

SG400[†]R, U, W, EX[†]22
○チョップパ、インバータ用

■外形図番号 T-42 (13-45F1A)

■最大定格

記号	SG400R22	SG400U22	SG400W22	SG400EX22	単位
V_{RRM}	15				V
V_{DRM}	1300	1600	1800	2500	V
I_{TQM}	400 ($V_D = \frac{1}{2} V_{DRM}$, $V_{DM} = \frac{1}{2} V_{DRM}$, $C_s = 1 \mu F$, $R_s = 20 \Omega$, $T_j = 125^\circ C$)				
I_{FRMS}	150 ($T_j = 70^\circ C$)				
I_{FSM}	2600/2860 (50Hz/60Hz, 正弦半波1サイクル)				
$I^2 \cdot t$	A ² S				
di/dt	200 ($I_{GP} = 7 A$, $t_r = 1 \mu s$, $V_D = \frac{1}{2} V_{DRM}$, $I_{TM} = 400 A$, $f = 50 Hz$, $T_j = 125^\circ C$)				
I_{GFM}	20 (パルス幅: max. 20 μs , duty: max. 20%)				
P_{GFAV}	4 W				
I_{GRMS}	20 A				
P_{GRM}	2000 (パルス幅: max. 20 μs , duty: max. 2%)				
V_{GRM}	15 V				
T_j	125 $^\circ C$				
T_{stc}	-40 ~ 125 $^\circ C$				

■電気的特性

記号	測定条件	Min	Typ	Max	単位
I_{RRM}	$T_j = 125^\circ C$, $V_D = V_{RRM}$			10	mA
I_{DRM}	$T_j = 125^\circ C$, $V_D = V_{DRM}$, $R_{GK} = 20 \Omega$			10	
I_{GRM}	$T_j = 125^\circ C$, $V_D = V_{GRM}$			10	
V_{TM}	$T_c = 25^\circ C$, $I_{TM} = 400 A$			2.4	V
V_{GT}	$T_c = 25^\circ C$, $V_D = 12 V$	0.75		1.0	
I_{GT}	$R_L = 0.5 \Omega$		200	500	mA
V_{GD}		0.3			
I_{GD}	$T_c = 125^\circ C$, $V_D = \frac{1}{2} V_{DRM}$	5			mA
t_d	$T_c = 25^\circ C$, $V_D = \frac{1}{2} V_{DRM}$			2.0	
t_{st}	$I_{TM} = 400 A$ $di/dt = 200 A/\mu s$ $I_{GP} = 7 A$, $t_r = 1 \mu s$	SG400R22		7.6	
		SG400U22		7.0	
		SG400W22		6.8	
	SG400EX22		6.0		
dv/dt	$T_j = 125^\circ C$, $V_D = \frac{1}{2} V_{DRM}$ $V_{GK} = -2 V$	600			V/ μs
I_H	$T_c = 25^\circ C$, $R_L = 0.5 \Omega$		10		A
t_r	$T_c = 25^\circ C$, $I_{TM} = 400 A$			13	μs
t_{ev}	$V_D = \frac{1}{2} V_{DRM}$ $V_{DM} = \frac{1}{2} V_{DRM}$ $C_s = 1 \mu F$ $R_s = 20 \Omega$	SG400R22		15	
		SG400U22		62	
		SG400W22		58	
	SG400EX22		56		
t_{tot}	$dig/dt = -12 A/\mu s$			50	
I_{GR}			95	125	A
R_{th}	接合~フィン間, DC			0.12	$^\circ C/W$

SG500[†]FXF, GXH[†]21 (VRRM)
○チョップパ、インバータ用

■外形図番号 T-43 (13-60E3A)

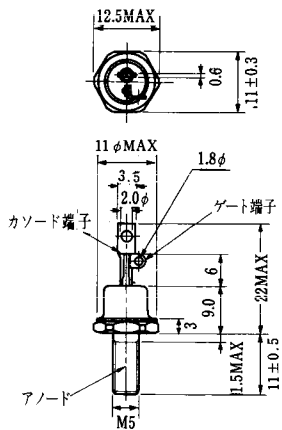
■最大定格

記号	SG500FXF21 (VRRM)	SG500GXH21 (VRRM)	単位
V_{RRM}	3000	4000	V
V_{DRM}	3300	4500	
I_{TQM}	500 ($V_D = \frac{1}{2} V_{DRM}$, $V_{DM} = \frac{1}{2} V_{DRM}$, $C_s = 2 \mu F$, $R_s = 20 \Omega$, $T_j = 115^\circ C$)		
I_{FRMS}	200 ($T_j = 70^\circ C$)		
I_{FSM}	2500/3000 (50Hz/60Hz, 正弦半波1サイクル)		
$I^2 \cdot t$	A ² S		
di/dt	200 ($I_{GP} = 9 A$, $t_r = 1 \mu s$, $V_D = \frac{1}{2} V_{DRM}$, $I_{TM} = 500 A$, $f = 50 Hz$, $T_j = 115^\circ C$)		
I_{GFM}	30 (パルス幅: max. 20 μs , duty: max. 20%)		
P_{GFAV}	6 W		
I_{GRMS}	35 A		
P_{GRM}	4000 (パルス幅: max. 20 μs , duty: max. 2%)		
V_{GRM}	15 V		
T_j	115 $^\circ C$		
T_{stc}	-40 ~ 115 $^\circ C$		

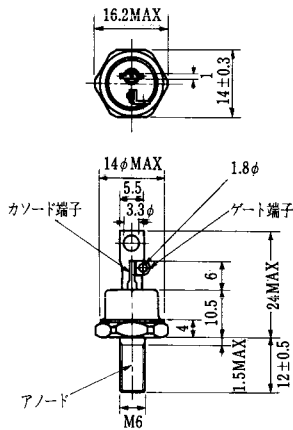
■電気的特性

記号	測定条件	Min	Typ	Max	単位
I_{RRM}	$T_j = 115^\circ C$, $V_D = V_{RRM}$			40	mA
I_{DRM}	$T_j = 115^\circ C$, $V_D = V_{DRM}$, $R_{GK} = 20 \Omega$			40	
V_{TM}	$T_c = 25^\circ C$, $I_{TM} = 500 A$			4.5	V
V_{GT}	$T_c = 25^\circ C$, $V_D = 24 V$			1	
I_{GT}	$R_L = 1 \Omega$			500	mA
V_{GD}		0.3			
I_{GD}	$T_c = 115^\circ C$, $V_D = \frac{1}{2} V_{DRM}$	5			mA
t_d	$T_c = 25^\circ C$, $V_D = \frac{1}{2} V_{DRM}$, $I_{GP} = 9 A$			2	
t_{st}	$I_{TM} = 500 A$, $di/dt = 200 A/\mu s$			8	
dv/dt	$T_j = 115^\circ C$, $V_D = \frac{1}{2} V_{DRM}$, $V_{GK} = -4 V$	900			V/ μs
I_H	$T_c = 25^\circ C$, $R_L = 1 \Omega$			30	A
t_r	$T_c = 110^\circ C$, $I_{TM} = 500 A$			13	
t_{ev}	$V_D = \frac{1}{2} V_{DRM}$, $V_{DM} = \frac{1}{2} V_{DRM}$			15	μs
t_{tot}	$C_s = 2 \mu F$, $R_s = 20 \Omega$			180	
I_{GR}	$dig/dt = -20 A/\mu s$		150	180	A
R_{th}	接合~フィン間, DC			0.06	

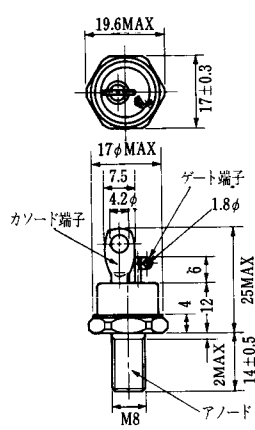
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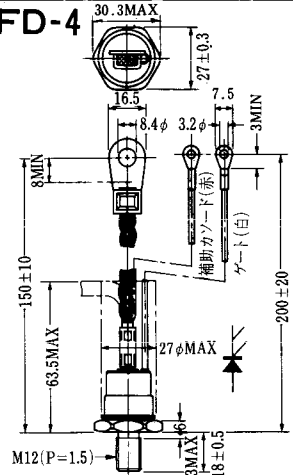
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FD-3



FD-4



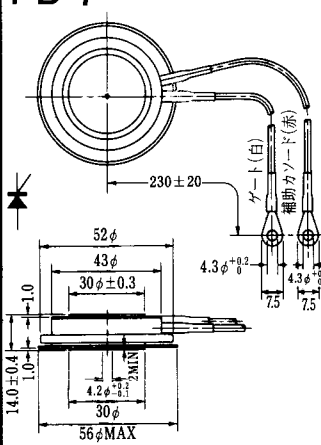
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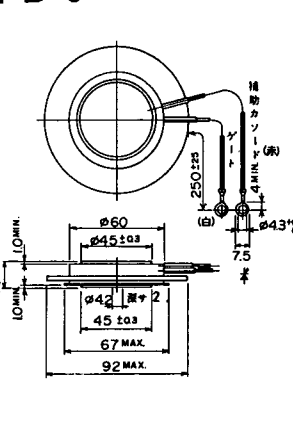
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FD-7



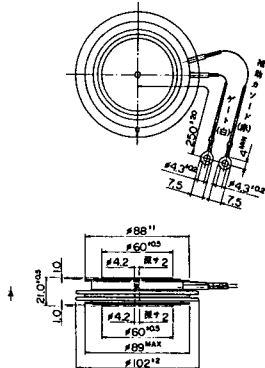
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FD-9



FD-10



FD-11

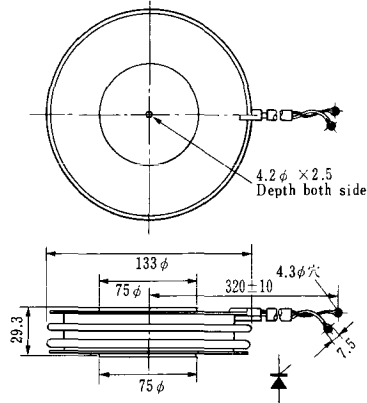
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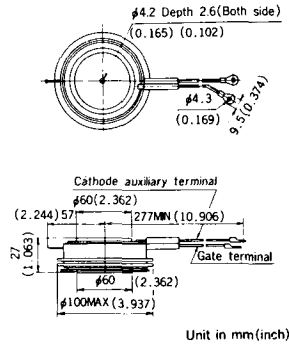


《寸法図単位：mm》

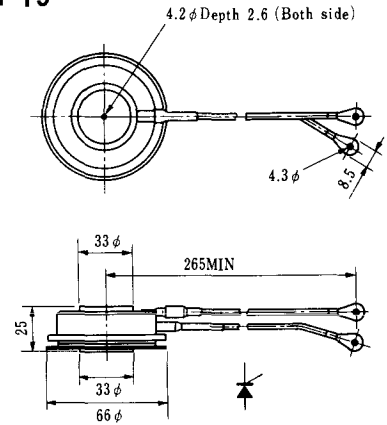
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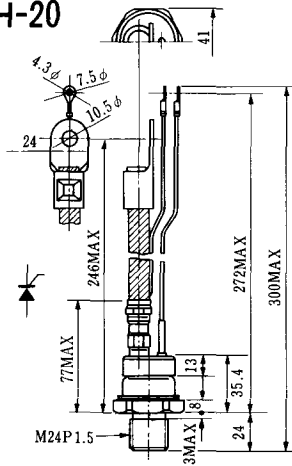
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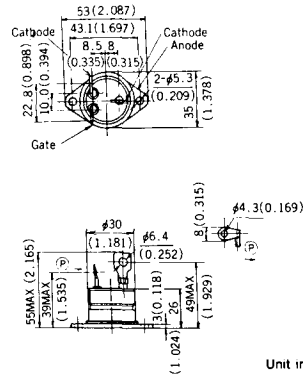
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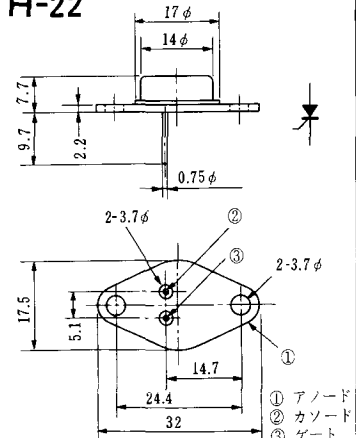
H-20



