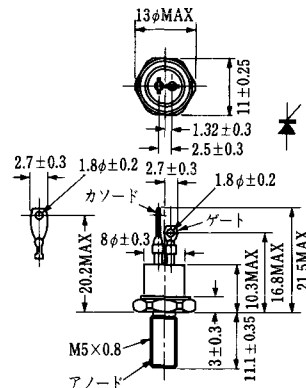
T-1 (13-5A1A)



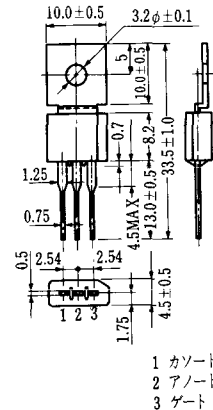
T-2 (13-8A1A)



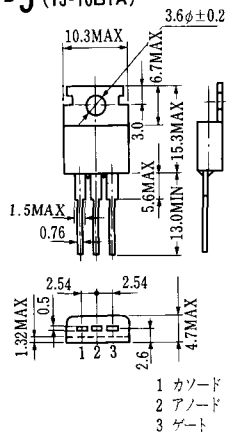
T-3 (13-8C1A)



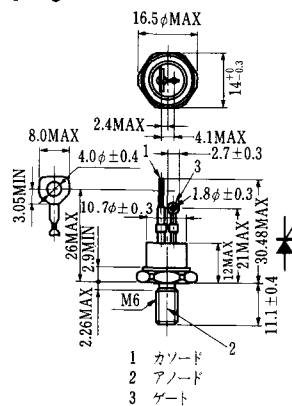
T-4 (13-10A1A)



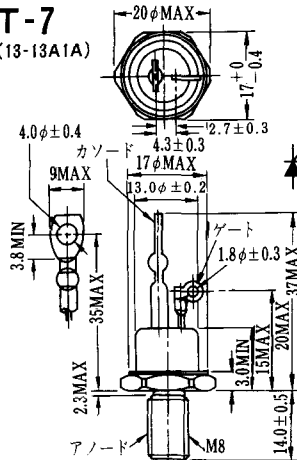
T-5 (13-10B1A)



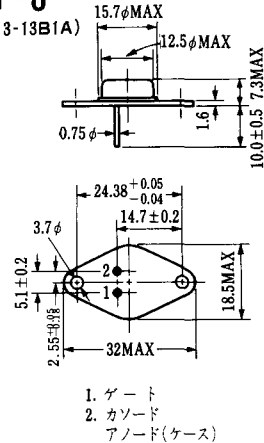
T-6 (13-11D1A)



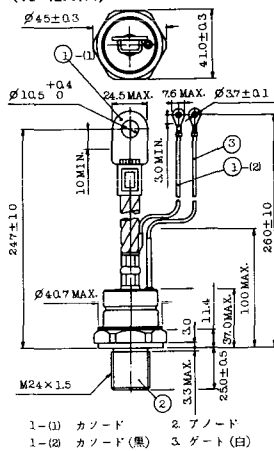
T-7 (13-13A1A)



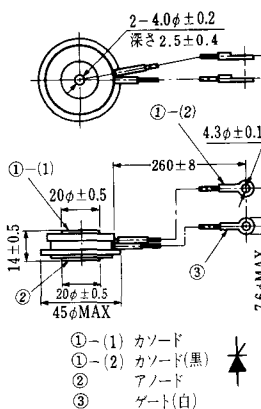
T-8 (13-13B1A)



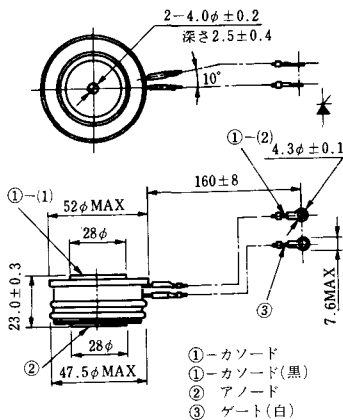
T-17 (13-42A1A)



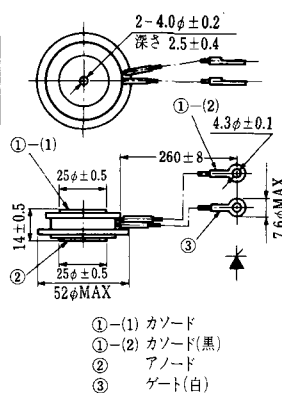
T-18 (13-45D1A)



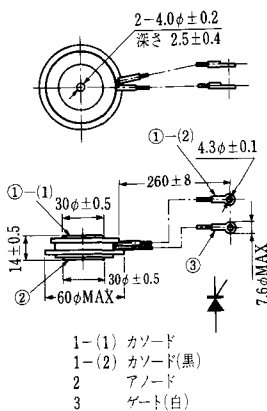
T-19 (13-52B1A)



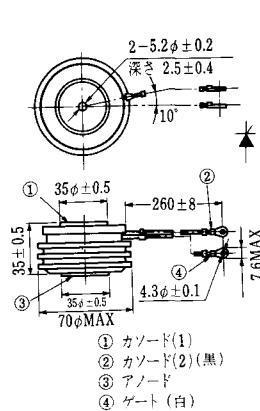
T-20 (13-52C1A)



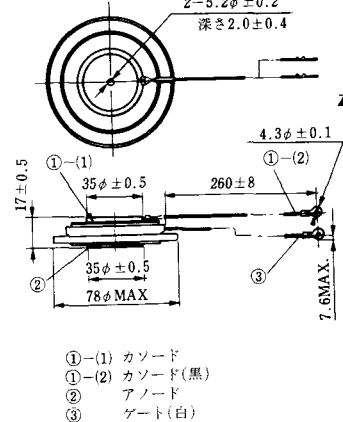
T-21 (13-60A1A)



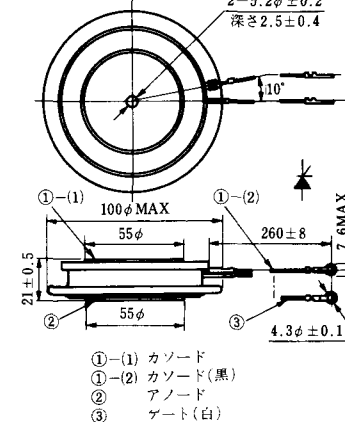
T-22 (13-70C1A)



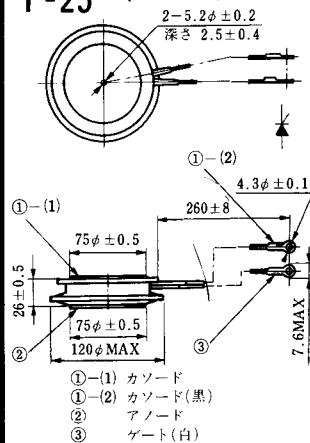
T-23 (13-78A1A)



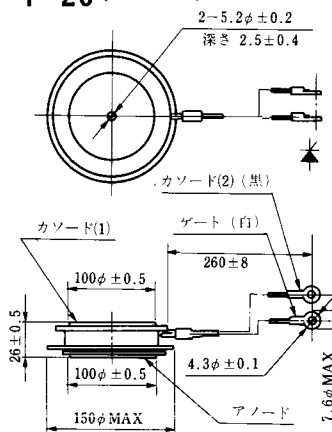
T-24 (13-100C1A)



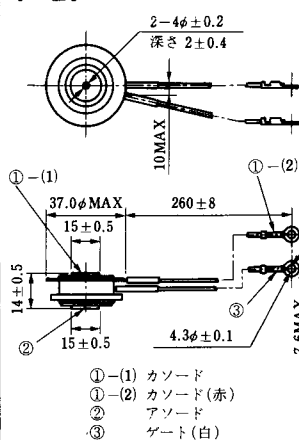
T-25 (13-120A2A)



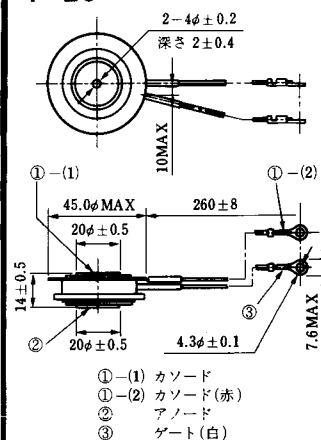
T-26 (13-150A1A)



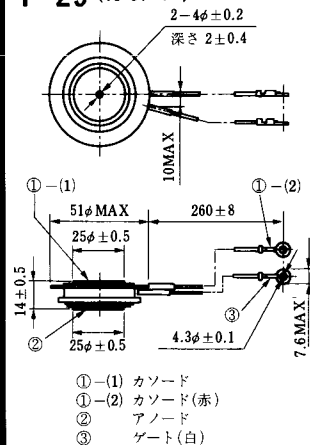
T-27 (13-37A1A)



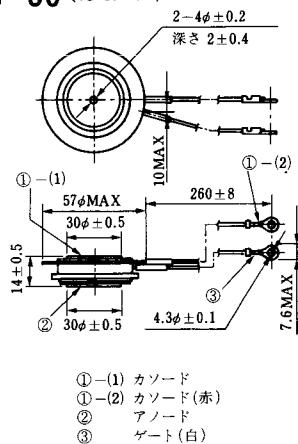
T-28 (13-45E1A)



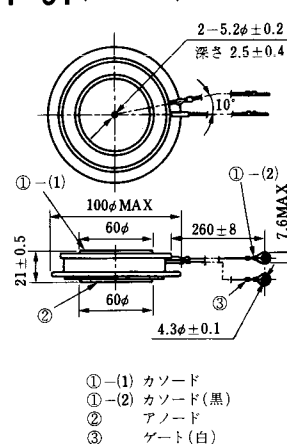
T-29 (13-51A1A)



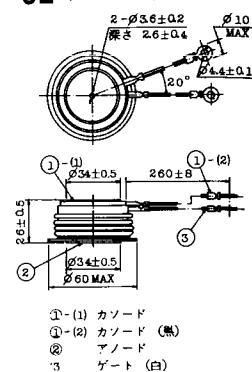
T-30 (13-57A1A)



