

トランジスタ・モジュール (NPN, 1アーム)

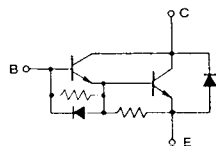
- ダーリントン・トランジスタ1個内蔵
- フリーホイール・ダイオード付
- 絶縁形
- UL認定品あり

Yellow Card No. : E80276 (N)

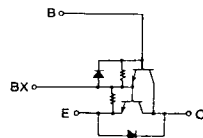
File No. : E80271

■等価回路

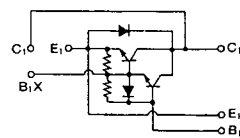
HA-1A



HA-1B



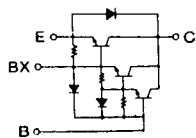
HA-1C



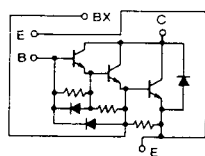
注1. $I_C = 1A$, $V_{EB} = 2V$, #印は V_{CEX} ($V_{EB} = 2V$)。 注2. 60Hz, 単相半波1サイクル波高値。 注3. $T_C = 25^\circ C$ 。 注4. AC, 1分間。

型 名	最 大 定 格 (T _J =25℃)											電 氣 的 特 性										
	V _{CBO}	V _{CEX (SUS)} (注1)	V _{EBO}	I _C	I _B	I _F	I _{FM} (注2)	P _C (注3)	T _J	T _{11E}	V _{1E0} (注4)	I _{CEX} (mA)	V _{CE} (V)	V _{EB} (V)	I _{EB0} (mA)	V _{EB} (V)	V _{CE0 (SUS)} (V)	I _C	h _{FE}	V _{CE}	I _C	
	(V)	(V)	(V)	(A)	(A)	(A)	(A)	(W)	(℃)	(℃)	(V)				最大		最小	(A)		最 小	(V)	(A)
QM5HG-24	1200	1200 #	7	5	2.0	—	—	100	150	-40~125	—	1	1200	2	50	7			5	1	3	
QM10HB-2H	1000	1000	7	10	2.0	—	—	100	150	-40~125	2500				150	7			5	1	15	
QM15HA-H	600	600	5	15	0.9	15	—	100	150	-40~125	2500				50	5			50/100	2/5	15	
QM30HA-H	600	600	7	30	1.8	30	300	250	150	-40~125	2500	1	600	2	200	7			75/100	2/5	30	
QM30HC-2H	1600	1600 #	10	30	5.0	30	300	310	150	-40~125	—	1	1600	2	400	10			75	5	30	
QM30HQ-24	1200	1200	7	30	6.0	—	—	310	150	-40~125	2500	1	1200	2	200	7			5	1	15	
QM30HY-2H	1000	1000	7	30	2.0	30	300	310	150	-40~125	2500	1	1000	2	200	7			75/100	2.8/5	30	
QM50HA-H	600	600	7	50	3.0	50	500	310	150	-40~125	2500	1	600	2	200	7			75/100	2/5	50	
QM50HC-H	900	900 #	10	50	3.0	30	300	310	150	-40~125	—	1	900	2	300	10			100	5	50	
QM50HF-H	900	900 #	10	50	3.0	30	300	160	150	-40~125	1500	1	900	2	300	10			100	5	50	
QM50HG-H	600	600	7	50	3.0	50	300	140	150	-40~125	2000	1	600	2	100	7			100	5	50	
QM50HG-4	200	200	7	50	3.0	50	300	140	150	-40~125	1500	1	200	2	200	7			1000	1.5	50	
QM50HJ-H	900	900 #	10	50	3.0	30	300	178	150	-40~125	—	3	900	2	100	10			100	5	50	
QM50HY-2H	1000	1000	7	50	3.0	50	500	400	150	-40~125	2500	1	1000	2	200	7			75/100	2.8/5	50	
QM75HA-H	600	600	7	75	4.5	75	750	350	150	-40~125	2500	1	600	2	200	7			75/100	2/5	75	
QM100HC-M	400	350	7	100	3.0	100	1000	420	150	-40~125	—	1	350	2	200	7			100/200	2/5	100	
QM100HY-H	600	600	7	100	6.0	100	1000	620	150	-40~125	2500	2	600	2	100	7			75/100	2/5	100	
QM100HY-2H	1000	1000	7	100	5.0	100	1000	800	150	-40~125	2500	2	1000	2	400	7			75/100	2.8/5	100	
QM150HY-H	600	600	7	150	9.0	150	1500	690	150	-40~125	2500	2	600	2	150	7			75/100	2/5	150	
QM150HY-2H	1000	1000	7	150	8.0	150	1500	1000	150	-40~125	2500	2	1000	2	200	7			75/100	2.8/5	150	

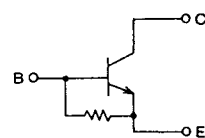
HA-2B



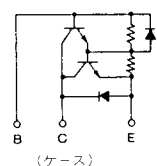
HA-2C



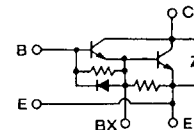
HB-1A



HC-1A

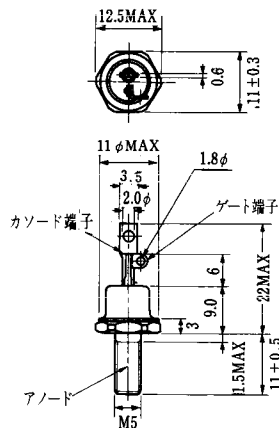


HC-1B

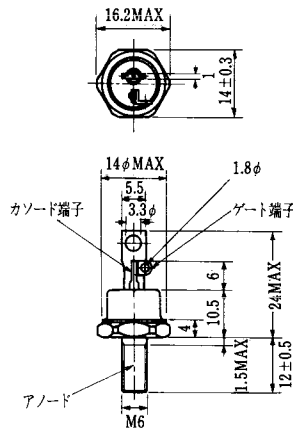


(T _J = 25℃)										エミッタ・コレクタ間ダイオード						熱抵抗		等価回路	外形図	記事	型名	
飽和電圧 (V)		I _C	I _B	スイッチング時間 (μs)			I _{B1}	I _{B2}	V _{CE}	I _C	V _F (V)	I _F	t _{rr} (μs)	I _R	V _{BE}	di/dt (A/μs)	θ _{J-C} (℃/W)					
V _{CE}	V _{BE}			t _{on}	t _{off}	t _f											最大					最大
最大	最大	(A)	(A)	最大	最大	最大	(A)	(A)	(V)	(A)	最大	(A)	最大	(A)	(V)	(A/μs)	最大	最大				
1.0	1.5	3	0.6	1.0	4.0	0.8	0.6	-1.2	600	3	—	—					1.25		HB-1A	M-1A1C	非絶縁形	QM5HC-24
1.0	1.5	5	1.0	1.5	7.0	2.0	1.0	-1.0	600	15							1.2		HB-1A	M-1A1A	UL認定済	QM10HB-2H
2.0	2.5	15	0.3	1.5	8.0	2.0	0.3	-0.3	300	15	1.5	15					1.2		HA-1A	M-3A1A	UL認定済	QM15HA-H
2.0	2.5	30	0.4	1.5	12	3.0	0.6	-0.6	300	30	1.85	30					0.5	1.0	HA-1A	M-3B1A	UL認定済	QM30HA-H
2.0	2.5	30	2.0	4.0	5.0	3.0	2.0	-5.0	100	30	1.5	30					0.4	0.8	HC-1A	M-2A1A	非絶縁形	QM30HC-2H
1.0	1.5	15	3.0	1.5	7.0	2.0	3.0	-3.0	600	15	—	—					0.4		HB-1A	M-2B1A	FD無, UL認定済	QM30HQ-24
2.5	3.5	30	0.6	2.5	15	3.0	0.6	-0.6	600	30	1.8	30					0.4	1.5	HY-2A	M-4A1A	UL認定済	QM30HY-2H
2.0	2.5	50	0.65	1.5	12	3.0	1.0	-1.0	300	50	1.75	50					0.4	1.3	HA-1A	M-3B1A	UL認定済	QM50HA-H
2.0	2.5	50	1.0	2.0	5.0	2.0	1.0	-1.0	300	50	1.8	30					0.4	1.2	HC-1A	M-2A1A	非絶縁形	QM50HC-H
2.0	2.5	50	1.0	2.0	5.0	2.0	1.0	-5.0	300	50	1.8	50					0.8	1.3	HA-1A	M-3C1A		QM50HF-H
2.0	2.5	50	1.0	1.5	10	3.5	1.0	-1.0	300	50	1.8	50					0.9	1.5	HA-1A	M-3C1A		QM50HG-H
1.5	2.5	50	0.05	1.5	8	3.0	0.1	-1.0	100	50	1.8	50					0.9	1.5	HA-1A	M-3C1A		QM50HG-4
2.0	2.5	50	1.0	2.0	5.0	2.0	1.0	-5.0	300	50	1.8	50					0.7	1.4	HA-1A	M-1A1B	非絶縁形	QM50HJ-H
2.5	3.5	50	1.0	2.5	15	3.0	1.0	-1.0	600	50	1.8	50					0.31	1.2	HY-2A	M-4A1A	UL認定済	QM50HY-2H
2.0	2.5	75	1.0	2.5	12	3.0	1.5	-1.5	300	75	1.85	75					0.35	1.3	HA-1A	M-3B1A		QM75HA-H
2.0	2.5	100	1.0	2.0	10	3.0	2.0	-2.0	200	100	1.5	100					0.3	0.5	HA-1A	M-3B1B	非絶縁形	QM100HC-M
2.0	2.5	100	1.3	2.0	12	3.0	2.0	-2.0	300	100	1.75	100					0.2	0.65	HY-1A	M-4A1A	UL認定済	QM100HY-H
2.5	3.5	100	2.0	3.0	15	3.0	2.0	-2.0	600	100	1.8	100					0.155	0.65	HY-2A	M-4A1A	UL認定済	QM100HY-2H
2.0	2.5	150	2.0	2.5	12	3.0	3.0	-3.0	600	150	1.8	150					0.18	0.6	HY-1A	M-4A1A	UL認定済	QM150HY-H
2.5	3.5	150	3.0	3.0	15	3.0	3.0	-3.0	600	150	1.8	150					0.125	0.6	HY-2A	M-5A1A	UL認定済	QM150HY-2H

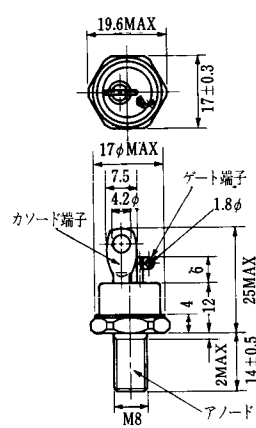
FD-1



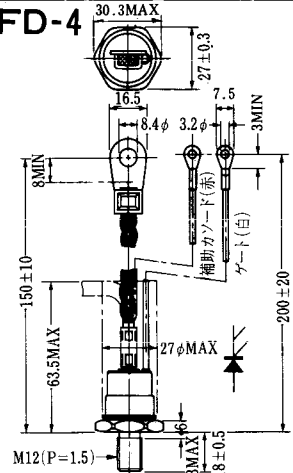
FD-2



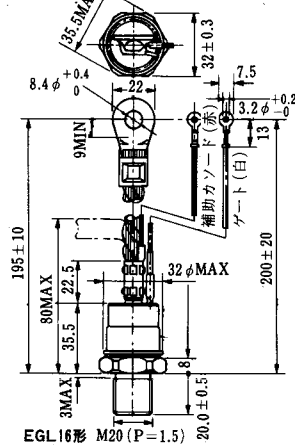
FD-3



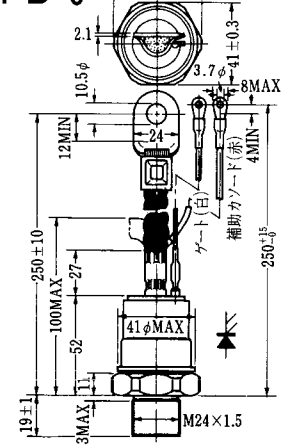
FD-4



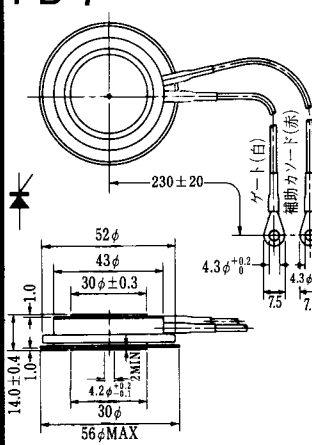
FD-5



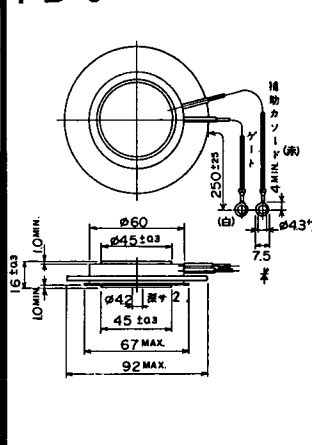
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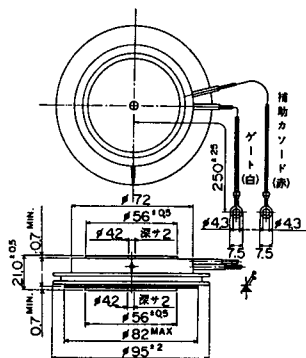
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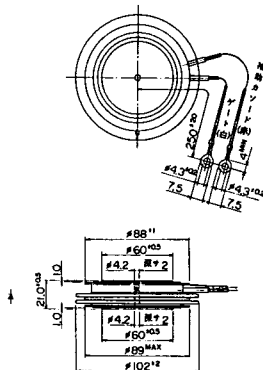
FD-8



FD-9

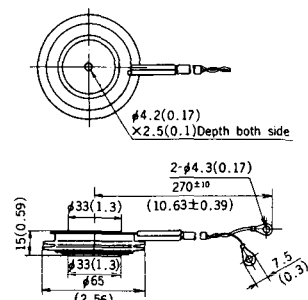
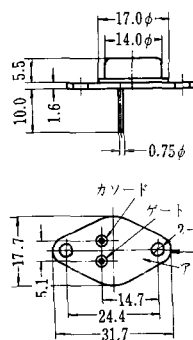
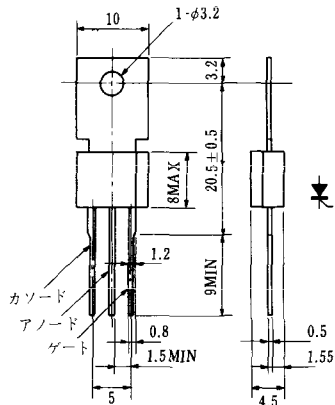


FD-10

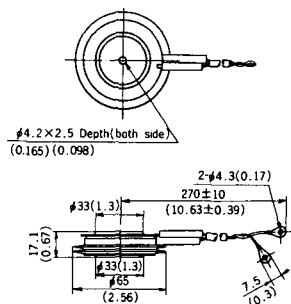


FD-11

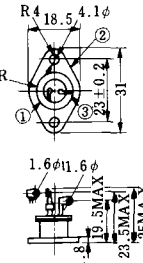
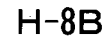
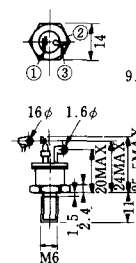
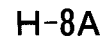
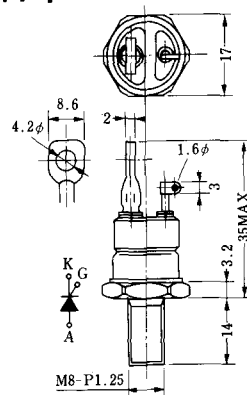
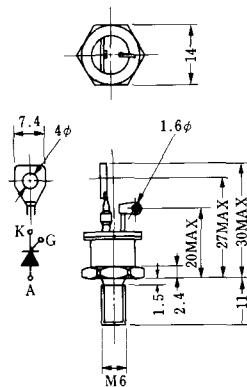
FD-12



Unit in mm (inch)

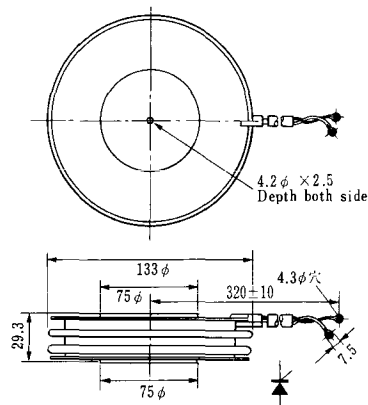


Unit in mm(inch)

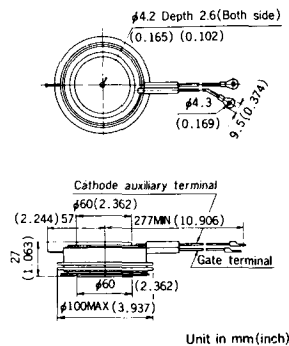


- ①アノード
②カソード
③ゲート

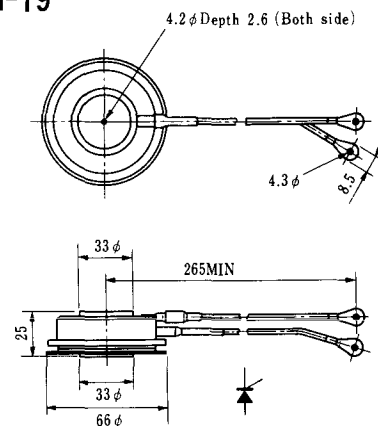
H-17



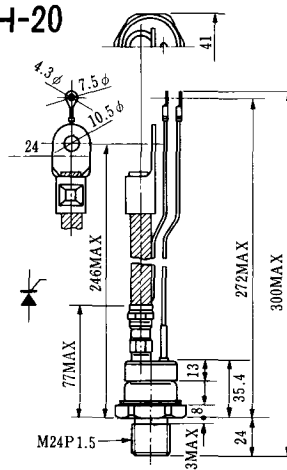
H-18



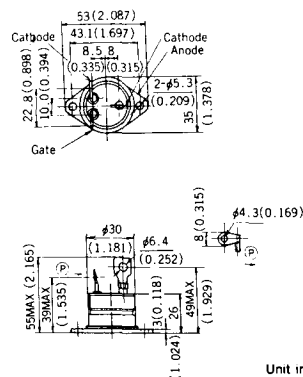
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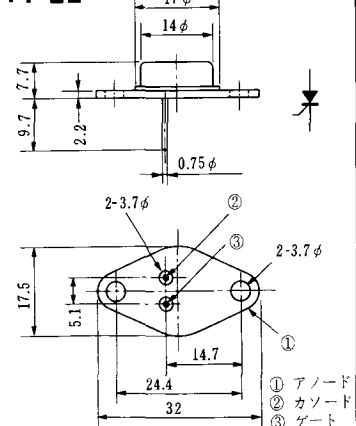
H-20