H-21



H-22



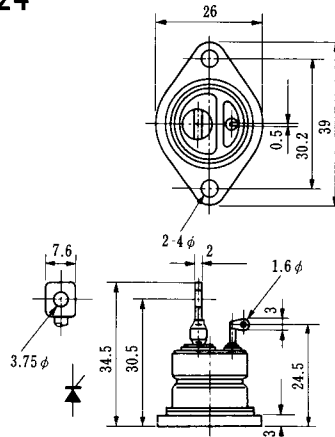
- ① アノード
- ② カソード
- ③ ゲート

H-23

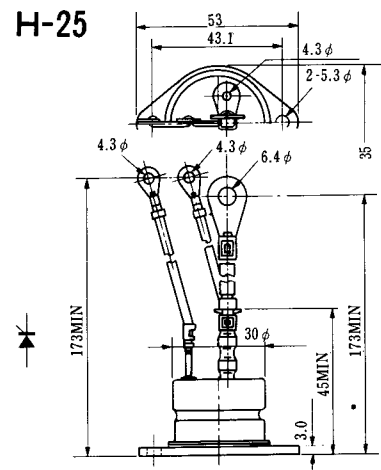


① アノード
② カソード
③ ゲート

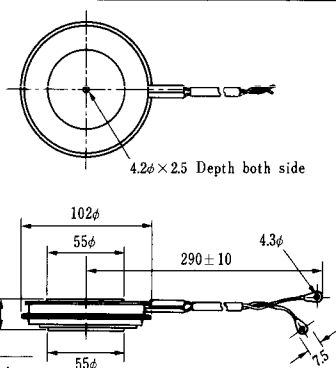
H-24



H-25



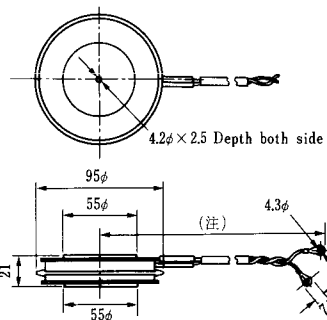
H-26



Type	Direction of polarity
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CA12	
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H-27

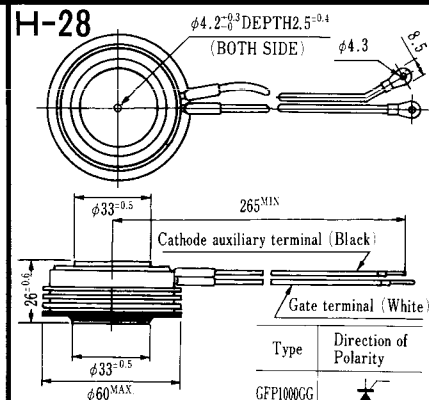


Type	Direction of polarity
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CF11V	
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(注) CC11V : 400 ± 10
CF11V : 250 ± 10

H-28



Type	Direction of Polarity
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GFP100GG	
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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



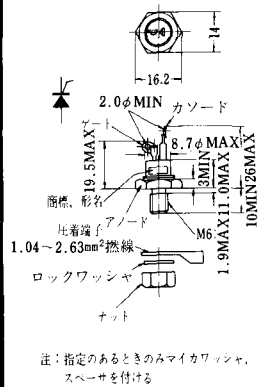
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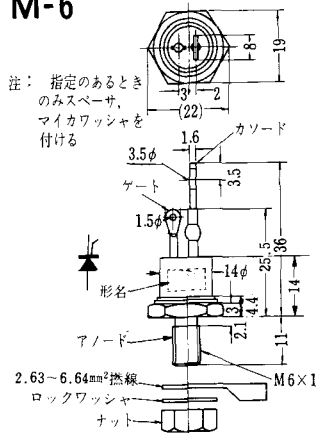
M-4



M-5



M-6



M-7



M-8



M-9



M-10



M-11



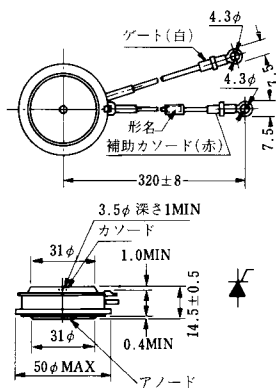
M-12



M-13



M-14



M-15



M-16





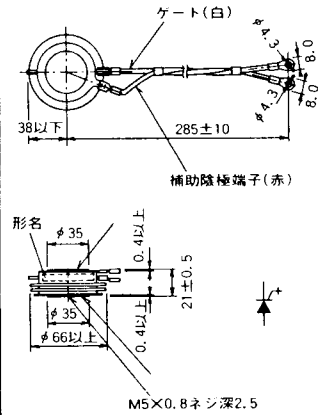
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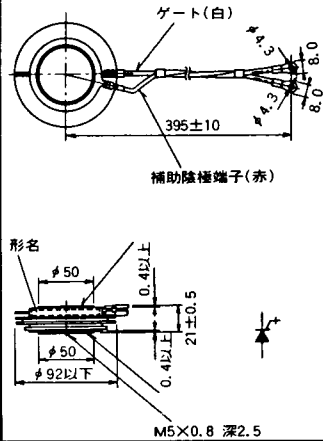
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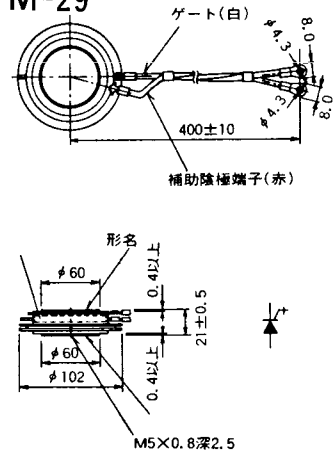
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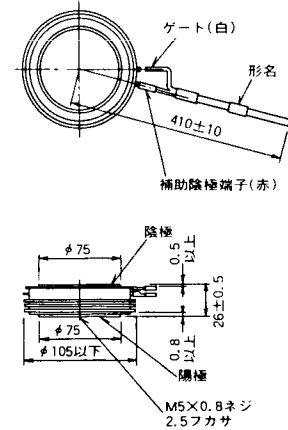
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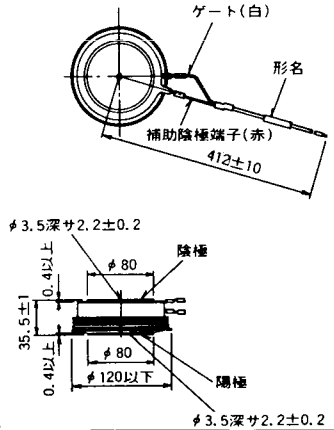
M-29



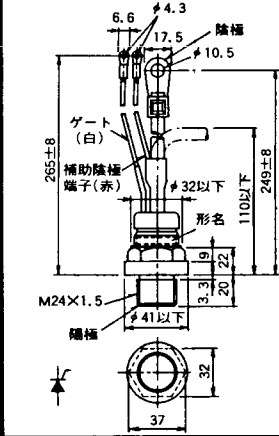
M-30



M-31



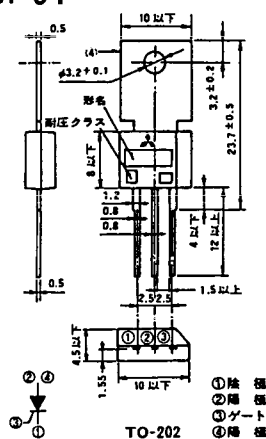
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M-33



M-34



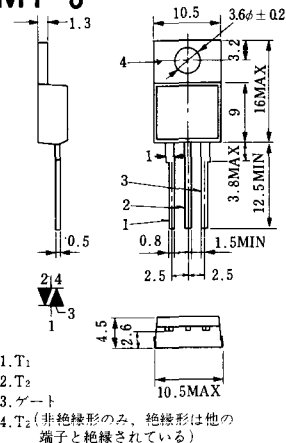
MT-1



MT-2



MT-3



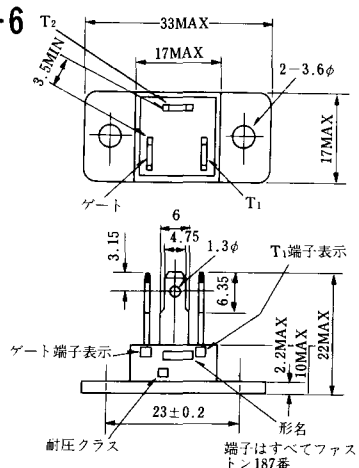
MT-4



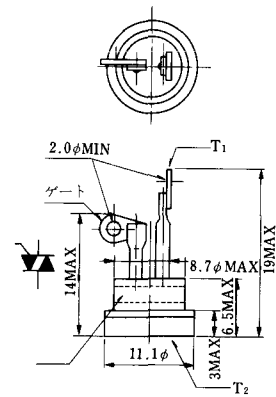
MT-5



MT-6



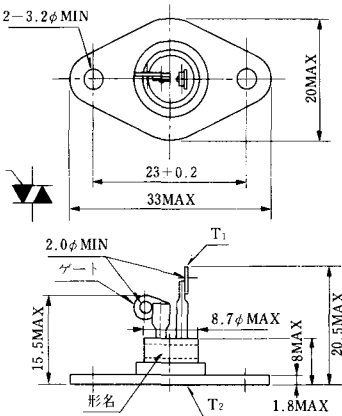
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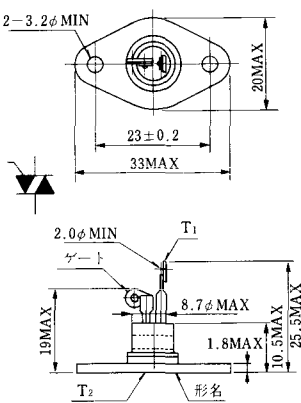
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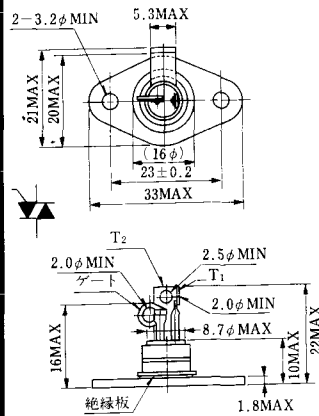
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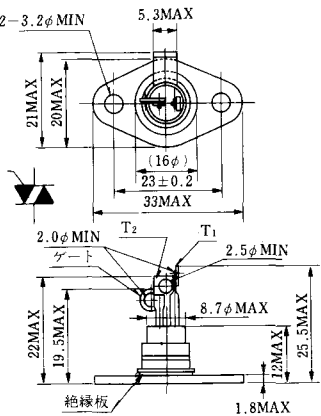
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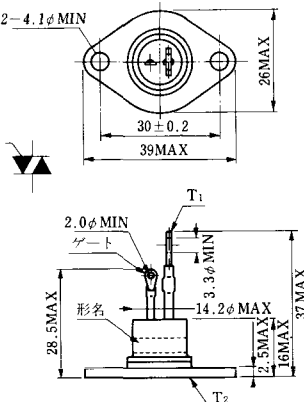
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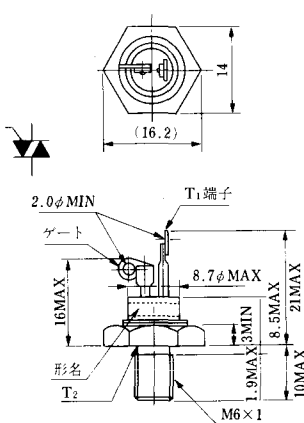
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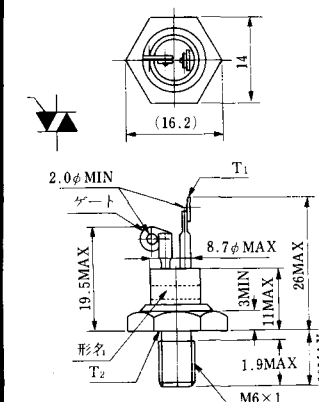
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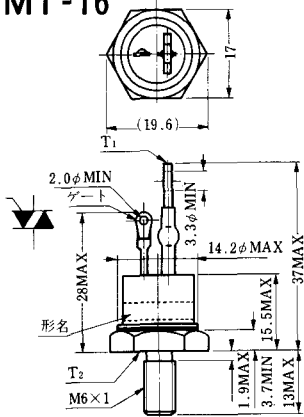
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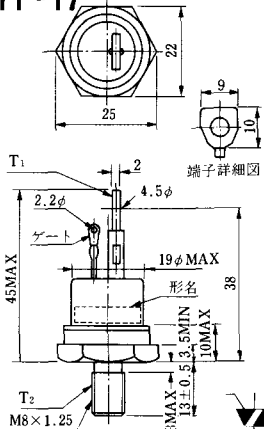
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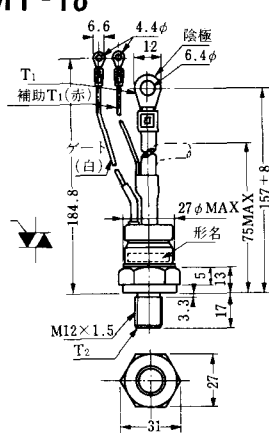
MT-16



