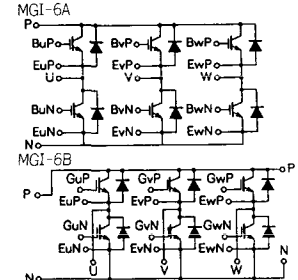
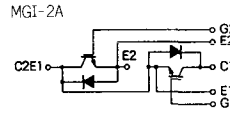
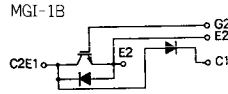
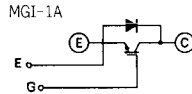


トランジスタ・モジュール (シリコンNチャネル IGBT)

- フリーホイール・ダイオード付
- 絶縁形

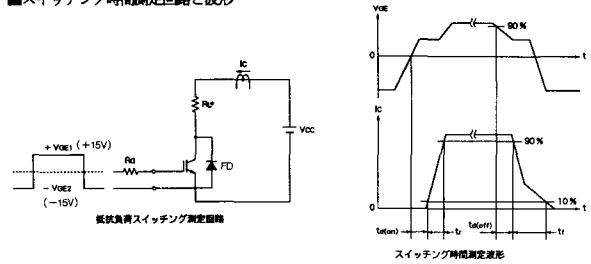
■等価回路



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

型名	最大定格 ($T_J = 25^\circ\text{C}$)										電気的特性 ($T_J = 25^\circ\text{C}$)												
	V_{CES}	V_{GSS}	I_c	I_{CP}	I_F	I_{FP}	P_c	T_J	T_{stg}	$V_{I_{EE}}$	I_{GSS}	V_{GE}	I_{CES}	V_{CES}	$V_{GE(OFF)}$	$V_{CE(SAT)}$	I_c	V_{GE}	I_c	V_{GE}			
	(V)	(V)	(注1) (A)	(注1) (A)	(注1) (A)	(注1) (A)	(注1) (W)	($^\circ\text{C}$)	($^\circ\text{C}$)	(注2) (V)	(nA) 最大	(V) 最大	(mA) 最大	(V) 最大	(V) 最小	(mA) 最小	(V) 最小	(V) 最大	(mA) 最大	(V) 最大	(A) 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

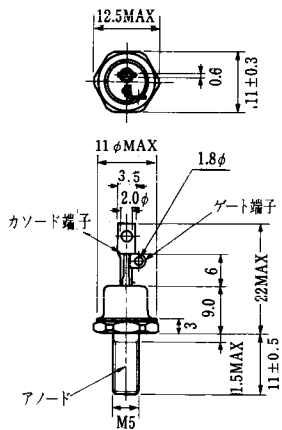


注3. スwitching時間は抵抗負荷時の値。

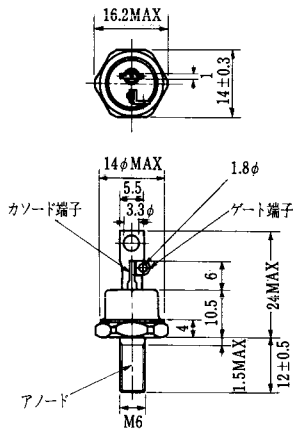
注4. FD: フリーホイール・ダイオード。

C _{oss} (pF)	f (kHz)	スイッチング時間 (ns)				R _G		I _C (A)	V _{CC} (V)	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	
		V _{CE} (V)	V _{GE} (V)	t _r 最大	t _d (ON) 最大	t _f 最大	t _d (OFF) 最大			V _F (V)	I _F (A)	t _{rr} (ns)	I _F (A)	di/dt (A/μs)	R _{th(j-c)} (°C/W)					
															最大					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
60000	10	0	700	400	350	800	2.1	300	300	2.5	300	200	300	-600	0.11	0.24	MG1-1A	M-9B1C	F D付	CM300HA-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	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	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

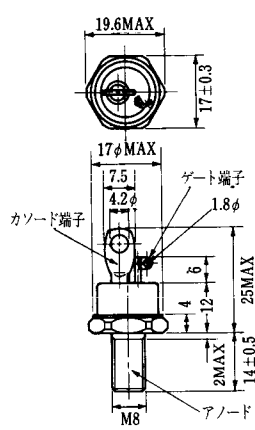
FD-1



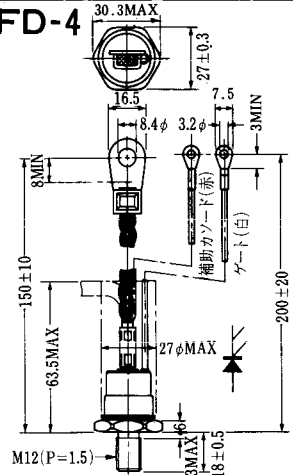
FD-2



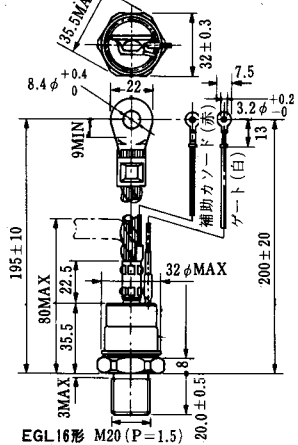
FD-3



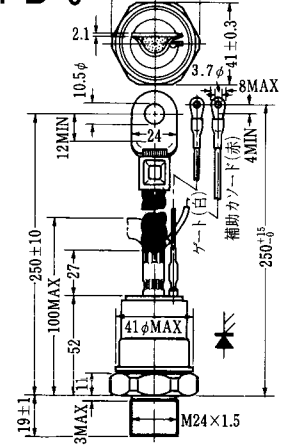
FD-4



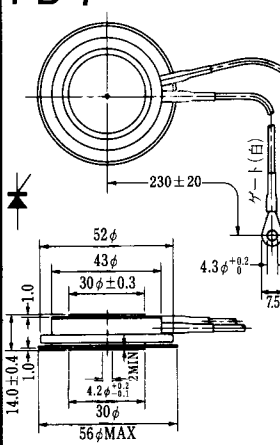
FD-5



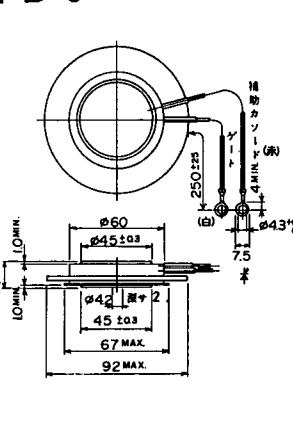
FD-6



FD-7



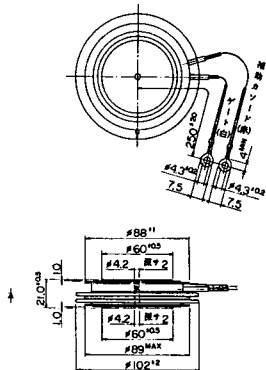
FD-8



FD-9

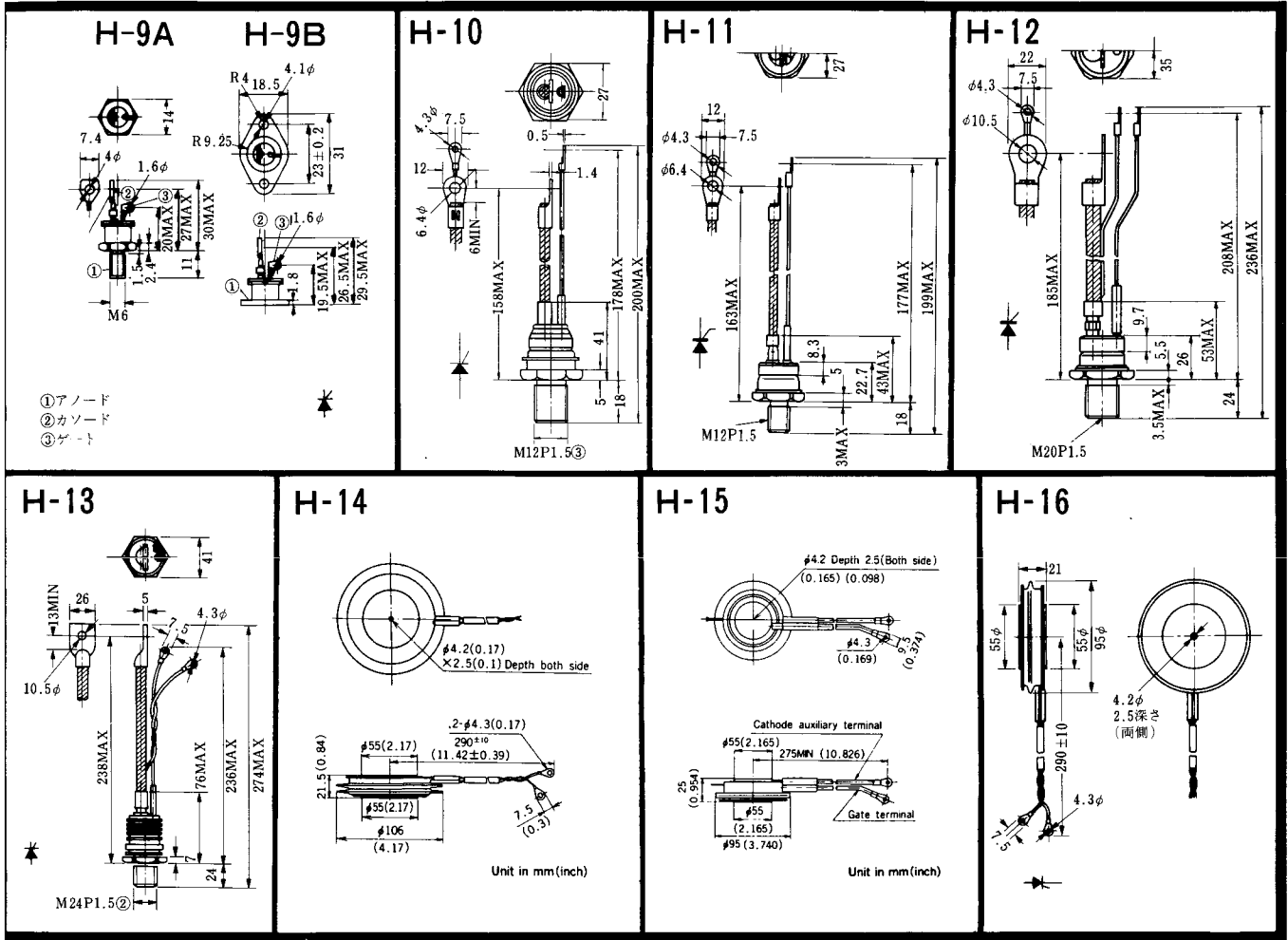


FD-10

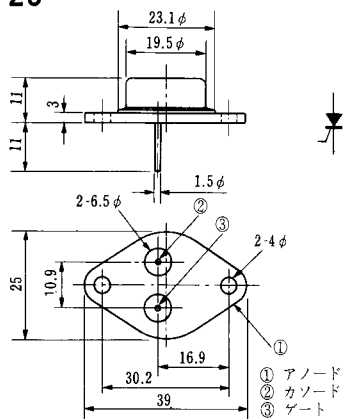


FD-12

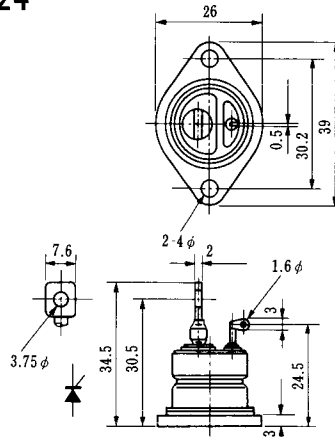




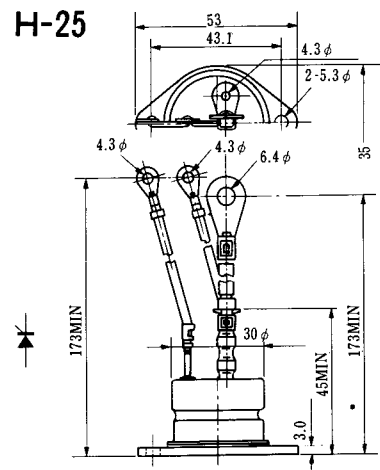
H-23



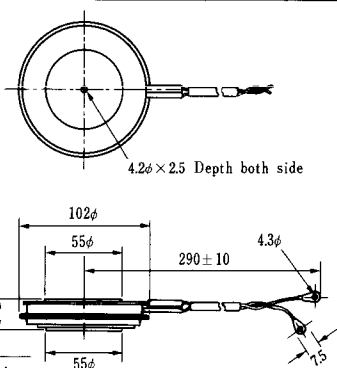
H-24



H-25

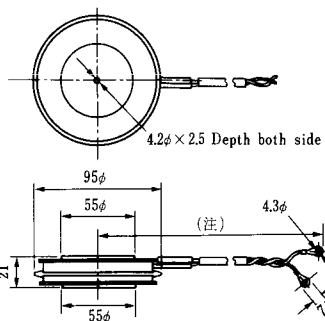


H-26



Type	Direction of polarity
CA12	

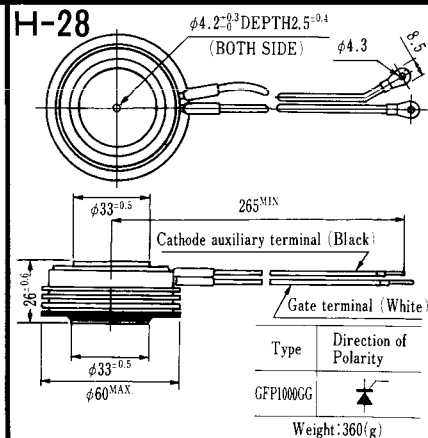
H-27



Type	Direction of polarity
CF11V	

(注) CC11V : 400 ± 10
CF11V : 250 ± 10

H-28



Type	Direction of Polarity
GFP100GG	

Weight: 360(g)