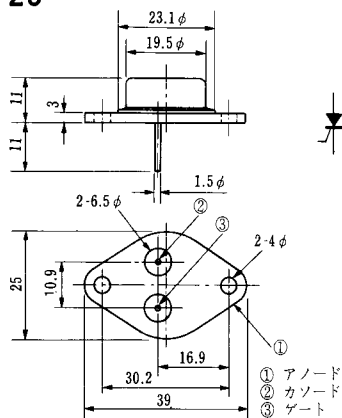
H-21



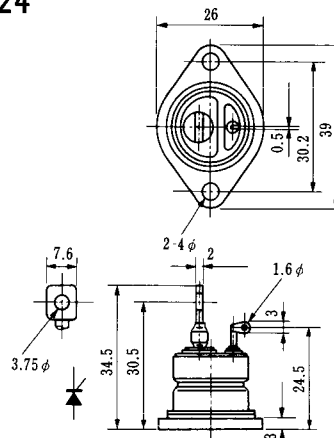
H-22



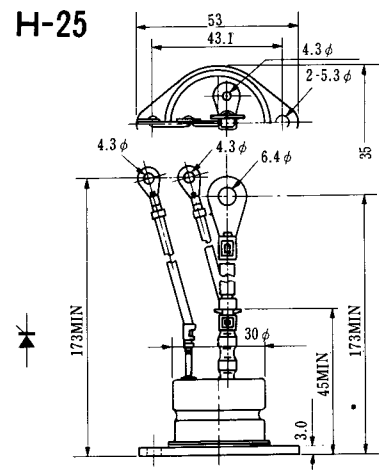
H-23



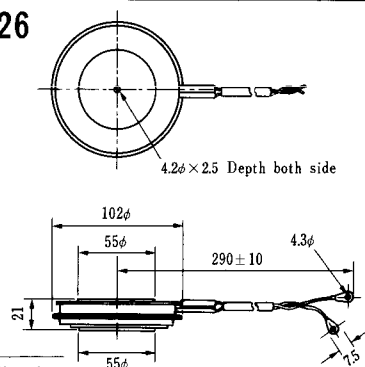
H-24



H-25

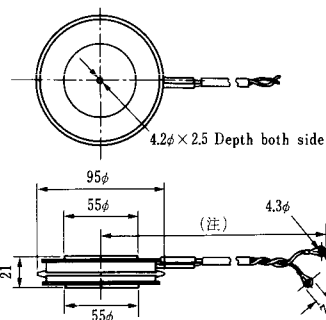


H-26



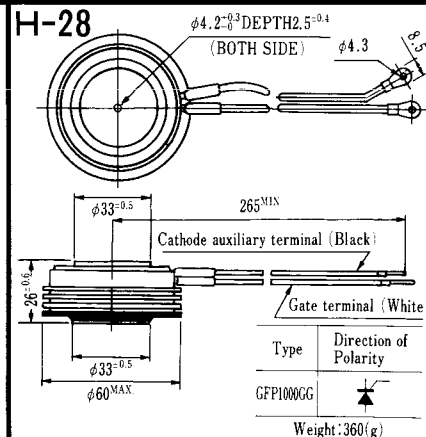
Type	Direction of polarity
CA12	

H-27



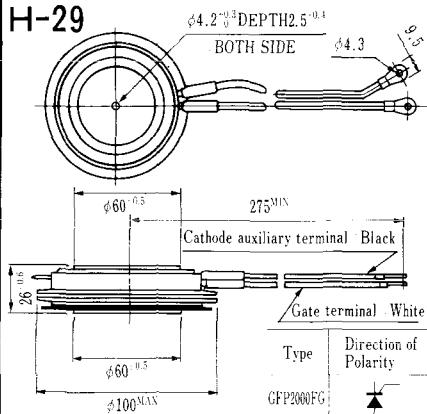
Type	Direction of polarity
CF11V	

H-28



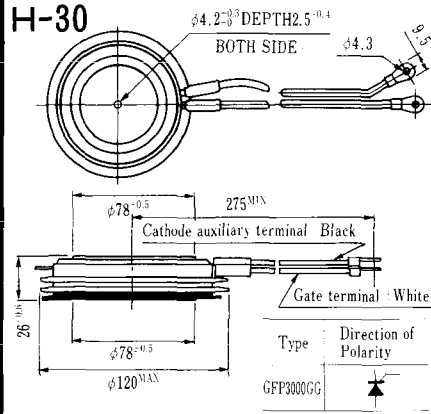
Note: The thickness is a dimension in press at the rated mounting force.

H-29



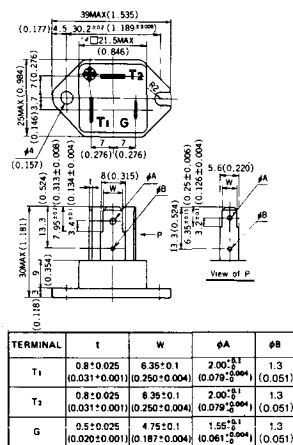
Note : The thickness is a dimension in press at the rated mounting force. Weight: 870(g)

H-30



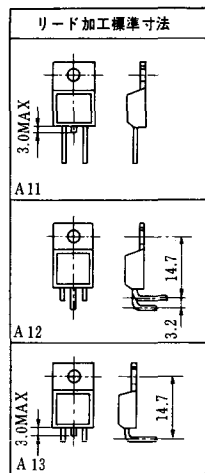
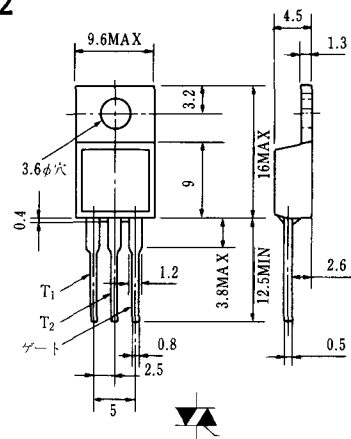
Note : The thickness is a dimension in press at the rated mounting force. Weight: 1,460(g)

HT-1

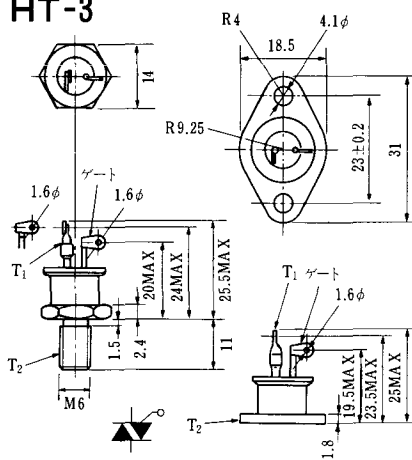


Unit in mm (inch)