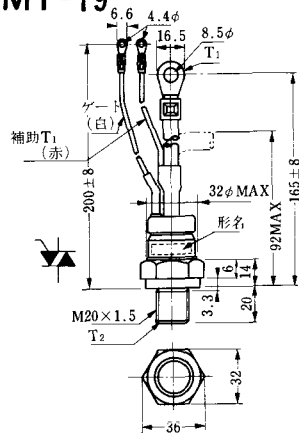
MT-17



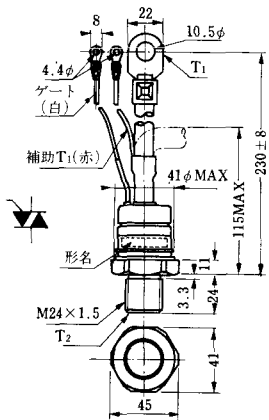
MT-18



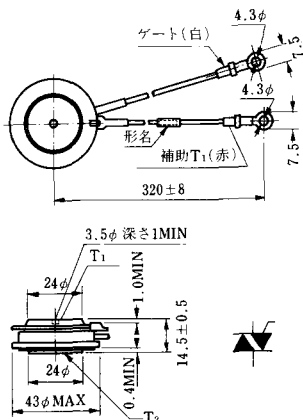
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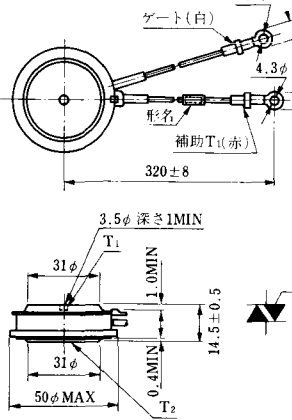
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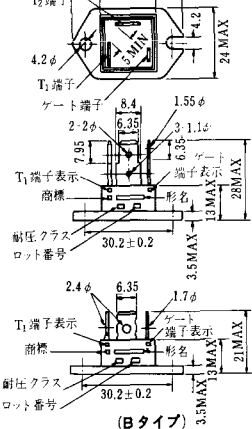
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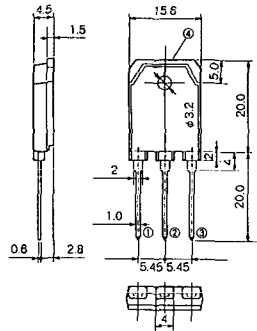
MT-22



MT-23

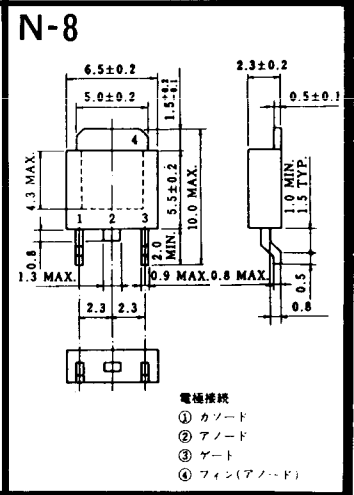
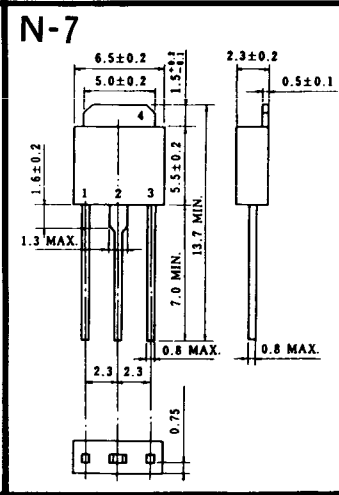
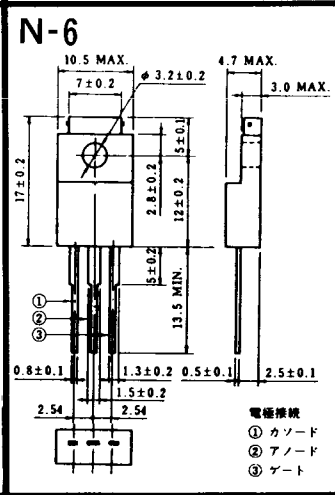
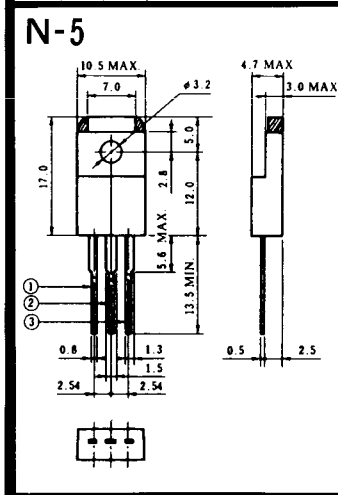
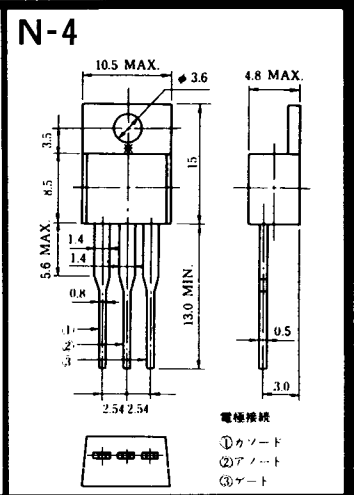
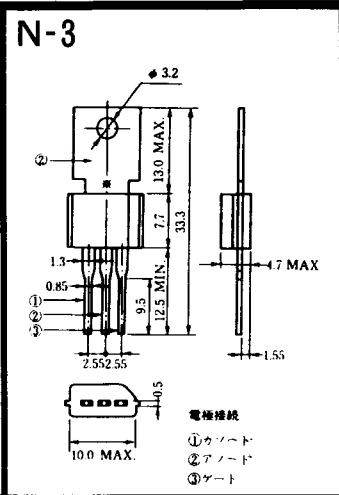
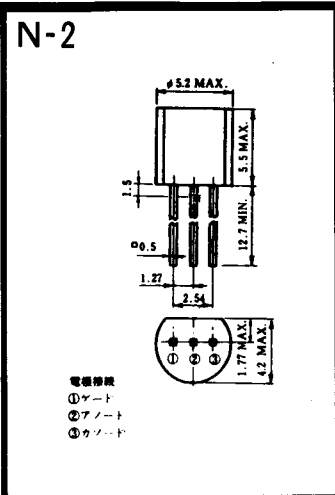
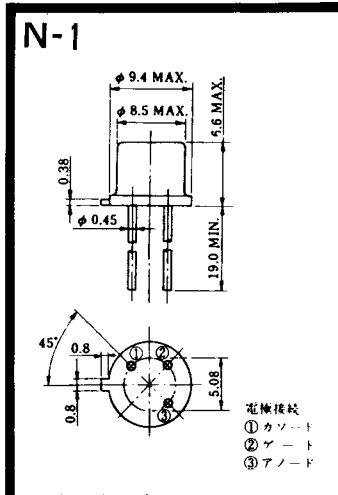


MT-24

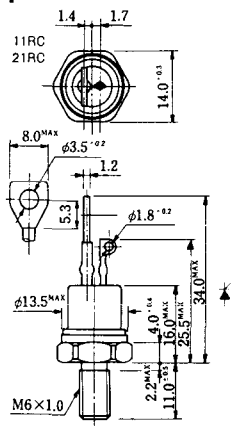


TO - 3P

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

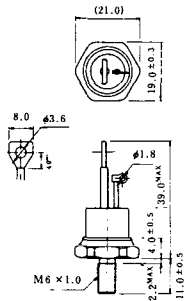


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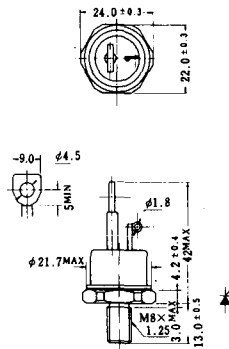
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29RD