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



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



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

M-1



M-2



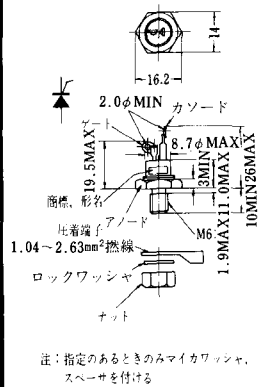
M-3



M-4



M-5



M-6



M-7



M-8



M-9



M-10



M-11



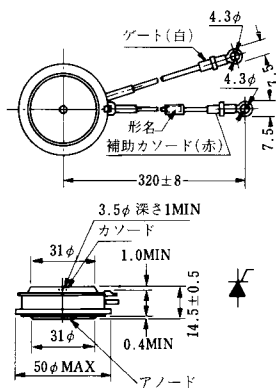
M-12



M-13



M-14

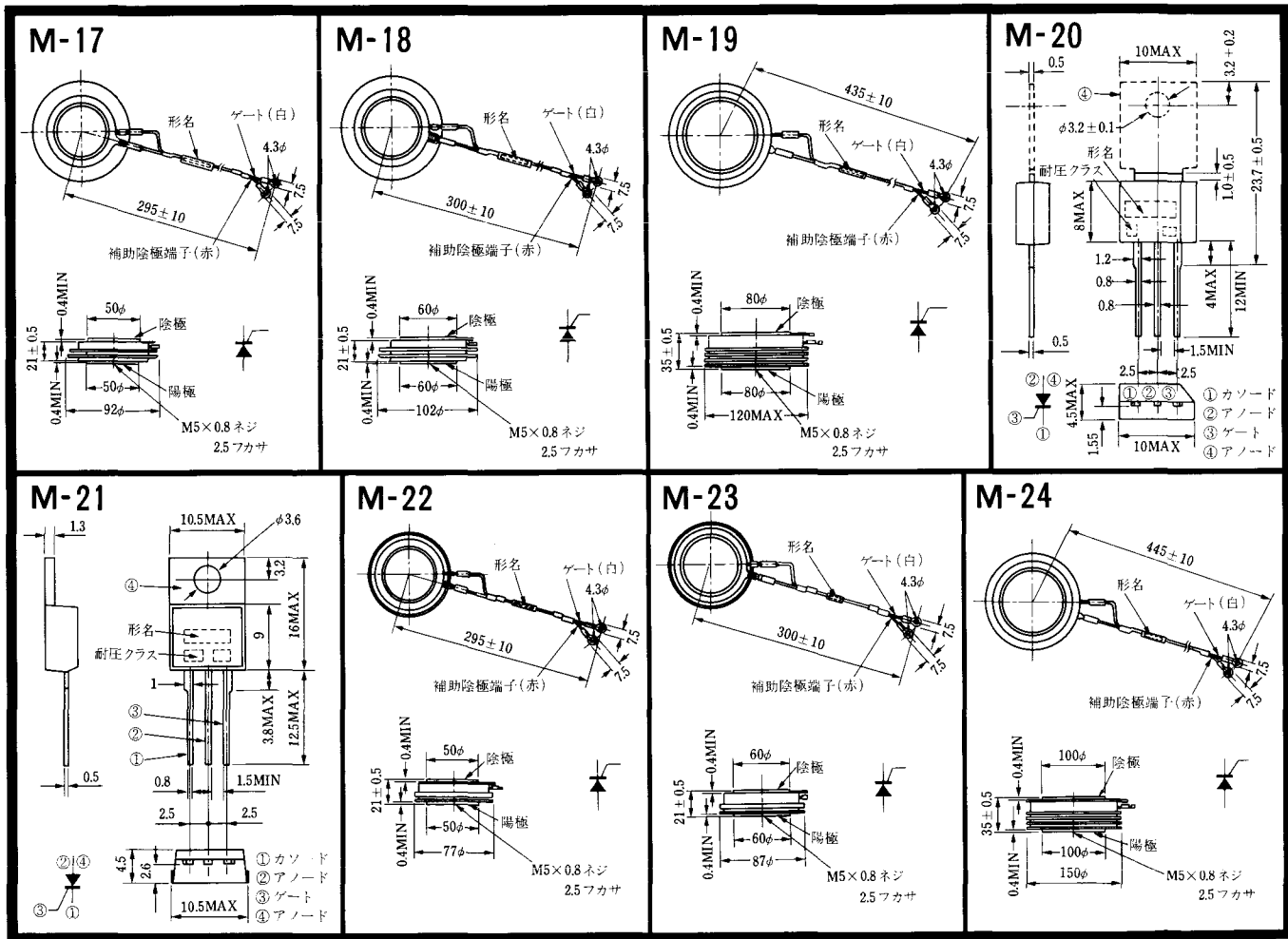


M-15



M-16





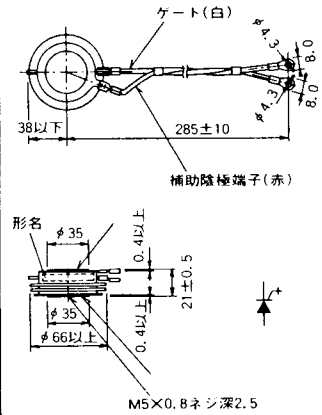
M-25



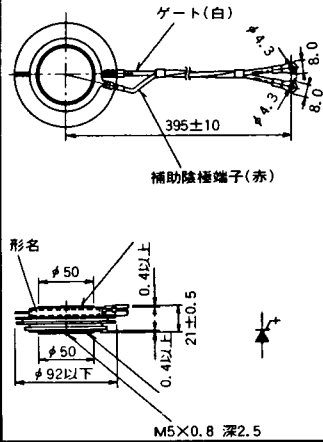
M-26



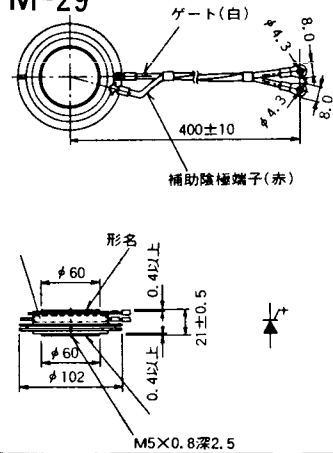
M-27



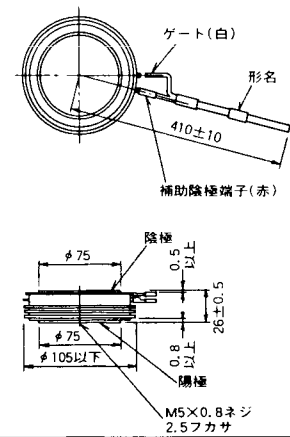
M-28



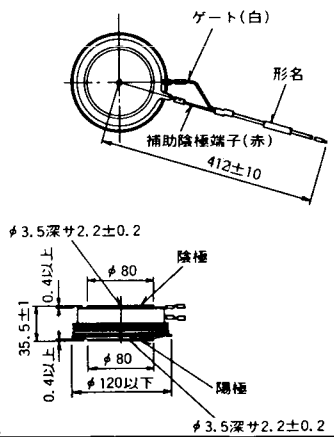
M-29



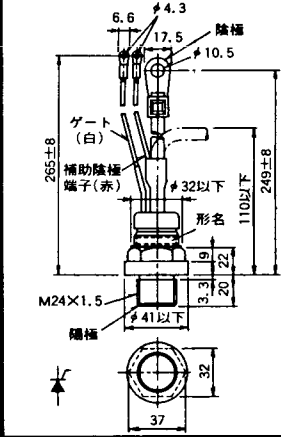
M-30



M-31



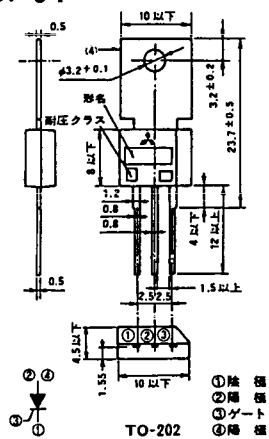
M-32



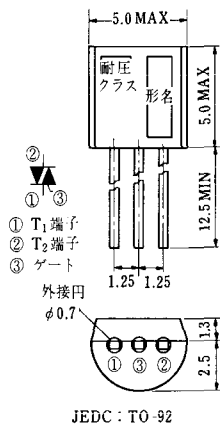
M-33



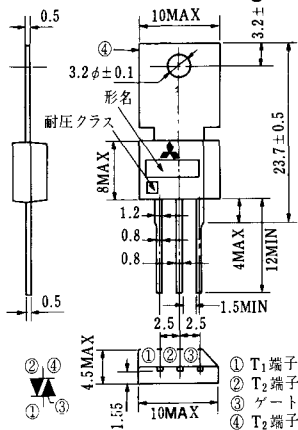
M-34



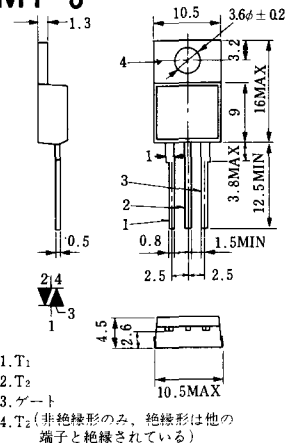
MT-1



MT-2

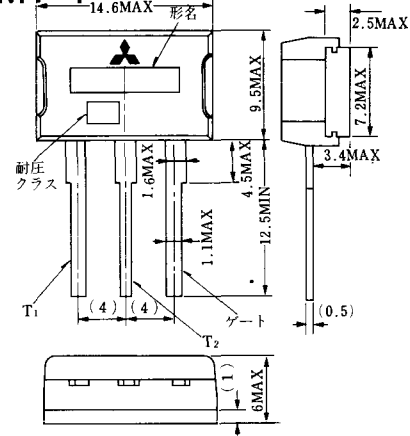


MT-3

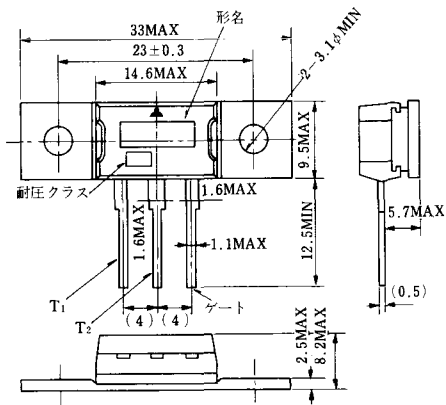


1. T₁
2. T₂
3. ゲート
4. T₂ (非絶縁形のみ、絶縁形は他の端子と絶縁されている)

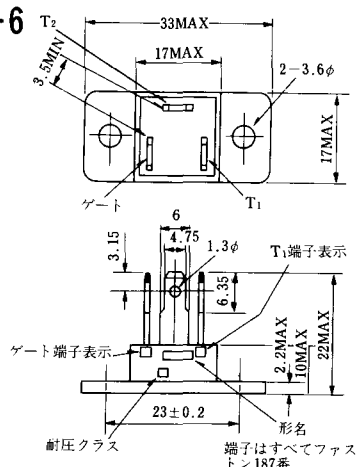
MT-4