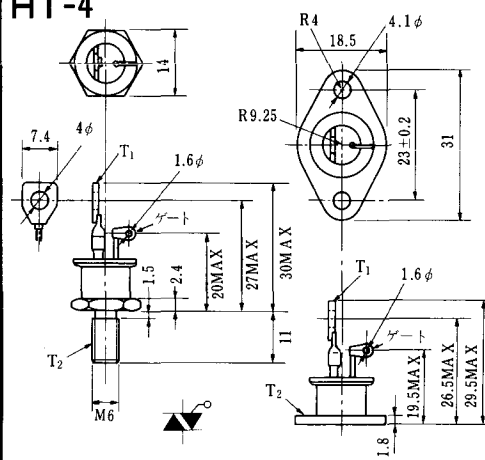
HT-2



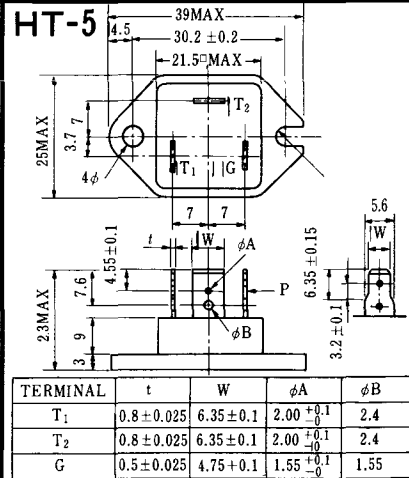
HT-3



HT-4

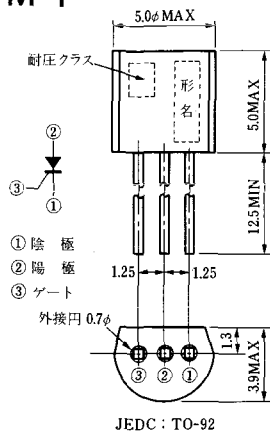


HT-5

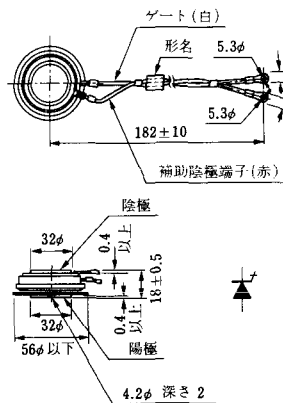


《寸法図単位：mm》

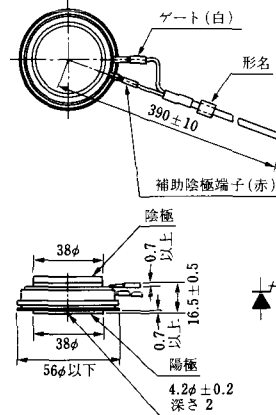
M-1



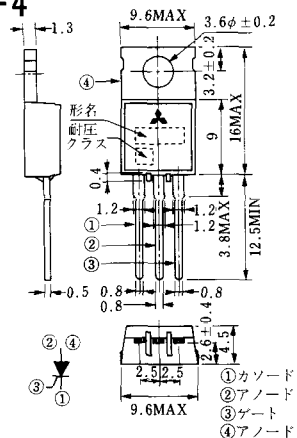
M-2



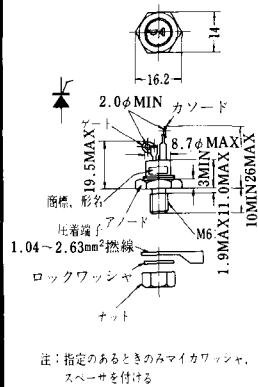
M-3



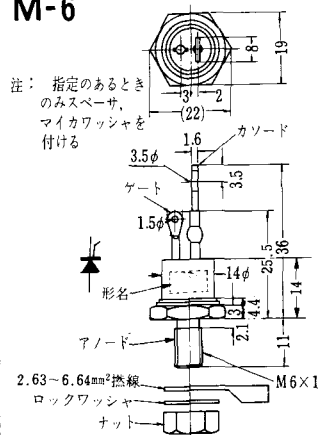
M-4



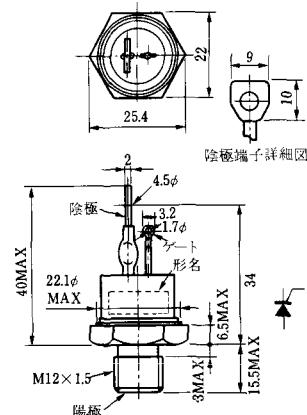
M-5



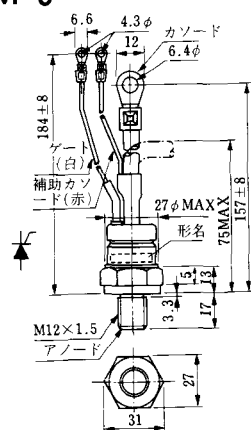
M-6



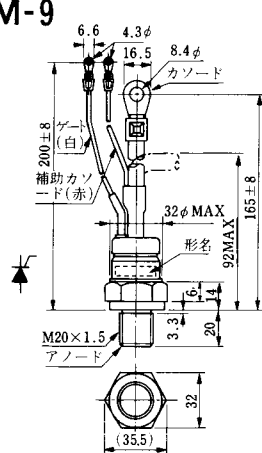
M-7



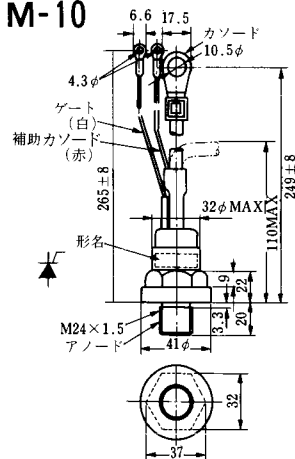
M-8



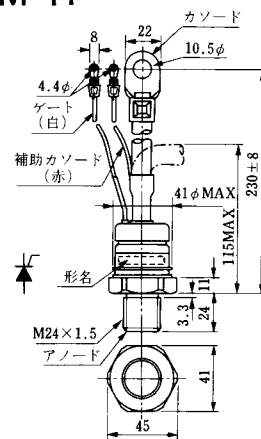
M-9



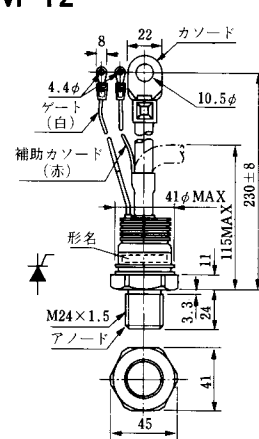
M-10



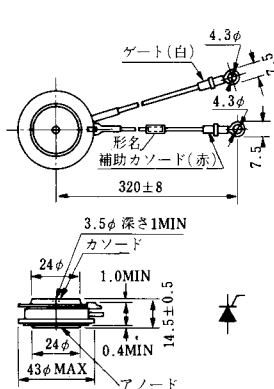
M-11



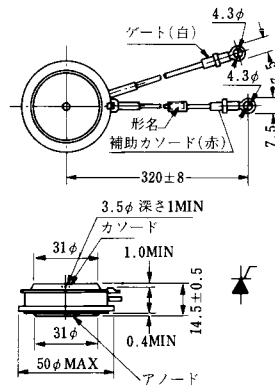
M-12



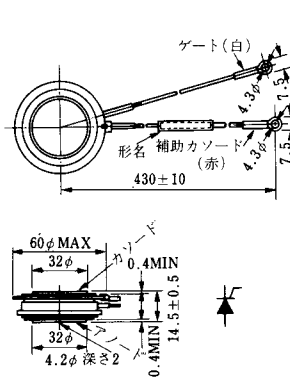
M-13



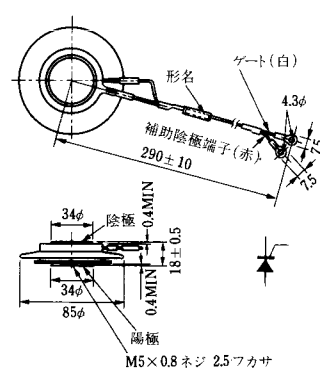
M-14



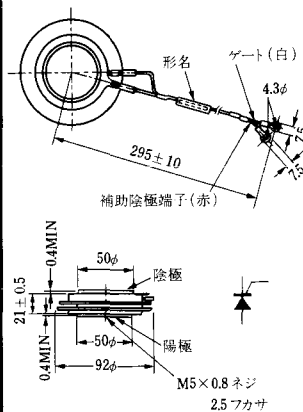
M-15



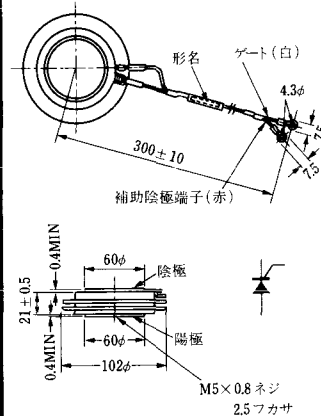
M-16



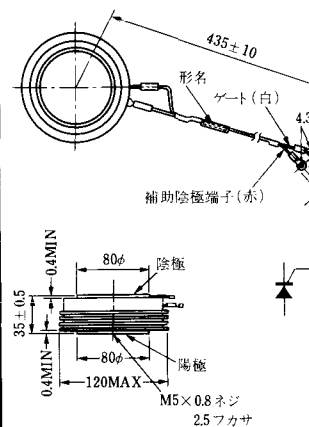
M-17



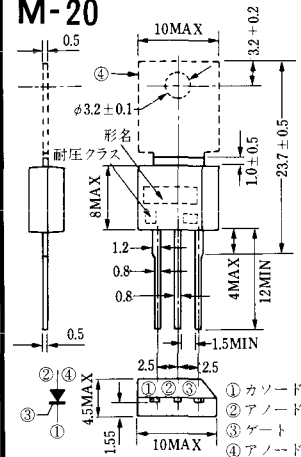
M-18



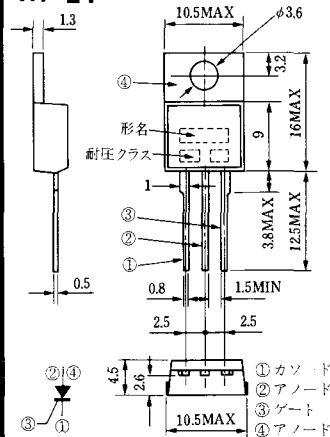
M-19



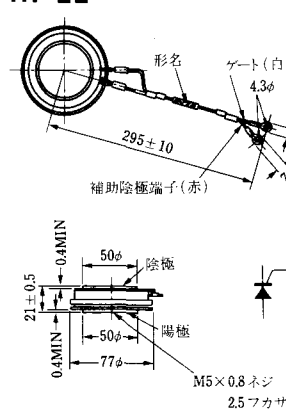
M-20



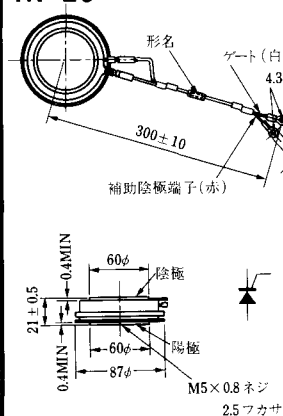
M-21



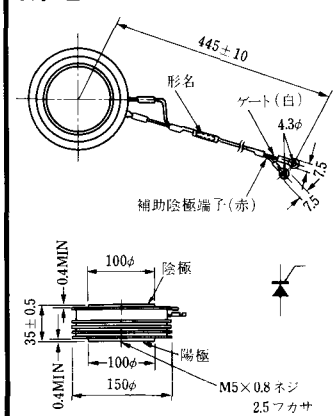
M-22



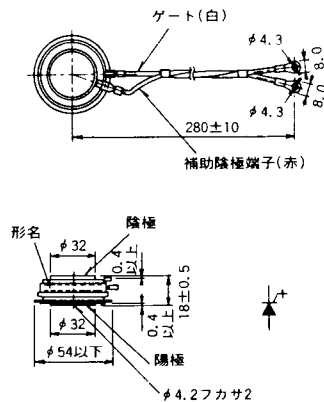
M-23



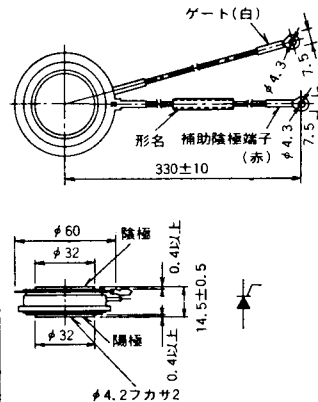
M-24



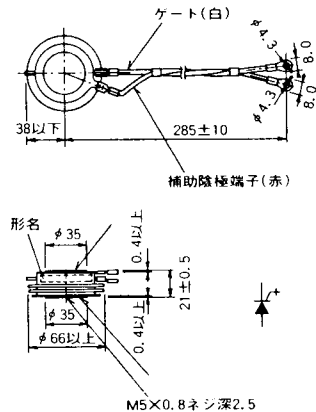
M-25



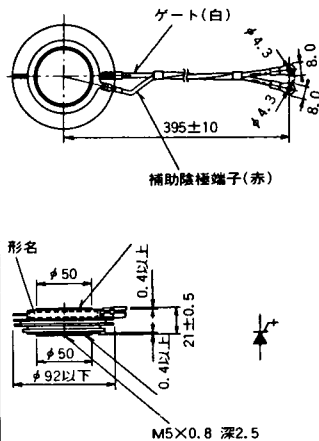
M-26



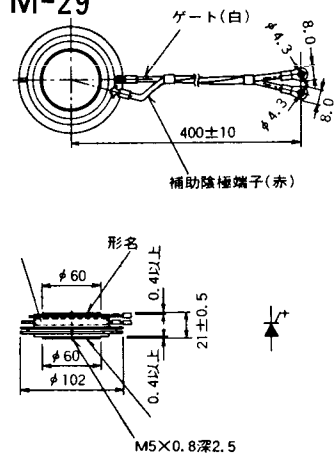
M-27



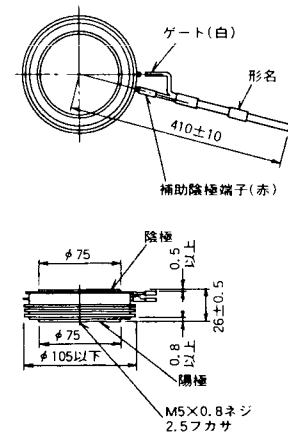
M-28



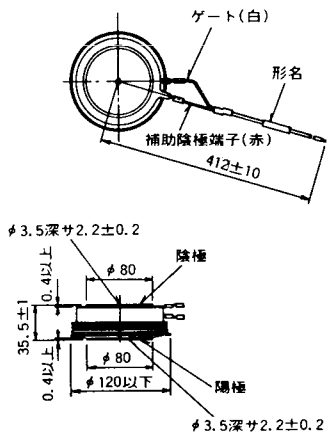
M-29



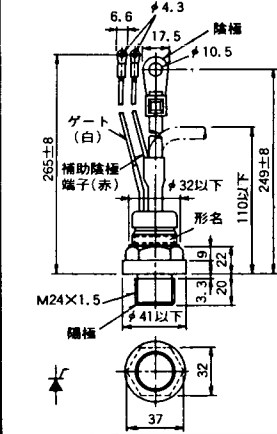
M-30



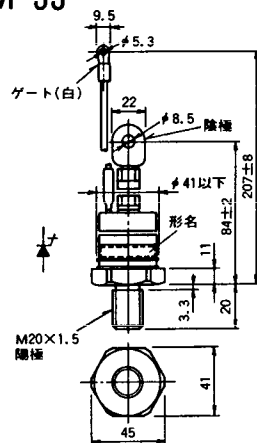
M-31



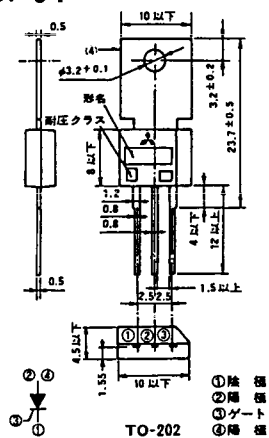
M-32



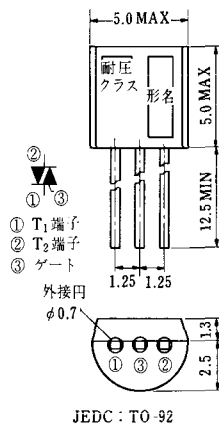
M-33



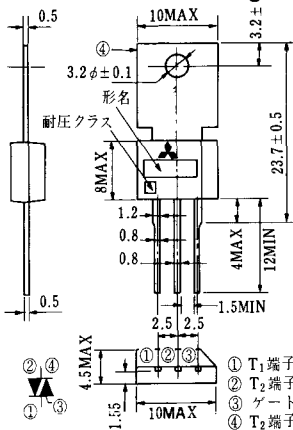
M-34



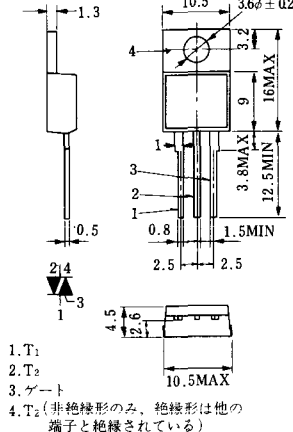
MT-1



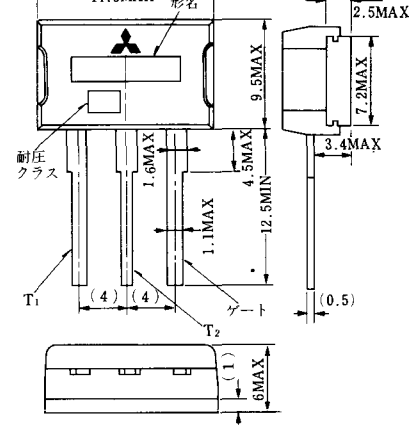
MT-2



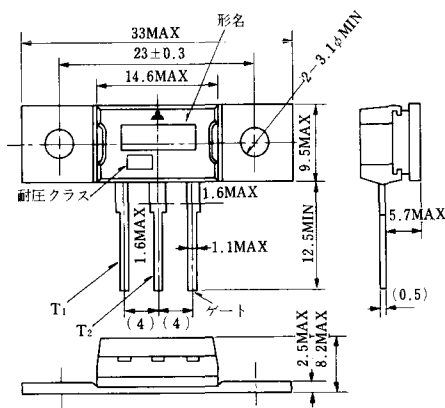
MT-3



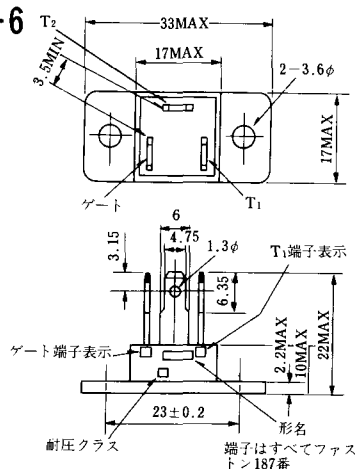
MT-4



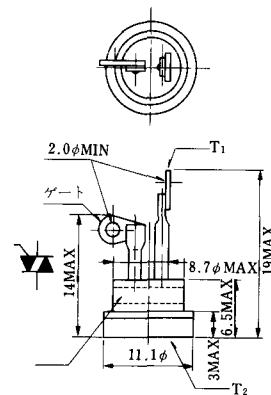
MT-5



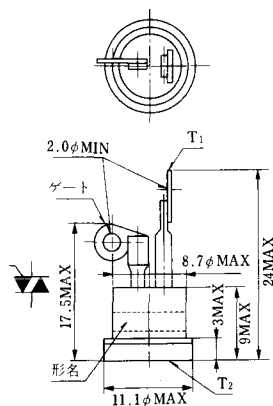
MT-6



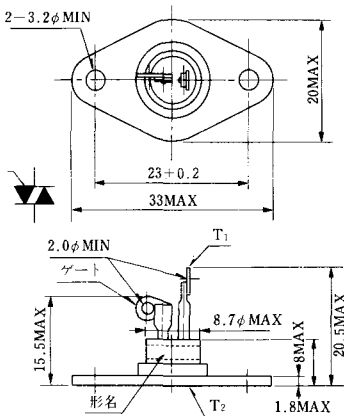
MT-7



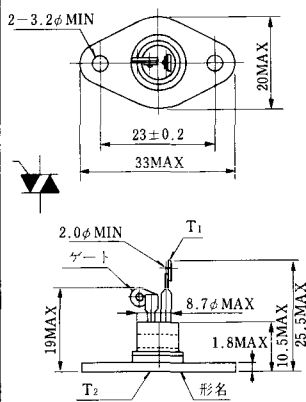
MT-8



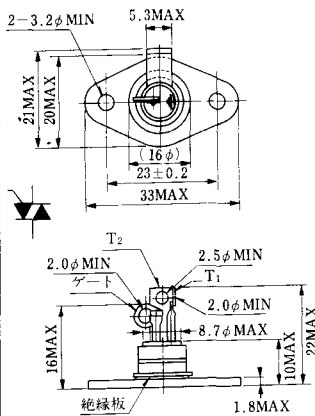
MT-9



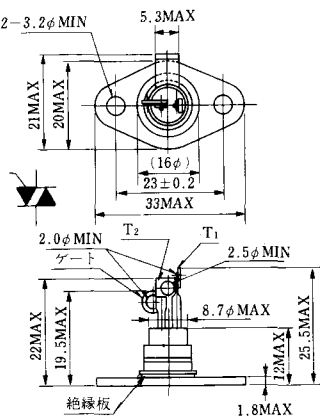
MT-10



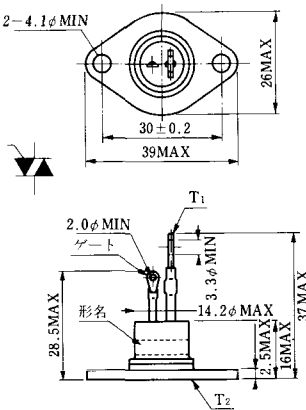
MT-11



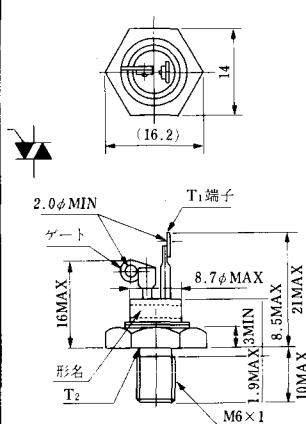
MT-12



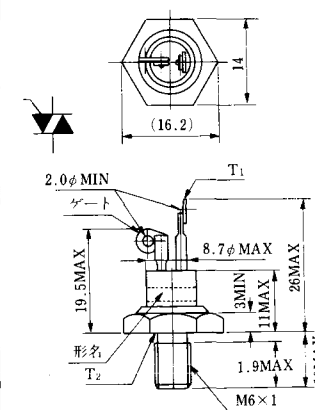
MT-13



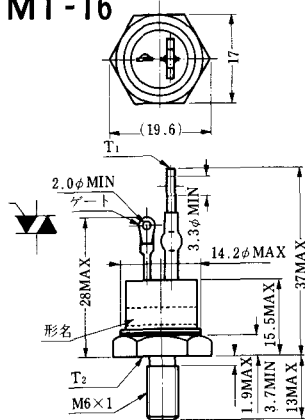
MT-14



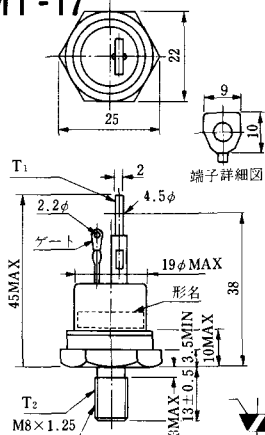
MT-15



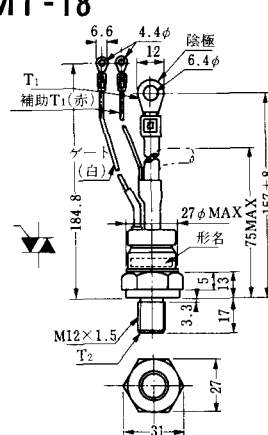
MT-16



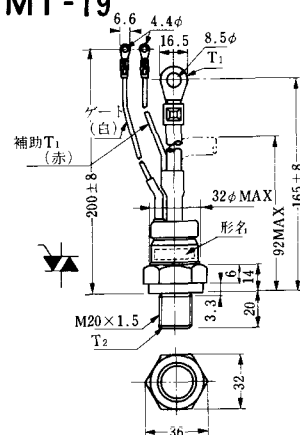
MT-17



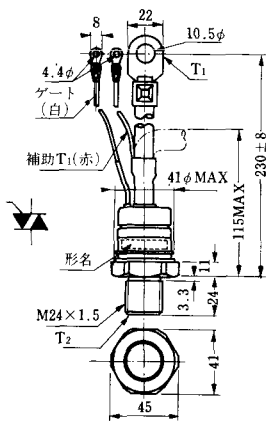
MT-18



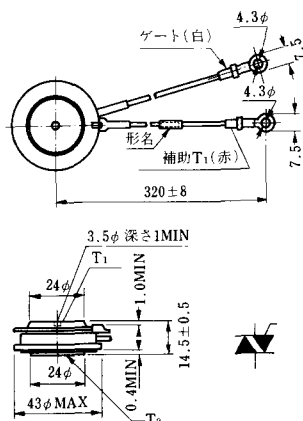
MT-19



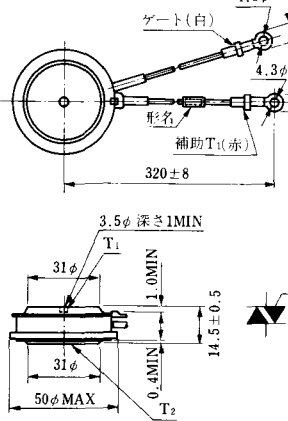
MT-20



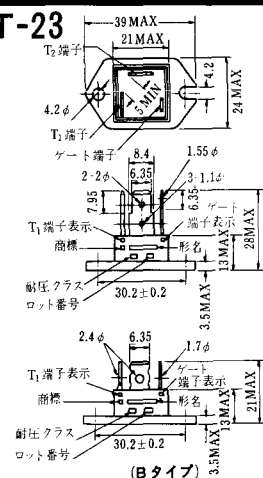
MT-21



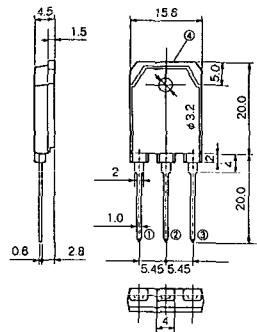
MT-22



MT-23



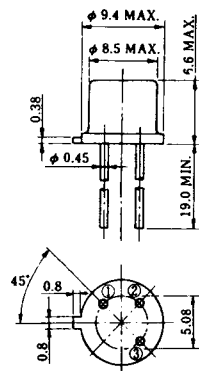
MT-24



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

TO - 3P

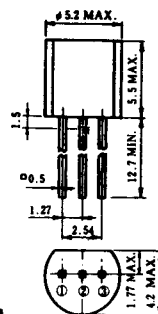
N-1



電極接続

- ① カソード
- ② ゲート
- ③ アノード

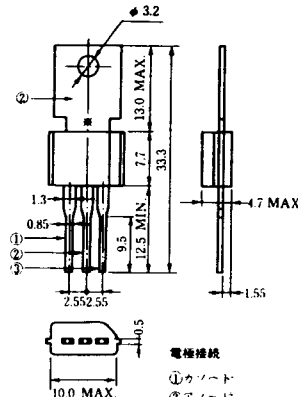
N-2



電極接続

- ① ヤート
- ② アノード
- ③ カソード

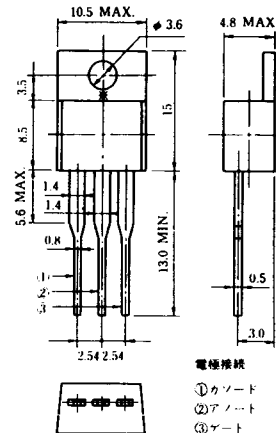
N-3



電極接続

- ① カソード
- ② アノード
- ③ ゲート

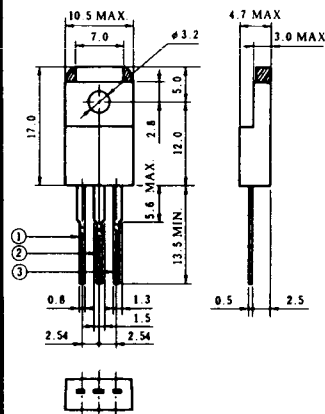
N-4



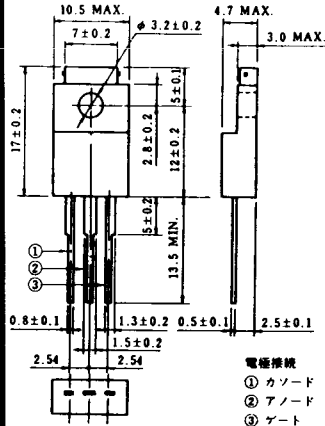
電極接続

- ① カソード
- ② アノード
- ③ ゲート

N-5



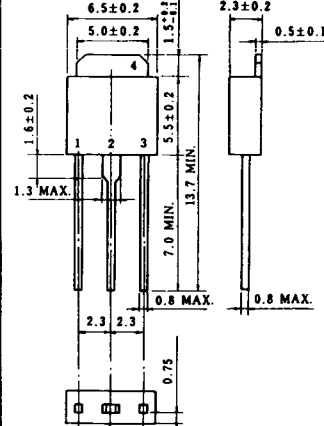
N-6



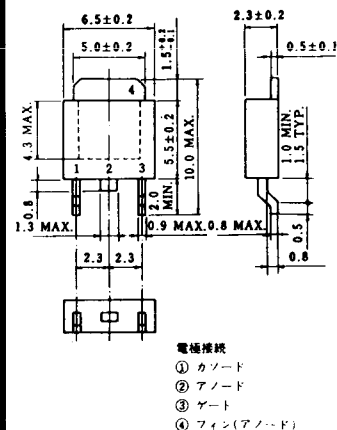
電極接続

- ① カソード
- ② アノード
- ③ ゲート

N-7



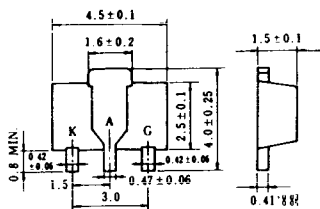
N-8



電極接続

- ① カソード
- ② アノード
- ③ ゲート
- ④ フィン(アノード)