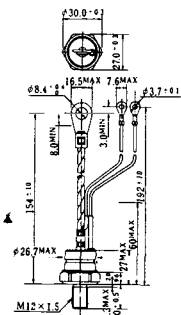
NI-3

39RC
59RC
39RF
59RF



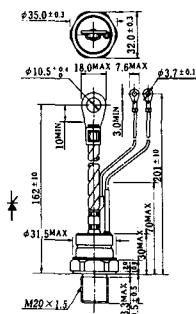
NI-4

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



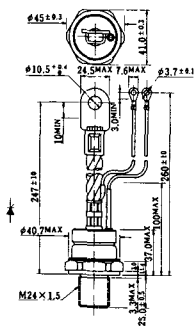
NI-5

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



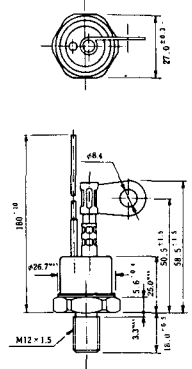
NI-7

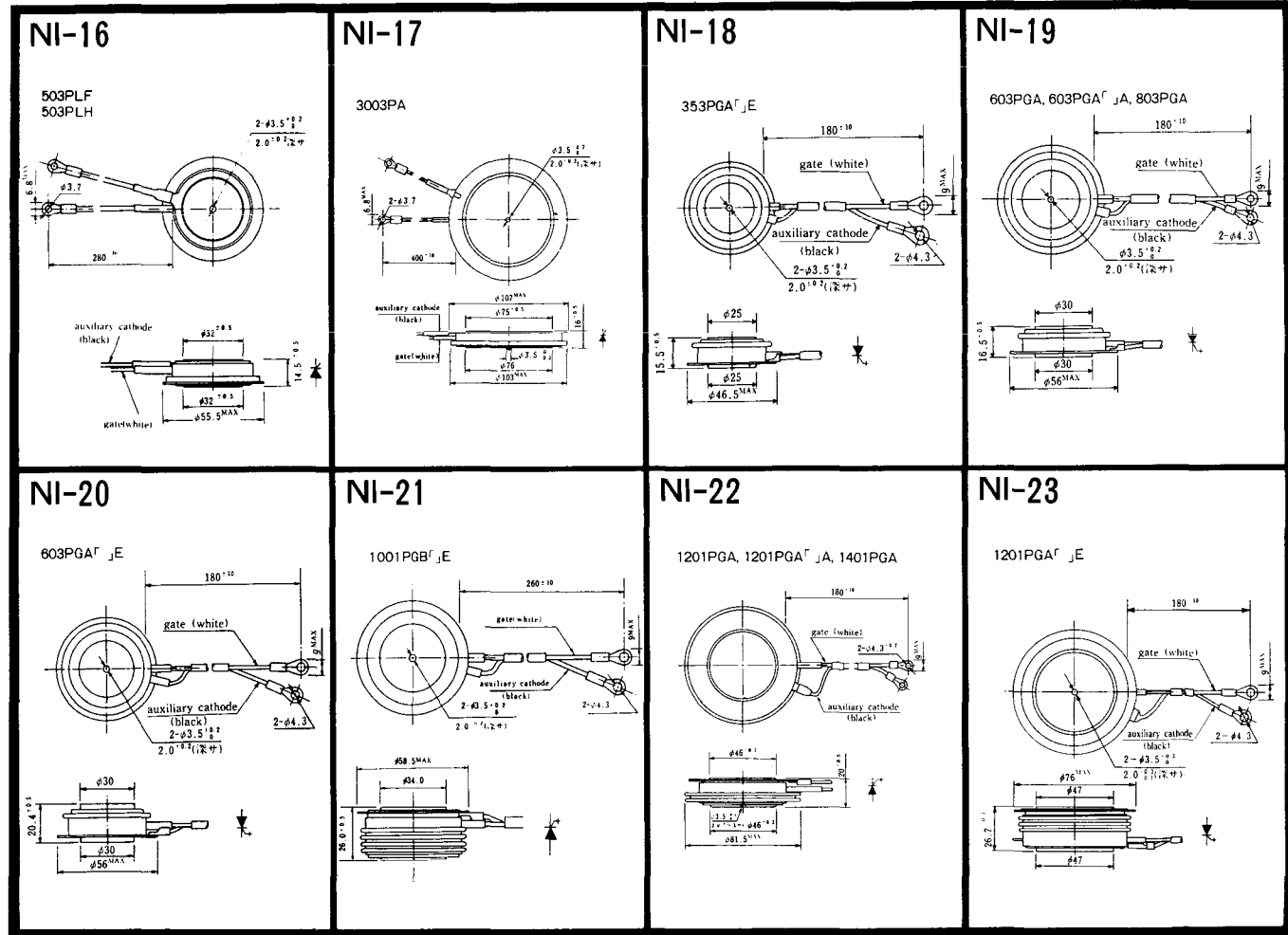
89RW_{JL}
129RW_{JL}



NI-8

89RW
129RW





NI-24

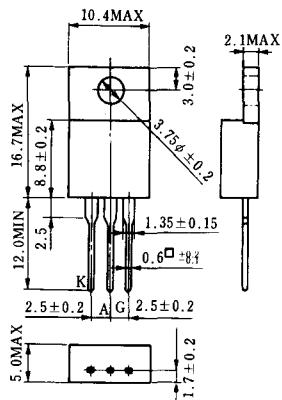
2001PGB^r JE



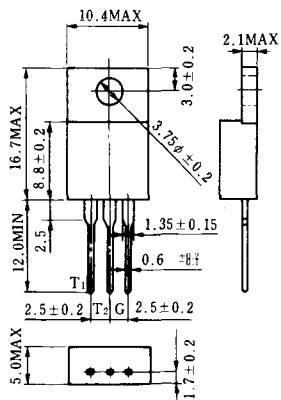
NI-25

NI-26

S-1



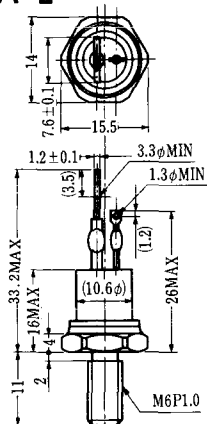
ST-1



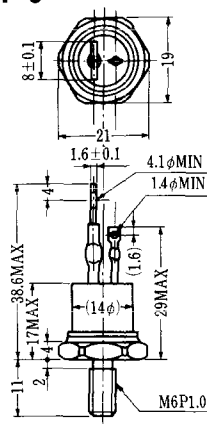
SA-1



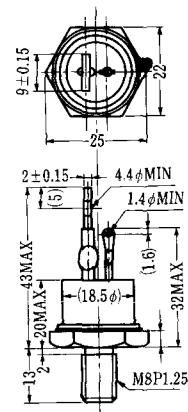
SA-2



SA-3



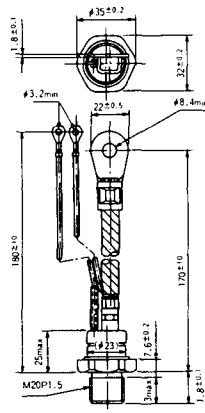
SA-4



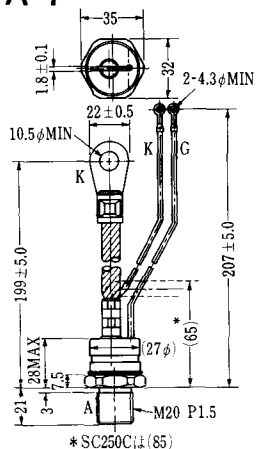
SA-5



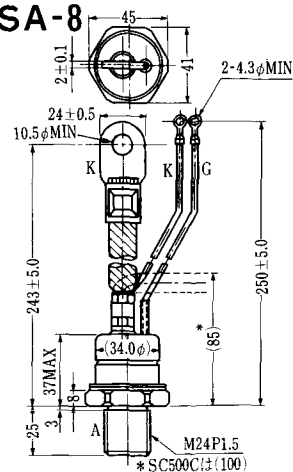
SA-6



SA-7



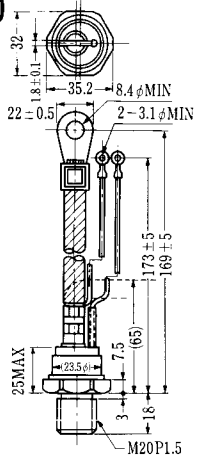
SA-8



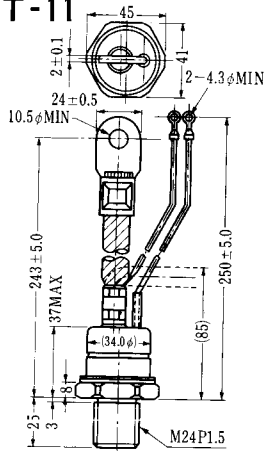
* SC250C:(1)(85)

* SC500C:(1)(100)

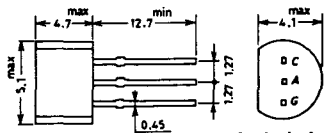
SAT-10



SAT-11

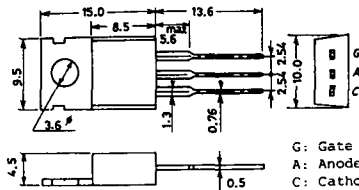


SY-1 (1096A)



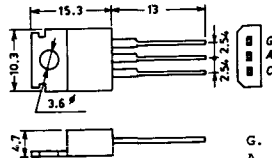
C: Cathode
A: Anode
G: Gate

SY-2 (1151)



G: Gate
A: Anode
C: Cathode

SY-3 (1104)



G: Gate
A: Anode
C: Cathode

SY-4 (1150)



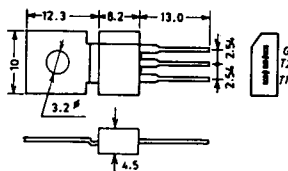
G: Gate
A: Anode
C: Cathode

1097A



G: Gate

1102



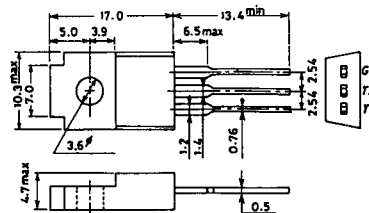
1141



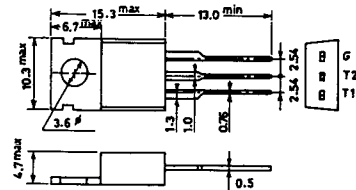
1142



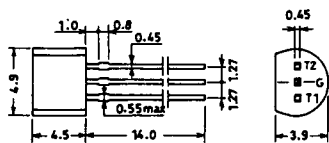
1144



1155

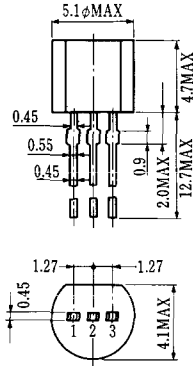


1192A



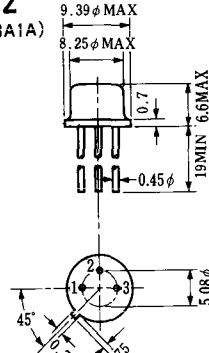
G: Gate

T-1 (13-5A1A)



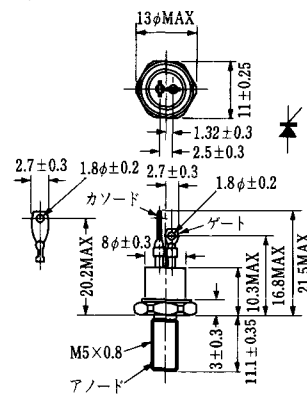
- 1 ゲート
- 2 アノード
- 3 カソード

T-2 (13-8A1A)



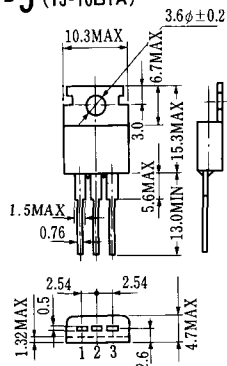
1. カソード
2. ゲート
3. アノード(ケース)

T-3 (13-8C1A)



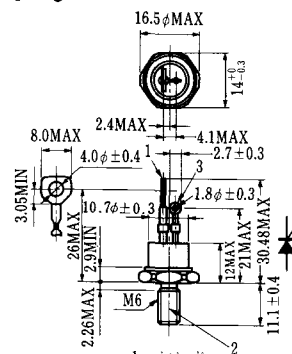
- 1 カソード
- 2 アノード
- 3 ゲート

T-5 (13-10B1A)



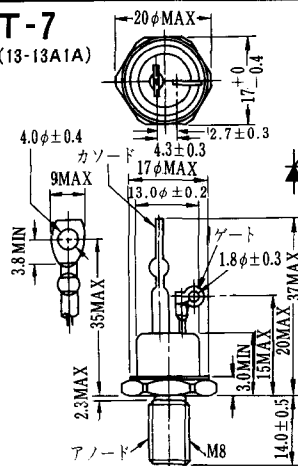
- 1 カソード
- 2 アノード
- 3 ゲート

T-6 (13-11D1A)

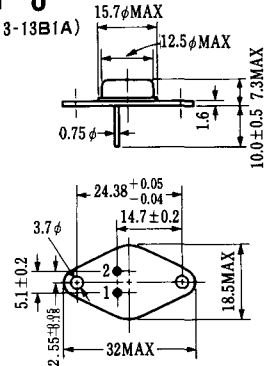


- 1 カソード
- 2 アノード
- 3 ゲート

T-7 (13-13A1A)

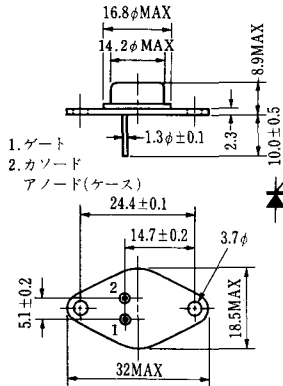


T-8 (13-13B1A)



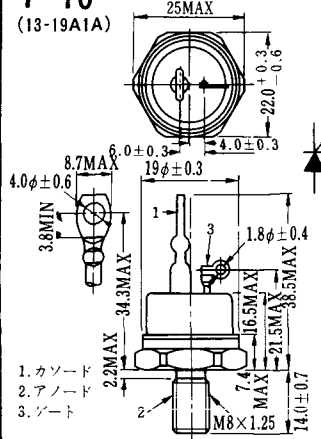
1. ゲート
2. カソード
3. アノード(ケース)

T-9 (13-14A1A)



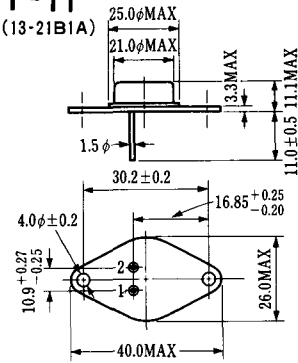
1. ゲート
2. カソード
- アノード(ケース)

T-10 (13-19A1A)



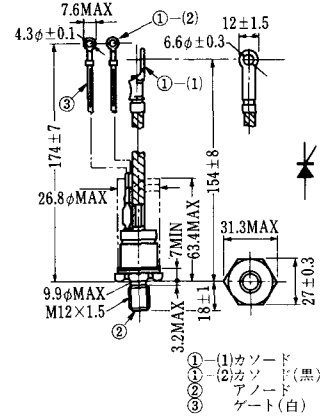
1. カソード
2. アノード
3. ゲート

T-11 (13-21B1A)