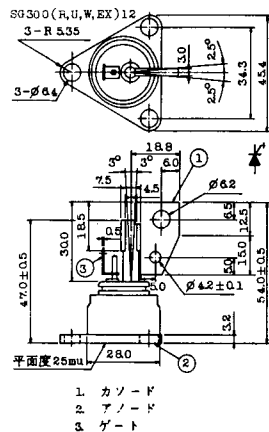
T-31 (13-100E1A)



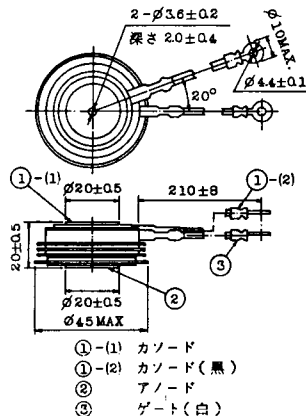
T-32 (13-60E3A)



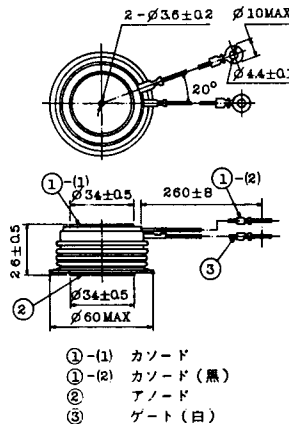
T-41 (13-28A2A)



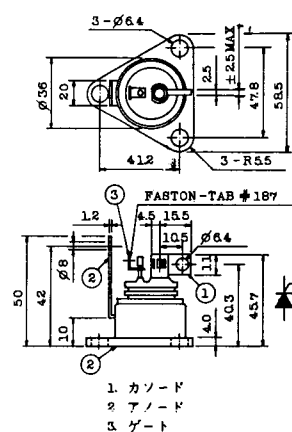
T-42 (13-45F1A)



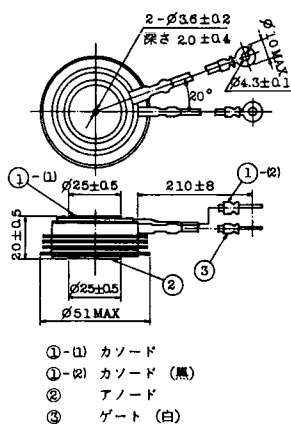
T-43 (13-60E2A)



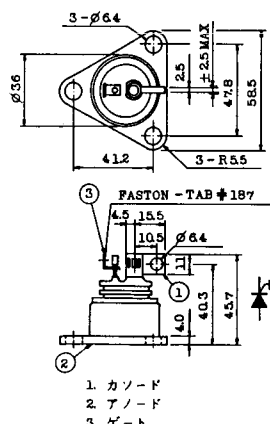
T-44 (13-36A1A)



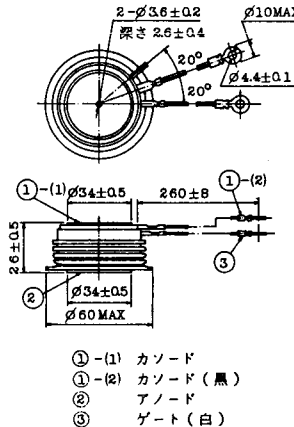
T-45 (13-51B1A)



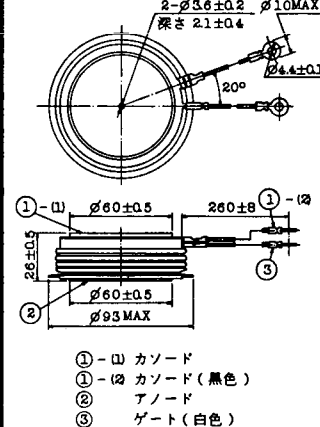
T-46 (13-36B1A)



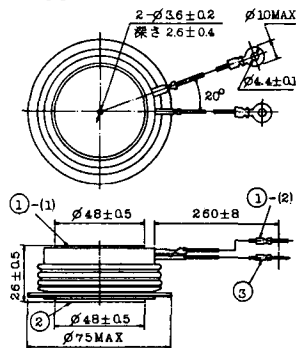
T-47 (13-60E1A)



T-48 (13-93C1A)

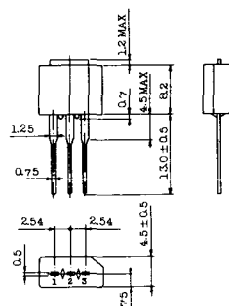


T-49 (13-75A1A)



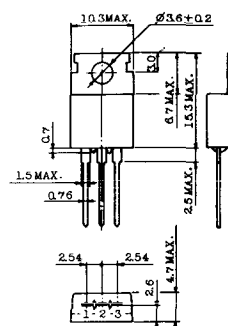
- 1-(1) カソード
- 1-(2) カソード (黒)
- 2 アノード
- 3 ゲート (白)

T-50 (13-10A3A)



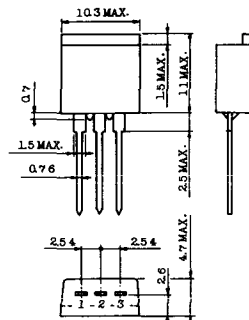
- 1 カソード
- 2 アノード
- 3 ゲート

T-51 (13-10D1A)



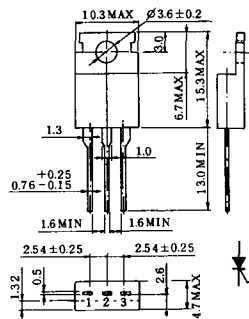
- 1 カソード
- 2 アノード
- 3 ゲート

T-52 (13-10D2A)



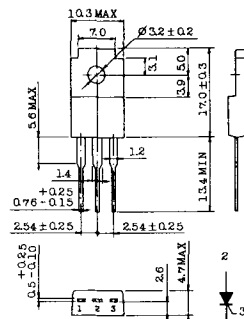
- 1 カソード
- 2 アノード
- 3 ゲート

T-53 (13-10E1B)



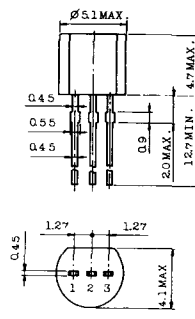
- 1 カソード
- 2 アノード
- 3 ゲート

T-54 (13-10F1B)



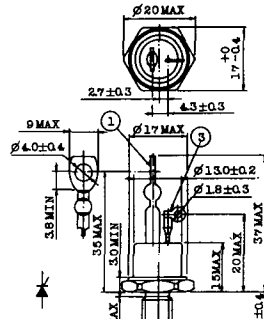
- 1 カソード
- 2 アノード
- 3 ゲート

T-55 (13-5A1D)



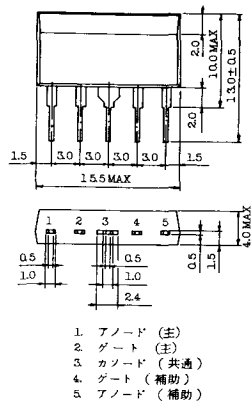
- 1 カソード
- 2 ゲート
- 3 アノード

T-56 (13-13C1A)

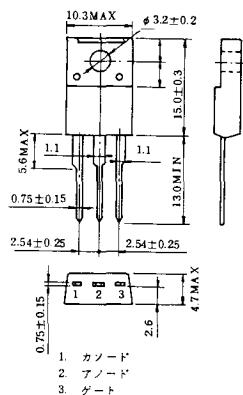


- 1 カソード
- 2 アノード
- 3 ゲート

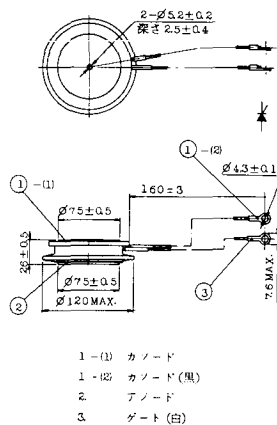
T-57 (12-16C1A)



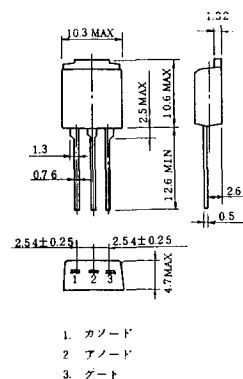
T-58 (13-10H1B)



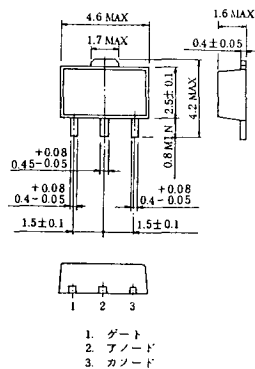
T-59 (13-120A1A)



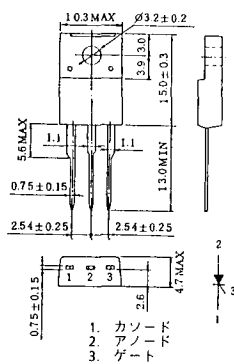
T-60



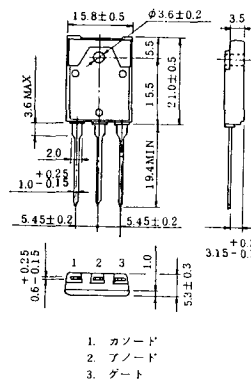
T-61 (13-5B1A)



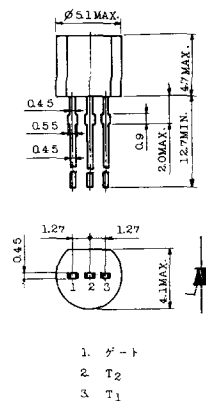
T-62 (13-10H1A)



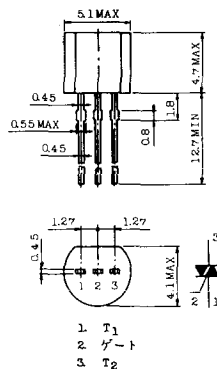
T-63 (13-16A1B)