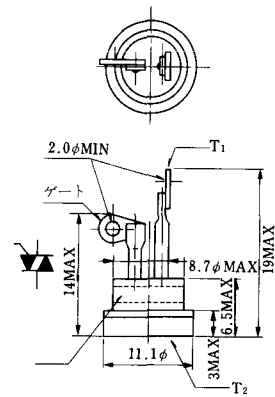
MT-5



MT-6



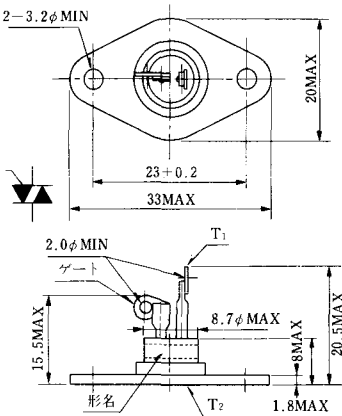
MT-7



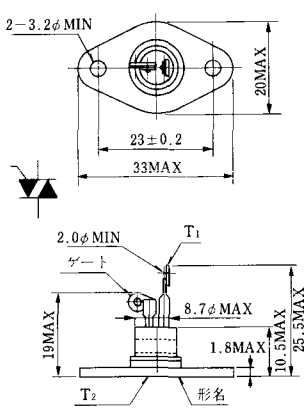
MT-8



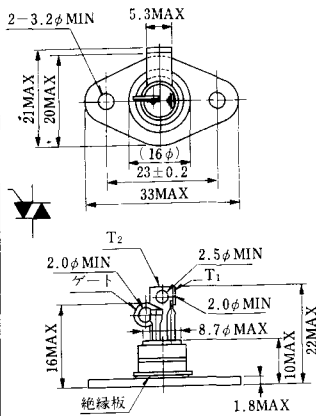
MT-9



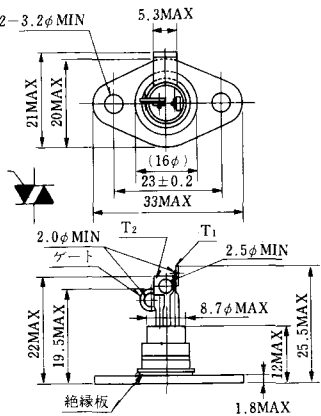
MT-10



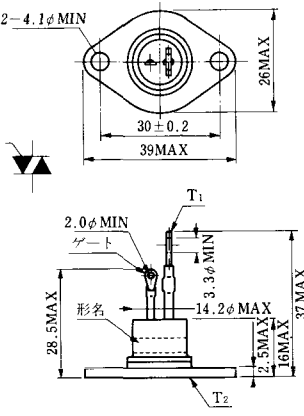
MT-11



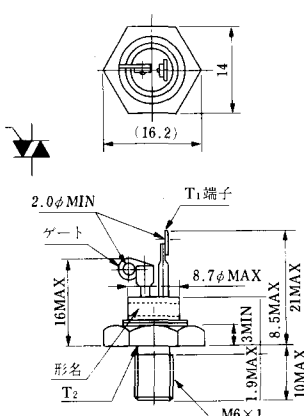
MT-12



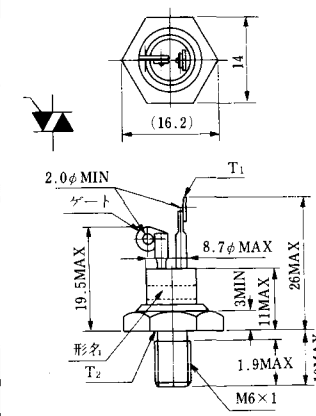
MT-13



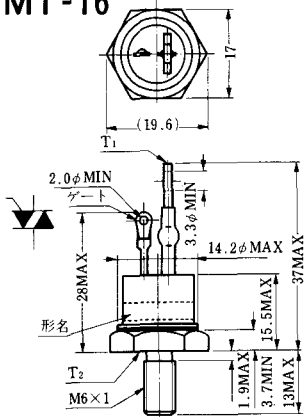
MT-14



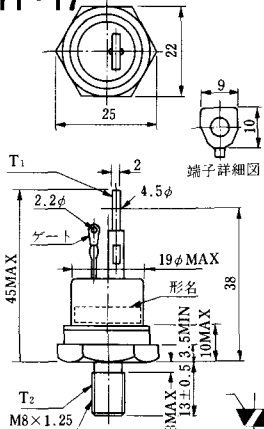
MT-15



MT-16

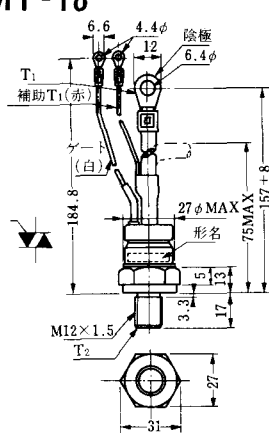


MT-17

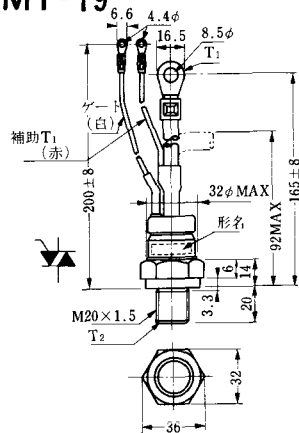


端子詳細図

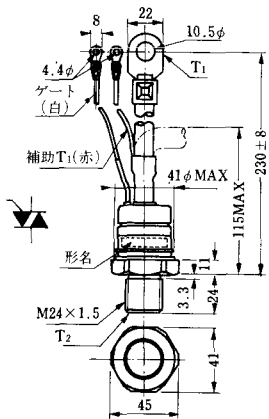
MT-18



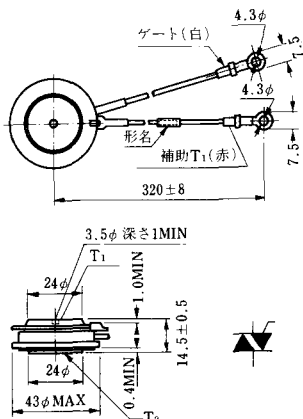
MT-19



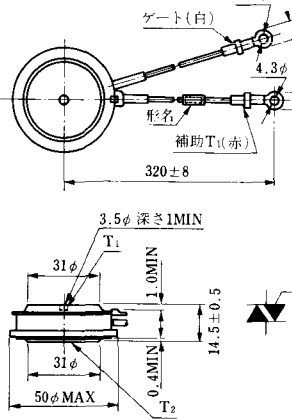
MT-20



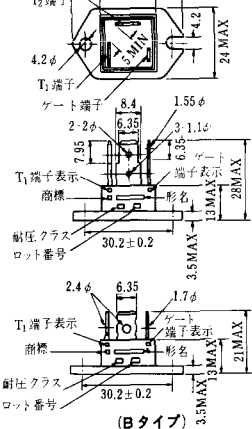
MT-21

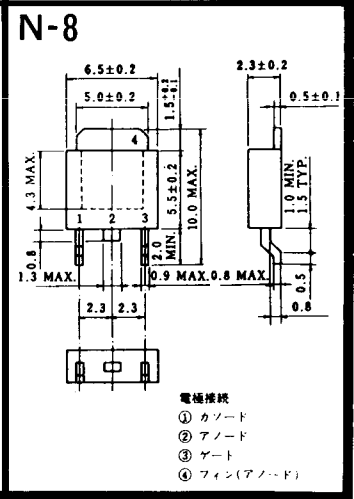
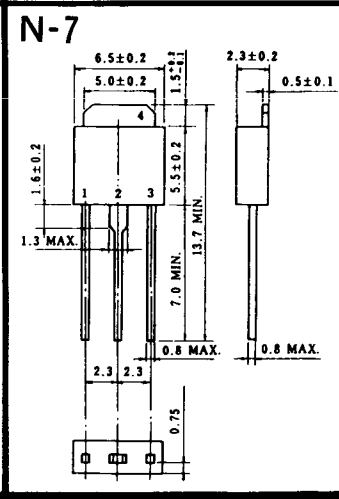
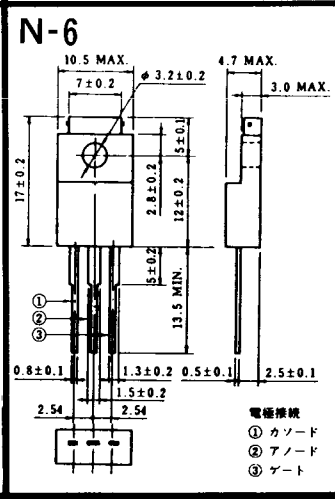
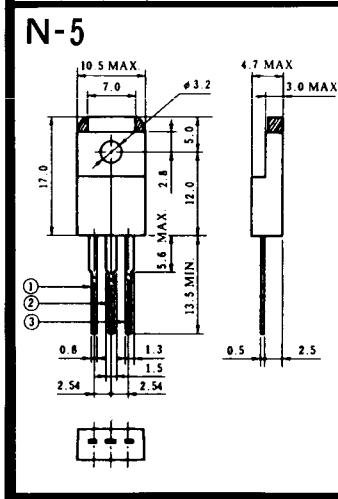
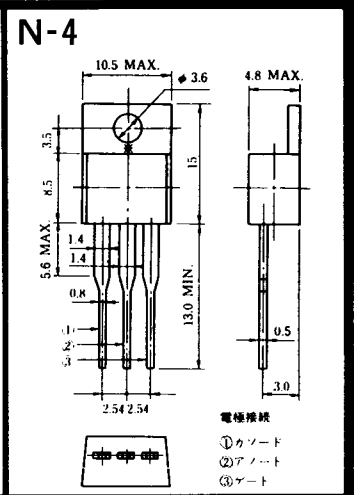
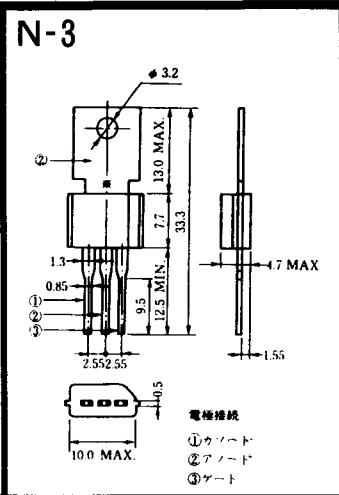
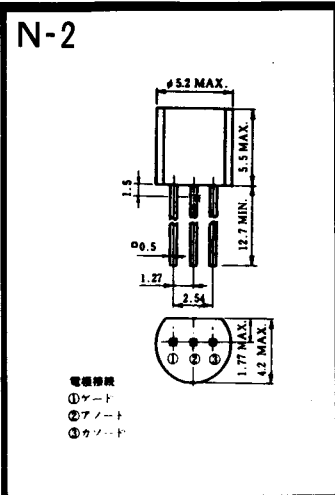
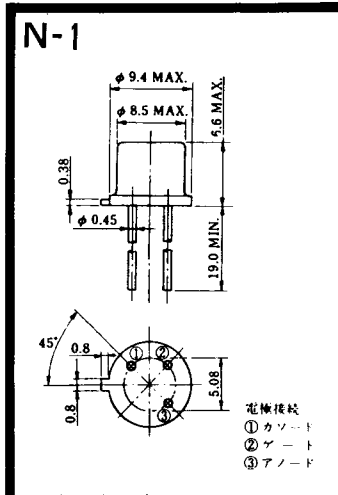