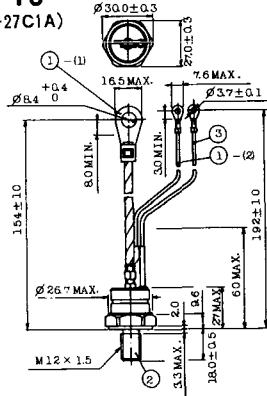
1. ゲート
2. カソード
- アノード(ケース)

T-12 (13-27B1B)



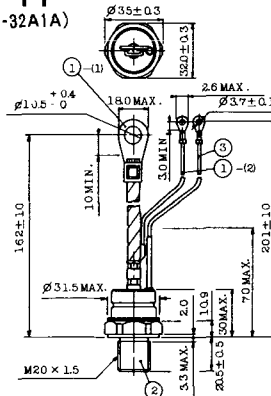
- ① (1) カソード
- ① (2) カソード(黒)
- ② アノード
- ③ ゲート(白)

T-13 (13-27C1A)



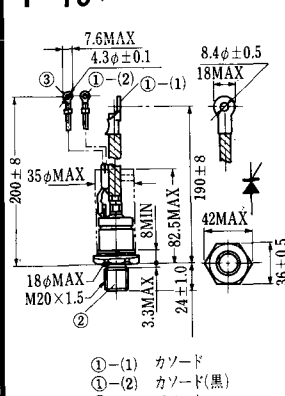
- 1-(1) カソード
- 1-(2) カソード(黒)
- 2 アノード
- 3 ゲート(白)

T-14 (13-32A1A)



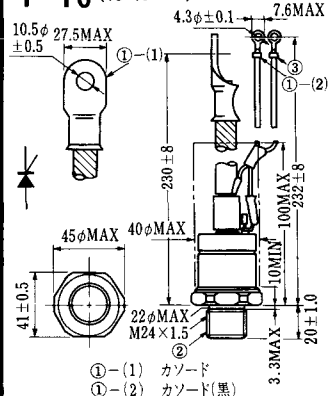
- 1-(1) カソード
- 1-(2) カソード(黒)
- 2 アノード
- 3 ゲート(白)

T-15 (13-35C1B)



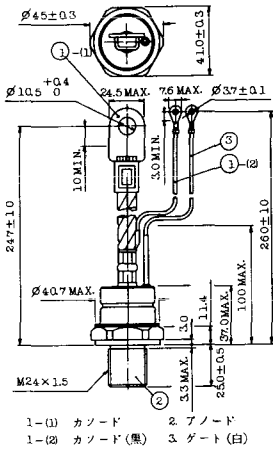
- ① (1) カソード
- ① (2) カソード(黒)
- ② アノード
- ③ ゲート(白)

T-16 (13-40B1A)

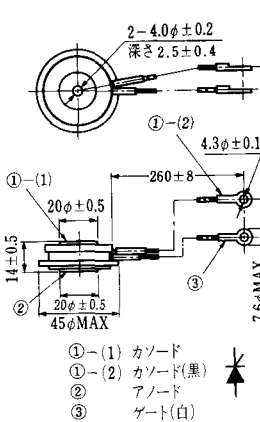


- ① (1) カソード
- ① (2) カソード(黒)
- ② アノード
- ③ ゲート(白)

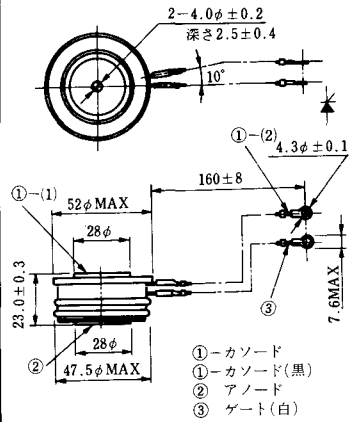
T-17 (13-42A1A)



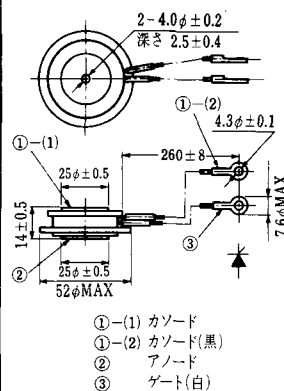
T-18 (13-45D1A)



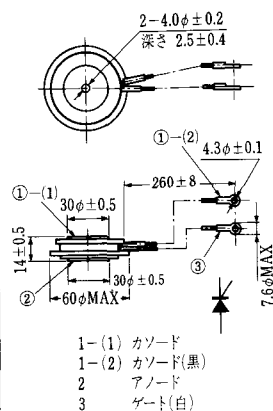
T-19 (13-52B1A)



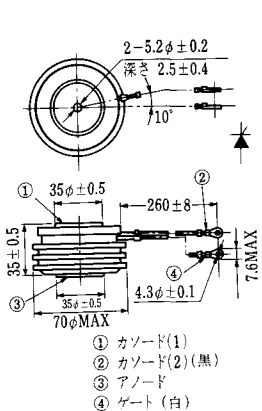
T-20 (13-52C1A)



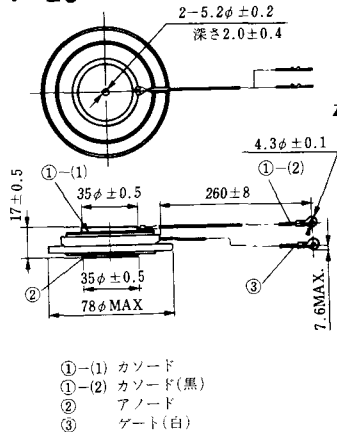
T-21 (13-60A1A)



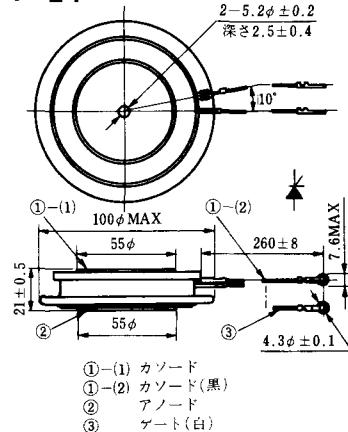
T-22 (13-70C1A)



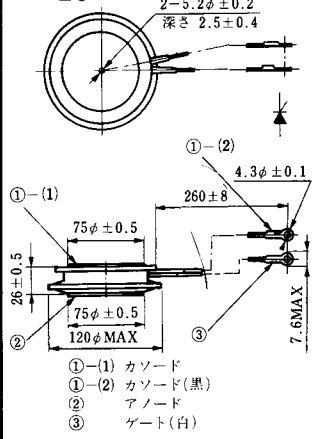
T-23 (13-78A1A)



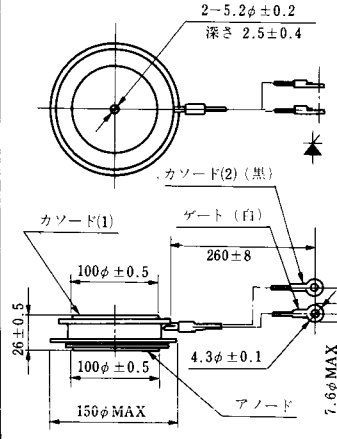
T-24 (13-100C1A)



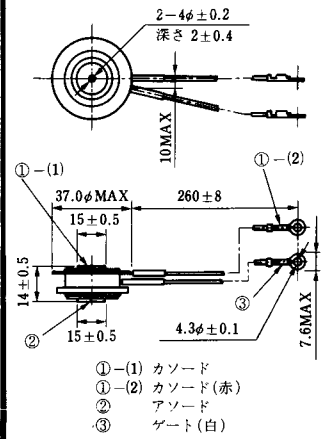
T-25 (13-120A2A)



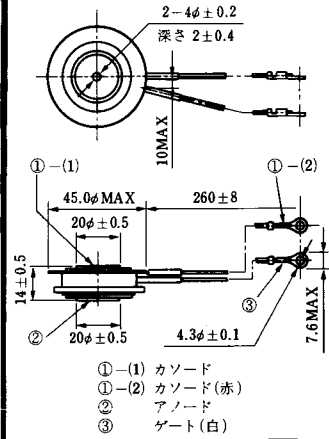
T-26 (13-150A1A)



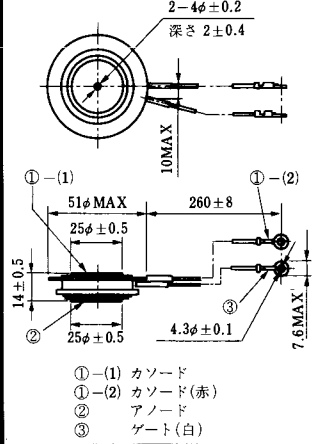
T-27 (13-37A1A)



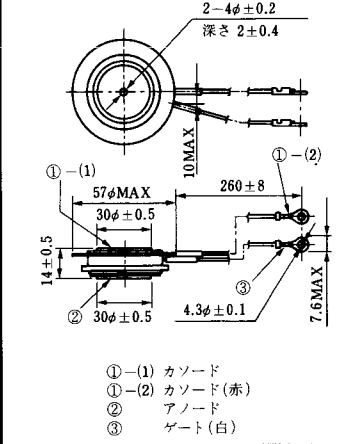
T-28 (13-45E1A)



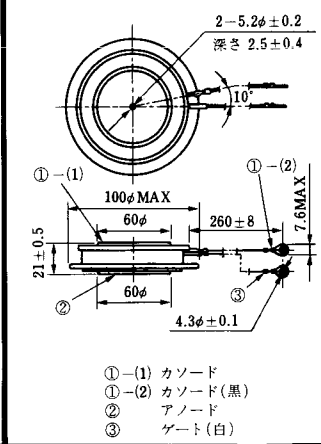
T-29 (13-51A1A)



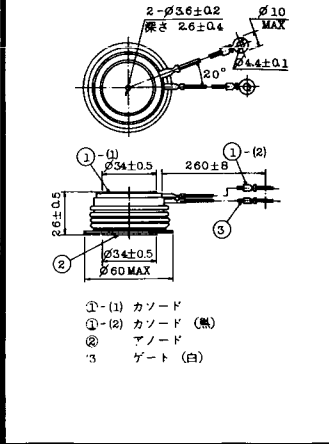
T-30 (13-57A1A)



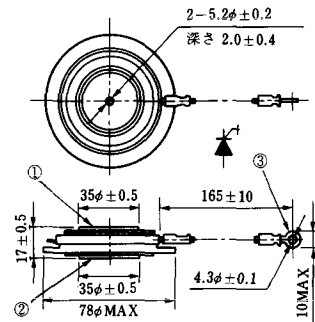
T-31 (13-100E1A)



T-32 (13-60E3A)

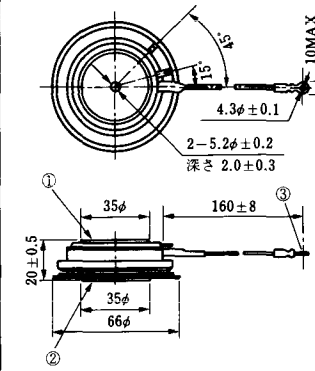


T-33 (13-78B1A)



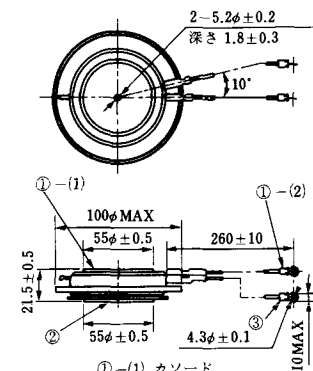
- ① カソード
- ② アノード
- ③ ゲート

T-34 (13-66A1A)



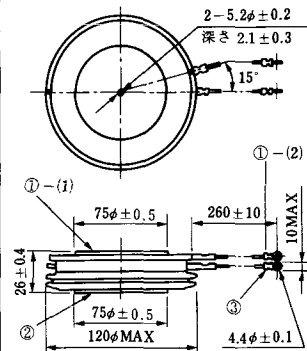
- ① カソード
- ② アノード
- ③ ゲート

T-35 (13-100D1A)