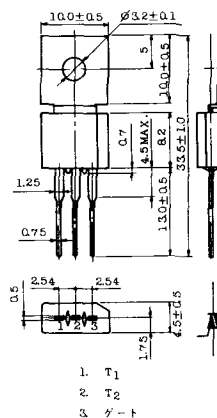
TT-1



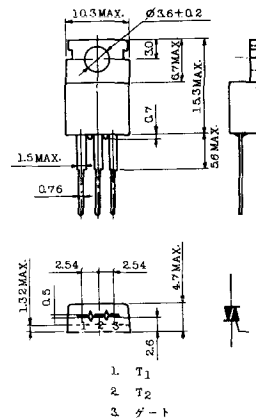
TT-2



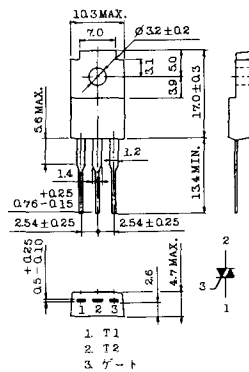
TT-3



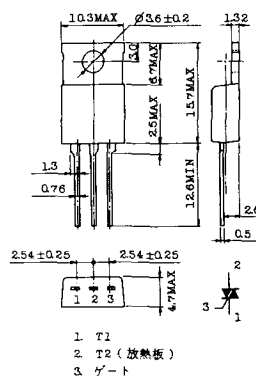
TT-4



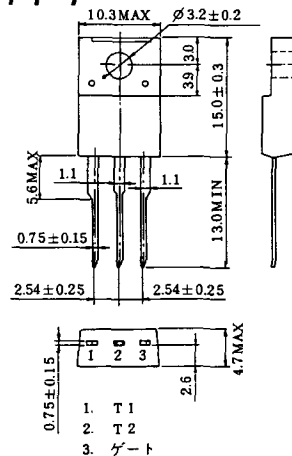
TT-5



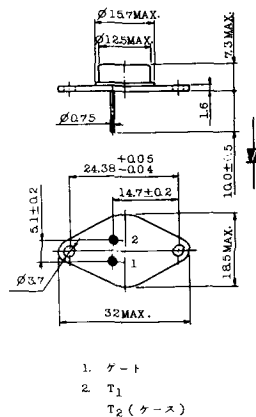
TT-6



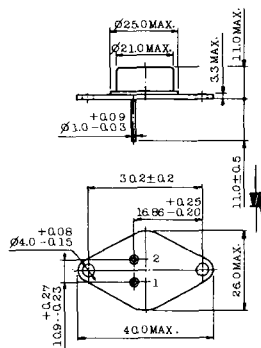
TT-7



TT-8

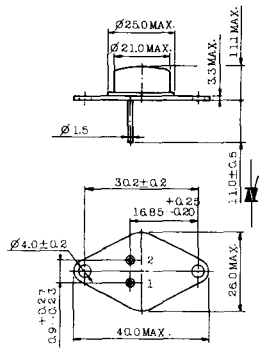


TT-9



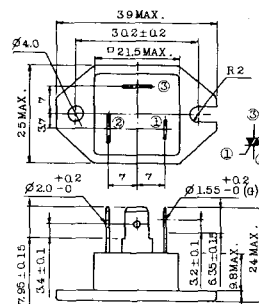
1. ゲート
2. T₁
3. T₂ (ケース)

TT-10



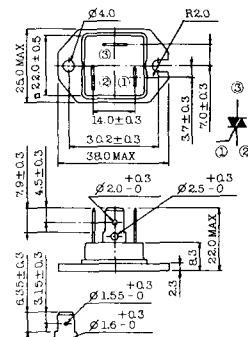
1. ゲート
2. T₁
3. T₂ (ケース)

TT-11



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

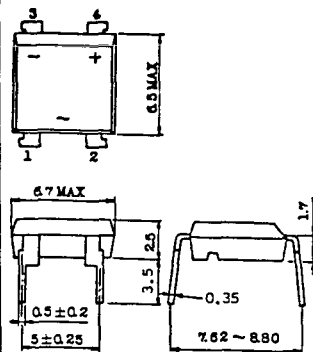
TT-12



ゲート端子詳細

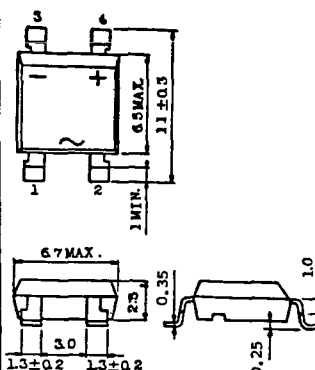
- ① ゲート (ファストン端子 #187)
- ② T₁ (" #250)
- ③ T₂ (" #250)

TT-13



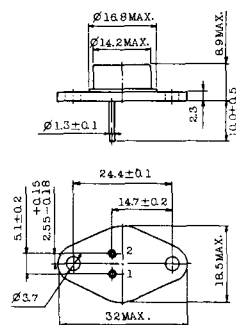
- 1, 2: T₂
- 3: GATE
- 4: T₁

TT-14



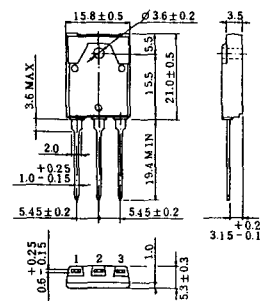
- 1, 2: T₂
- 3: GATE
- 4: T₁

TT-15 (13-14A1B)



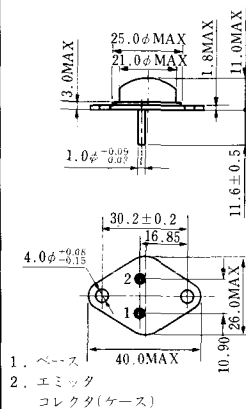
1. ゲート
2. T₁
- T₂ (ケース)

TT-16 (13-16A1A)

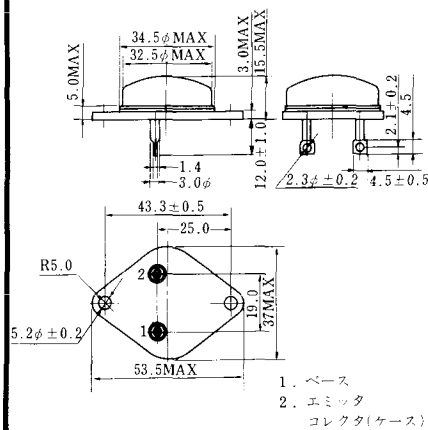


1. T₁
2. T₂
3. ゲート

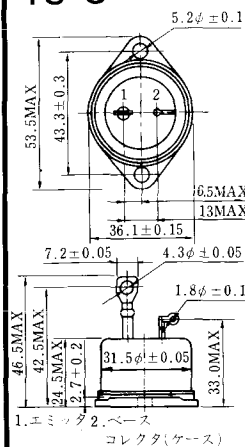
TS-1



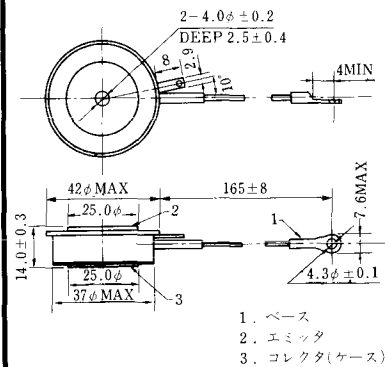
TS-2



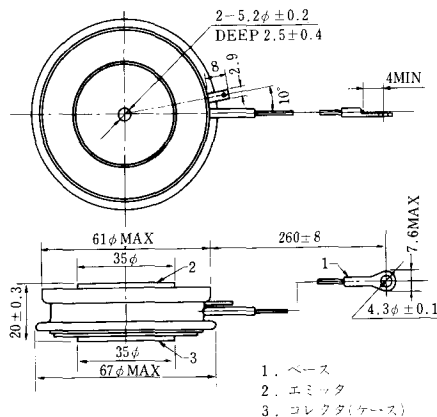
TS-3



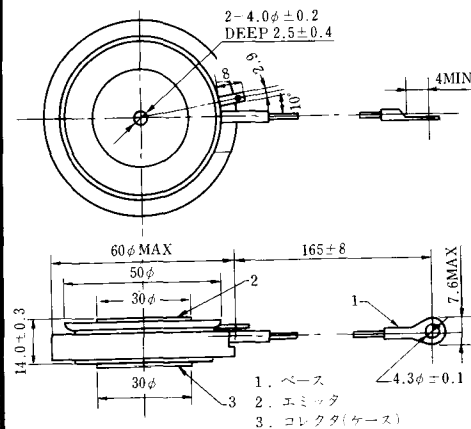
TS-4



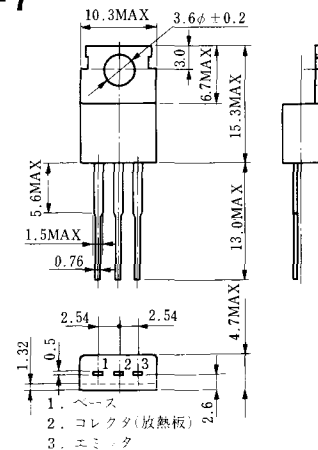
TS-5

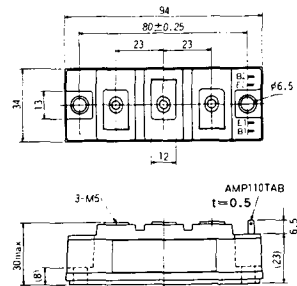
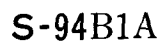
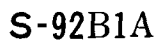
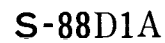
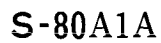