N-9



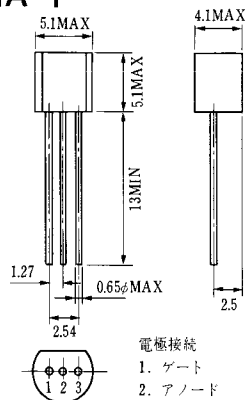
電極接続

K : カソード

A : アノード

G : ゲート

NA-1

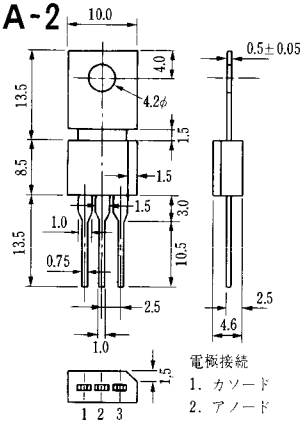


電極接続

1. ゲート
2. アノード
3. カソード

JEDEC: TO-92

NA-2



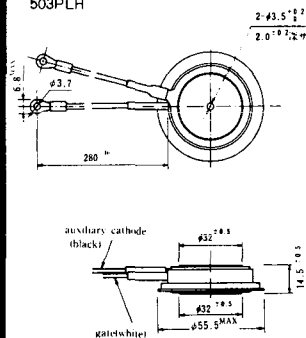
電極接続

1. カソード
2. アノード
3. ゲート

JEDEC: TO-202AA

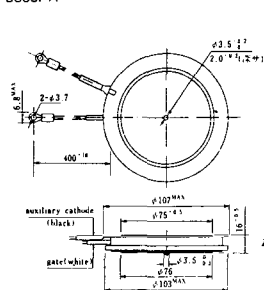
NI-16

503PLF
503PLH



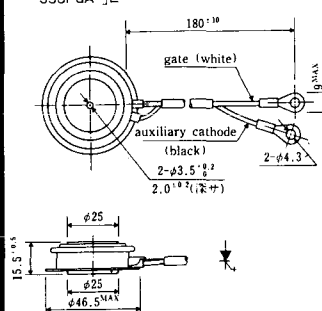
NI-17

3003PA



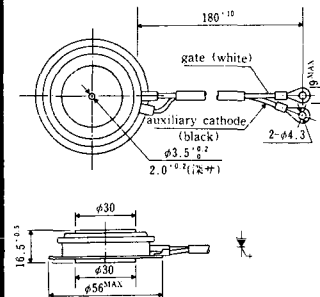
NI-18

353PGA「J」E



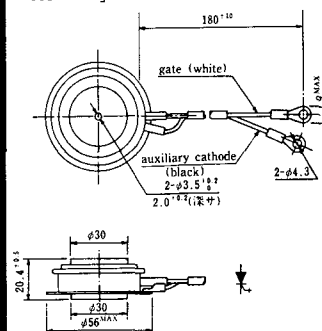
NI-19

603PGA, 603PGA「J」A, 803PGA



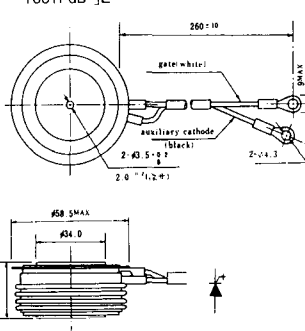
NI-20

603PGA「J」E



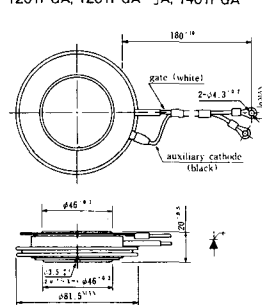
NI-21

1001PGB「J」E



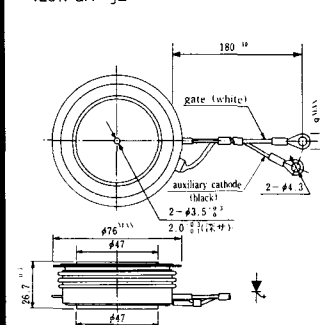
NI-22

1201PGA, 1201PGA「J」A, 1401PGA



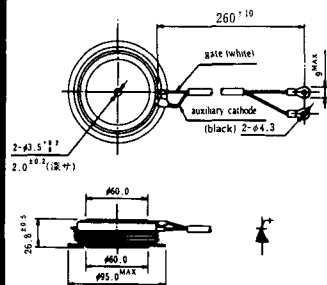
NI-23

1201PGA「J」E



NI-24

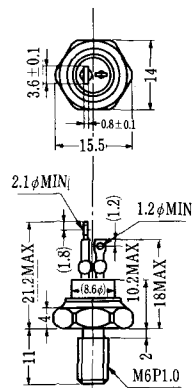
2001PGB^r JE



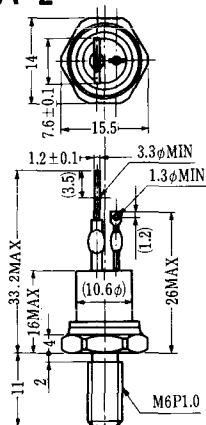
NI-25

NI-26

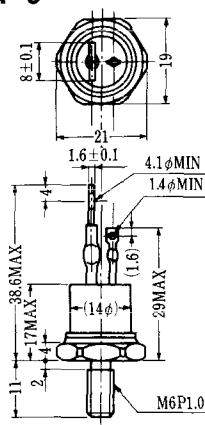
SA-1



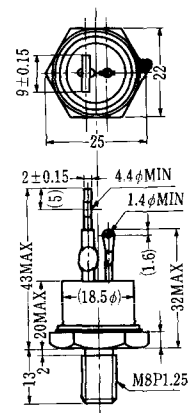
SA-2



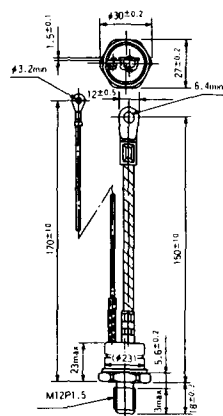
SA-3



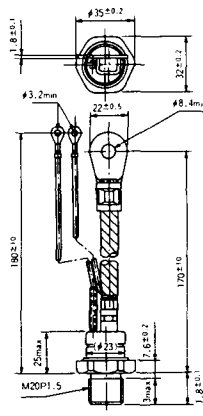
SA-4



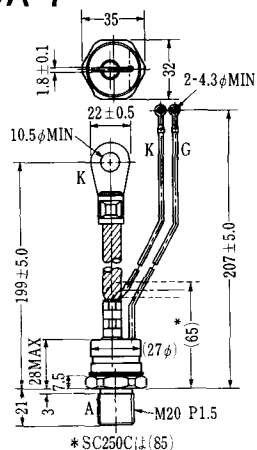
SA-5



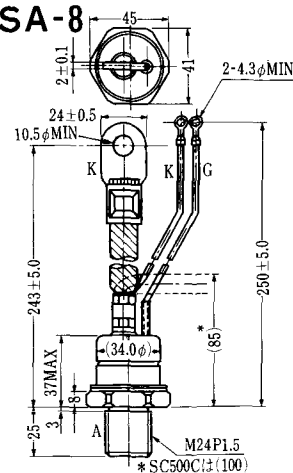
SA-6



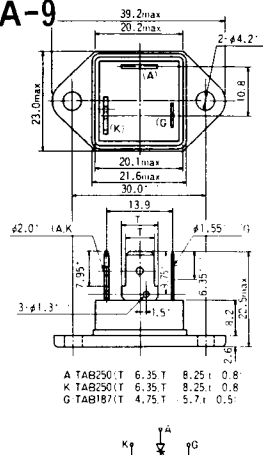
SA-7



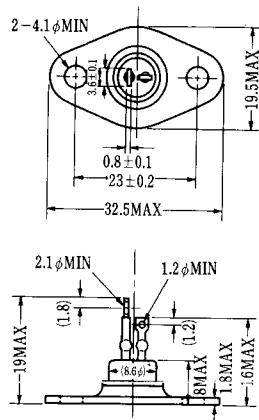
SA-8



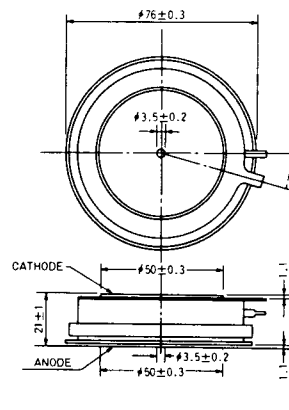
SA-9



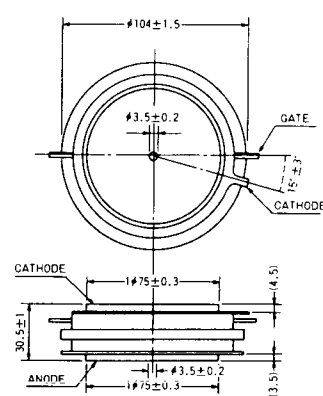
SA-10



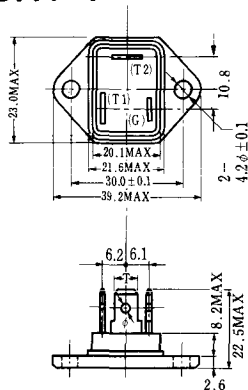
SA-11



SA-12

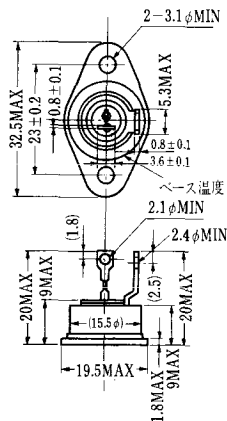


SAT-1

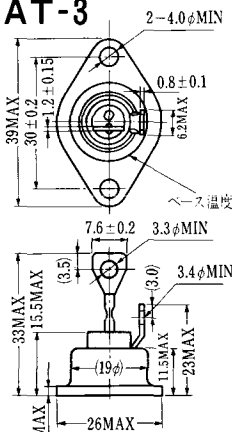


T1端子:ファストン250($T=6.35$, $t=0.8$, $\phi=1.65$)
T2端子:ファストン250($T=6.35$, $t=0.8$, $\phi=1.65$)
G端子:ファストン187($T=4.75$, $t=0.5$, $\phi=1.3$)

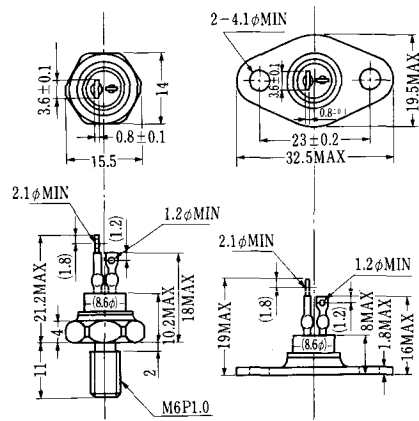
SAT-2



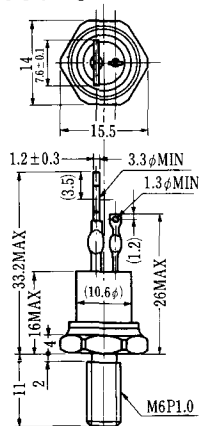
SAT-3



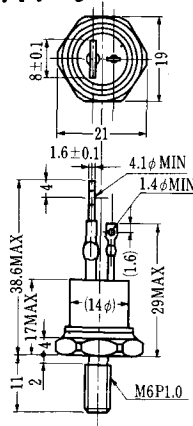
SAT-4



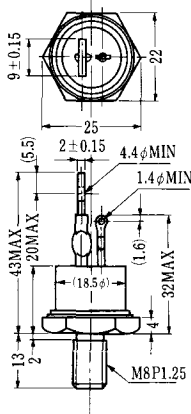
SAT-5



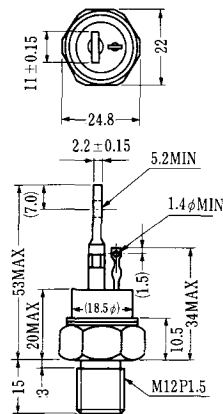
SAT-6



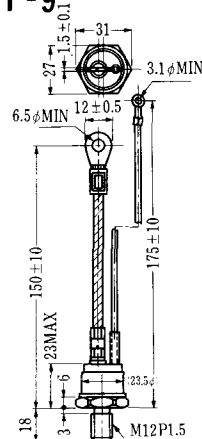
SAT-7



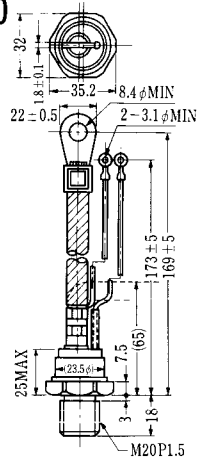
SAT-8



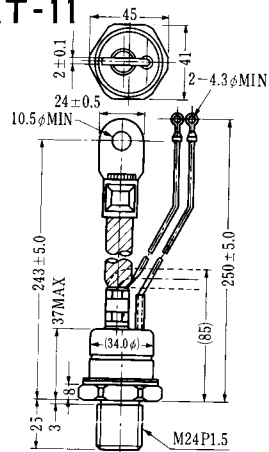
SAT-9.



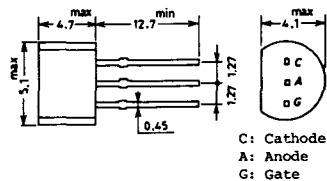
SAT-10



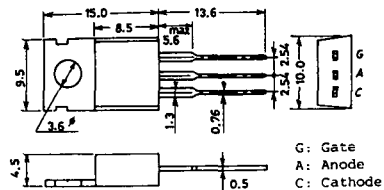
SAT-11



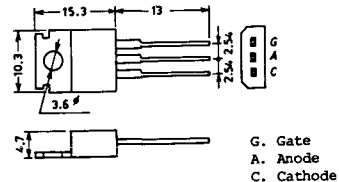
SY-1(1096A)



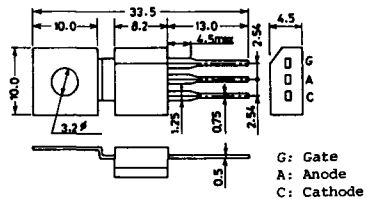
SY-2(1151)



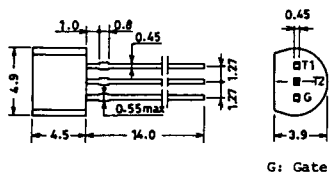
SY-3(1104)



SY-4(1150)

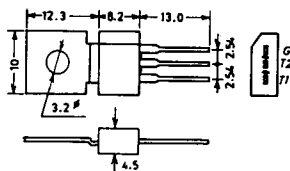


1097A

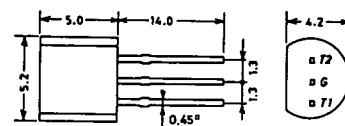


G: Gate

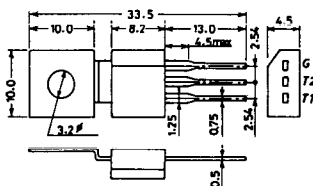
1102



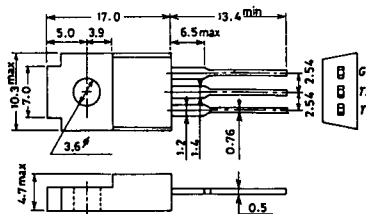
1141



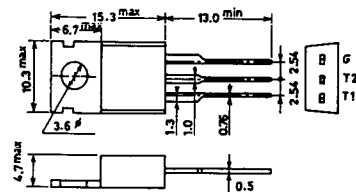
1142



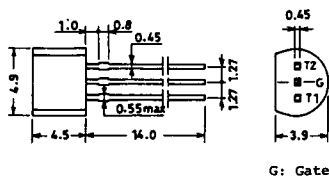
1144



1155

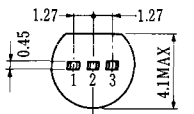
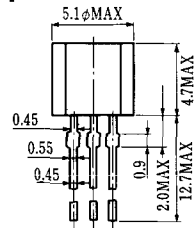