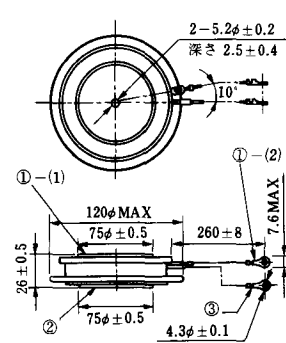
- ①-(1) カソード
- ①-(2) カソード(黒)
- ② アノード
- ③ ゲート(白)

T-36 (13-120E1A)



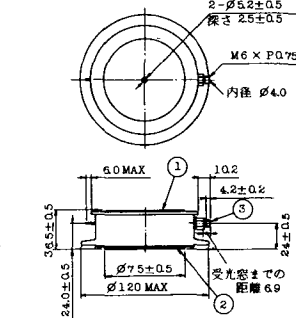
- ①-(1) カソード
- ①-(2) カソード(黒)
- ② アノード
- ③ ゲート(白)

T-37 (13-120A1A)



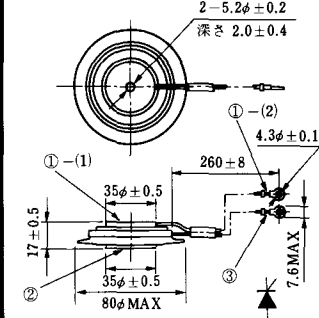
- ①-(1) カソード
- ①-(2) カソード(黒)
- ② アノード
- ③ ゲート(白)

T-38 (13-120C1A)



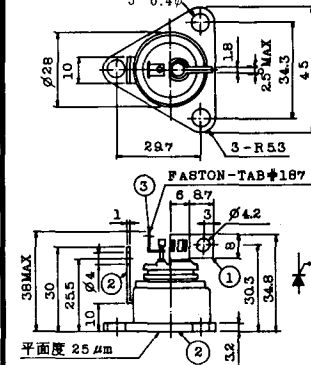
- ① カソード
- ② アノード
- ③ ゲート

T-39 (13-80B1A)



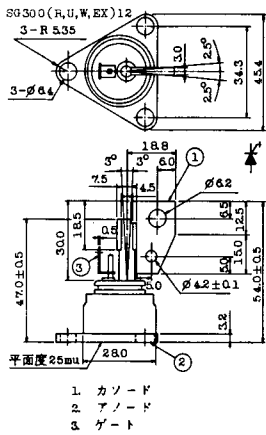
- ①-(1) カソード
- ①-(2) カソード(黒)
- ② アノード
- ③ ゲート(白)

T-40 (13-28A1A)

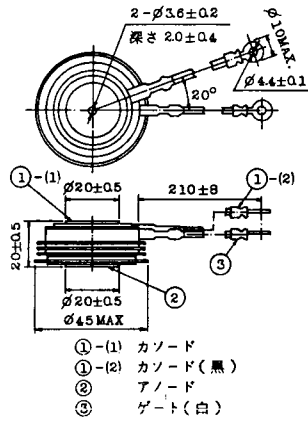


- 1. カソード
- 2. アノード
- 3. ゲート

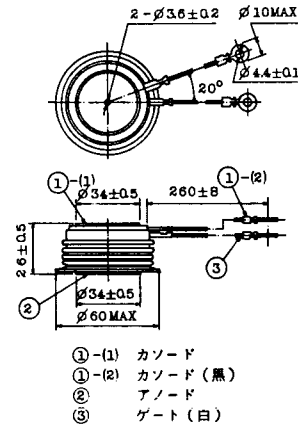
T-41 (13-28A2A)



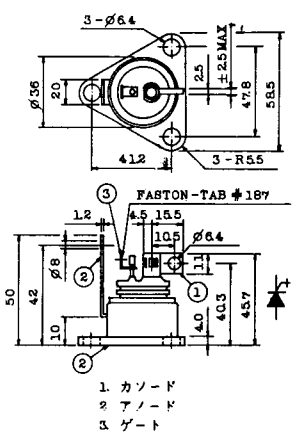
T-42 (13-45F1A)



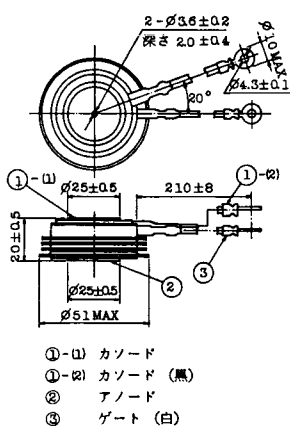
T-43 (13-60E2A)



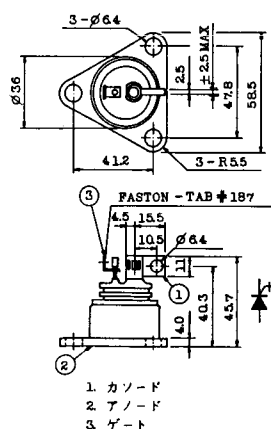
T-44 (13-36A1A)



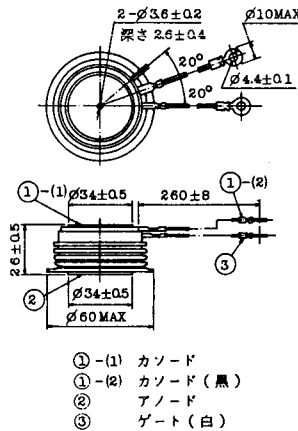
T-45 (13-51B1A)



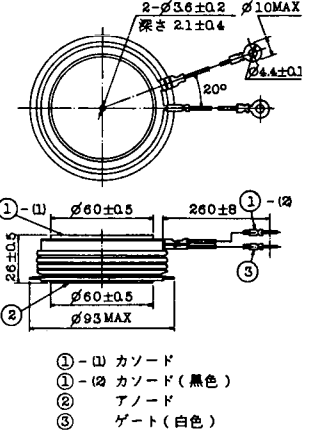
T-46 (13-36B1A)



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)



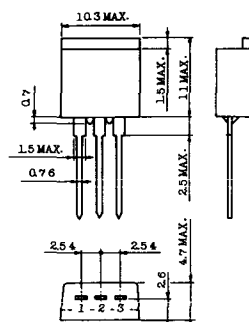
- 1 カソード
- 2 アノード
- 3 ゲート

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)



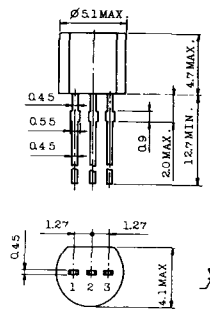
- 1 カソード
- 2 アノード
- 3 ゲート

T-54 (13-10F1B)



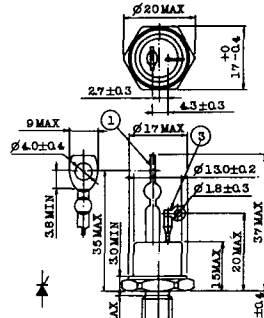
- 1 カソード
- 2 アノード
- 3 ゲート

T-55 (13-5A1D)



- 1 カソード
- 2 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)



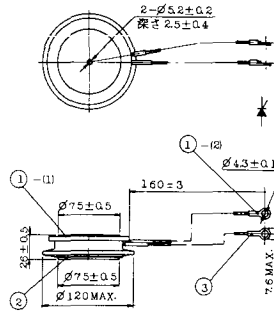
1. アノード (主)
2. ゲート (主)
3. カソード (共通)
4. ゲート (補助)
5. アノード (補助)

T-58 (13-10H1B)



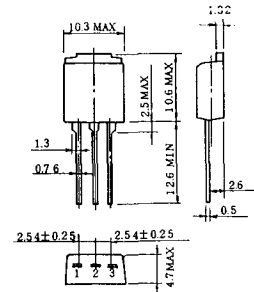
1. カソード
2. アノード
3. ゲート

T-59 (13-120A1A)



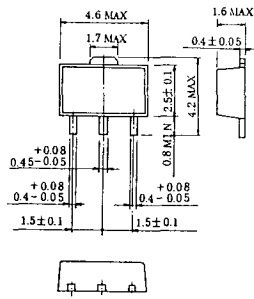
- 1-1) カソード
- 1-12) カソード (黒)
- 2) アノード
- 3) ゲート (白)

T-60



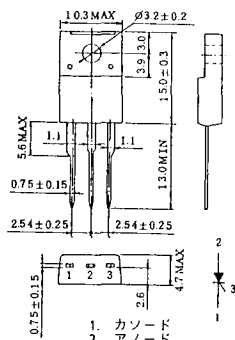
1. カソード
2. アノード
3. ゲート

T-61 (13-5B1A)



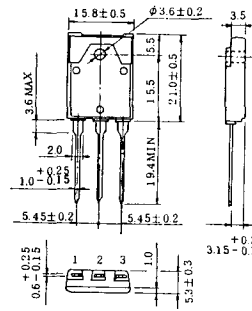
1. ゲート
2. アノード
3. カソード

T-62 (13-10H1A)



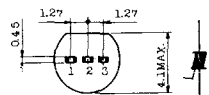
1. カソード
2. アノード
3. ゲート

T-63 (13-16A1B)



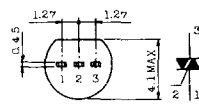
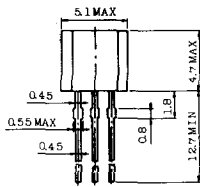
1. カソード
2. アノード
3. ゲート

TT-1



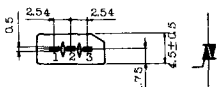
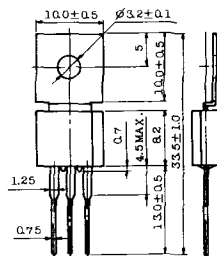
- 1 ゲート
- 2 T₂
- 3 T₁

TT-2



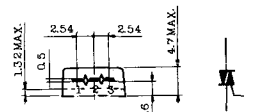
- 1 T₁
- 2 ゲート
- 3 T₂

TT-3



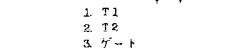
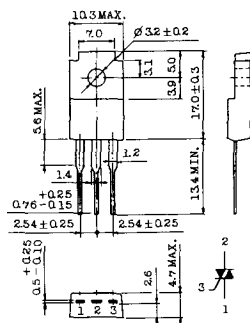
- 1 T₁
- 2 T₂
- 3 ゲート

TT-4



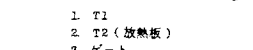
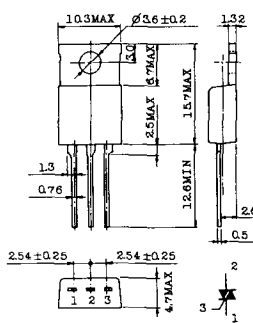
- 1 T₁
- 2 T₂
- 3 ゲート

TT-5



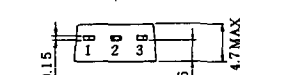
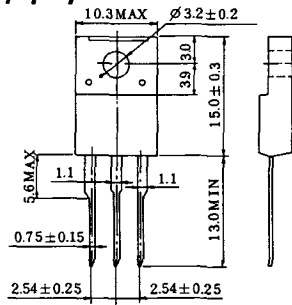
- 1 T₁
- 2 T₂
- 3 ゲート

TT-6



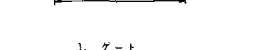
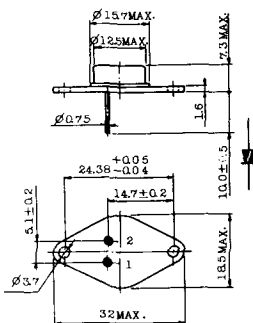
- 1 T₁
- 2 T₂ (放熱板)
- 3 ゲート

TT-7



- 1 T₁
- 2 T₂
- 3 ゲート

TT-8



- 1 ゲート
- 2 T₁
- T₂ (ケース)