TS-6

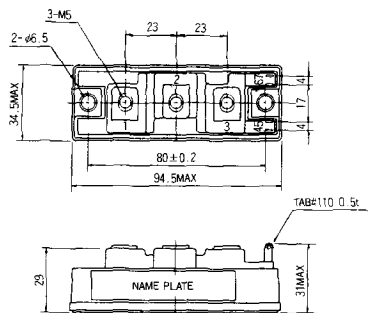


TS-7

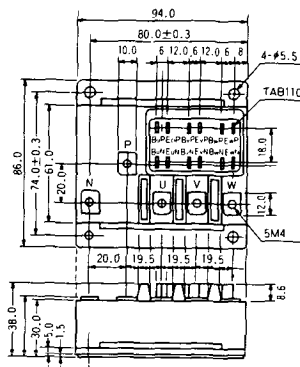




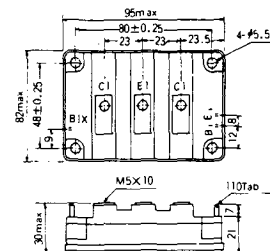
S-94B2A



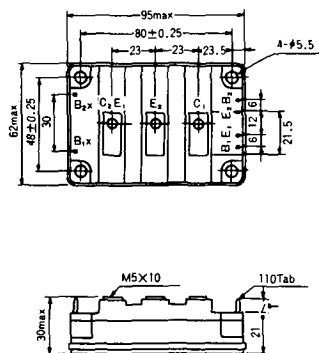
S-94D1A



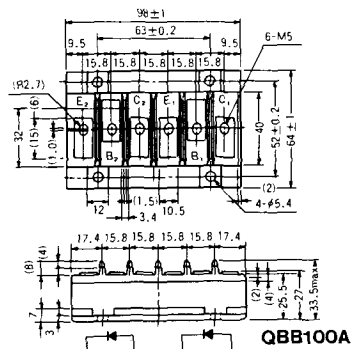
S-95A1A



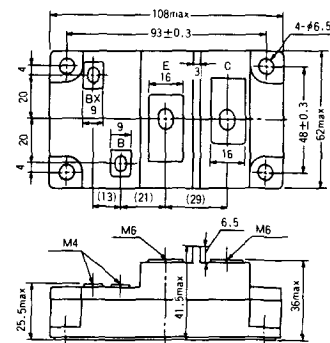
S-95B1A



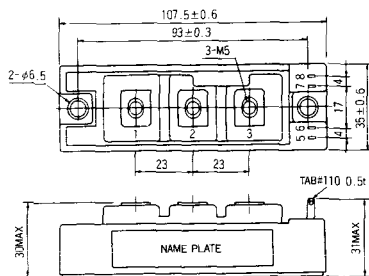
S-98B1B



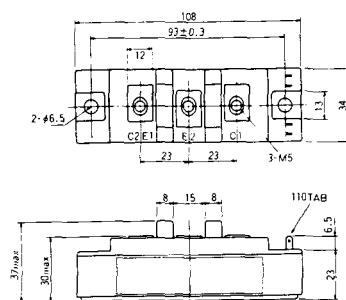
S-108A2A



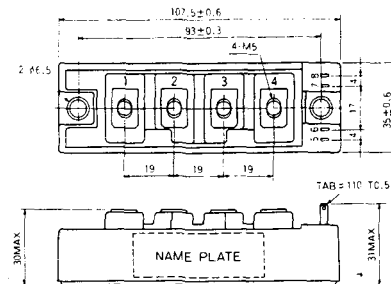
S-108B1A



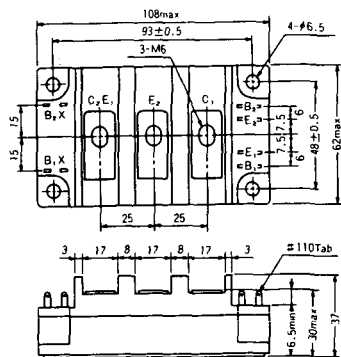
S-108B1B



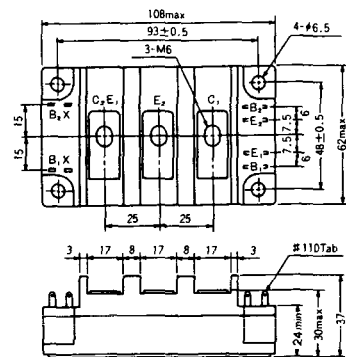
S-108B1C



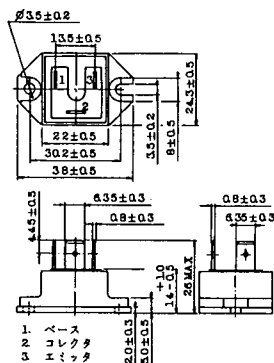
S-108B2A



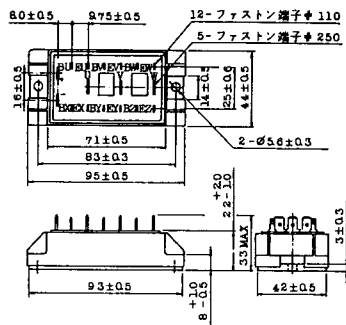
S-108B2B



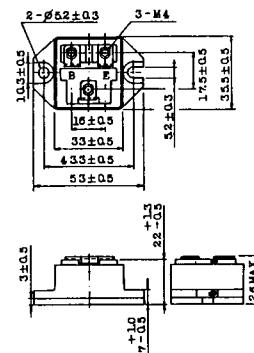
2-22B1A



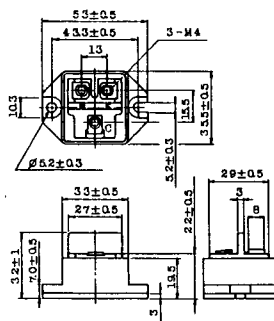
2-27A4A



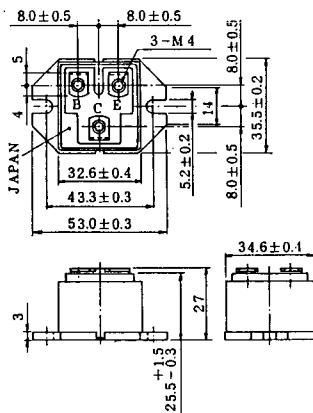
2-33C1A



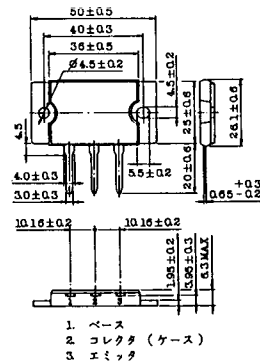
2-33D1A



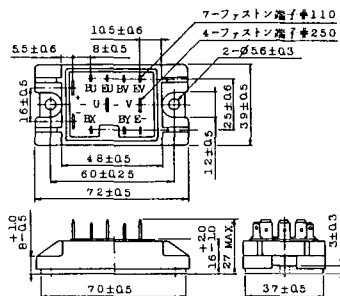
2-33F1A



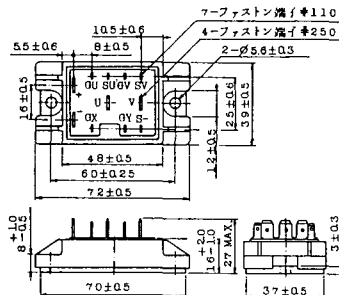
2-37A1A



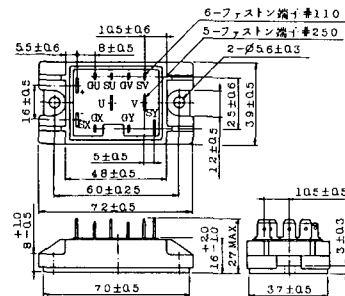
2-48A3A



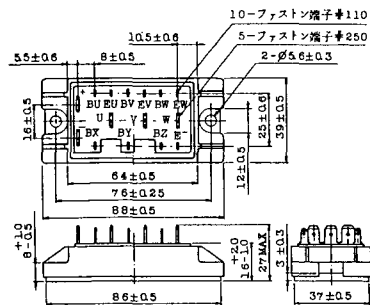
2-48A3B



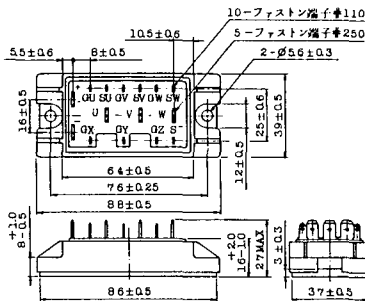
2-48A4A



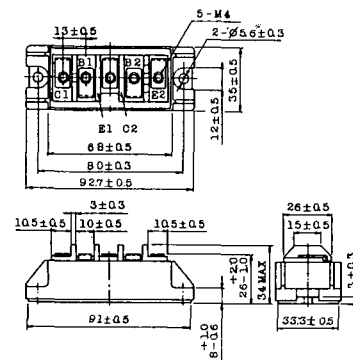
2-64A2A



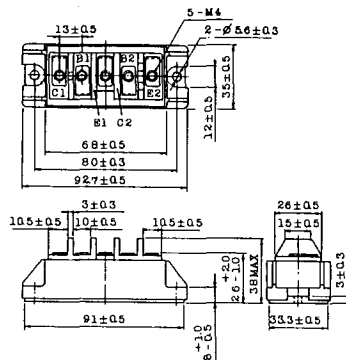
2-64A2B



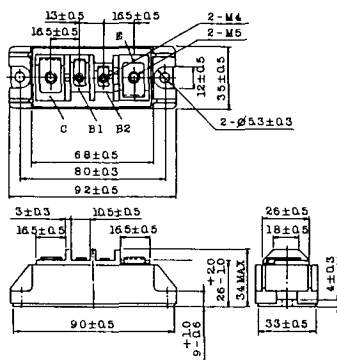
2-68A2A



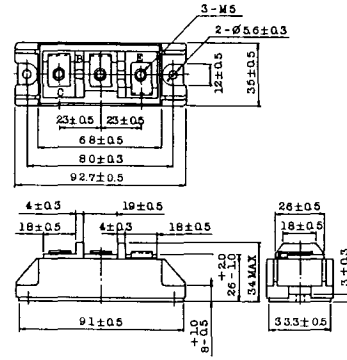
2-68B2A



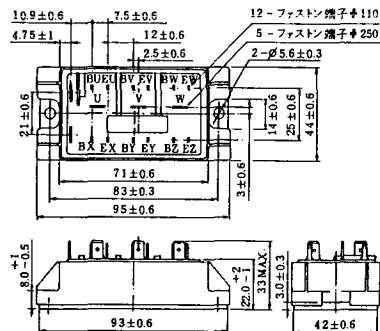
2-68C1A



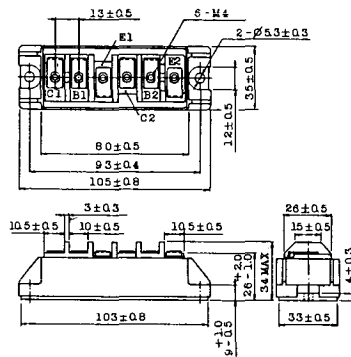
2-68D2A



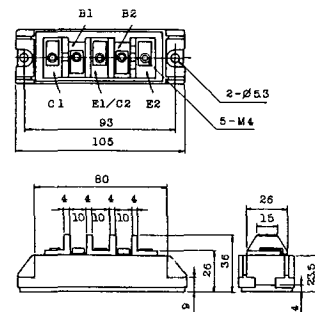
2-72A3A



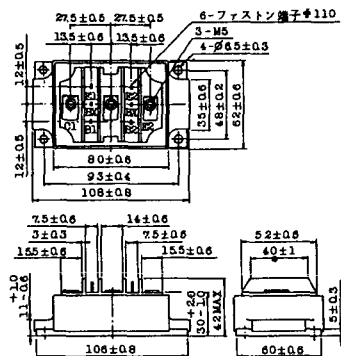
2-80A1A



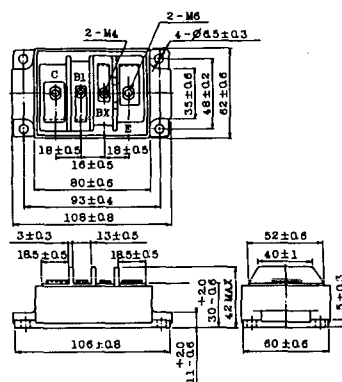