MT-22

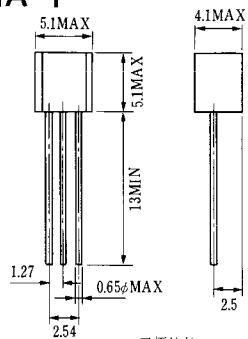


MT-23





NA-1

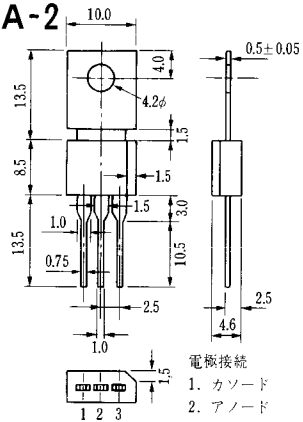


電極接続

1. ゲート
2. アノード
3. カソード

JEDEC: TO-92

NA-2

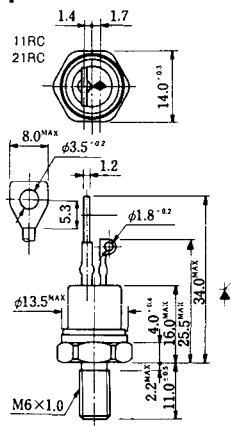


電極接続

1. カソード
2. アノード
3. ゲート

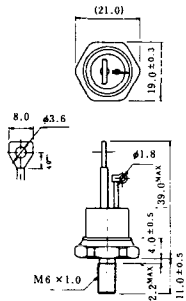
JEDEC: TO-202AA

NI-1



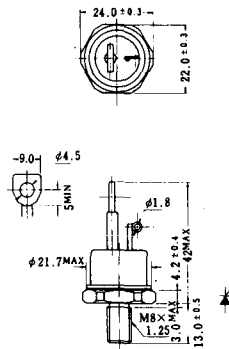
NI-2

29RD



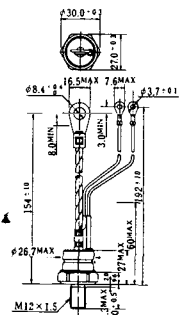
NI-3

39RC
59RC
39RF
59RF



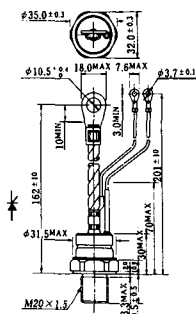
NI-4

68RP, 88RP, 108RP, 68RS,
88RS, 78RT, 88RLD, 88RLE,
88RLF, 88RLF, 88RLH, 108RLE



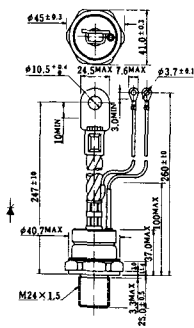
NI-5

158RP, 208RP, 128RS, 178RS,
156RT, 178RLD, 178RLE,
178RLF, 178RLG, 178RLH,
208RLE



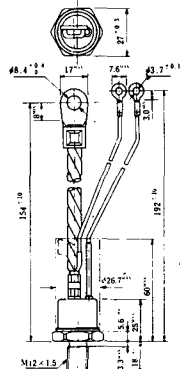
NI-6

308RP, 408RP, 508RP, 278RS,
358RS, 258RT, 258RLD, 258RLG,
258RLH, 308RLE, 308RLF,
358RLE



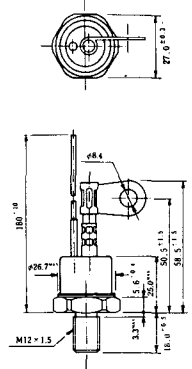
NI-7

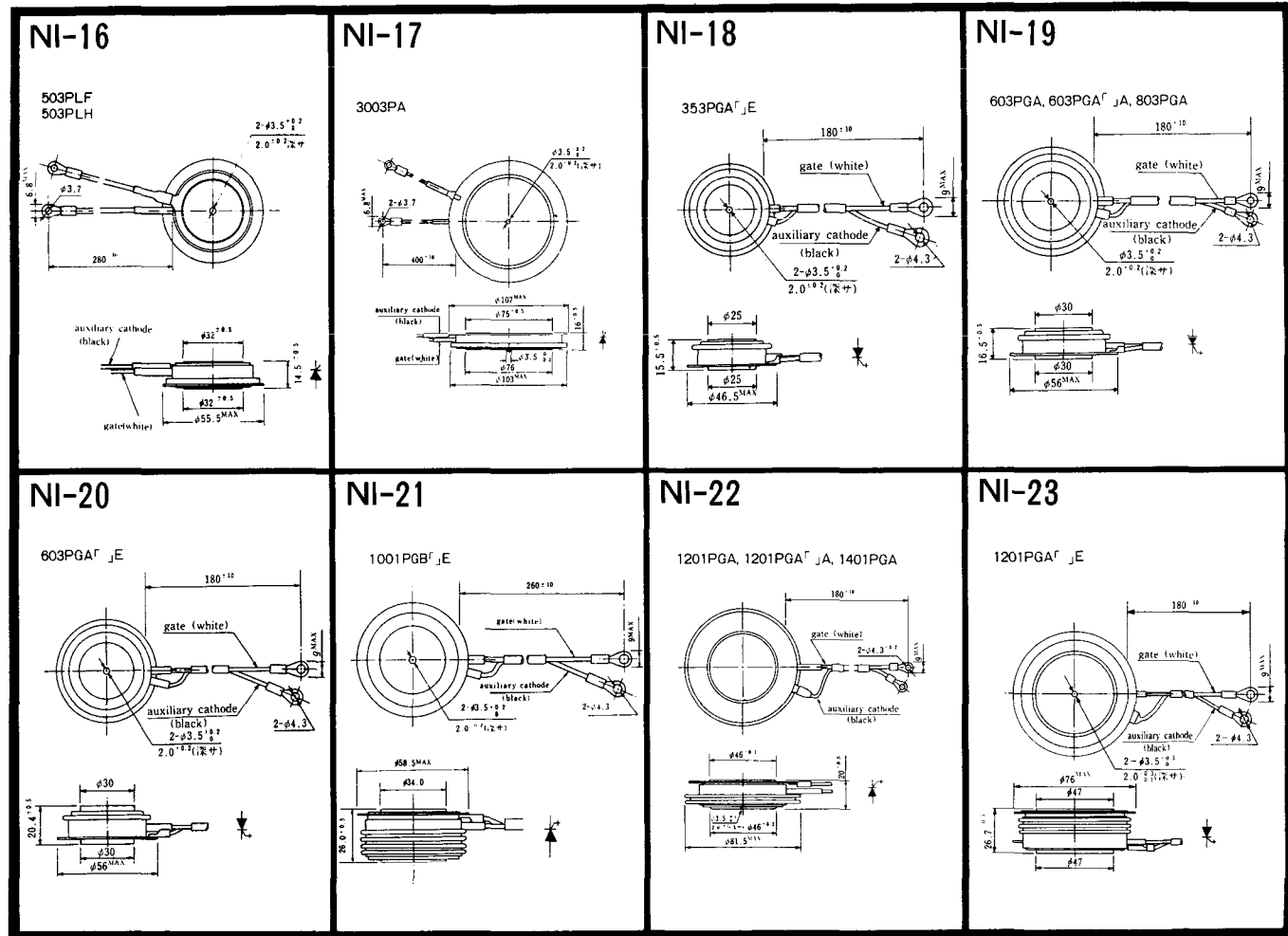
89RW_{JL}
129RW_{JL}



NI-8

89RW
129RW





NI-24

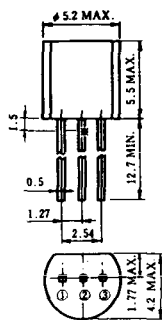
2001PGB^r JE



NI-25

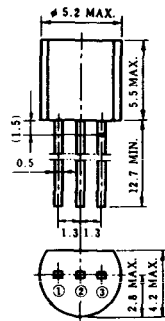
NI-26

NT-1



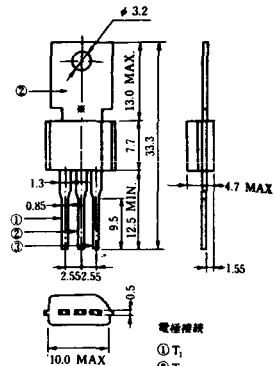
電極接続
① T₁
② ゲート
③ T₂

NT-2



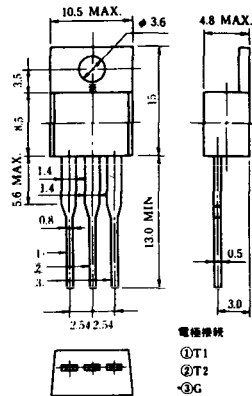
電極接続
① T₁
② ゲート
③ T₂

NT-3



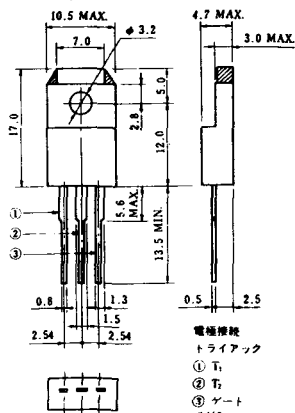
電極接続
① T₁
② T₂
③ ゲート

NT-4



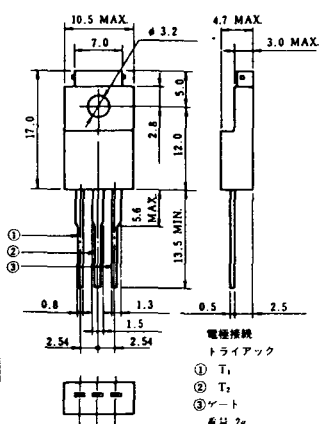
電極接続
① T₁
② T₂
③ G

NT-5



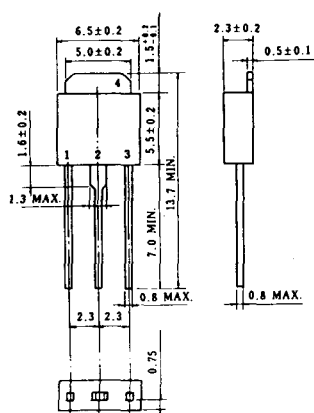
電極接続
トライアック
① T₁
② T₂
③ ゲート
④ G

NT-6

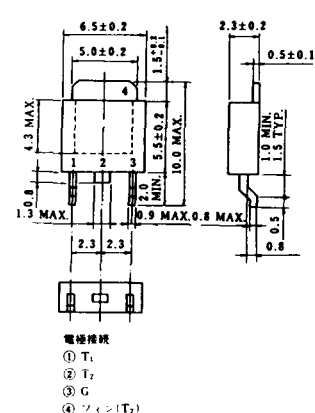


電極接続
トライアック
① T₁
② T₂
③ ゲート
④ G
⑤ 2k

NT-7

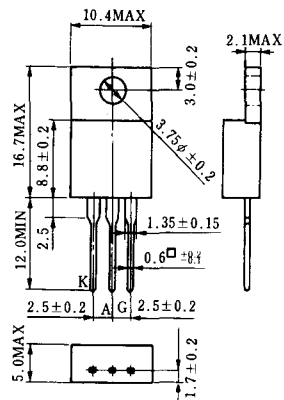


NT-8

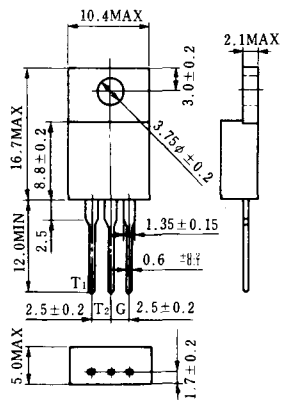


電極接続
① T₁
② T₂
③ G
④ ソフト(T₂)

S-1



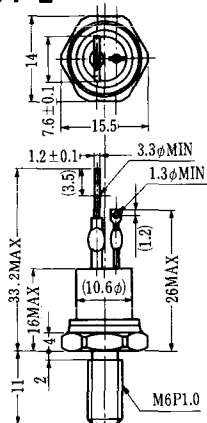
ST-1



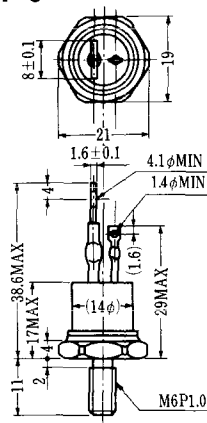
SA-1



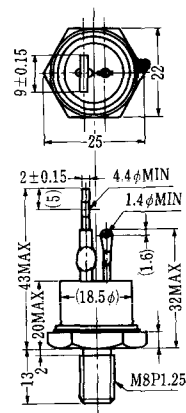
SA-2



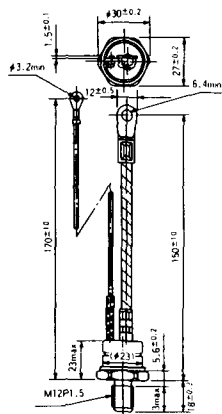
SA-3



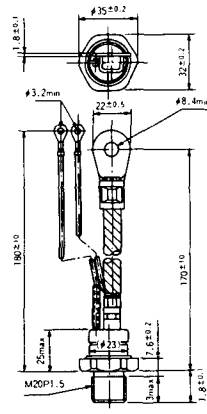
SA-4



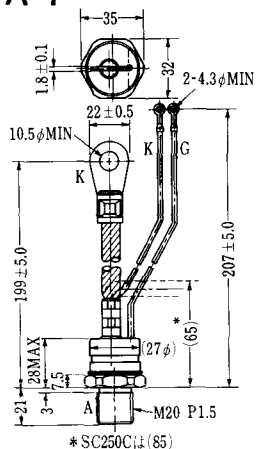
SA-5



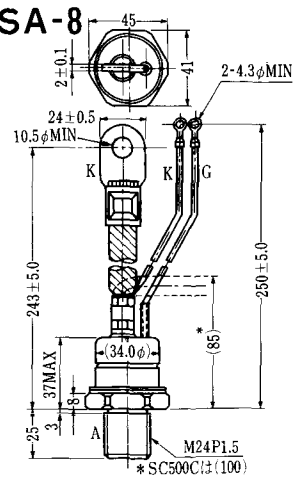
SA-6



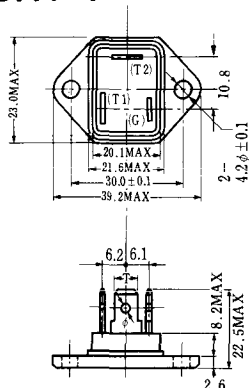
SA-7



SA-8

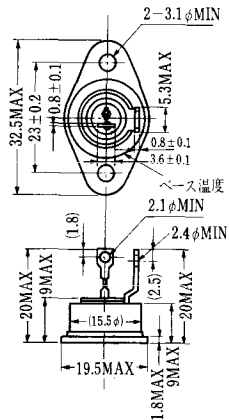


SAT-1



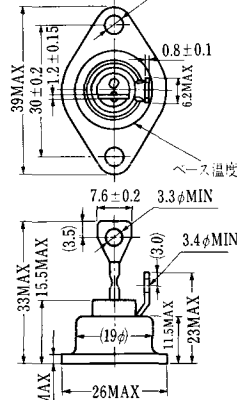
T1 端子: フラスト > 250 (T=6.35, t=0.8, φ=1.65)
 T2 端子: フラスト > 250 (T=6.35, t=0.8, φ=1.65)
 G 端子: フラスト > 187 (T=4.75, t=0.5, φ=1.3)

SAT-2

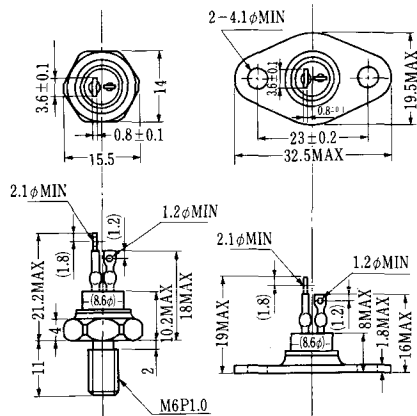


へス温度

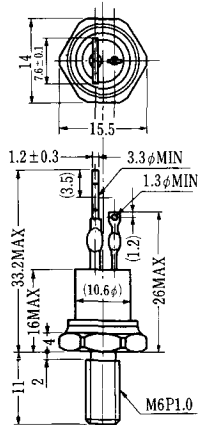
SAT-3



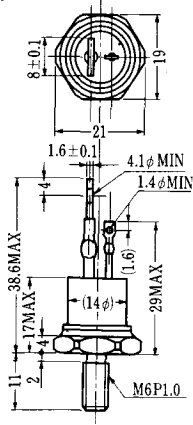
SAT-4



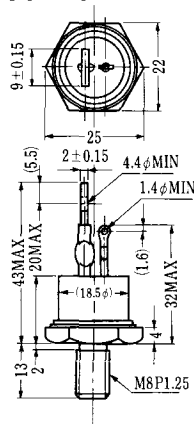
SAT-5



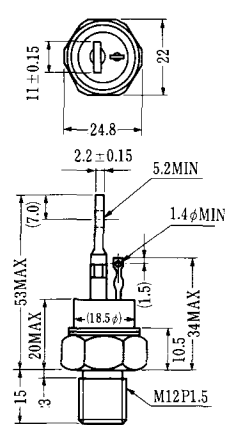
SAT-6



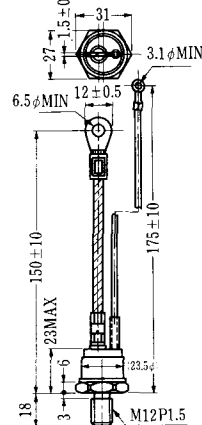
SAT-7



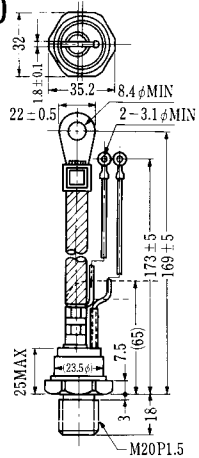
SAT-8



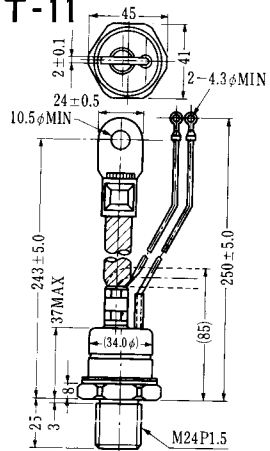
SAT-9



SAT-10



SAT-11

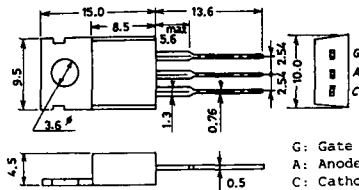


SY-1 (1096A)