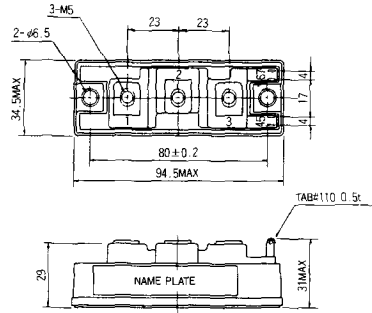


TS-8

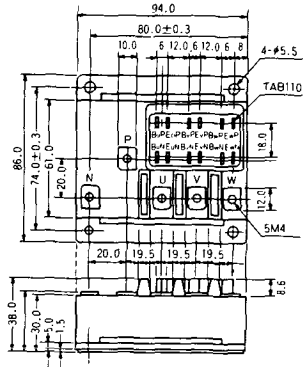


- 1. ベース
- 2. エミッタ
コレクタ
(ケース)

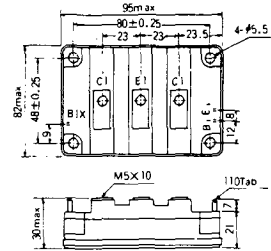
S-94B2A



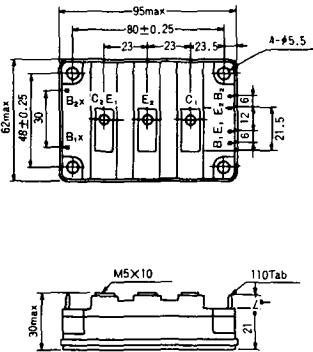
S-94D1A



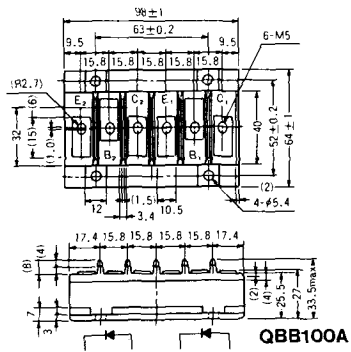
S-95A1A



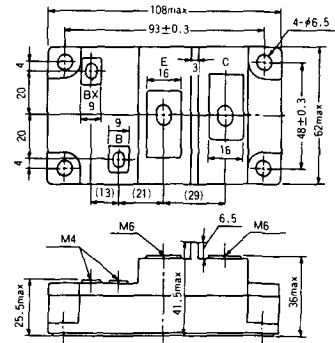
S-95B1A



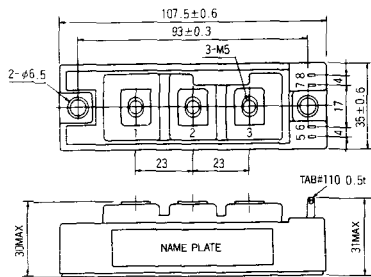
S-98B1B



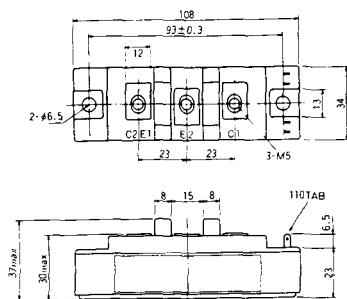
S-108A2A



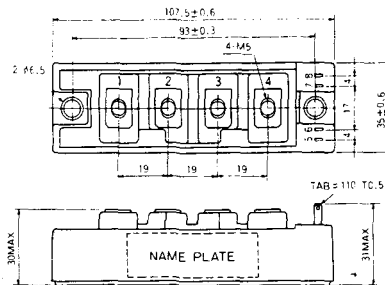
S-108B1A



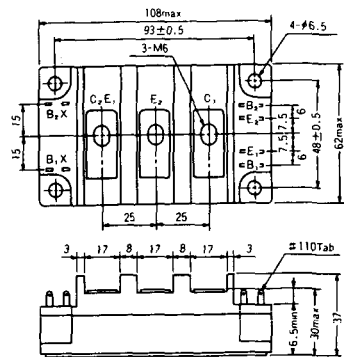
S-108B1B



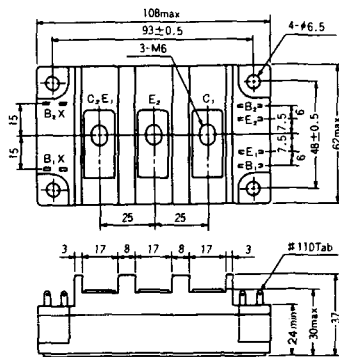
S-108B1C



S-108B2A



S-108B2B



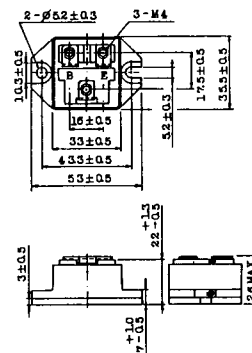
2-22B1A



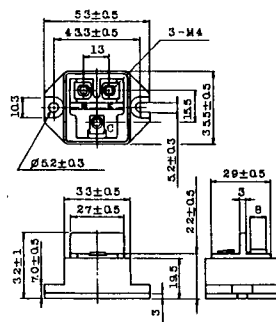
2-27A4A



2-33C1A



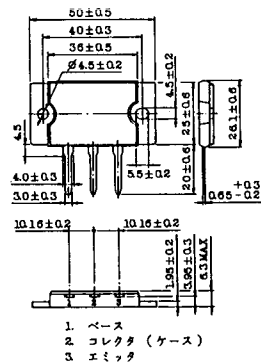
2-33D1A



2-33F1A



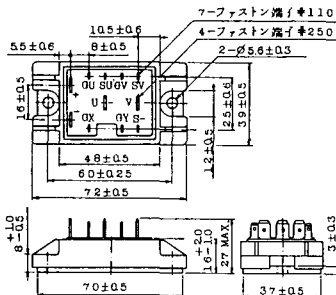
2-37A1A



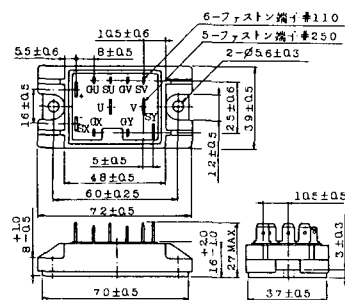
2-48A3A



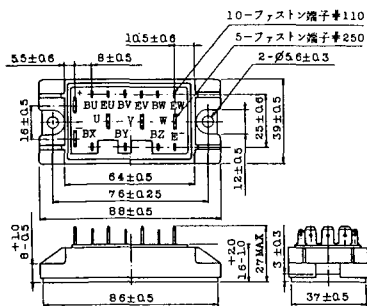
2-48A3B



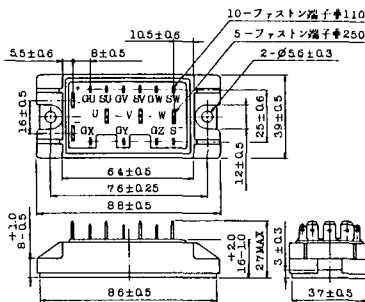
2-48A4A



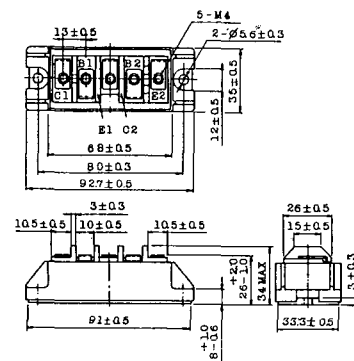
2-64A2A



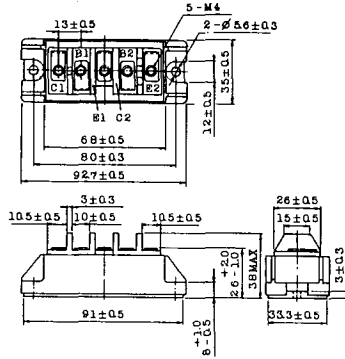
2-64A2B



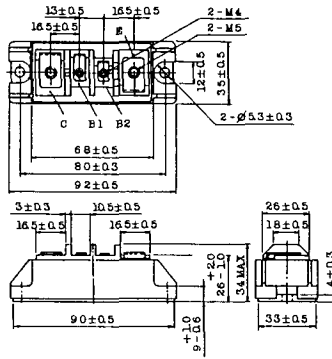
2-68A2A



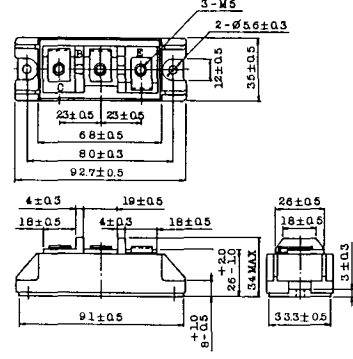
2-68B2A



2-68C1A



2-68D2A



2-72A3A



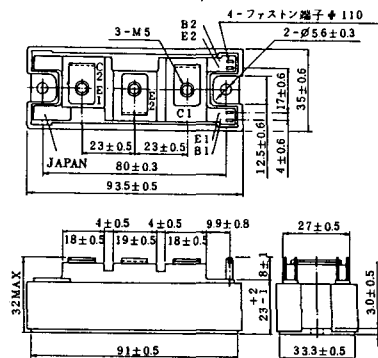
2-80A1A



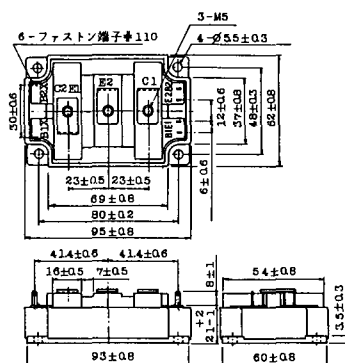
2-80B1A



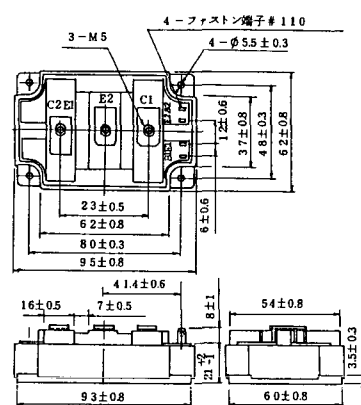
2-94D1A



2-96A3A



2-96A4A



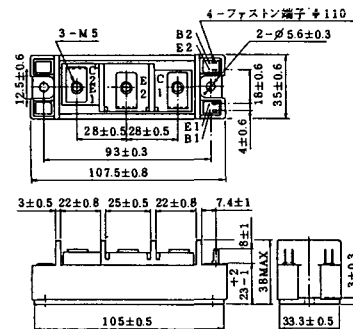
2-98B1A



2-98C2A



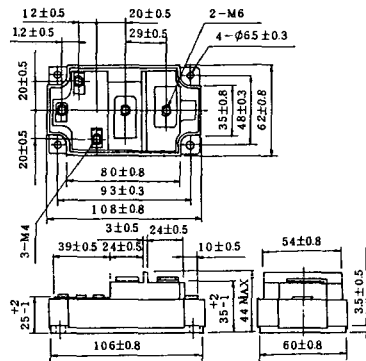
2-108A2A



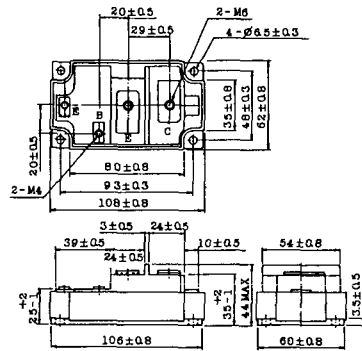
2-108B1A



2-109A3A



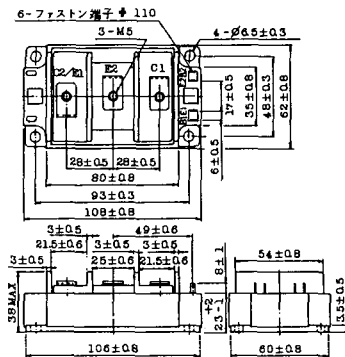
2-109A4A



2-109B3A

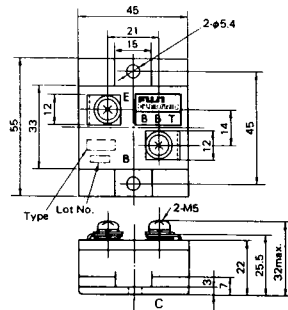


2-109B4A



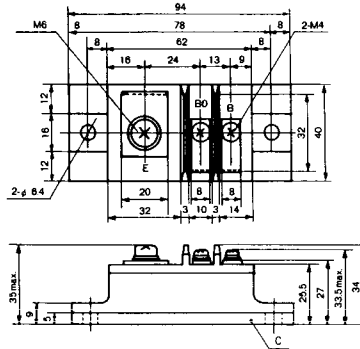
BBT-II

BBTII
1D200A-020



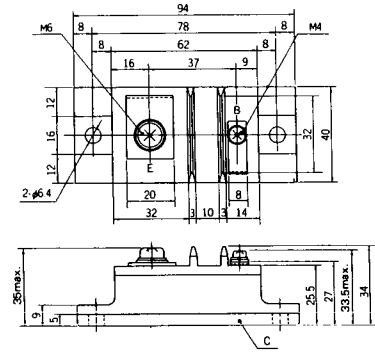
BBT-III

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



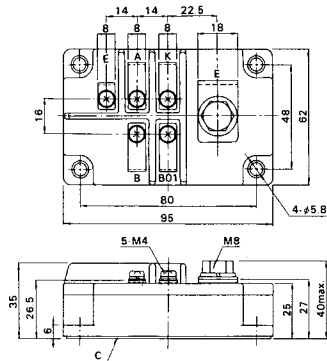
BBT-III

BBTIII