1192A



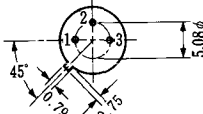
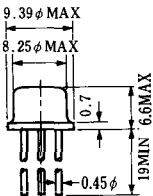
G: Gate

T-1 (13-5A1A)



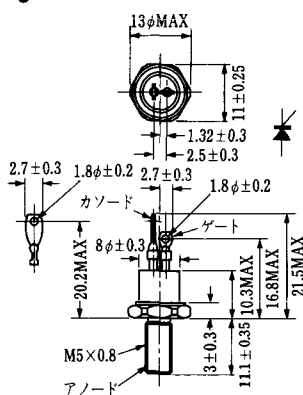
- 1 ゲート
- 2 アノード
- 3 カソード

T-2
(13-8A1A)



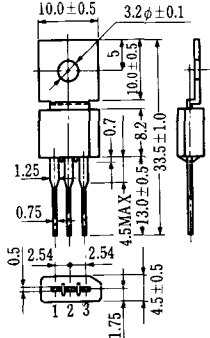
1. カソード
2. ゲート
3. アノード(ケース)

T-3 (13-8C1A)



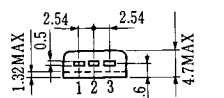
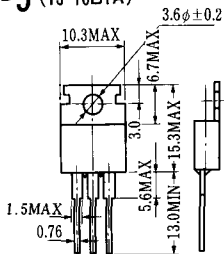
- 1 カソード
- 2 アノード
- 3 ゲート

T-4 (13-10A1A)



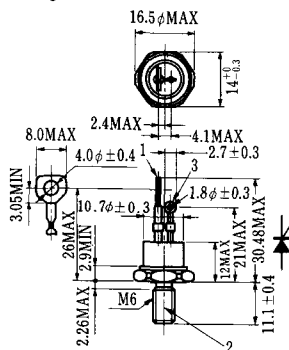
- 1 カソード
- 2 アノード
- 3 ゲート

T-5 (13-10B1A)



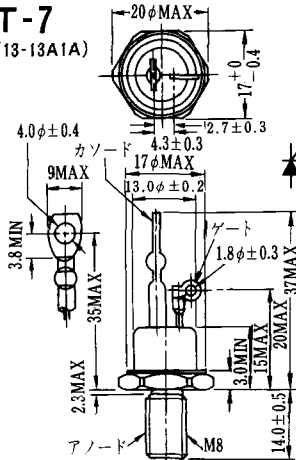
- 1 カソード
- 2 アノード
- 3 ゲート

T-6 (13-11D1A)



- 1 カソード
- 2 アノード
- 3 ゲート

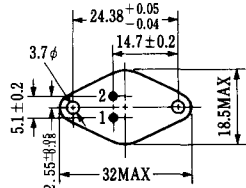
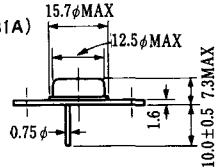
T-7
(13-13A1A)



- アノード

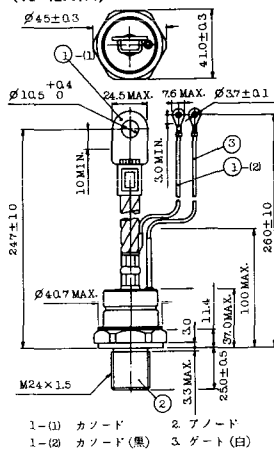
T-8

(13-13B1A)

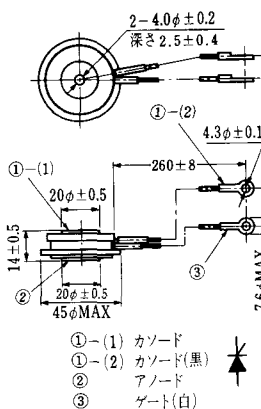


1. ゲート
2. カソード
アノード(ケース)

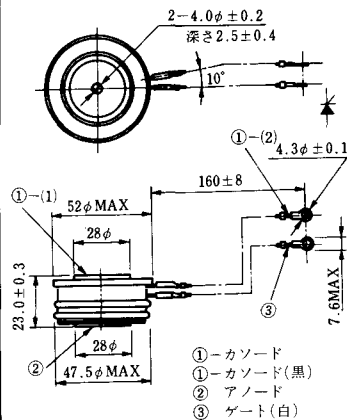
T-17 (13-42A1A)



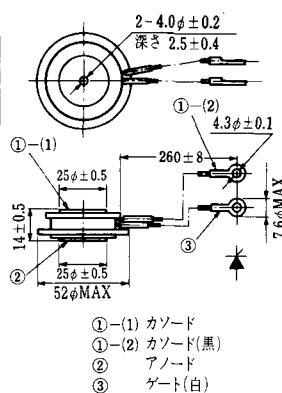
T-18 (13-45D1A)



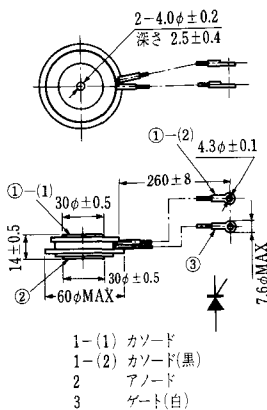
T-19 (13-52B1A)



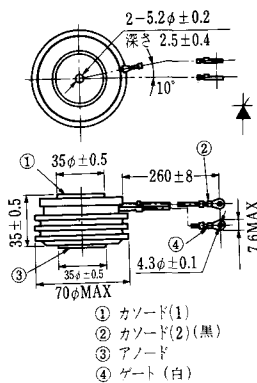
T-20 (13-52C1A)



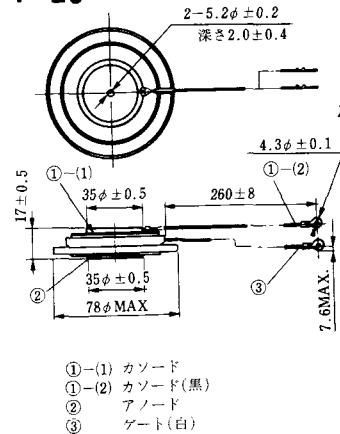
T-21 (13-60A1A)



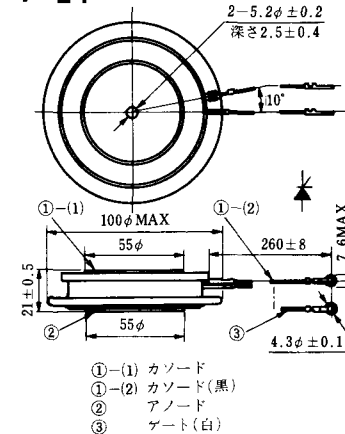
T-22 (13-70C1A)

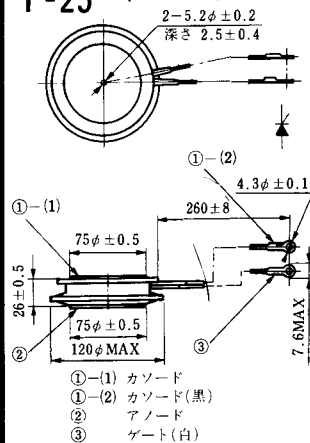
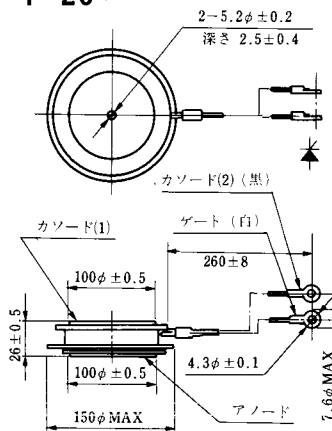
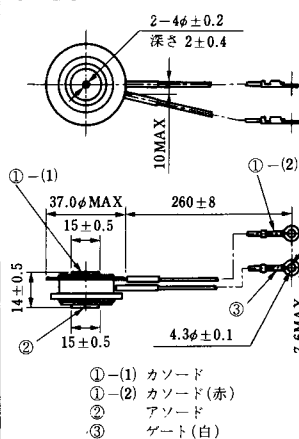
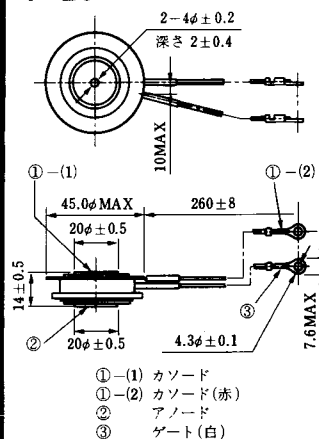
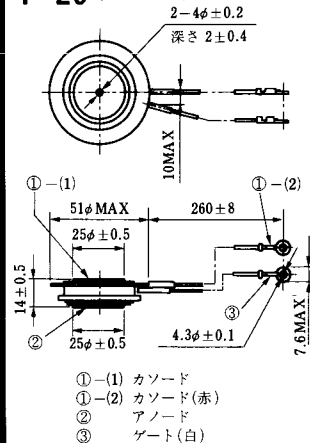
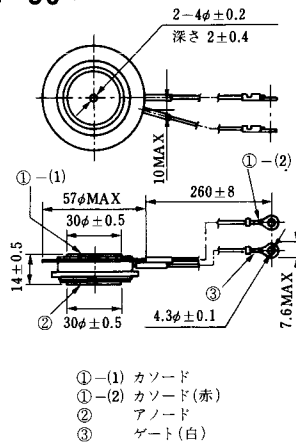
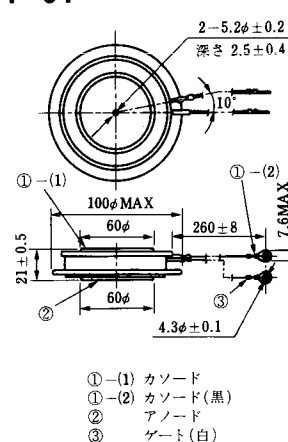
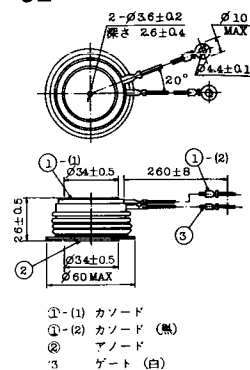


T-23 (13-78A1A)

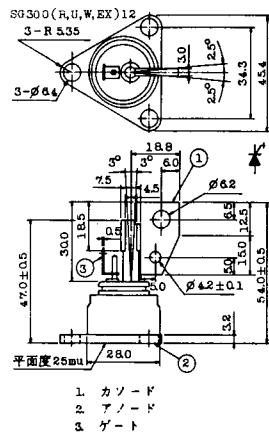


T-24 (13-100C1A)

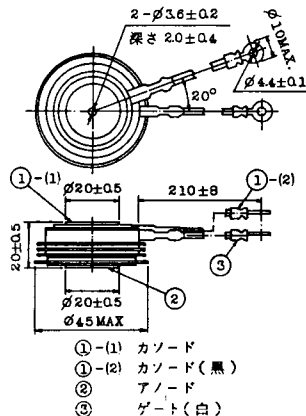


T-25 (13-120A2A)**T-26** (13-150A1A)**T-27** (13-37A1A)**T-28** (13-45E1A)**T-29** (13-51A1A)**T-30** (13-57A1A)**T-31** (13-100E1A)**T-32** (13-60E3A)

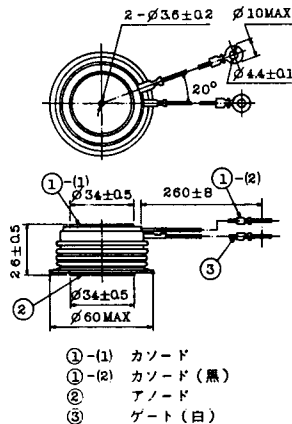
T-41 (13-28A2A)



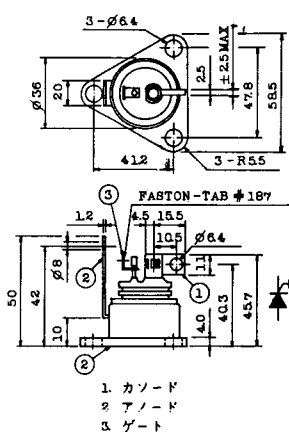
T-42 (13-45F1A)



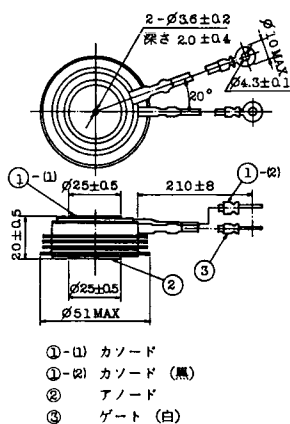
T-43 (13-60E2A)



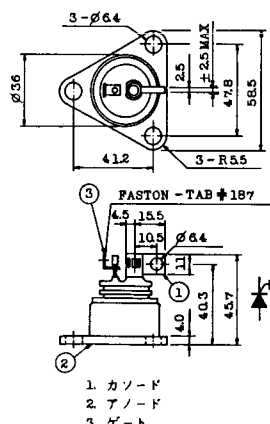
T-44 (13-36A1A)



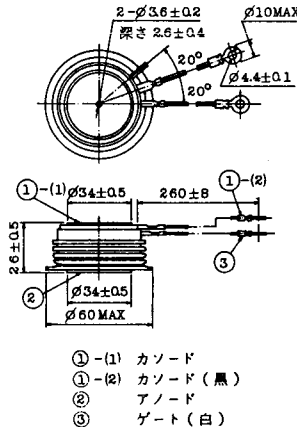
T-45 (13-51B1A)



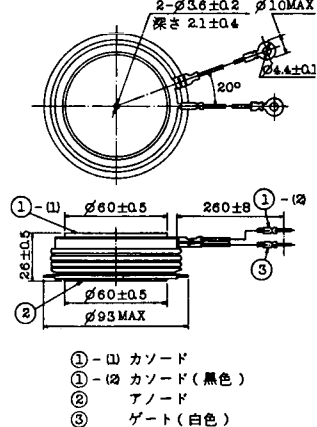
T-46 (13-36B1A)



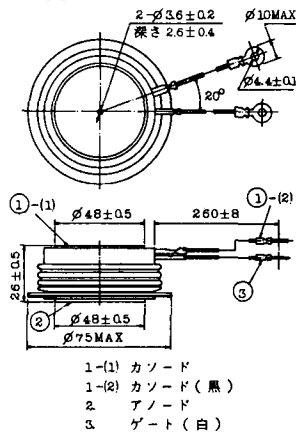
T-47 (13-60E1A)



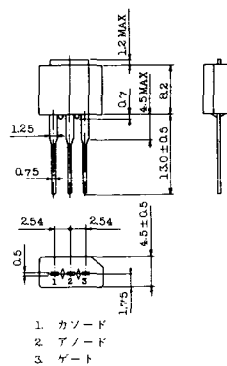
T-48 (13-93C1A)



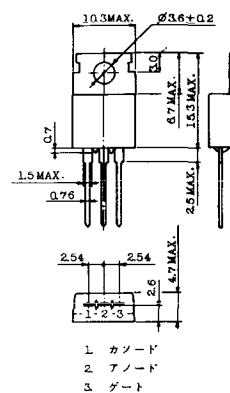
T-49 (13-75A1A)



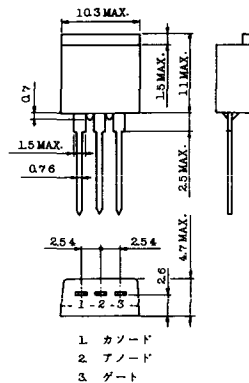
T-50 (13-10A3A)



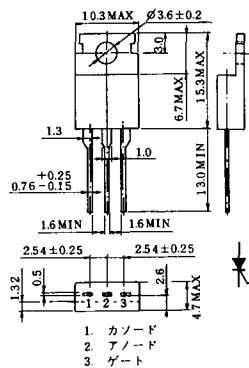
T-51 (13-10D1A)



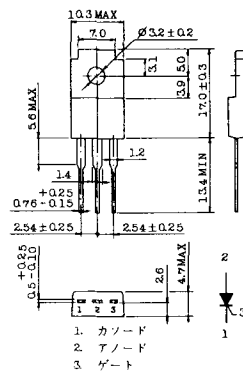
T-52 (13-10D2A)



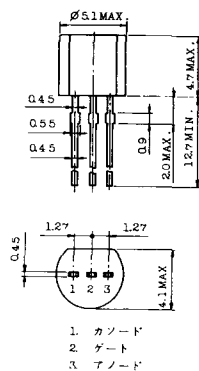
T-53 (13-10E1B)



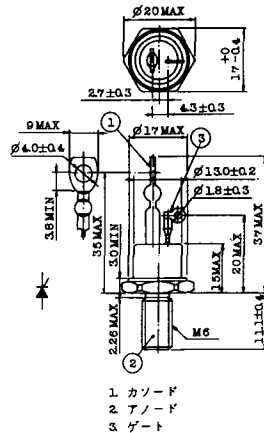
T-54 (13-10F1B)



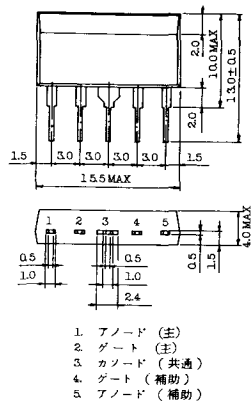
T-55 (13-5A1D)



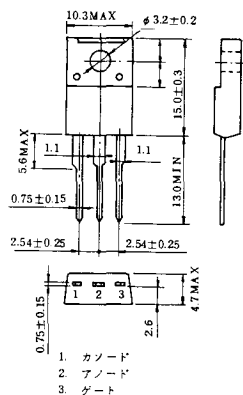
T-56 (13-13C1A)



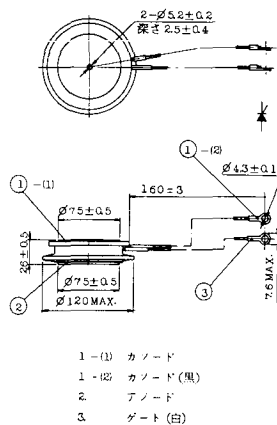
T-57 (12-16C1A)