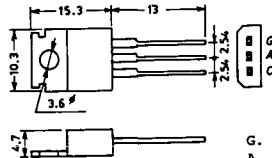
C: Cathode
A: Anode
G: Gate

SY-2 (1151)



G: Gate
A: Anode
C: Cathode

SY-3 (1104)



G: Gate
A: Anode
C: Cathode

SY-4 (1150)



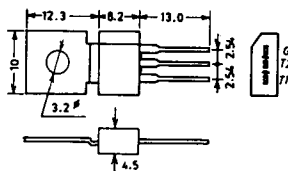
G: Gate
A: Anode
C: Cathode

1097A



G: Gate

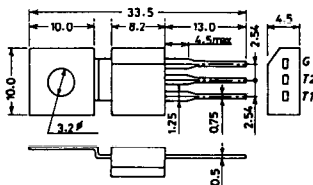
1102



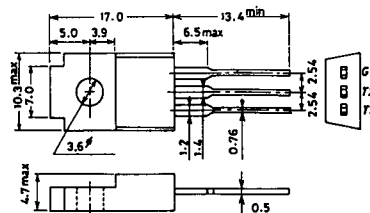
1141



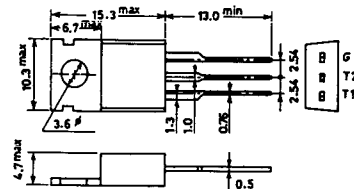
1142



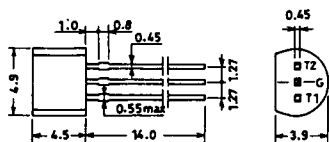
1144



1155

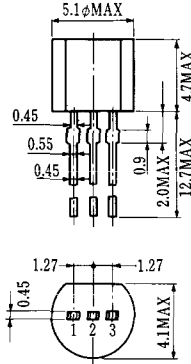


1192A



G: Gate

T-1 (13-5A1A)



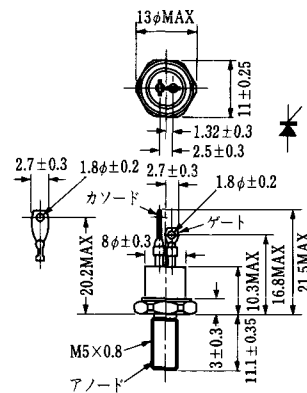
- 1 ゲート
- 2 アノード
- 3 カソード

T-2 (13-8A1A)



1. カソード
2. ゲート
3. アノード(ケース)

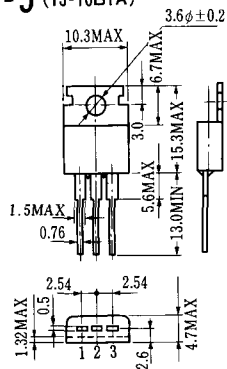
T-3 (13-8C1A)



アノード

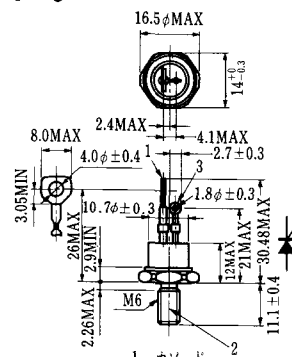
- 1 カソード
- 2 アノード
- 3 ゲート

T-5 (13-10B1A)



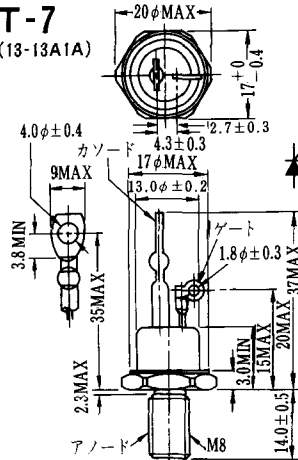
- 1 カソード
- 2 アノード
- 3 ゲート

T-6 (13-11D1A)



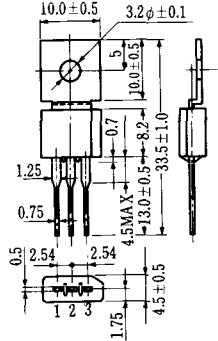
- 1 カソード
- 2 アノード
- 3 ゲート

T-7 (13-13A1A)

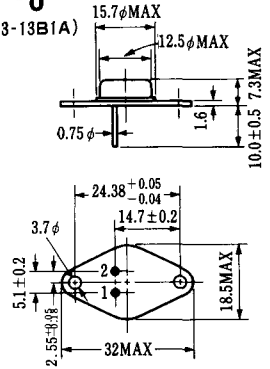


アノード

T-4 (13-10A1A)

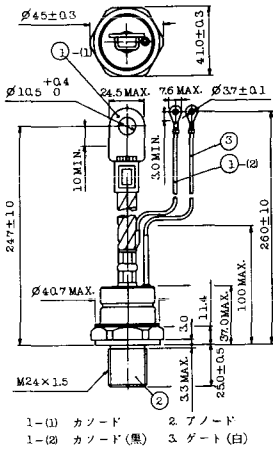


T-8 (13-13B1A)

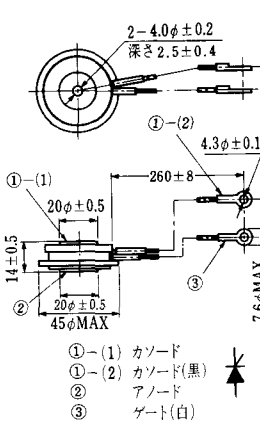


1. ゲート
2. カソード
3. アノード(ケース)

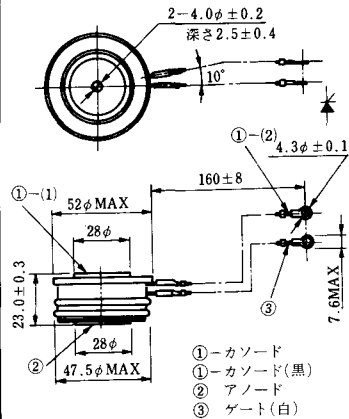
T-17 (13-42A1A)



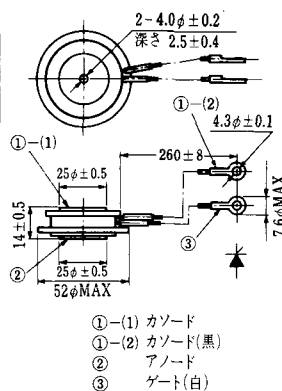
T-18 (13-45D1A)



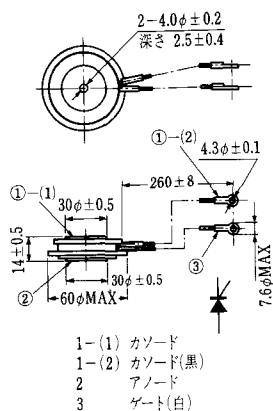
T-19 (13-52B1A)



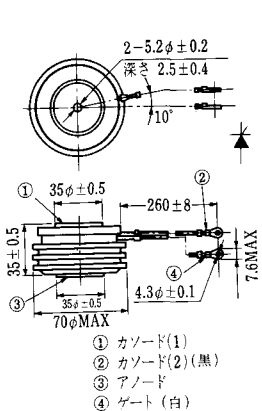
T-20 (13-52C1A)



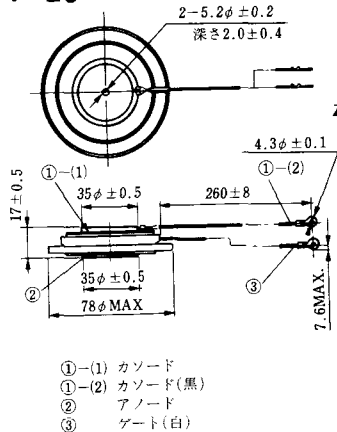
T-21 (13-60A1A)



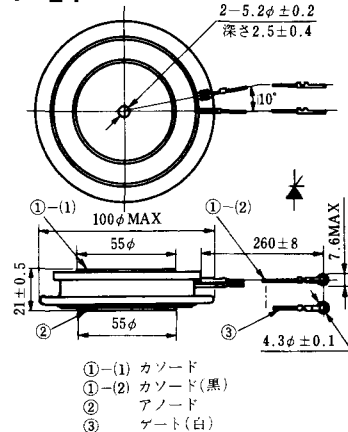
T-22 (13-70C1A)



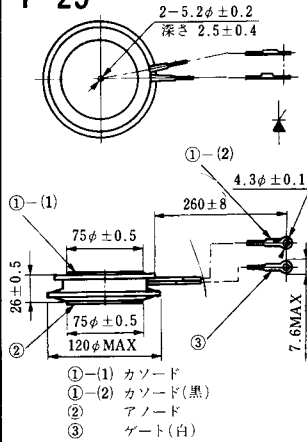
T-23 (13-78A1A)



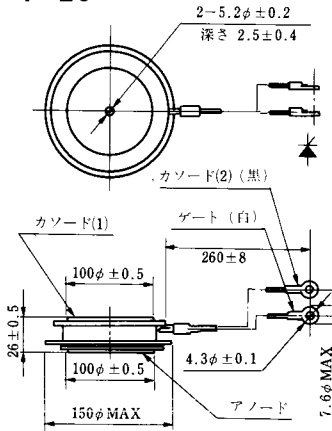
T-24 (13-100C1A)



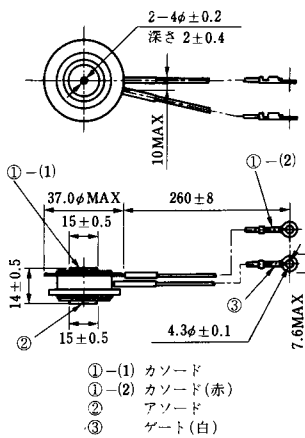
T-25 (13-120A2A)



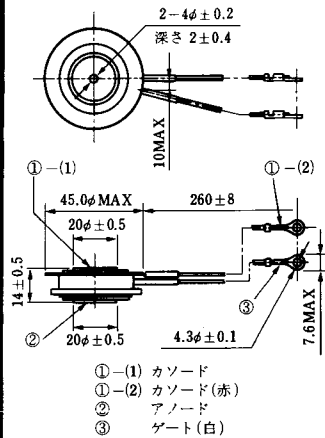
T-26 (13-150A1A)



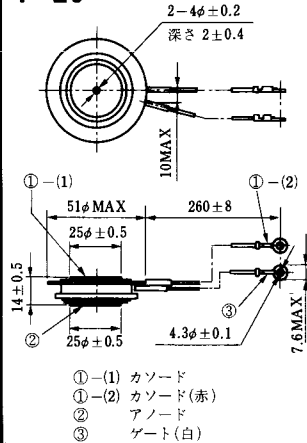
T-27 (13-37A1A)



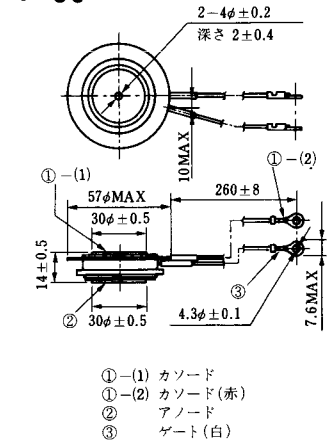
T-28 (13-45E1A)



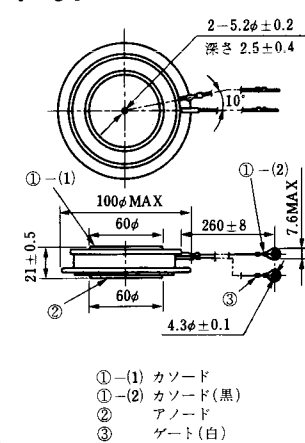
T-29 (13-51A1A)



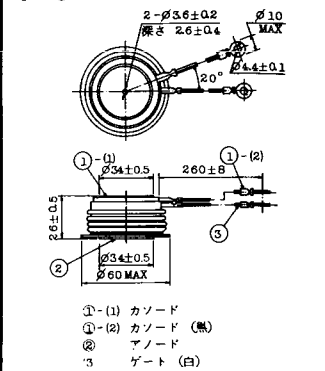
T-30 (13-57A1A)



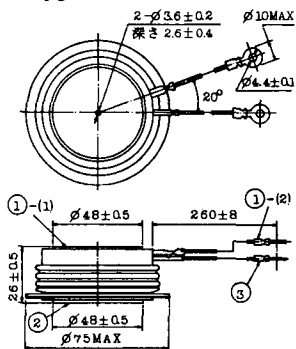
T-31 (13-100E1A)



T-32 (13-60E3A)

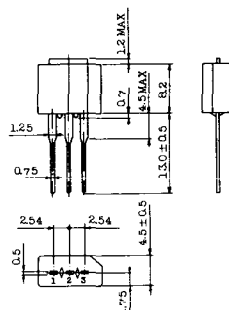


T-49 (13-75A1A)



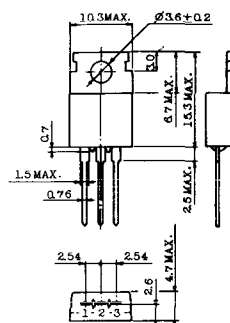
- 1-(1) カソード
- 1-(2) カソード (黒)
- 2 アノード
- 3 ゲート (白)

T-50 (13-10A3A)



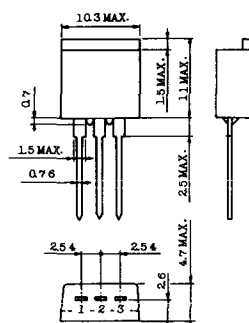
- 1 カソード
- 2 アノード
- 3 ゲート

T-51 (13-10D1A)