ETN01-055
ET1257

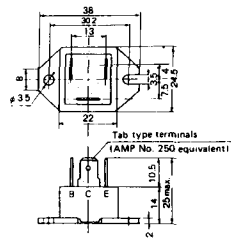


BBT-IV

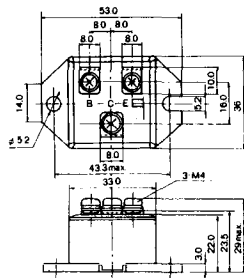
BBTIV
1D500A-030



M-101



M-102



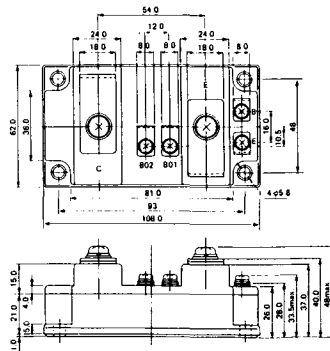
M-103



M-104



M-105



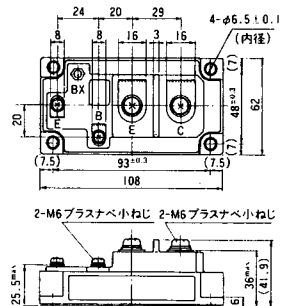
M-106



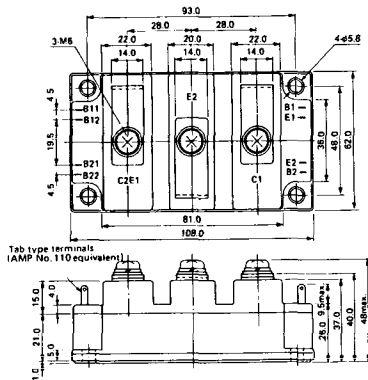
M-107



M-116



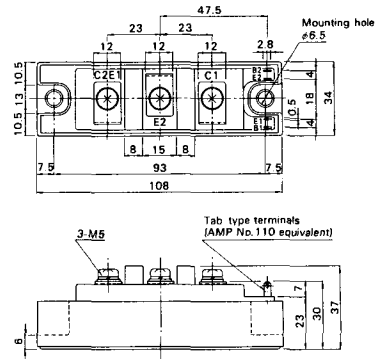
M-207



M-208



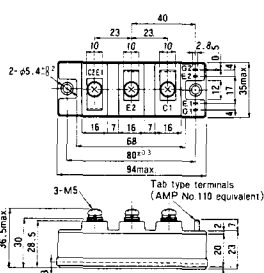
M-209



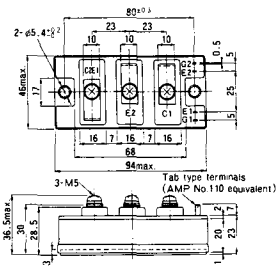
M-210



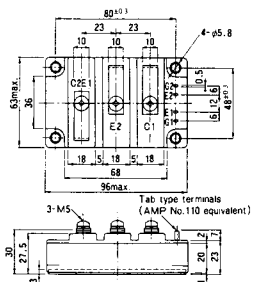
M-211



M-212



M-213

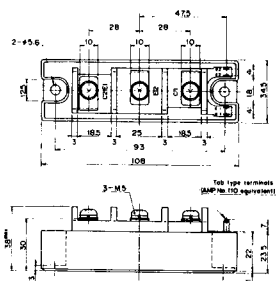


M-214

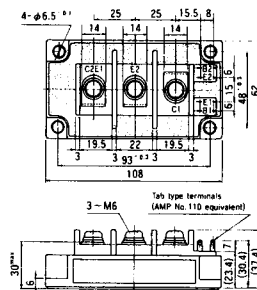
M-215



M-216



M-217



M-218



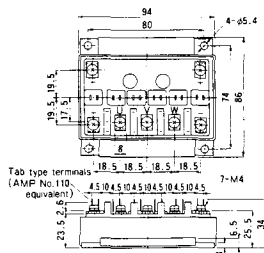
M-219



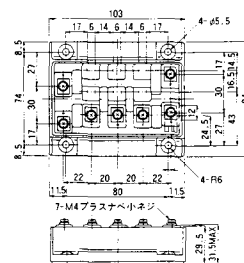
M-607



M-608



M-609



M-610



M-616



M-3C1A



M-3D6A



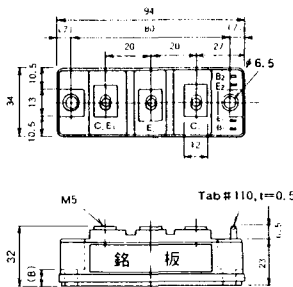
M-3E6A



M-4A1A



M-4A2A



M-4A1B



M-4A2B



M-4B2A



M-5A1A



M-5A1B



M-5A2A



M-5B2A



M-5C2A



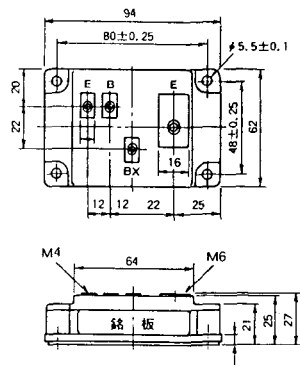
M-5D2A



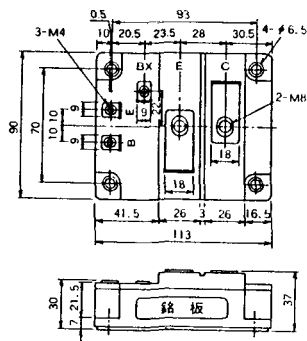
M-6A1A



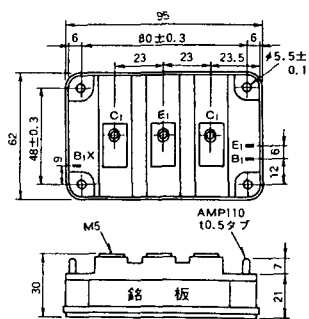
M-7A1A



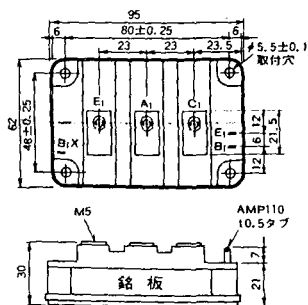
M-7B1A



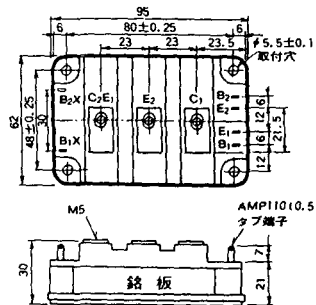
M-8A1A



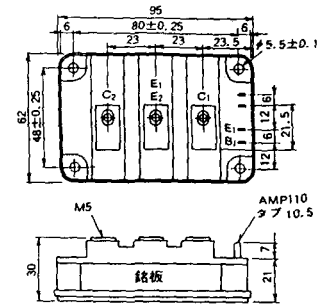
M-8A1B



M-8A2A



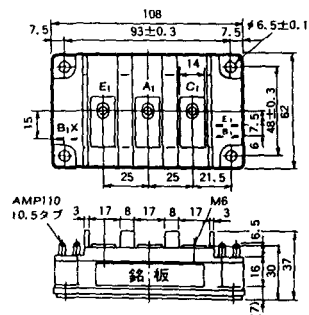
M-8A2B



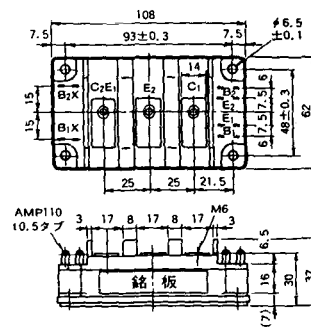
M-8B2A



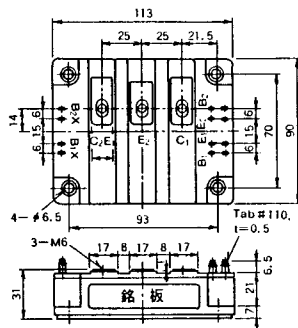
M-9A1A



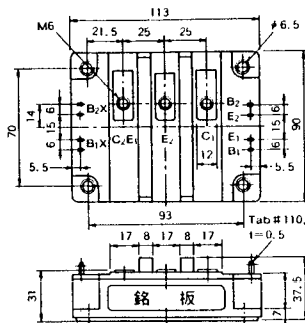
M-9A2A



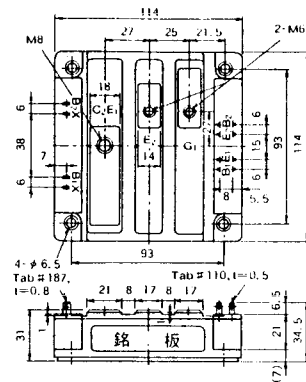
M-10A2A



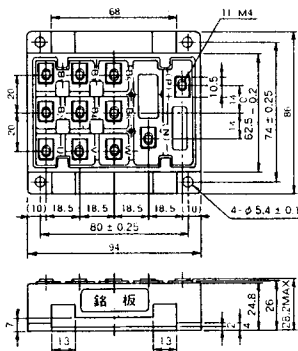
M-10A2B



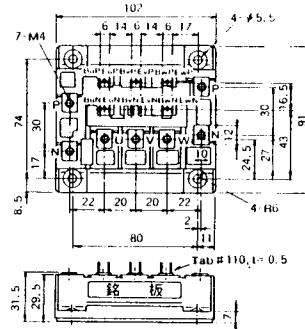
M-11A2A



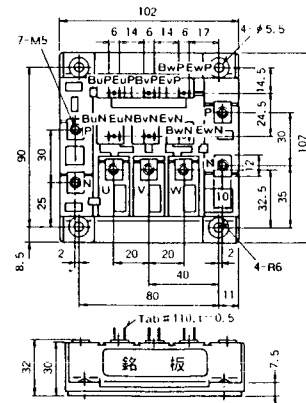
M-12A6A



M-12B6A



M-12B6B



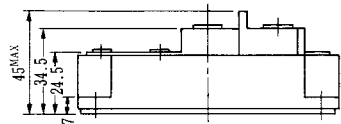
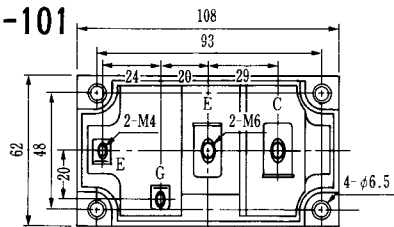
M-9D2B



M-10A2C

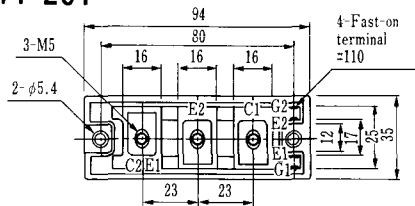


H-101



Weight :480g

H-201



Weight: 200g

H-202



Weight: 360g

LF-J



LF-K