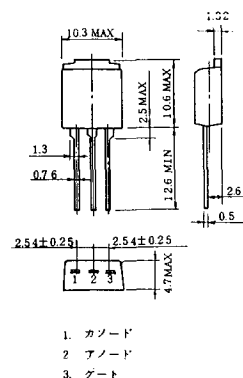
T-58 (13-10H1B)



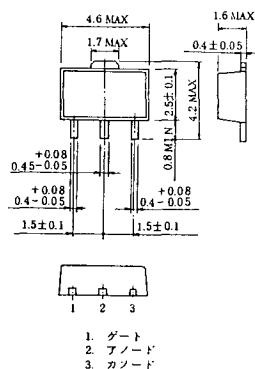
T-59 (13-120A1A)



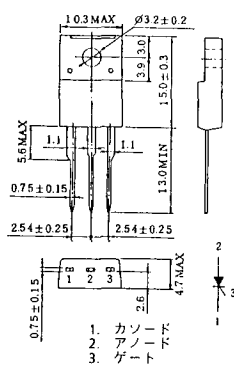
T-60



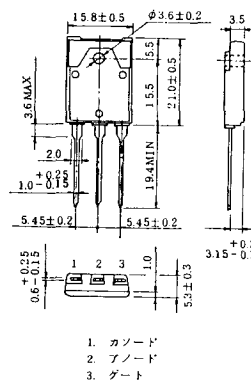
T-61 (13-5B1A)



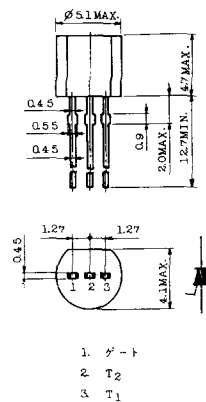
T-62 (13-10H1A)



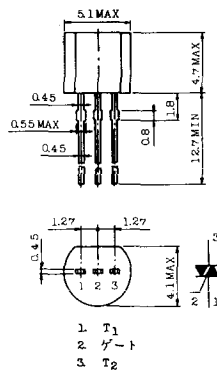
T-63 (13-16A1B)



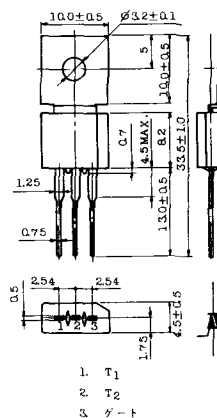
TT-1



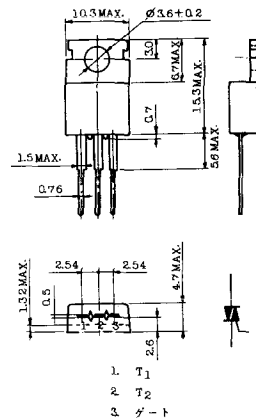
TT-2



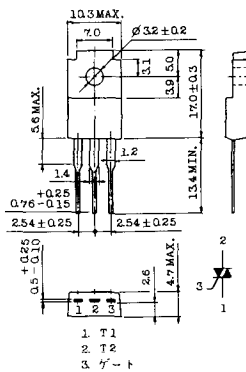
TT-3



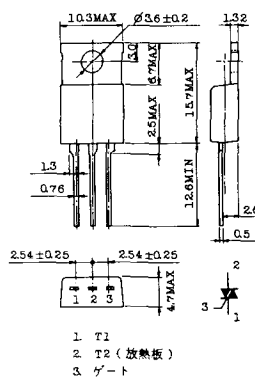
TT-4



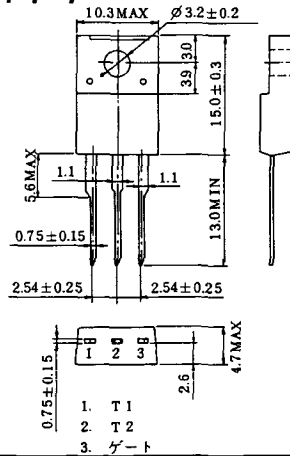
TT-5



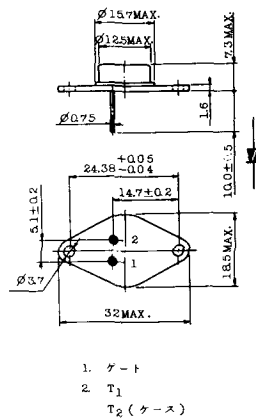
TT-6



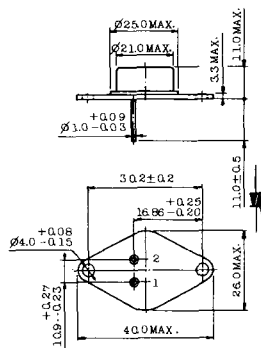
TT-7



TT-8

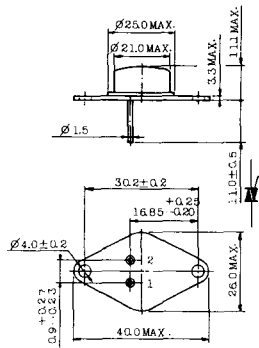


TT-9



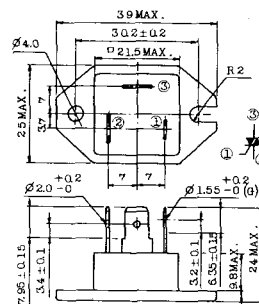
1. ゲート
2. T₁
3. T₂ (ケース)

TT-10



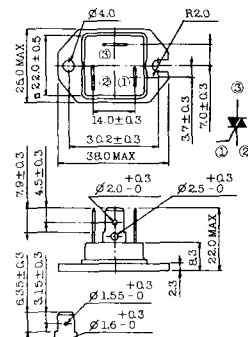
1. ゲート
2. T₁
3. T₂ (ケース)

TT-11



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

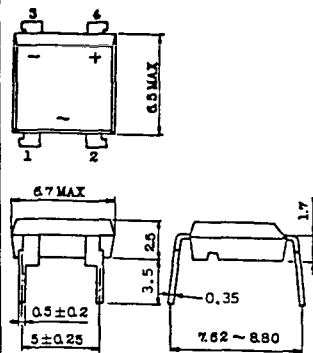
TT-12



ゲート端子詳細

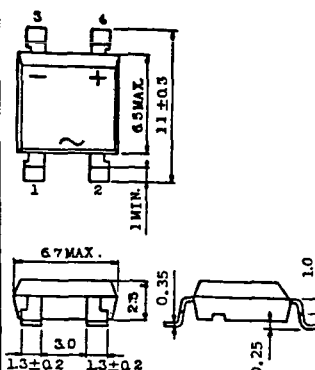
- ① ゲート (ファストン端子 #187)
- ② T₁ (" #250)
- ③ T₂ (" #250)

TT-13



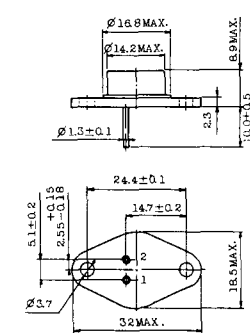
- 1, 2: T₂
- 3: GATE
- 4: T₁

TT-14



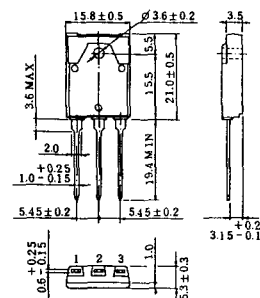
- 1, 2: T₂
- 3: GATE
- 4: T₁

TT-15 (13-14A1B)



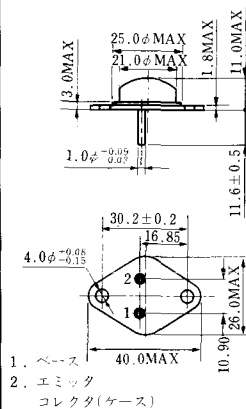
1. ゲート
2. T₁
- T₂ (ケース)

TT-16 (13-16A1A)

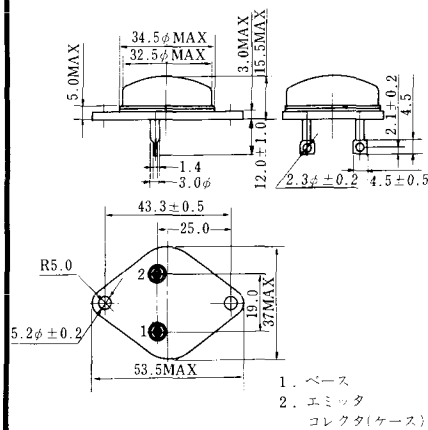


1. T₁
2. T₂
3. ゲート

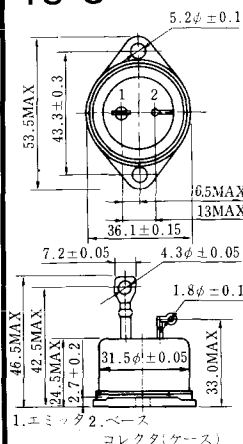
TS-1



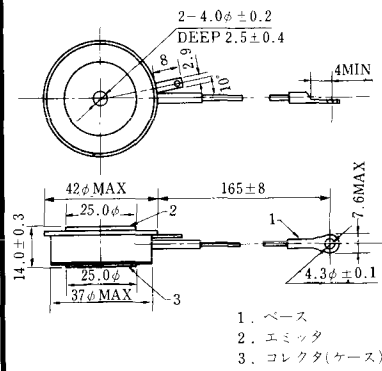
TS-2



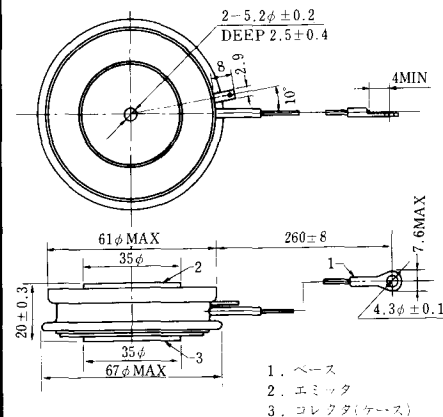
TS-3



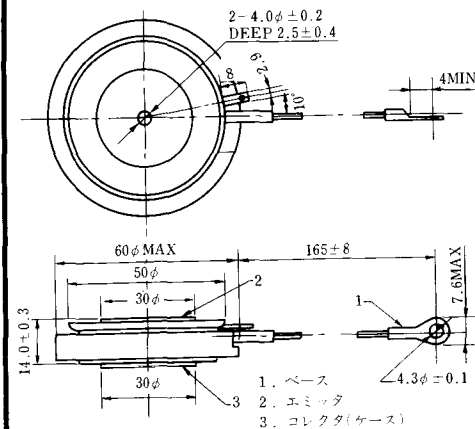
TS-4



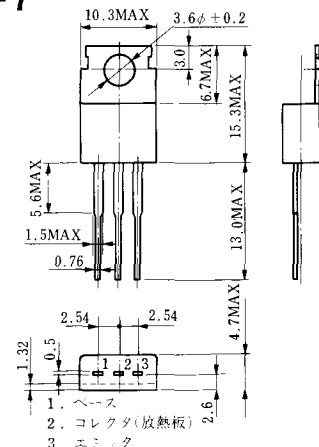
TS-5



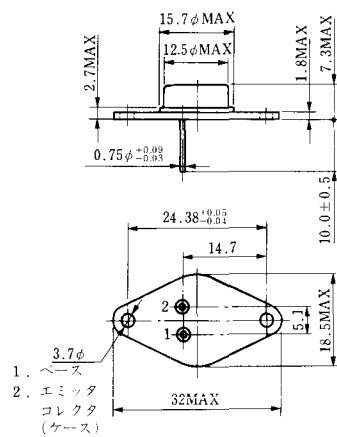
TS-6

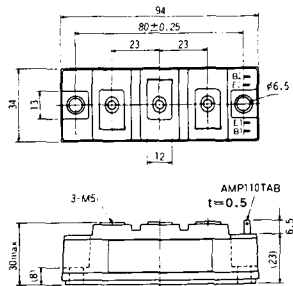
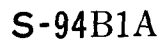
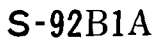
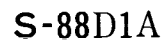
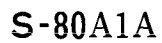


TS-7

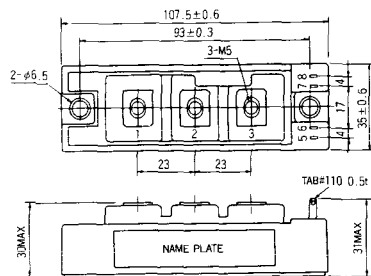


TS-8

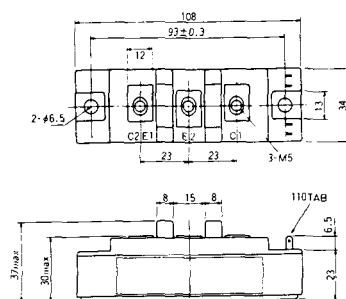




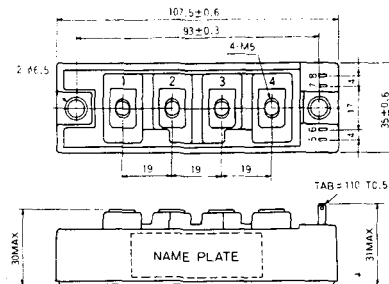
S-108B1A



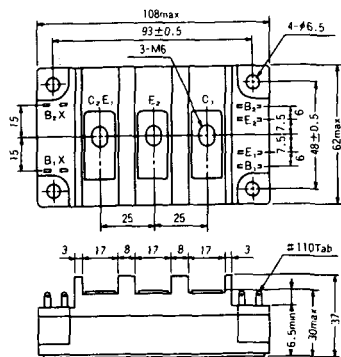
S-108B1B



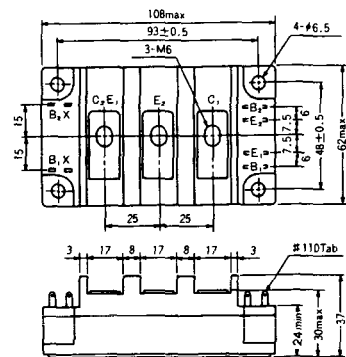
S-108B1C



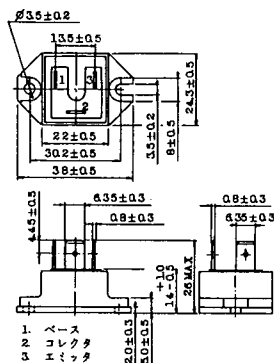
S-108B2A



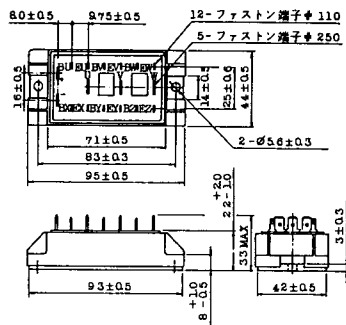
S-108B2B



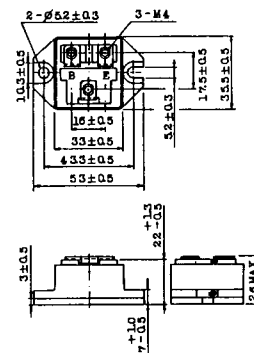
2-22B1A



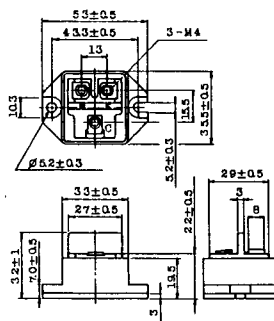
2-27A4A



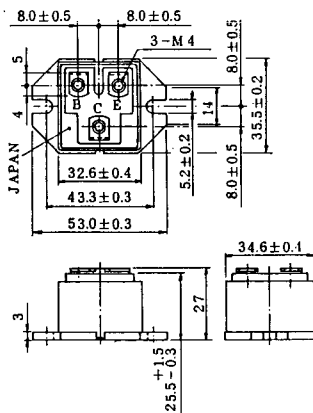
2-33C1A



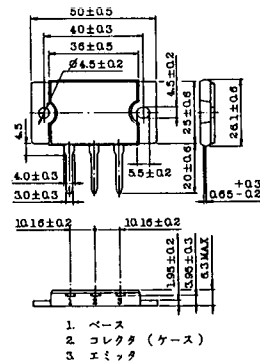
2-33D1A

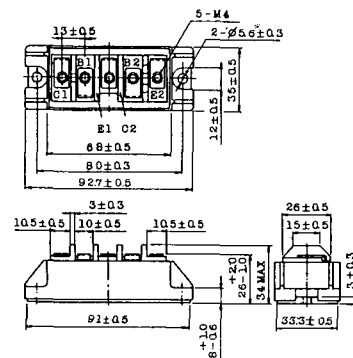
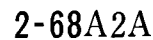
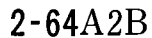
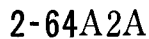
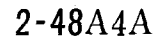
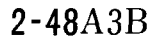