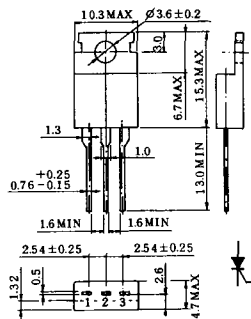
- 1 カソード
- 2 アノード
- 3 ゲート

T-52 (13-10D2A)



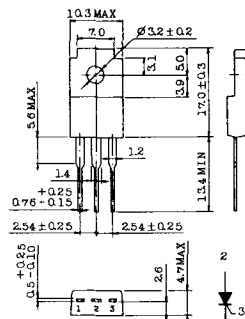
- 1 カソード
- 2 アノード
- 3 ゲート

T-53 (13-10E1B)



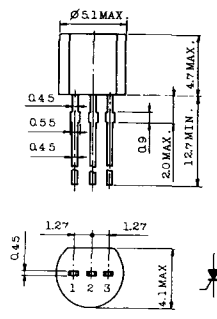
- 1 カソード
- 2 アノード
- 3 ゲート

T-54 (13-10F1B)



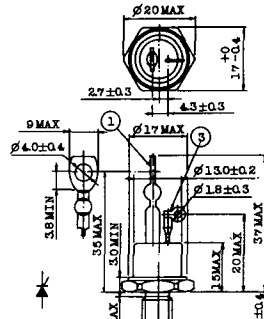
- 1 カソード
- 2 アノード
- 3 ゲート

T-55 (13-5A1D)



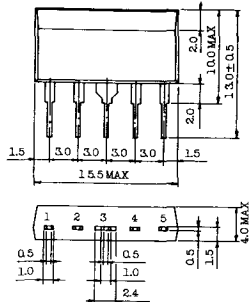
- 1 カソード
- 2 アノード
- 3 アノード

T-56 (13-13C1A)



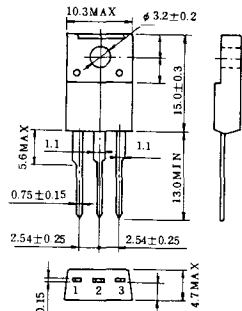
- 1 カソード
- 2 アノード
- 3 ゲート

T-57 (12-16C1A)



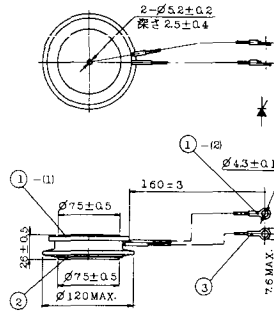
1. アノード (主)
2. ゲート (主)
3. カソード (共通)
4. ゲート (補助)
5. アノード (補助)

T-58 (13-10H1B)



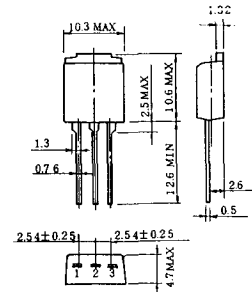
1. カソード
2. アノード
3. ゲート

T-59 (13-120A1A)



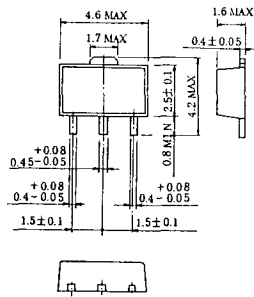
- 1-1) カソード
- 1-12) カソード (黒)
- 2) アノード
- 3) ゲート (白)

T-60



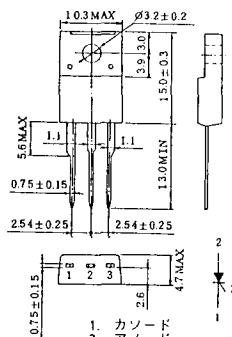
1. カソード
2. アノード
3. ゲート

T-61 (13-5B1A)



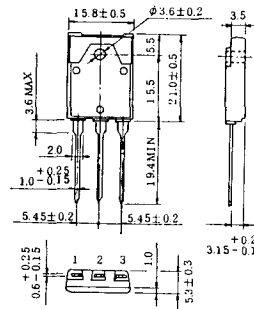
1. ゲート
2. アノード
3. カソード

T-62 (13-10H1A)



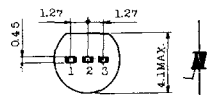
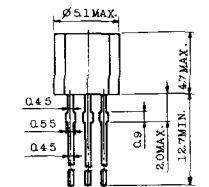
1. カソード
2. アノード
3. ゲート

T-63 (13-16A1B)



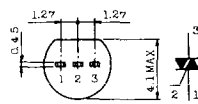
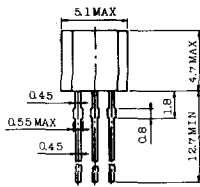
1. カソード
2. アノード
3. ゲート

TT-1



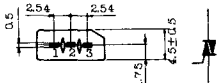
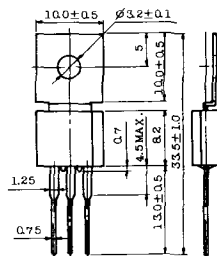
- 1 ゲート
- 2 T₂
- 3 T₁

TT-2



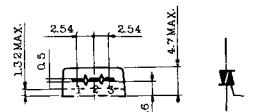
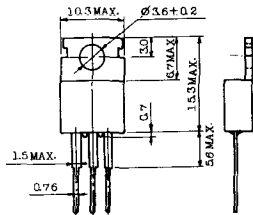
- 1 T₁
- 2 ゲート
- 3 T₂

TT-3



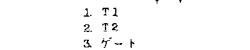
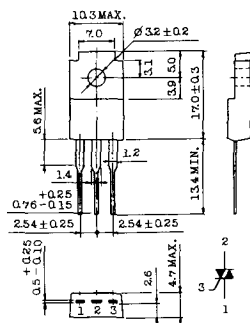
- 1 T₁
- 2 T₂
- 3 ゲート

TT-4



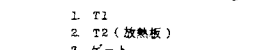
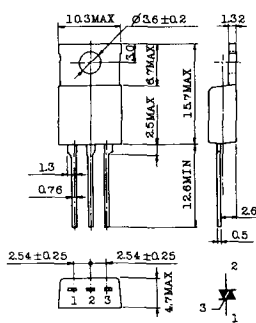
- 1 T₁
- 2 T₂
- 3 ゲート

TT-5



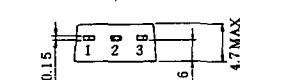
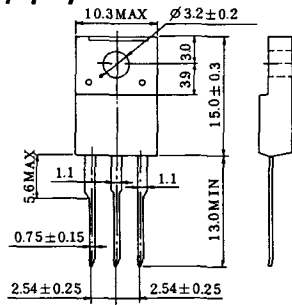
- 1 T₁
- 2 T₂
- 3 ゲート

TT-6



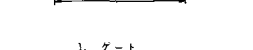
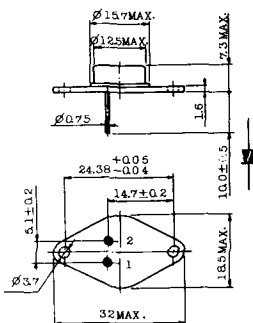
- 1 T₁
- 2 T₂ (放熱板)
- 3 ゲート

TT-7



- 1 T₁
- 2 T₂
- 3 ゲート

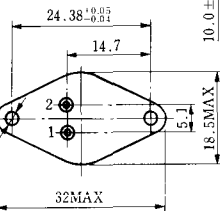
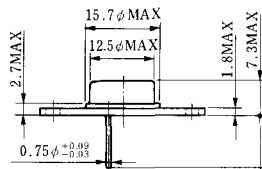
TT-8



- 1 ゲート
- 2 T₁
- T₂ (ケース)



TS-8

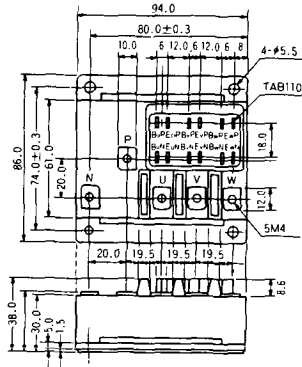


1. ベース
2. エミッタ
コレクタ
(ケース)