2-80B1A



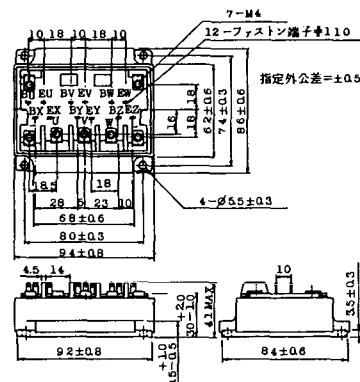
2-80C1A



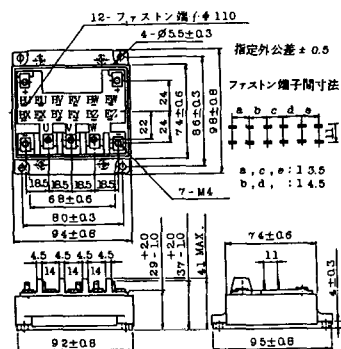
2-80D2A



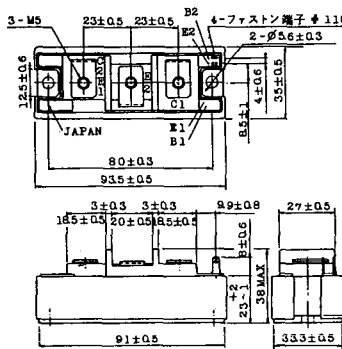
2-94A2A



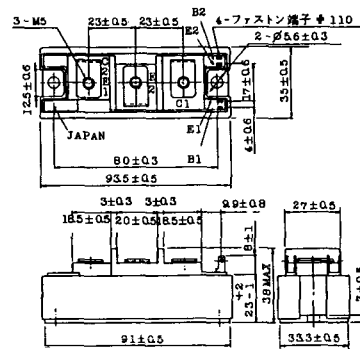
2-94B1A



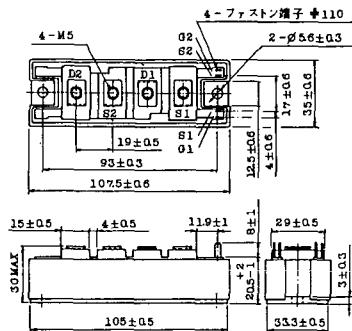
2-94C2A



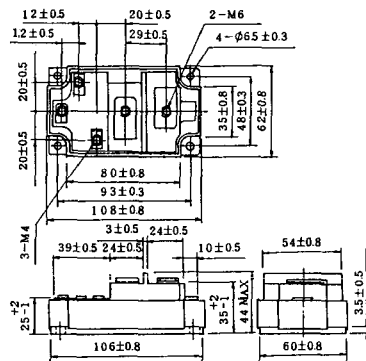
2-94C3A



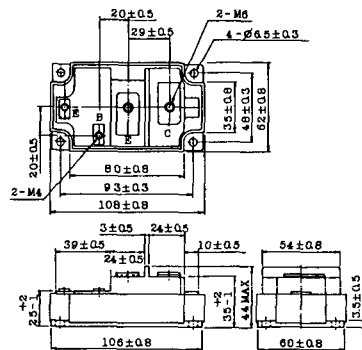
2-108B1A



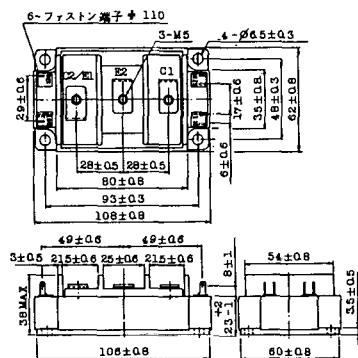
2-109A3A



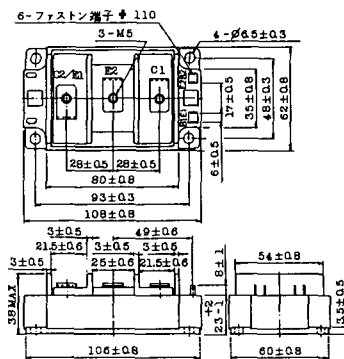
2-109A4A



2-109B3A

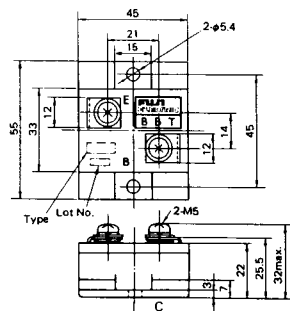


2-109B4A



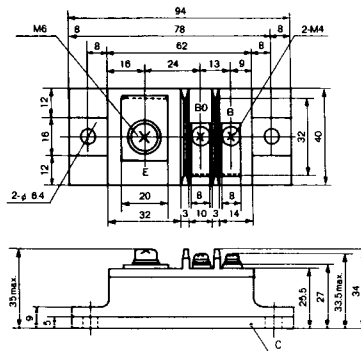
BBT-II

BBTII
1D200A-020



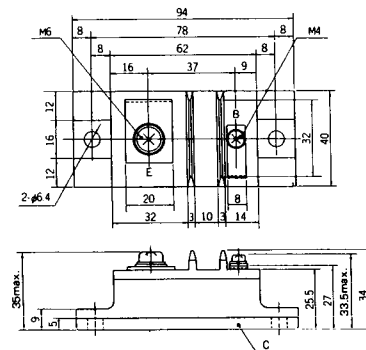
BBT-III

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



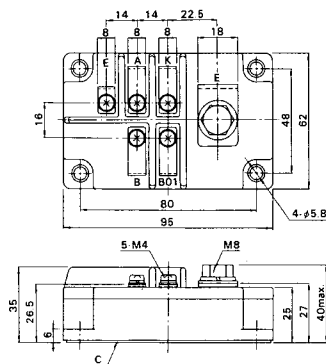
BBT-III

BBTIII
ETN01-055
ET1257

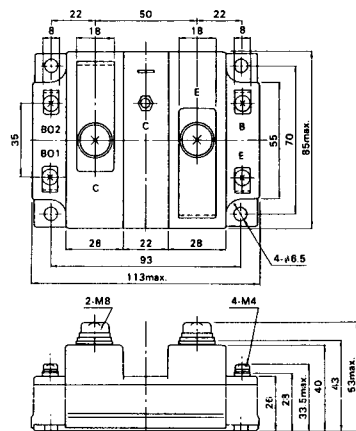


BBT-IV

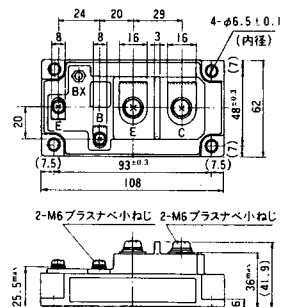
BBTIV
1D500A-030



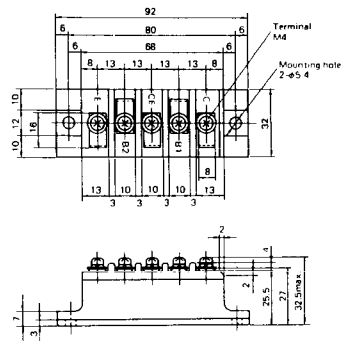
M-107



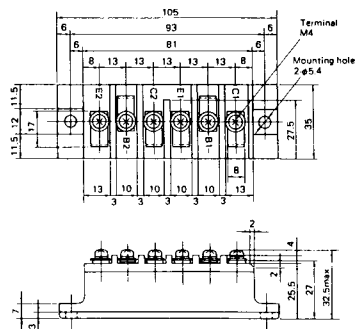
M-116



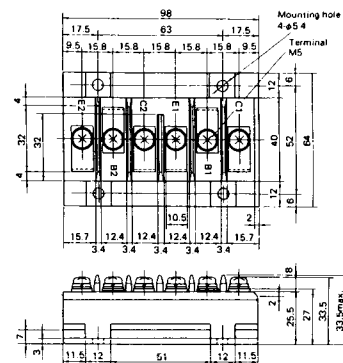
M-201



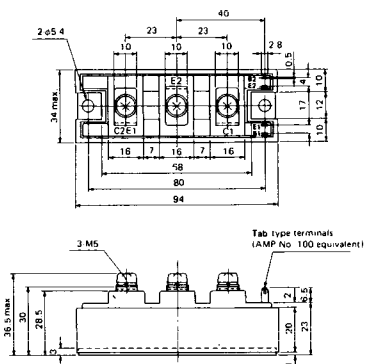
M-202



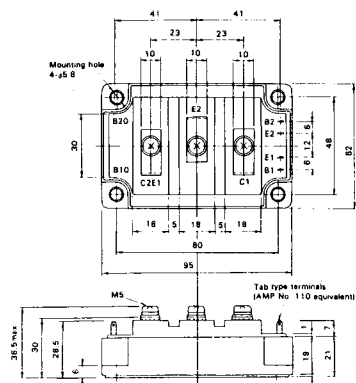
M-203



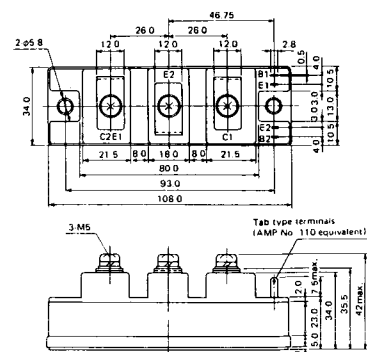
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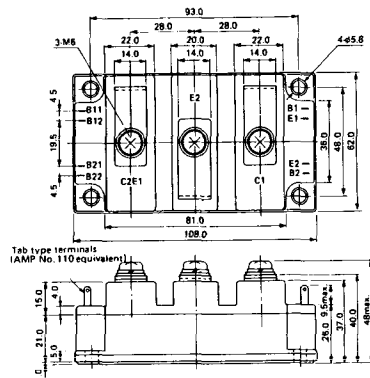
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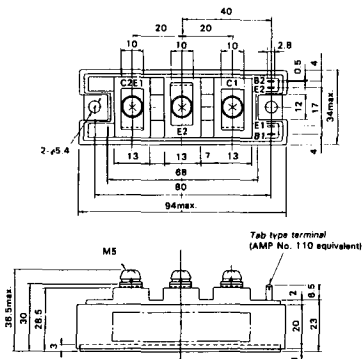
M-206



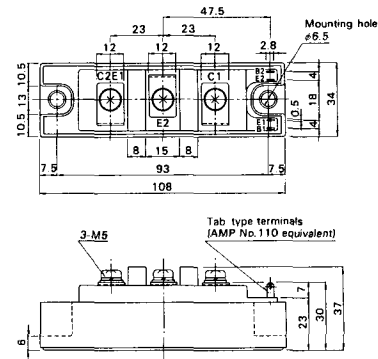
M-207



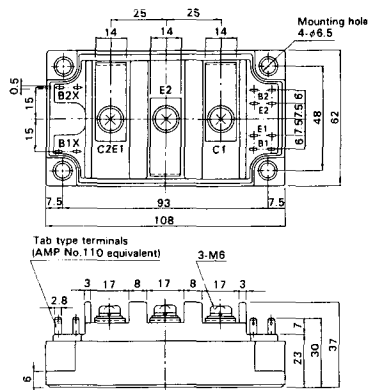
M-208



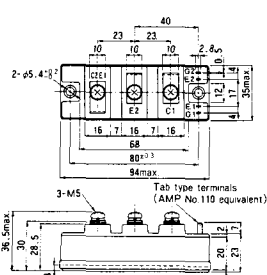
M-209



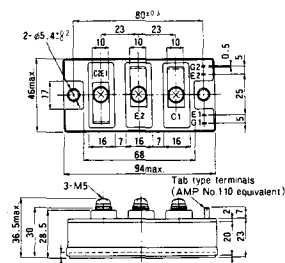