2-33F1A

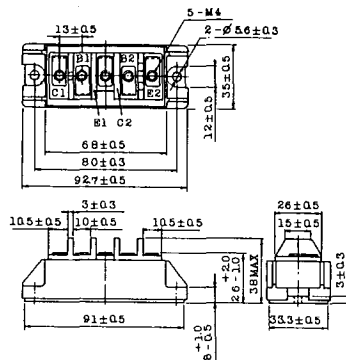


2-37A1A

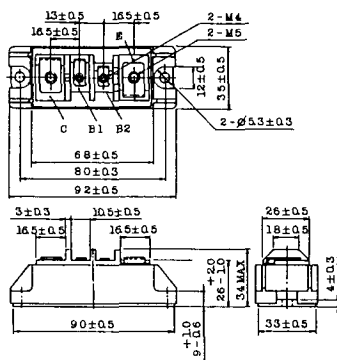




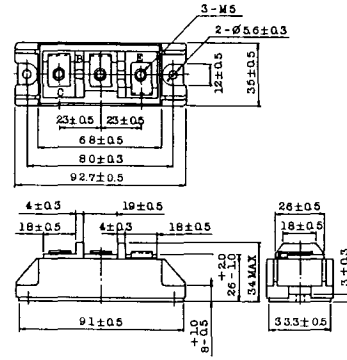
2-68B2A



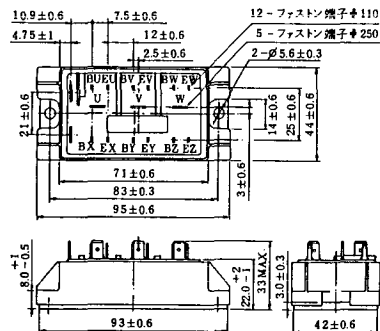
2-68C1A



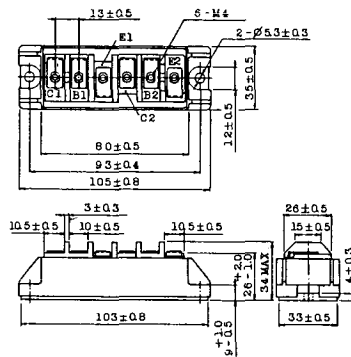
2-68D2A



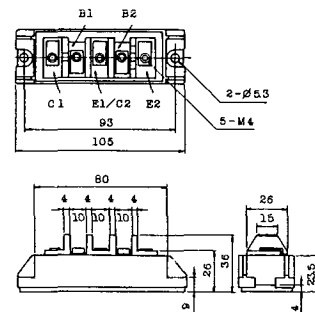
2-72A3A



2-80A1A

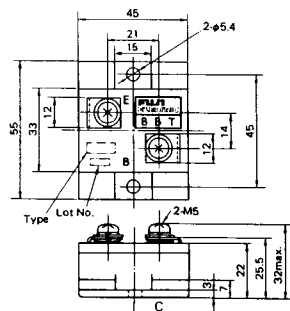


2-80B1A



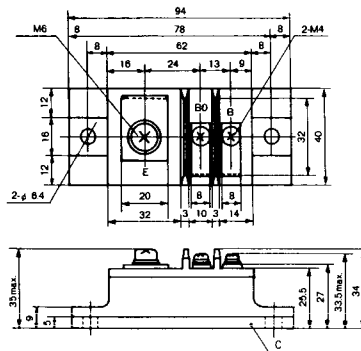
BBT-II

BBTII
1D200A-020



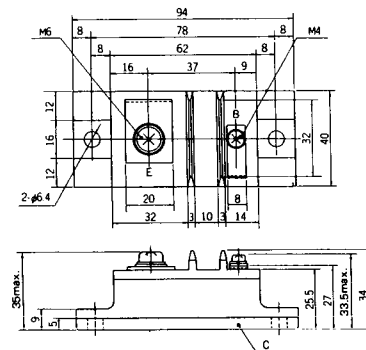
BBT-III

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



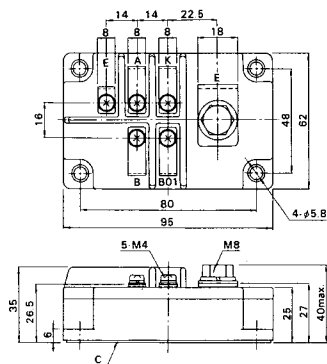
BBT-III

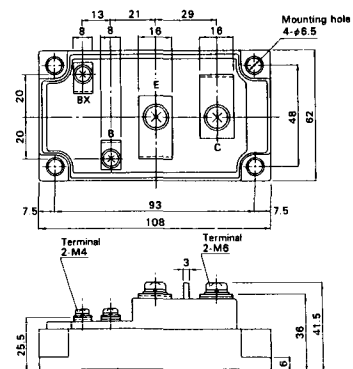
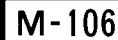
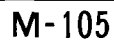
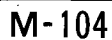
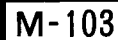
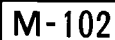
BBTIII
ETN01-055
ET1257



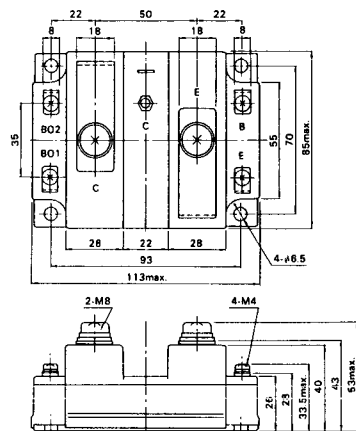
BBT-IV

BBTIV
1D500A-030

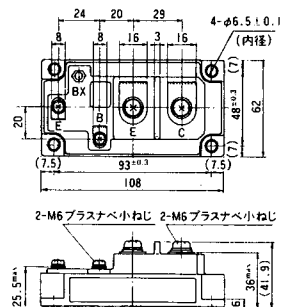




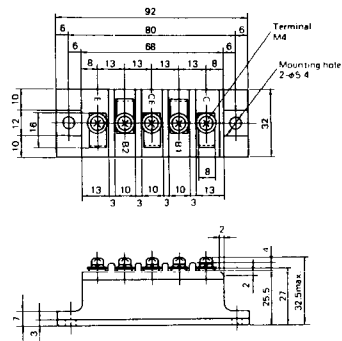
M-107



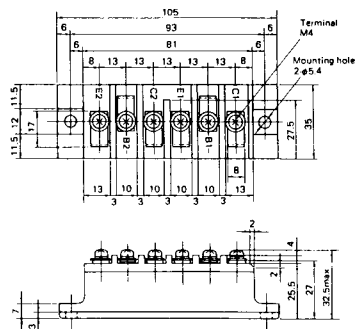
M-116



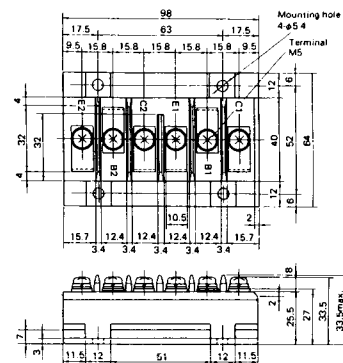
M-201



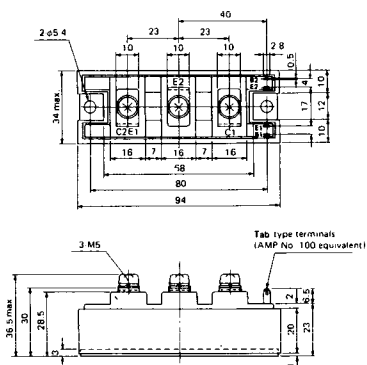
M-202



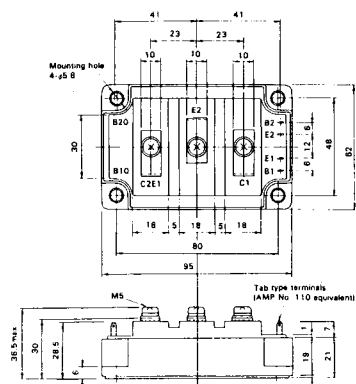
M-203



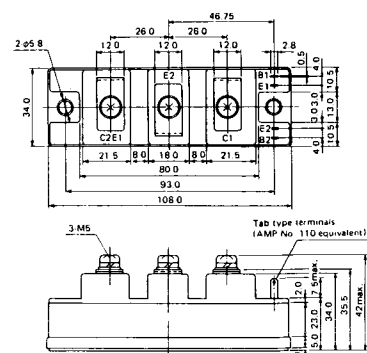
M-204



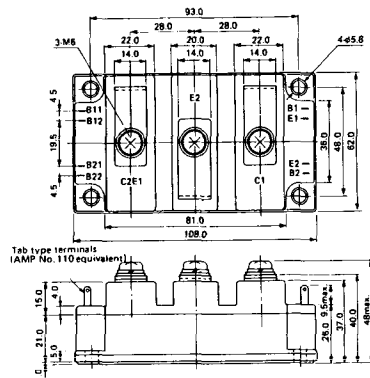
M-205



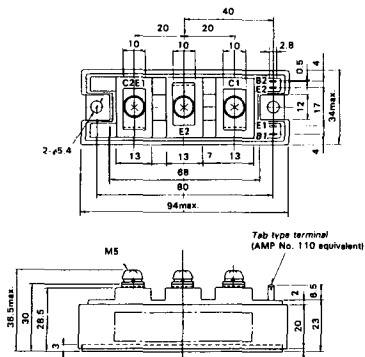
M-206



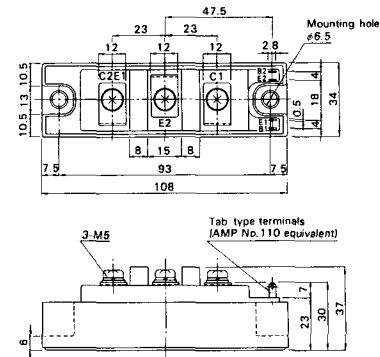
M-207



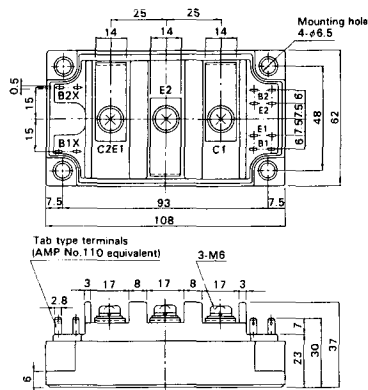
M-208



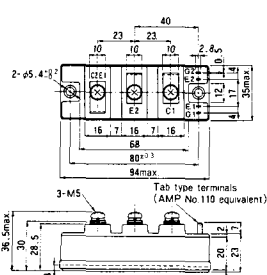
M-209



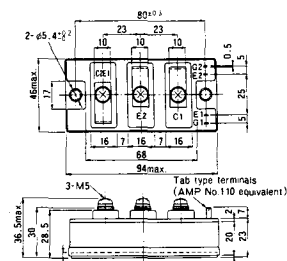
M-210

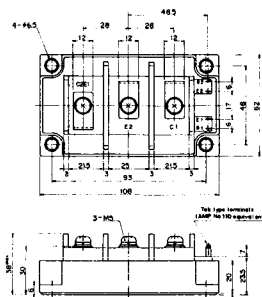
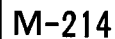