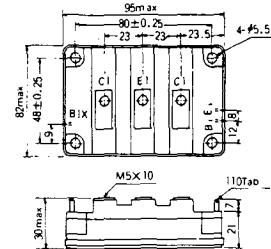
S-94B2A



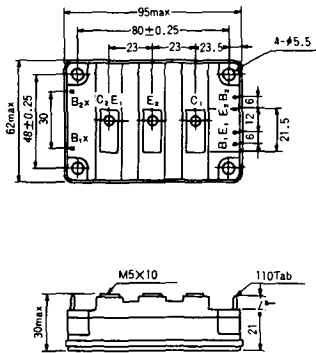
S-94D1A



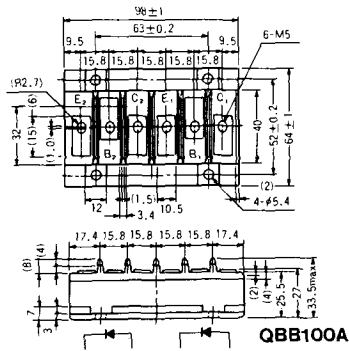
S-95A1A



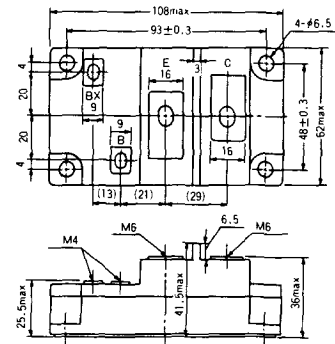
S-95B1A



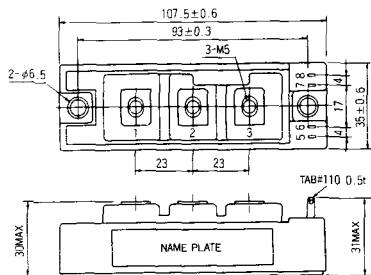
S-98B1B



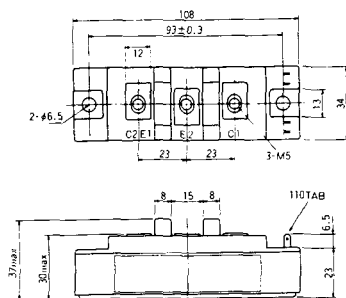
S-108A2A



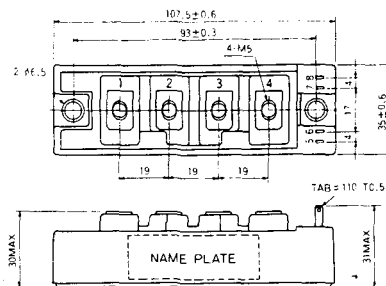
S-108B1A



S-108B1B



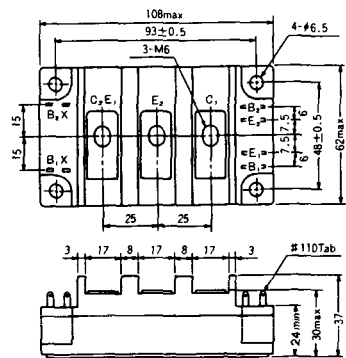
S-108B1C



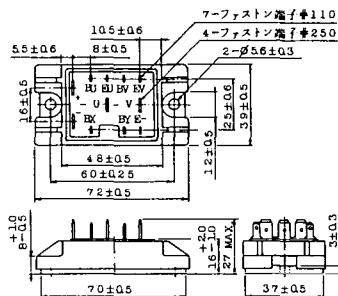
S-108B2A



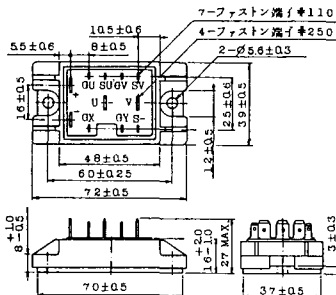
S-108B2B



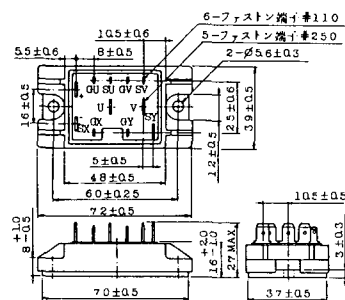
2-48A3A



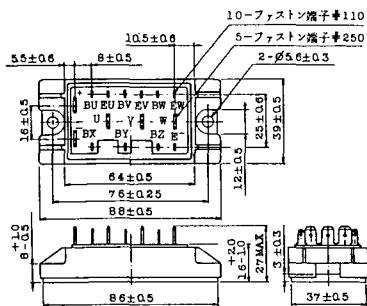
2-48A3B



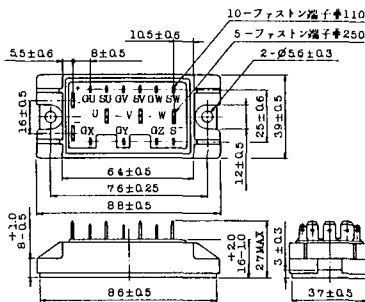
2-48A4A



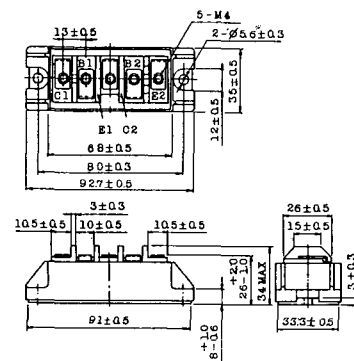
2-64A2A



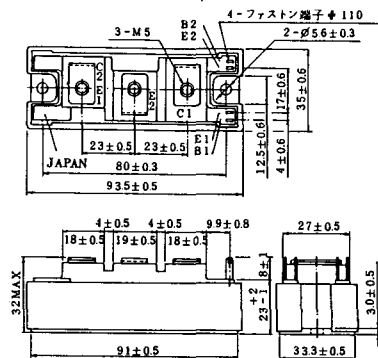
2-64A2B



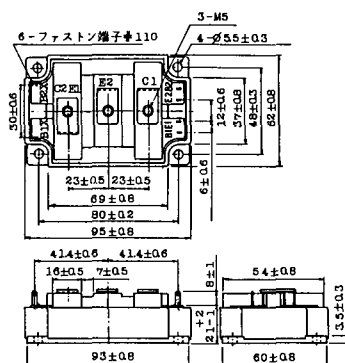
2-68A2A



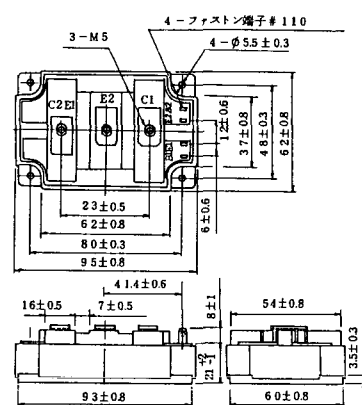
2-94D1A



2-96A3A



2-96A4A



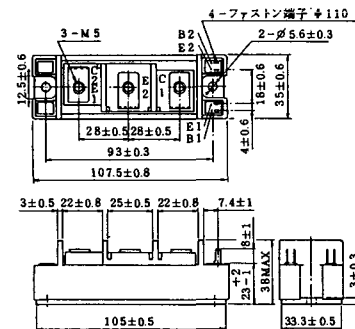
2-98B1A



2-98C2A



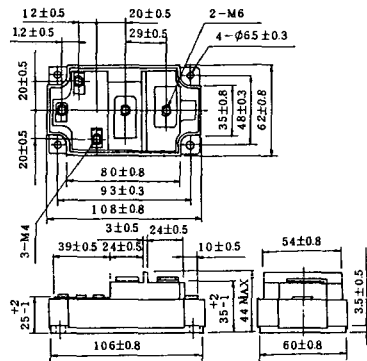
2-108A2A



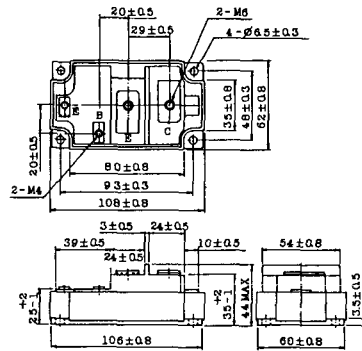
2-108B1A



2-109A3A



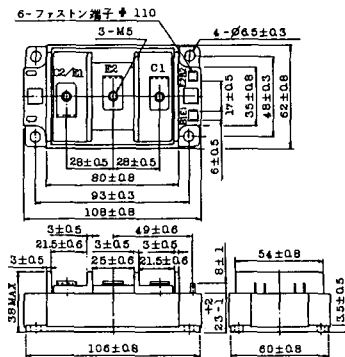
2-109A4A



2-109B3A

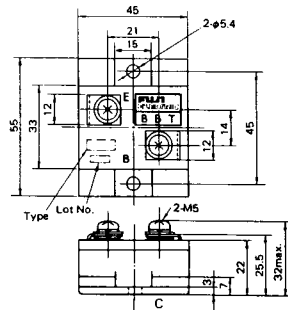


2-109B4A



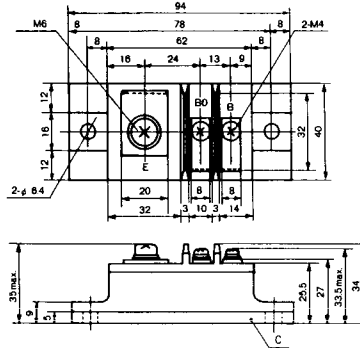
BBT-II

BBTII
1D200A-020



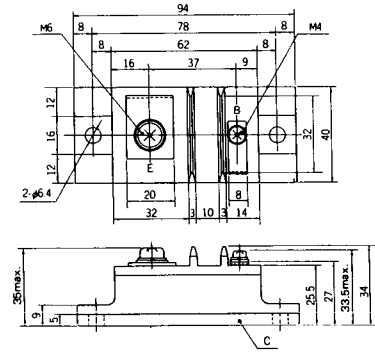
BBT-III

BBTIII
ETN31-055
ETM36-030
ETN36-030
ETN35-030



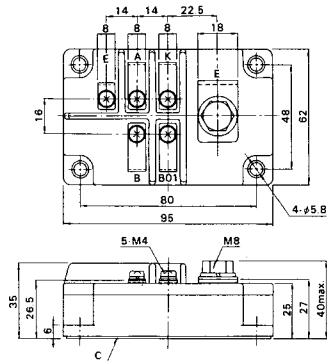
BBT-III

BBTIII
ETN01-055
ET1257

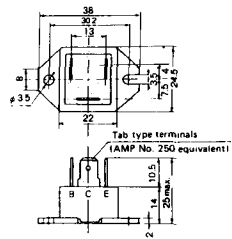


BBT-IV

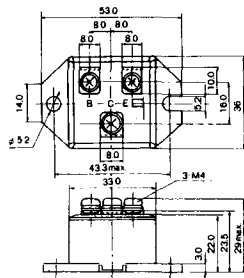
BBTIV
1D500A-030



M-101



M-102



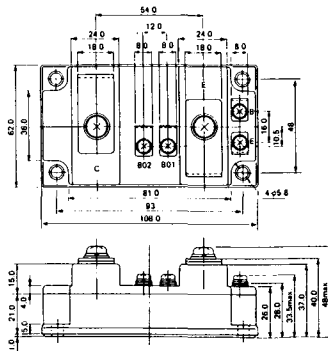
M-103



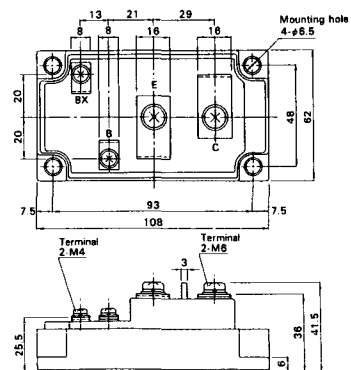
M-104



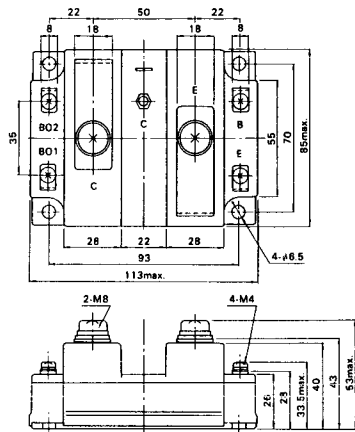
M-105



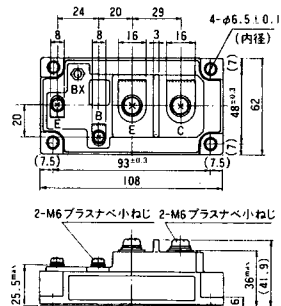
M-106



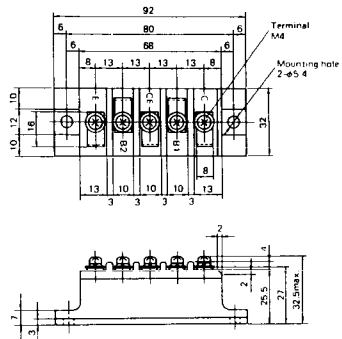
M-107



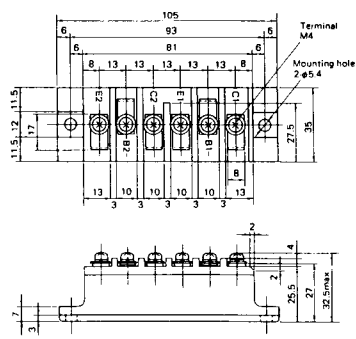
M-116



M-201



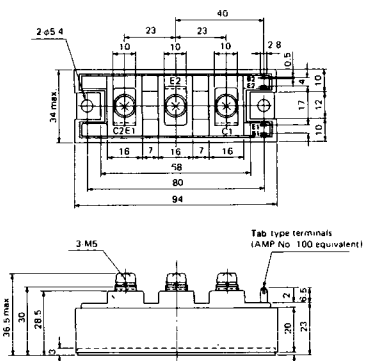
M-202



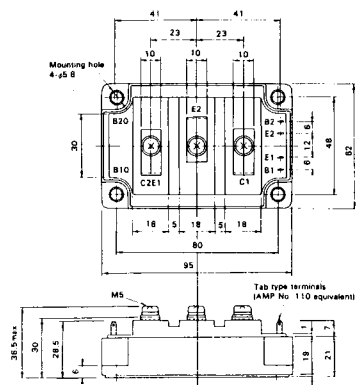
M-203



M-204



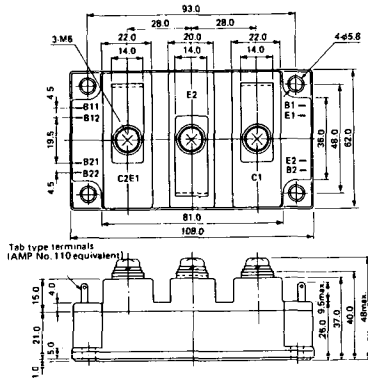
M-205



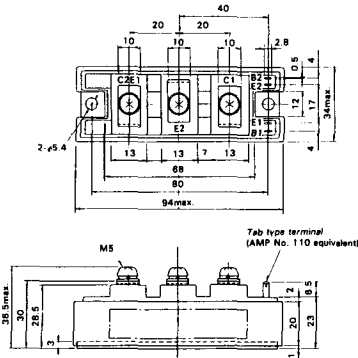
M-206



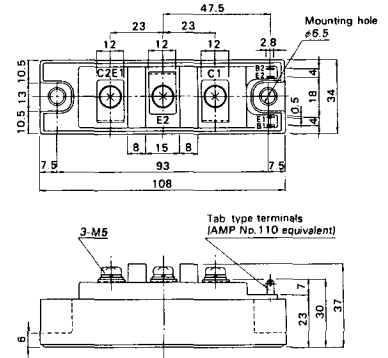
M-207



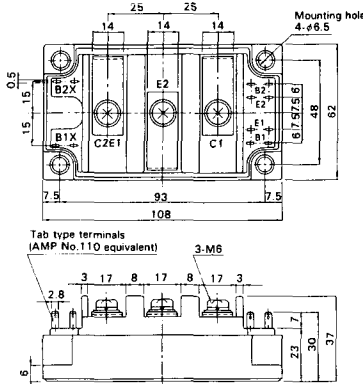
M-208



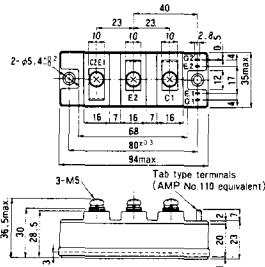
M-209



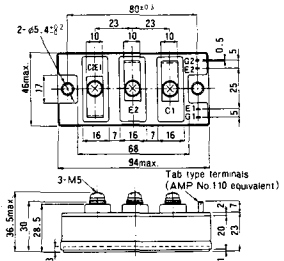
M-210



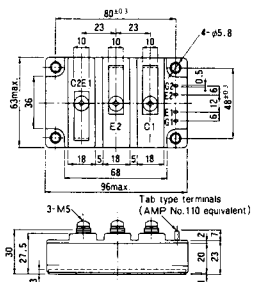
M-211



M-212

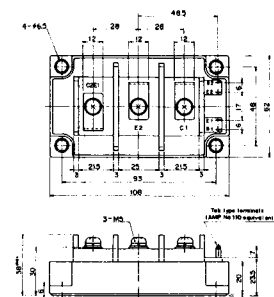


M-213

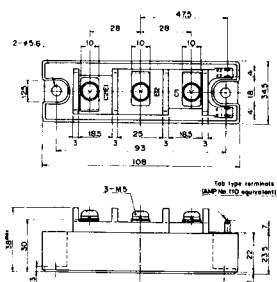


M-214

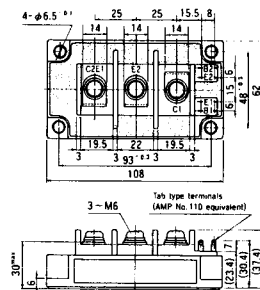
M-215



M-216



M-217



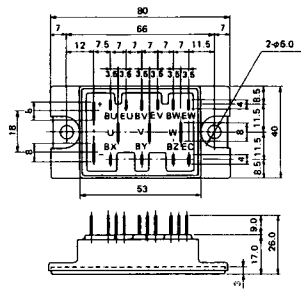
M-218



M-219



M-601



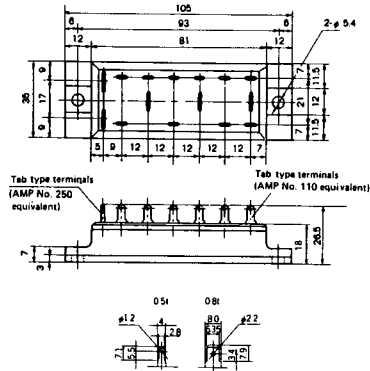
Tab type terminals
(AMP No. 110 equivalent)



Tab type terminals
(AMP No. 250 equivalent)



M-602



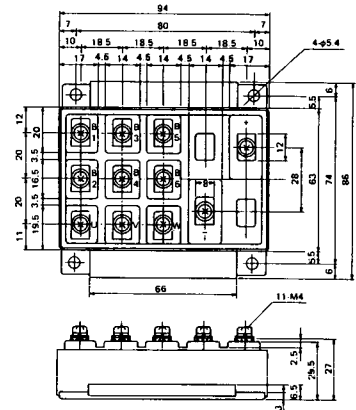
Tab type terminals
(AMP No. 250 equivalent)