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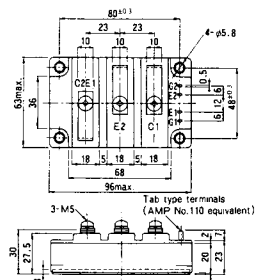
M-211



M-212

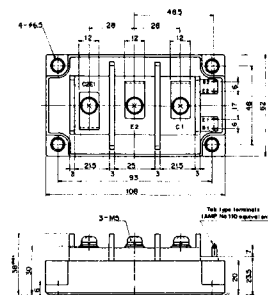


M-213

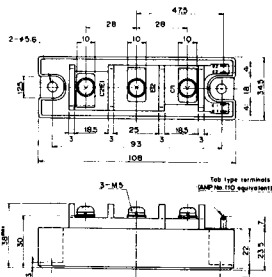


M-214

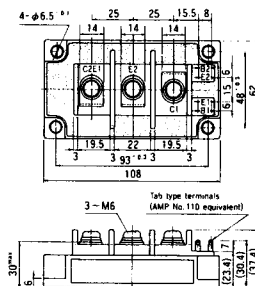
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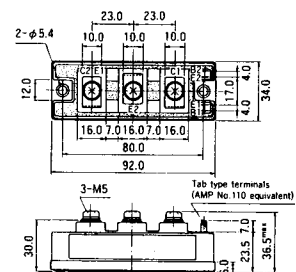
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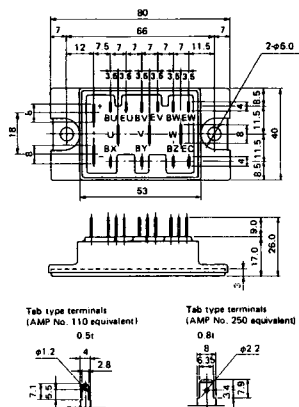
M-217



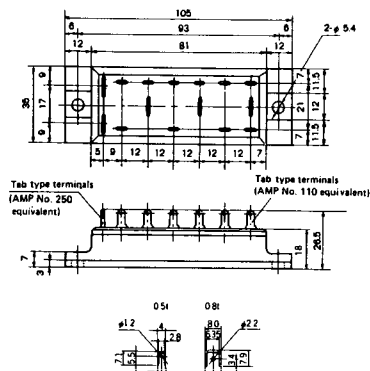
M-218



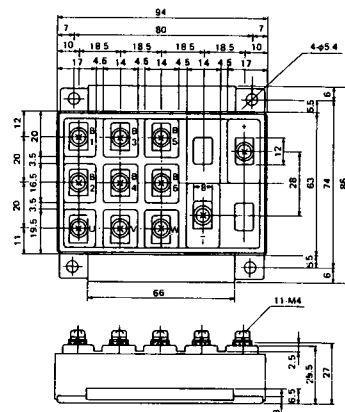
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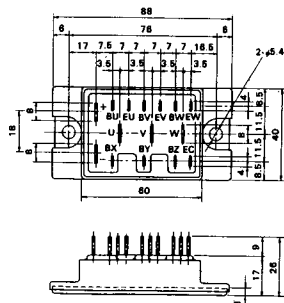
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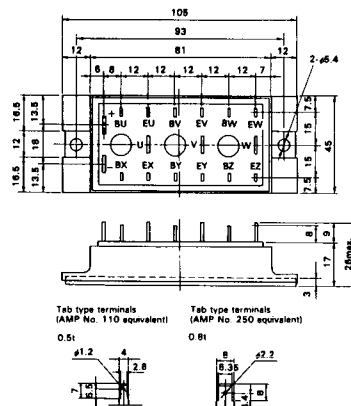
M-603



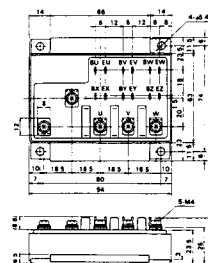
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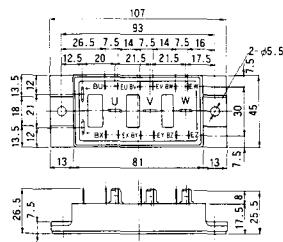
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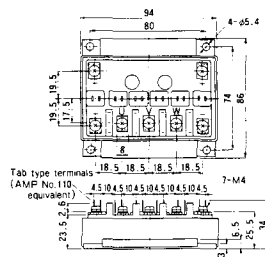
M-606



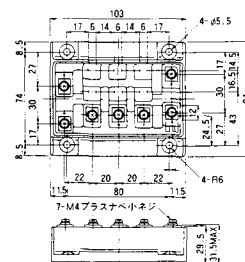
M-607



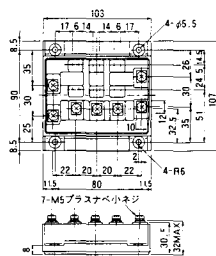
M-608



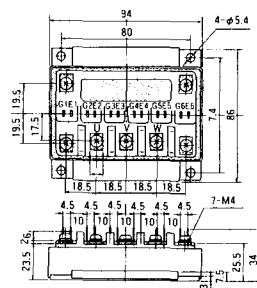
M-609



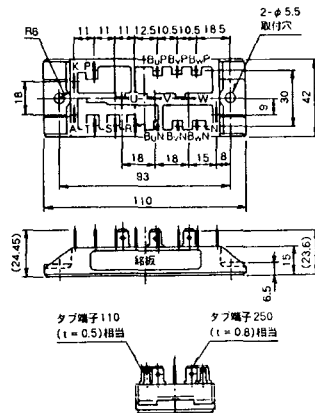
M-610



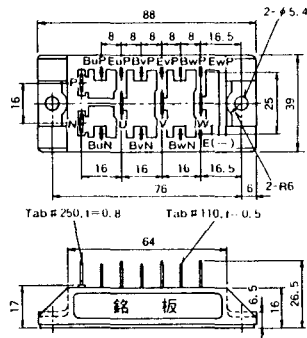
M-616



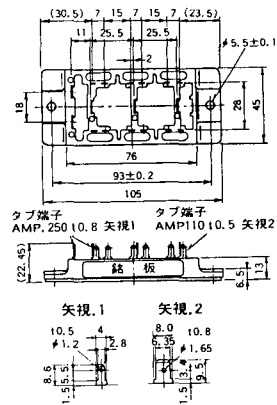
M-2E6A



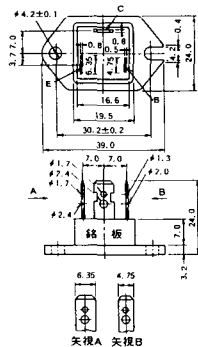
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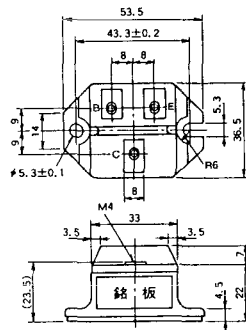
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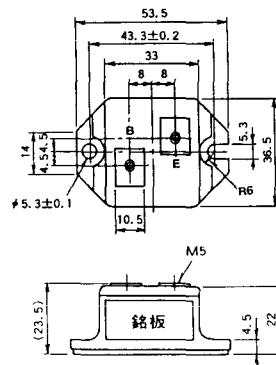
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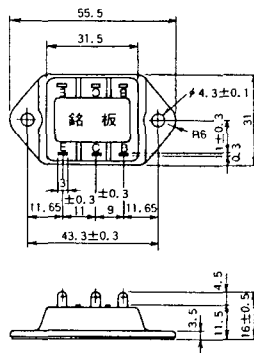
M-3B1A