M-211



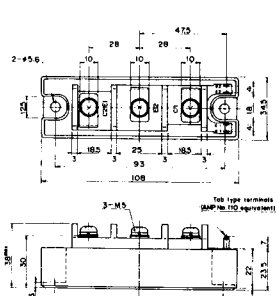
M-212



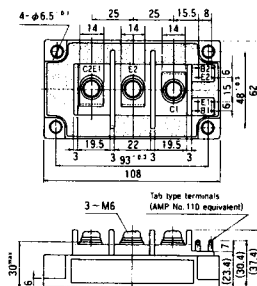


M-215

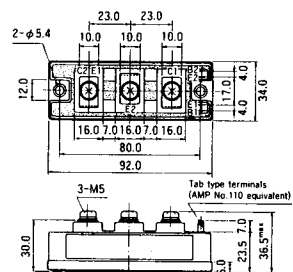
M-216



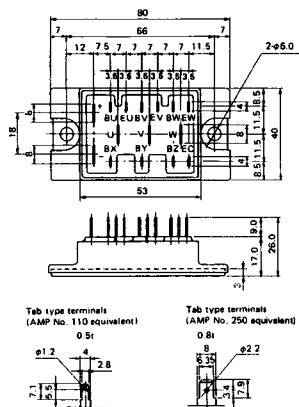
M-217



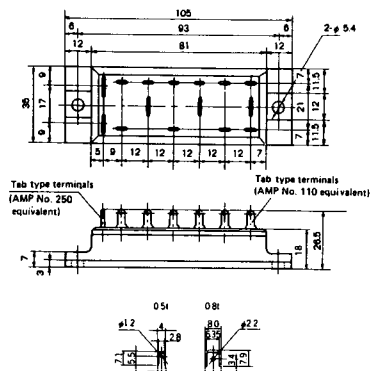
M-218



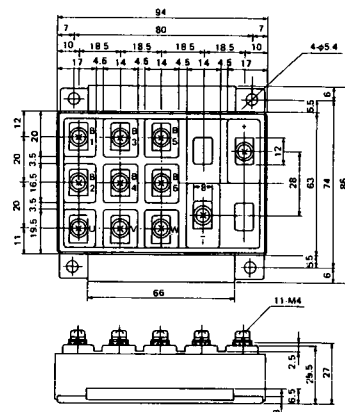
M-601



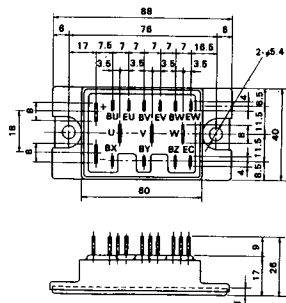
M-602



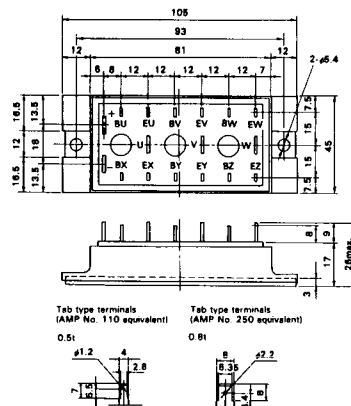
M-603



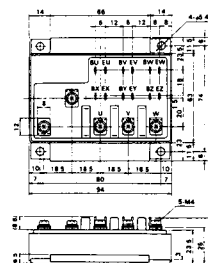
M-604



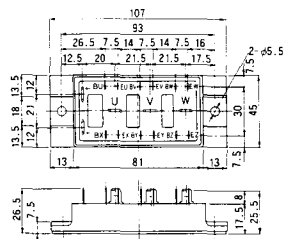
M-605



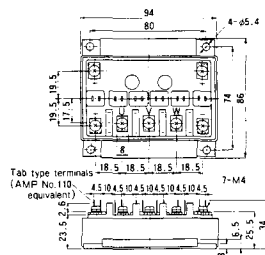
M-606



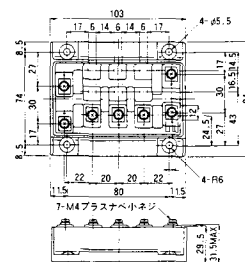
M-607



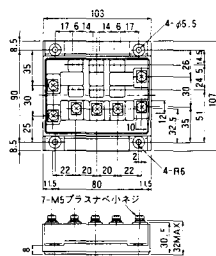
M-608



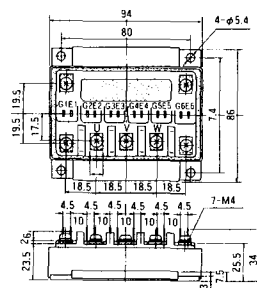
M-609



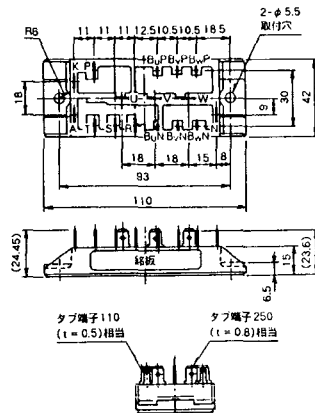
M-610



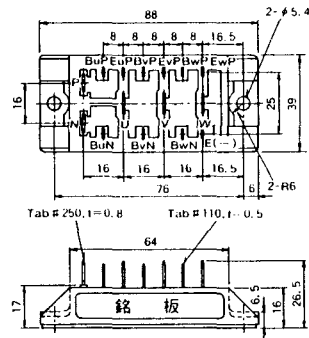
M-616



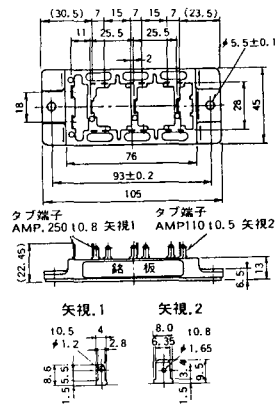
M-2E6A



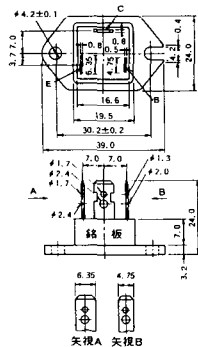
M-2F6A



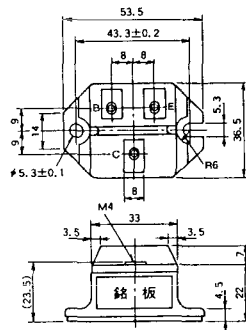
M-2G6A



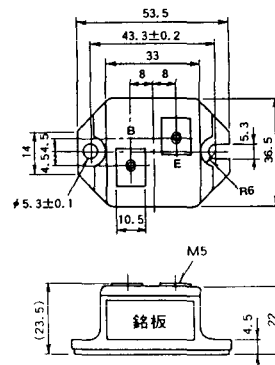
M-3A1A



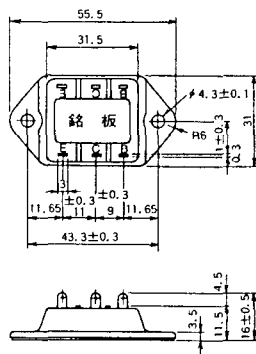
M-3B1A



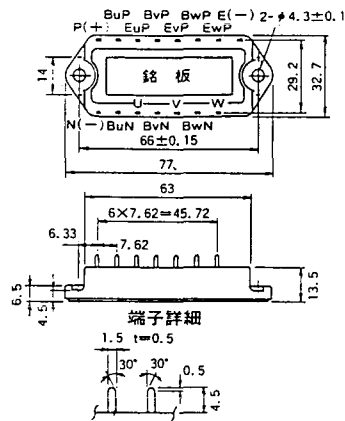
M-3B1B



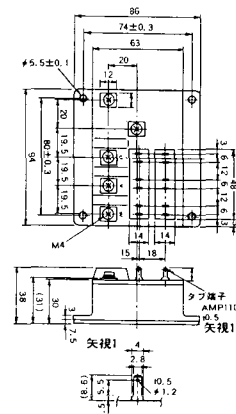
M-3C1A



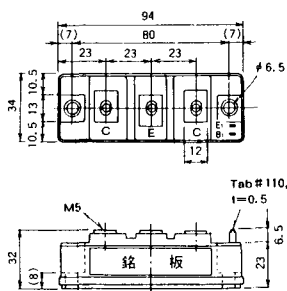
M-3D6A



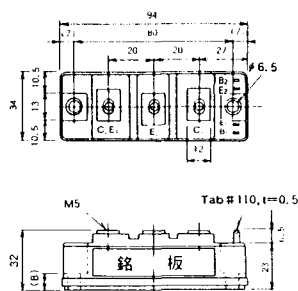
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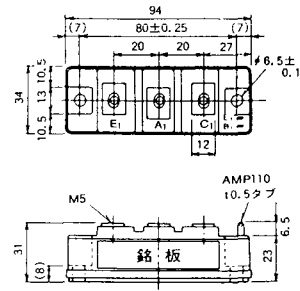
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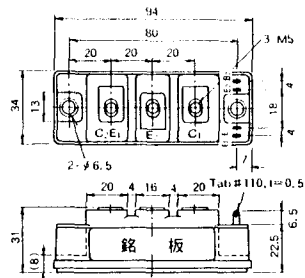
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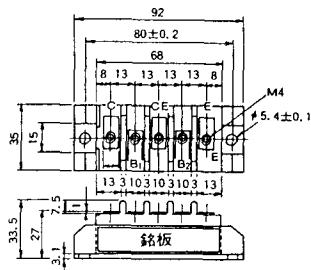
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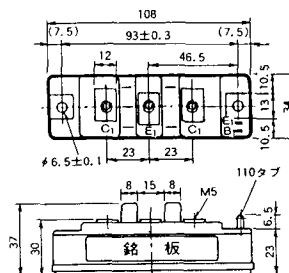
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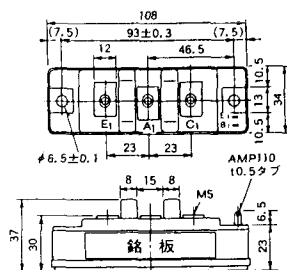
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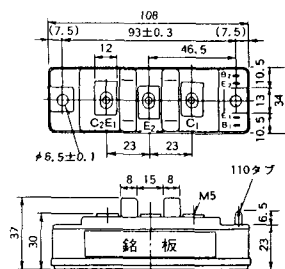
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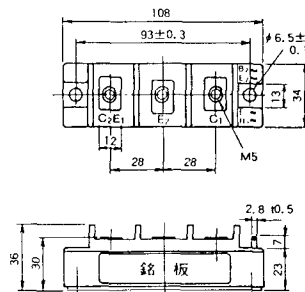
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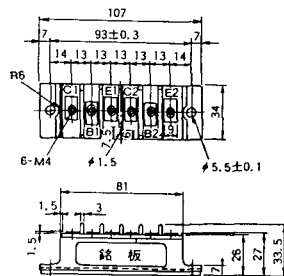
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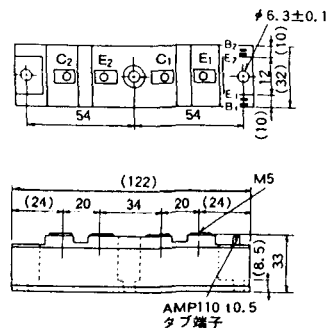
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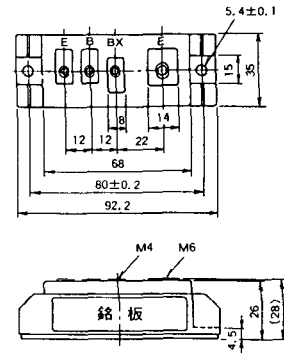
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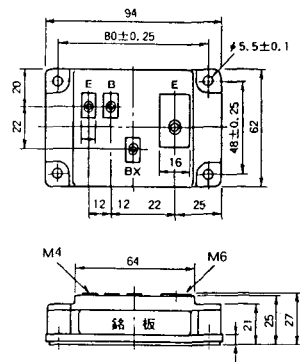
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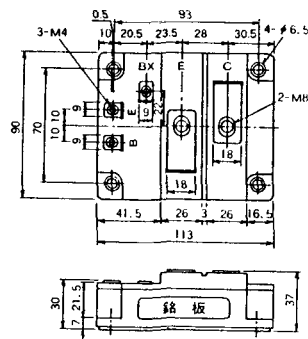
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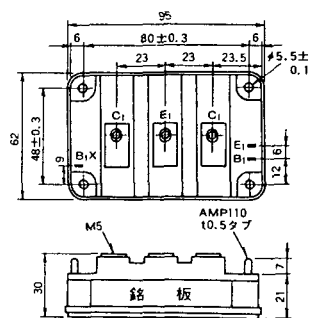
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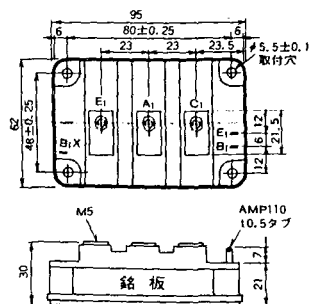
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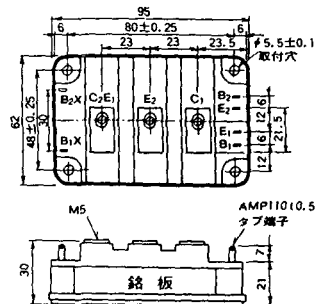
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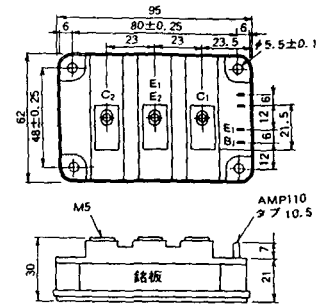
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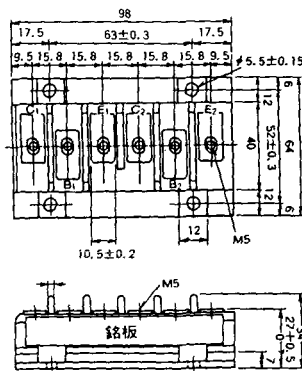
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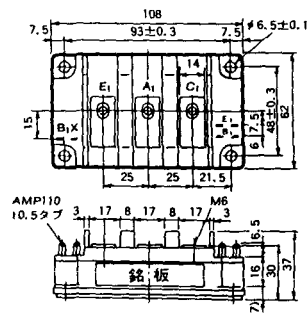
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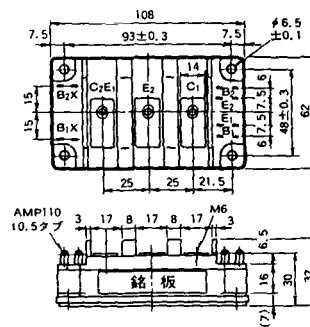
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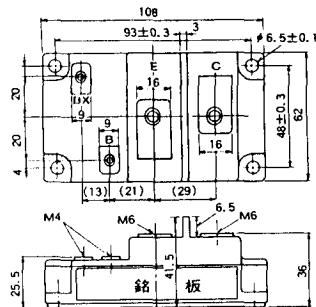
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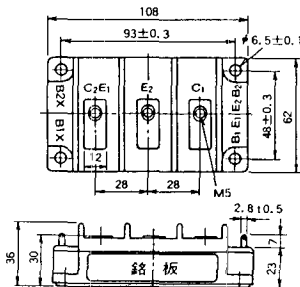
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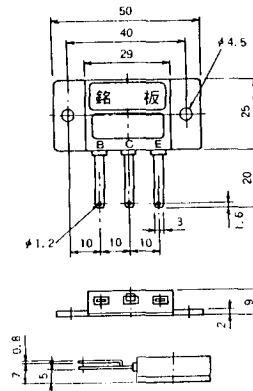
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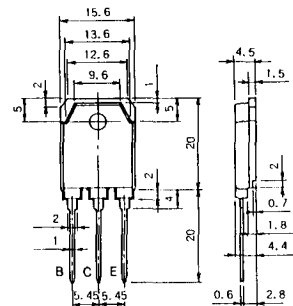
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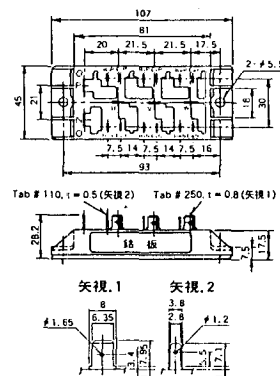
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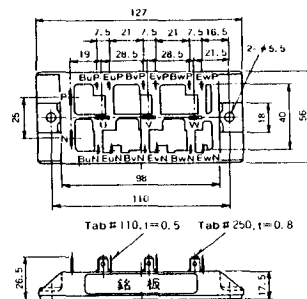
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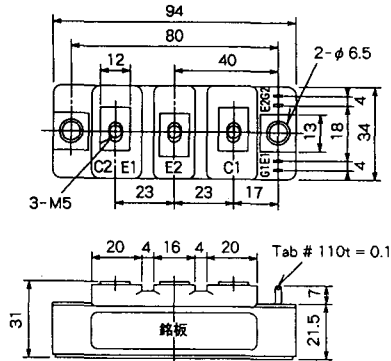
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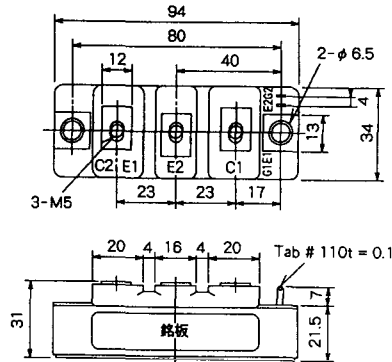
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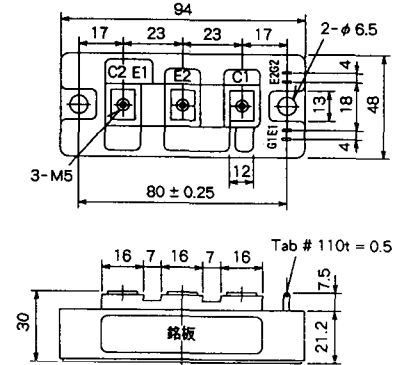
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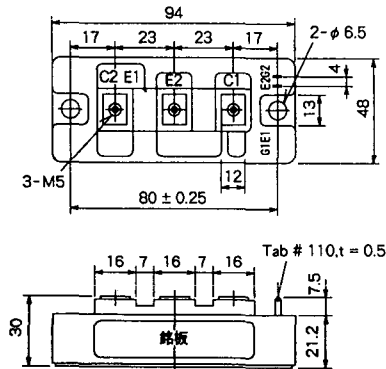
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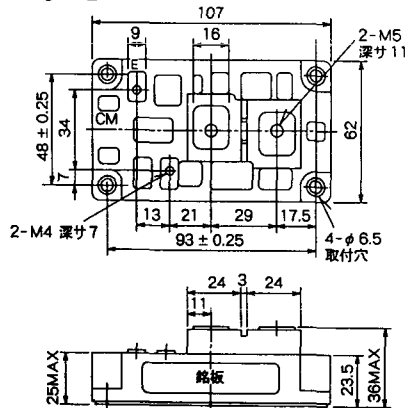
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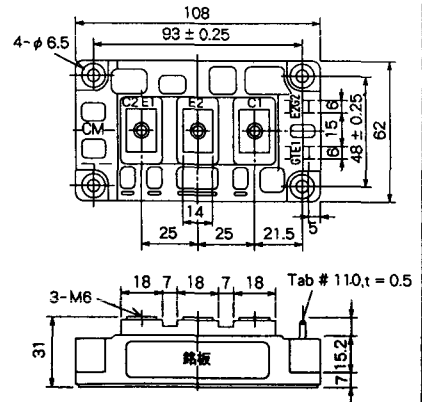
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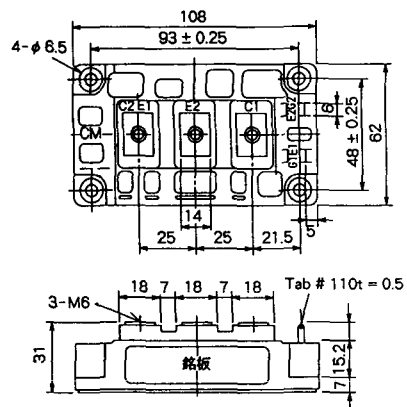
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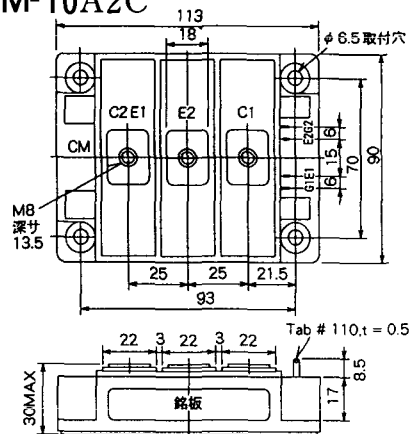
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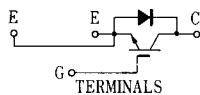
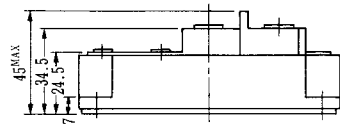
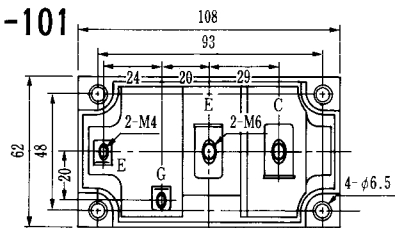
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M-10A2C



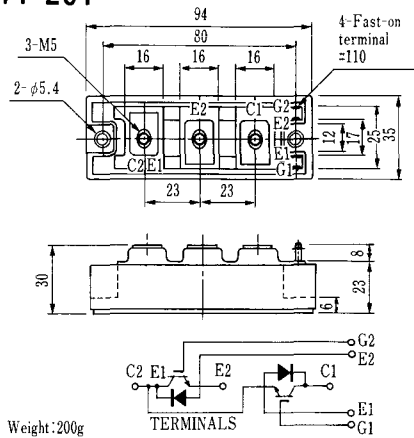
H-101



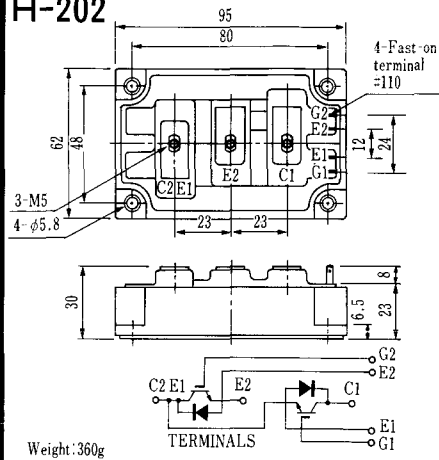
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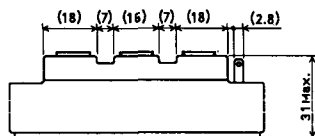
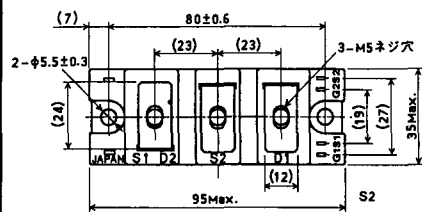
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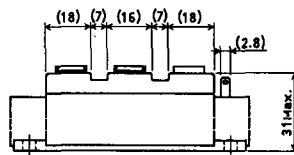
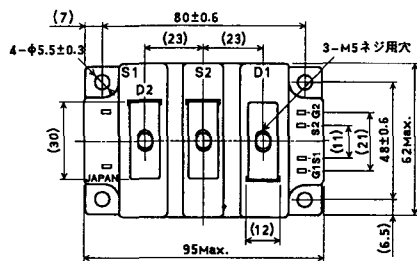
H-202



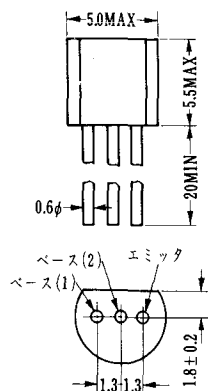
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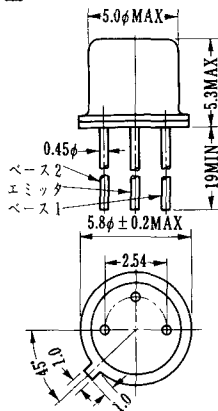
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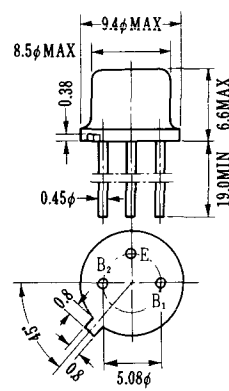
U-1



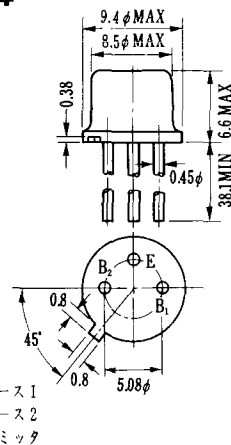
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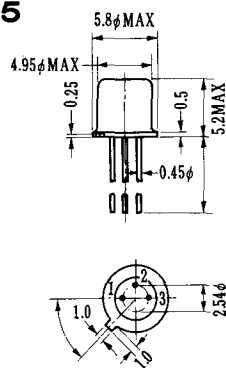
U-3



U-4

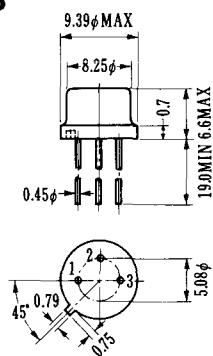


U-5



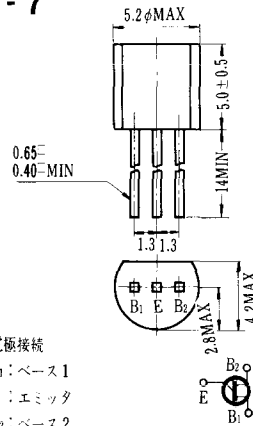
1. BASE 1
2. EMITTER
3. BASE 2 (CASE)

U-6



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

U-7



U-8