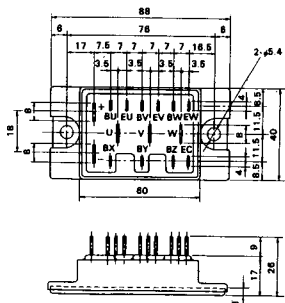
Tab type terminals
(AMP No. 110 equivalent)



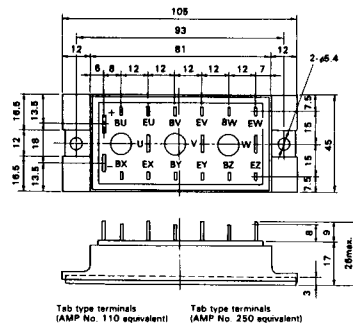
M-603



M-604



M-605



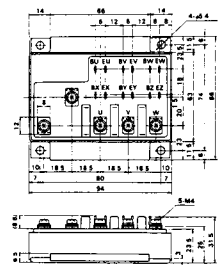
Tab type terminals
(AMP No. 110 equivalent)



Tab type terminals
(AMP No. 250 equivalent)



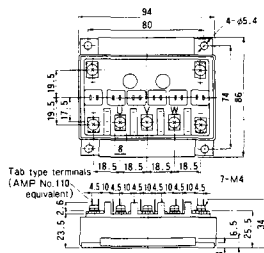
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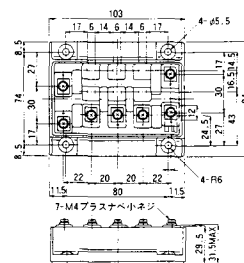
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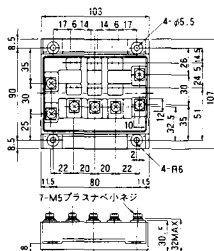
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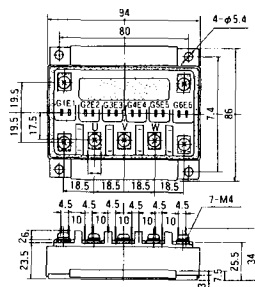
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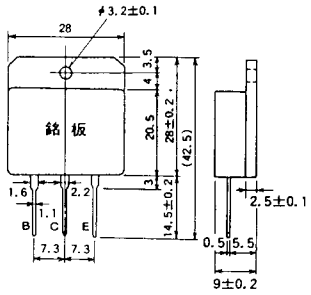
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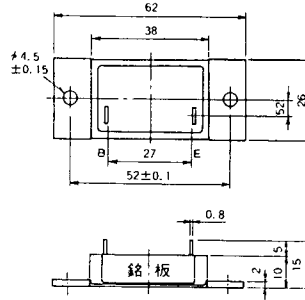
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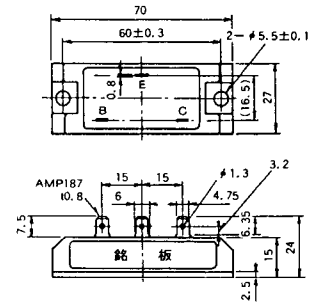
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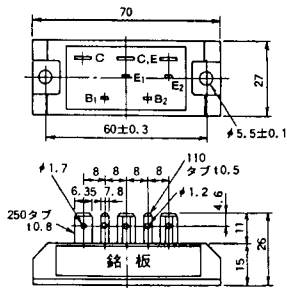
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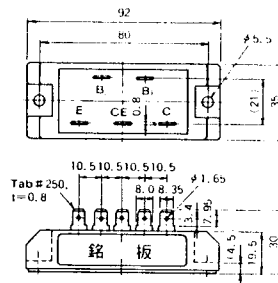
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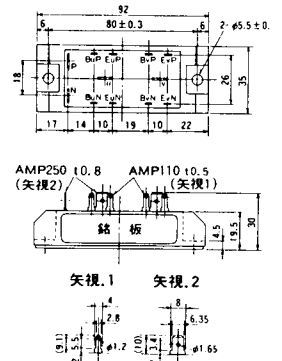
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M-2C2A



M-2D4A



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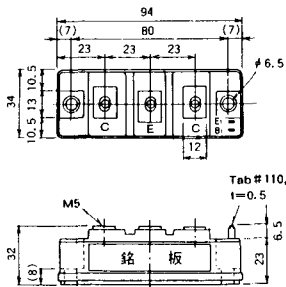
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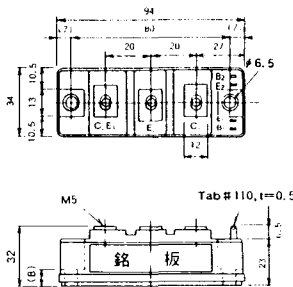
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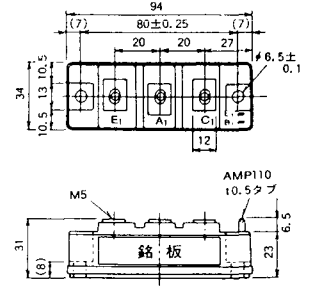
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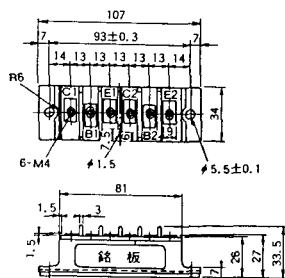
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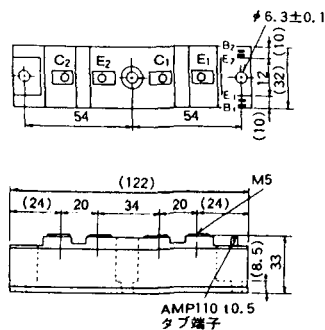
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M-5D2A



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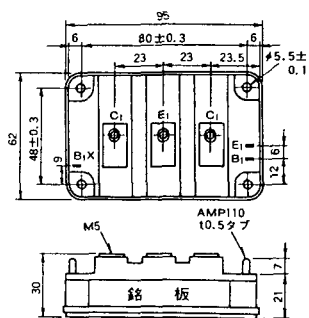
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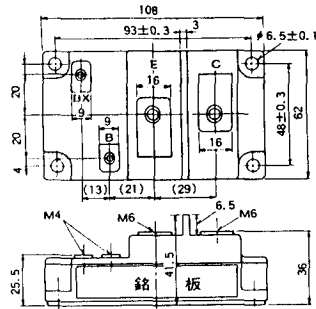
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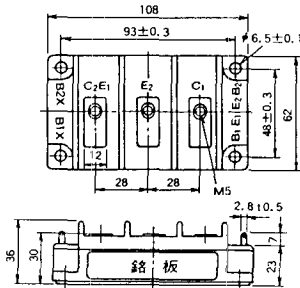
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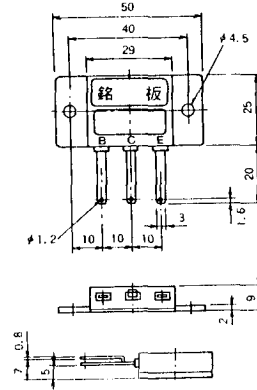
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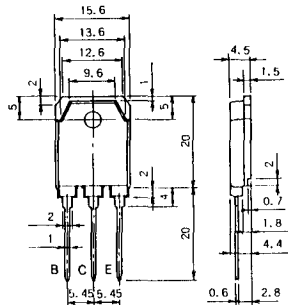
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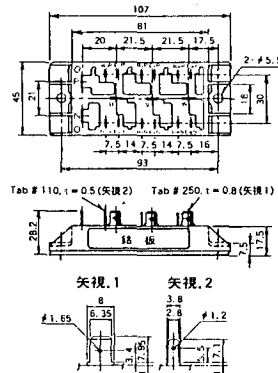
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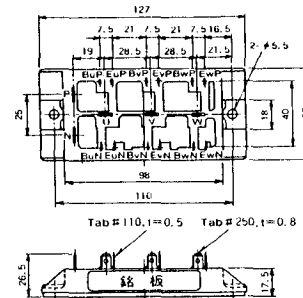
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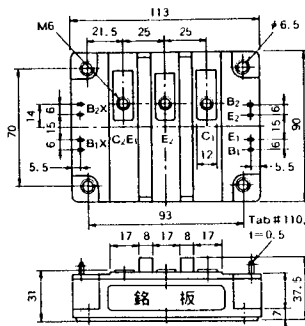
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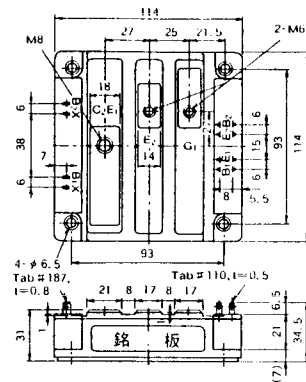
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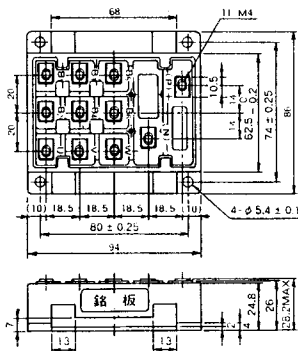
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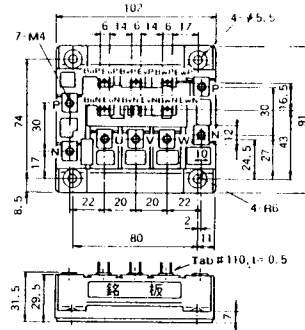
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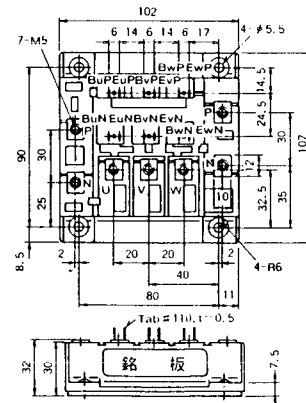
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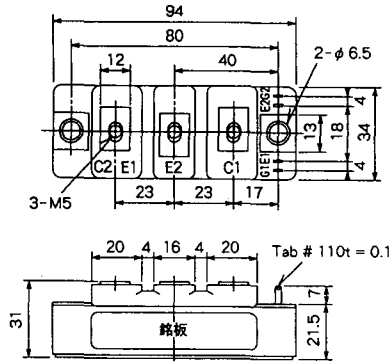
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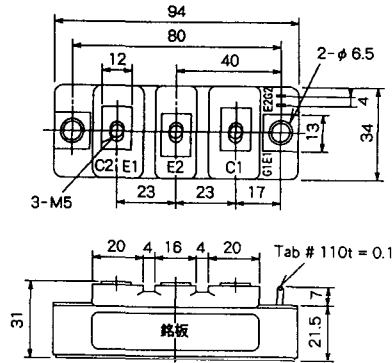
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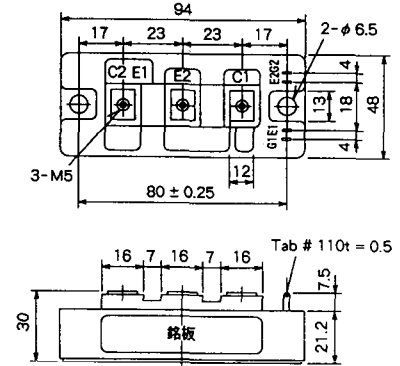
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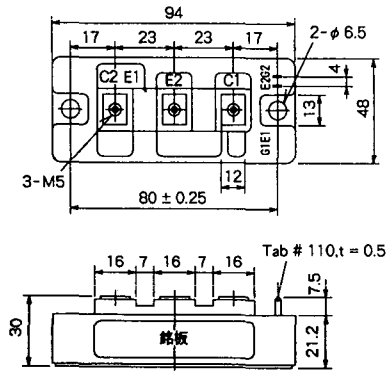
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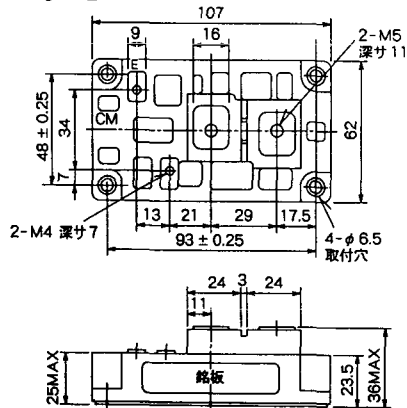
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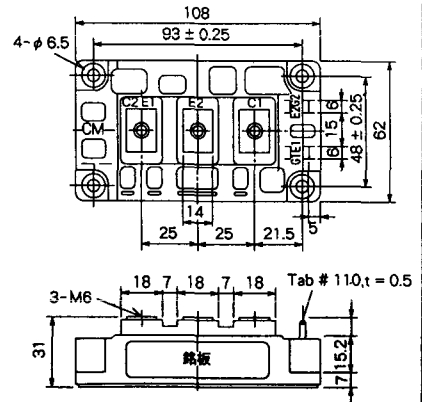
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M-9D2A



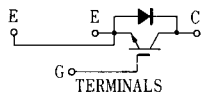
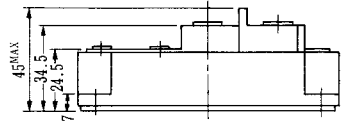
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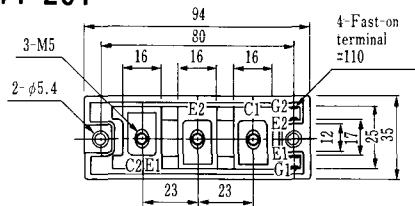


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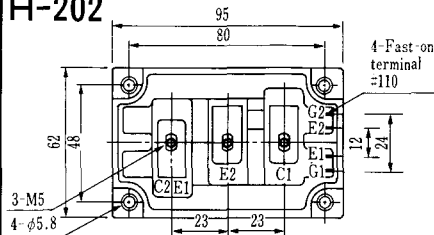
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H-201



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H-202



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LF-J



LF-K