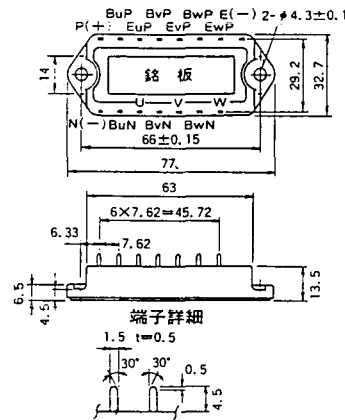
M-3B1B



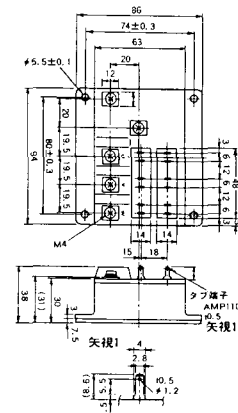
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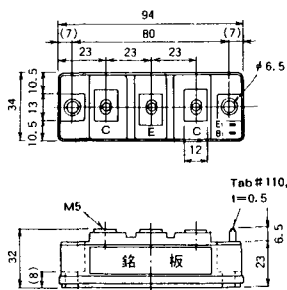
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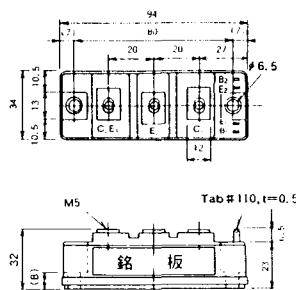
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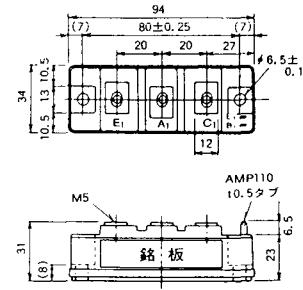
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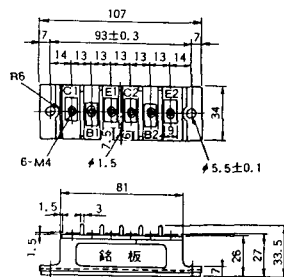
M-4A2A



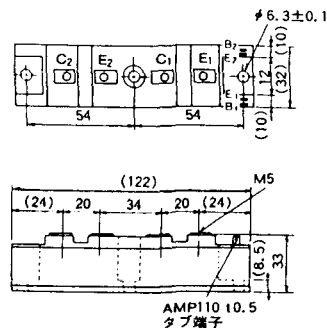
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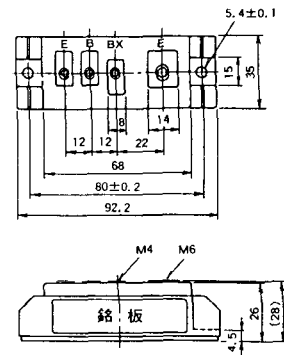
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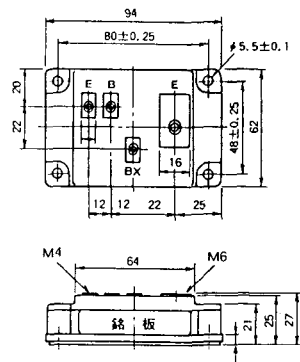
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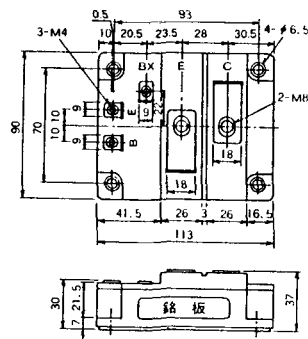
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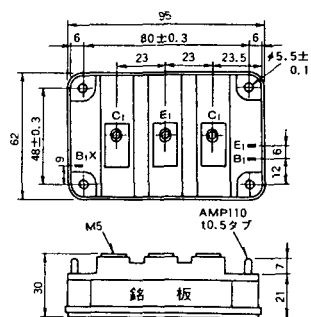
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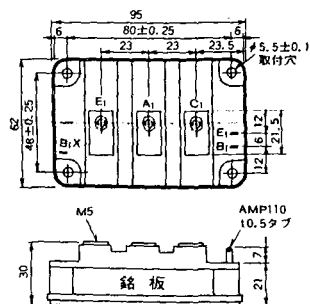
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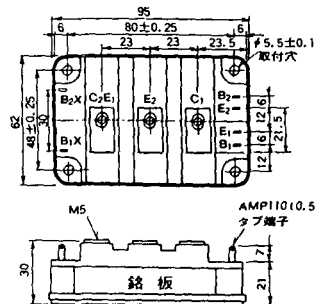
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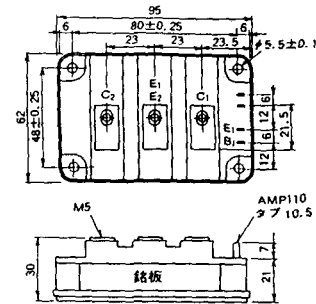
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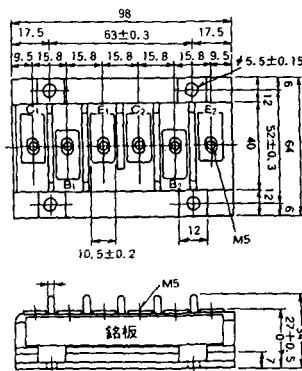
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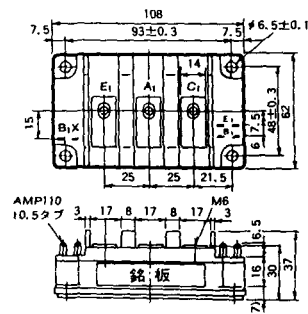
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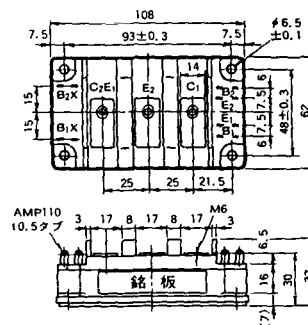
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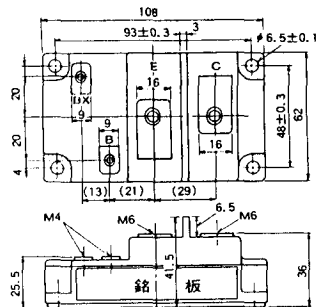
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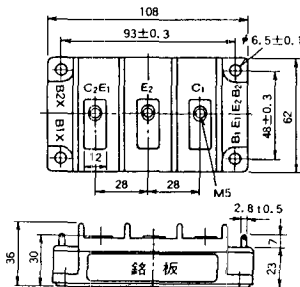
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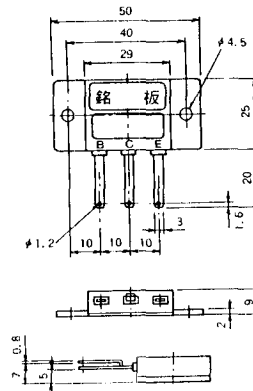
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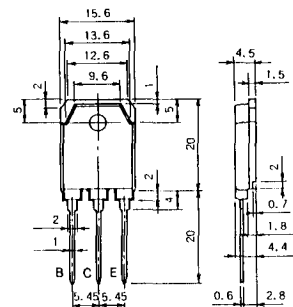
M-9C2A



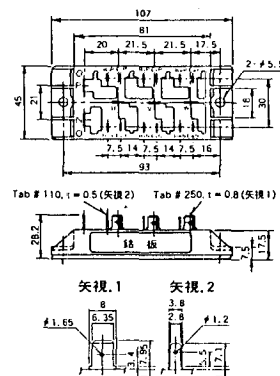
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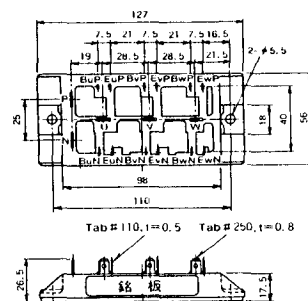
M-1A1C



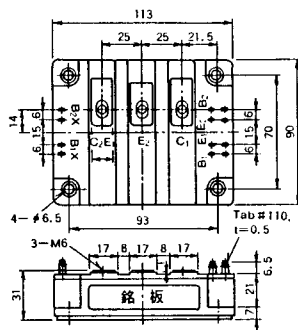
M-2E6B



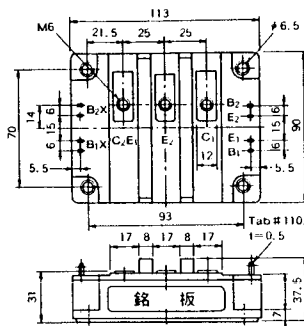
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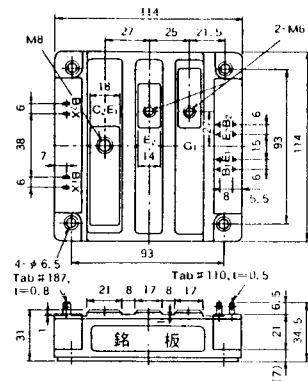
M-10A2A



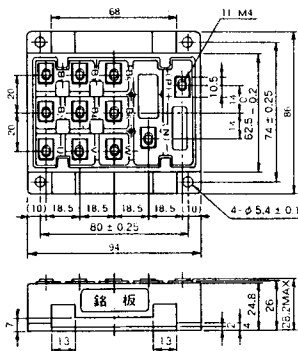
M-10A2B



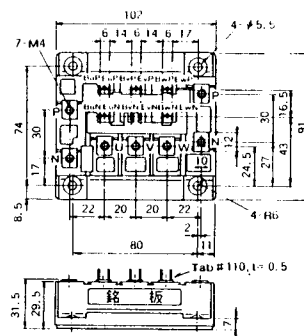
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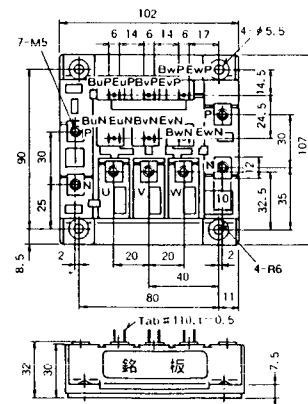
M-12A6A



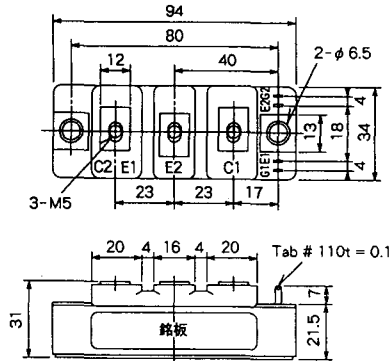
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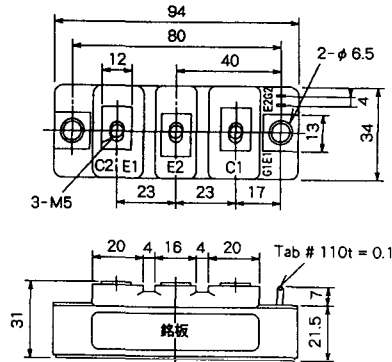
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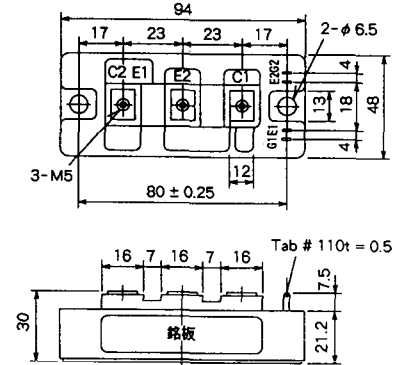
M-4A2D



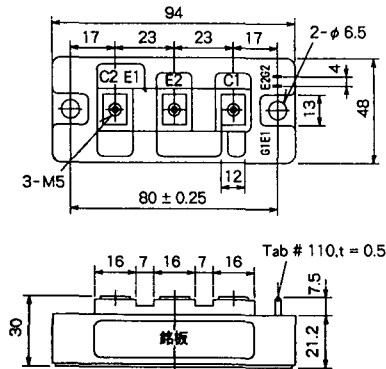
M-4A2E



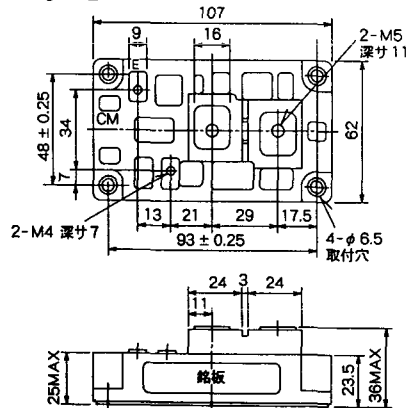
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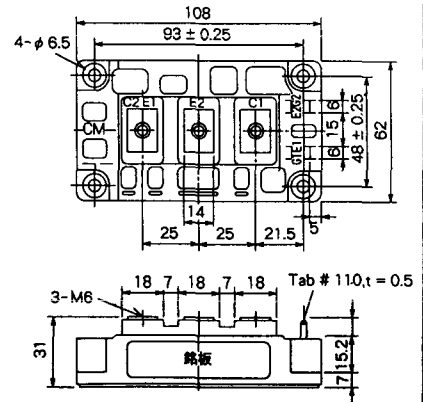
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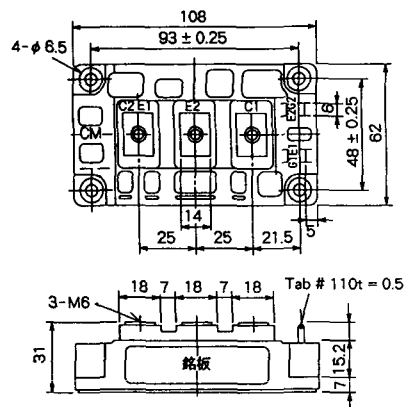
M-9B1C



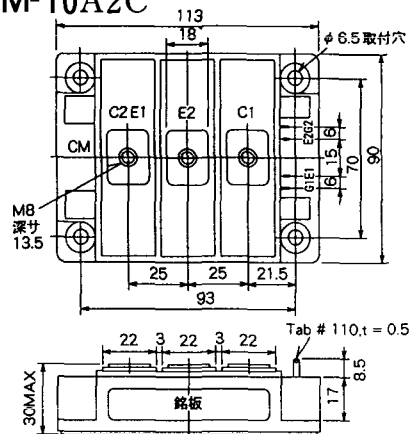
M-9D2A



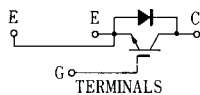
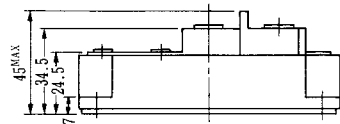
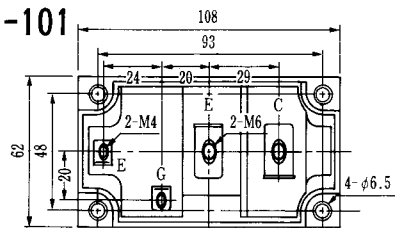
M-9D2B



M-10A2C



H-101

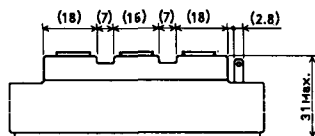
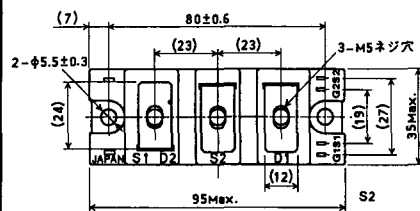


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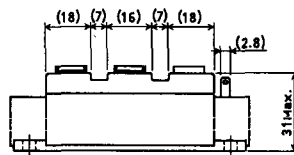
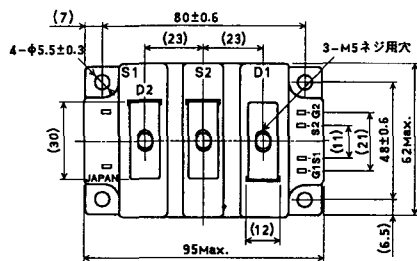
TERMINALS



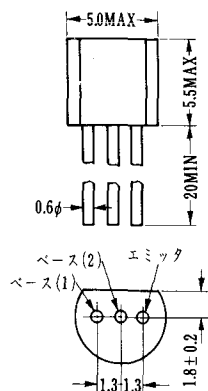
LF-J



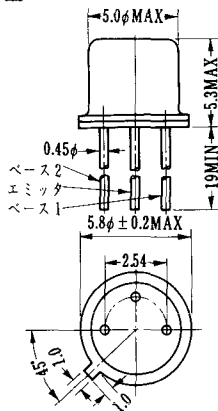
LF-K



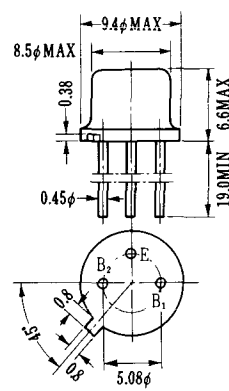
U-1



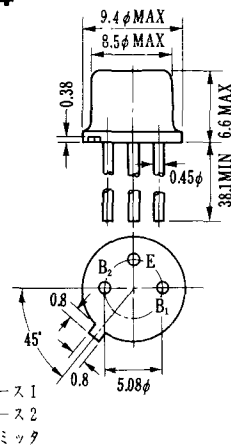
U-2



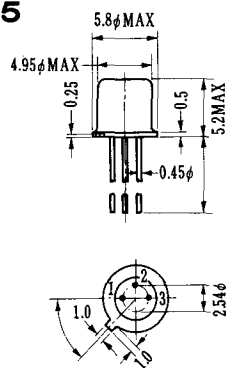
U-3



U-4

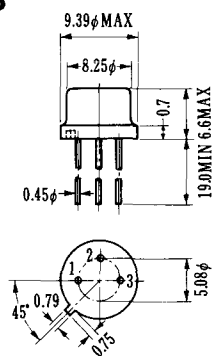


U-5



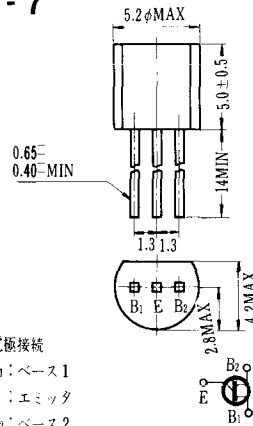
1. BASE 1
2. EMITTER
3. BASE 2 (CASE)

U-6



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

U-7



U-8

