

Compliance status of RoHS directive
C:Compliant S.C:Compliant (Included RoHS exemption substance) N:Non compliant

Production Status
M:Mass production O:Order production U:Under development
W:Working sample N:Not for new design D:Discontinued
E:Engineering sample

Load Dump Surge Suppressor Diodes

Type	Absolute maximum ratings			Characteristics			Outline	RoHS Status	Production year	Production status	
	PRSM (kW)	V _{DC} (V)	T _j (°C)	V _z (V)		Test Current (mA)					
				Min.	Max.						
ZSH5MA27(※)	3.0kW	18	-40 ~+150	24.0	30.0	10	6A	S.C	2000	M	
ZSH5MA27(A)(※)	62A									N	
ZSH5MC27(※)	3.2kw							S.C	2007	M	
ZSH5MC27(S)(※)	65A										
ZSH5MAZ27	3.4kW 70A	22		36.0	44.0	10	6B	S.C	2009	M	
ZSH8MD27	5.7kW 130A							S.C	2015	M	
ZSH8MD40	5.7kW 80A	32					S.C	2015	M		
ZSH5MT27C	3.4kW 70A	22					24.0	30.0	10	7A	S.C
ZSH5MT27(Z)	4.3kW 90A			O							
ZSH5MT40C	4.3kW 62A			32	M						
ZSH5MT48C	4.3kW 50A			39	M						
ZSH5MV14	4.3kW 200A	11		13.0	15.0	10	5	S.C	2013	M	
ZSH5MV27	4.3kW 100A	22	24.0	30.0	10	2012			M		

※ Please consider alternative new products as follows.
ZSH5MA27/27(A) --> ZSH5MAZ27,ZSH5MT series,ZSH8MD27
ZSH5MC27/27(S) --> ZSH5MAZ27,ZSH5MT series,ZSH8MD27

Surge Suppressor Diodes

◆Surface Mount Type

Type		Absolute maximum ratings			Characteristics			Outline	RoHS Status	Production year	Production status
		P _{RSM} (kW)	V _{RM} (V)	T _j (°C)	V _z (V)		Test Current				
					Min.	Max.	(mA)				
DAM1MB	12	0.6	9.7	-65 ~+185	11.4	12.7	1	4A	S.C	2013	M
	13		10.5		12.4	14.1	1				M
	15		12.1		13.5	15.6	1				M
	16		12.9		15.3	17.1	1				M
	18		14.5		16.8	19.1	1				M
	20		16.2		18.8	21.2	1				O
	22		17.8		20.8	23.3	1				M
	24		19.4		22.7	25.6	1				M
	27		21.8		25.1	28.9	1				M
	30		24.3		28.0	32.0	1				M
	33		26.8		31.0	35.0	1				M
	36		29.1		33.4	38.6	1				M
	39		31.6		36.1	41.9	1				M
	43		34.8		39.8	46.2	1				O
	47		38.0		43.3	50.7	1				M
	51		41.3		46.9	55.1	1				M
	68		55.1		61.2	74.8	1				M
	75		60.7		67.5	82.5	1				M
	82		66.4		73.8	90.2	1				O
DAM2MB	12	1.2	9.7	-65 ~+185	11.4	12.7	1	4B	S.C	2013	O
	13		10.5		12.4	14.1	1				O
	15		12.1		13.5	15.6	1				O
	16		12.9		15.3	17.1	1				O
	18		14.5		16.8	19.1	1				O
	20		16.2		18.8	21.2	1				O
	22		17.8		20.8	23.3	1				O
	24		19.4		22.7	25.6	1				O
	27		21.8		25.1	28.9	1				M
	30		24.3		28.0	32.0	1				M
	33		26.8		31.0	35.0	1				M
	36		29.1		33.4	38.6	1				M
	39		31.6		36.1	41.9	1				M
	43		34.8		39.8	46.2	1				O
	47		38.0		43.3	50.7	1				M
	51		41.3		46.9	55.1	1				O
	68		55.1		61.2	74.8	1				O
	75		60.7		67.5	82.5	1				O
	82		66.4		73.8	90.2	1				O
DAM3MB	12	1.8	9.7	-65 ~+185	11.4	12.7	1	4C	S.C	2013	M
	13		10.5		12.4	14.1	1				M
	15		12.1		13.5	15.6	1				M
	16		12.9		15.3	17.1	1				M
	18		14.5		16.8	19.1	1				O
	20		16.2		18.8	21.2	1				M
	22		17.8		20.8	23.3	1				O
	24		19.4		22.7	25.6	1				O
	27		21.8		25.1	28.9	1				M
	30		24.3		28.0	32.0	1				M
	33		26.8		31.0	35.0	1				M
	36		29.1		33.4	38.6	1				M
	39		31.6		36.1	41.9	1				M
	43		34.8		39.8	46.2	1				O
	47		38.0		43.3	50.7	1				M
	51		41.3		46.9	55.1	1				M
	68		55.1		61.2	74.8	1				M
	75		60.7		67.5	82.5	1				O
	82		66.4		73.8	90.2	1				M

Fast Recovery Diodes

◆Surface Mount Type

Type	Absolute maximum ratings				Characteristics		Outline	RoHS Status	Production year	Production status
	V _{RRM} (V)	I _{F(AV)} (A)	I _{FSM} (A)	T _j (°C)	V _{FM} (at I _{FM}) (V) (A)	t _{rr} (ns)				
DFM1MF2	200	1.0	25	-40 ~+150	0.95 (1.0)	35	4A	S.C	1997	M
DFM3MF2	200	3.0	50	-40 ~+150	0.95 (3.0)	35	4B	S.C	1997	M

High Voltage – Fast Recovery Diodes

◆Resin Molded Type

Type	Absolute maximum ratings				Characteristics		Outline	RoHS Status	Production year	Production status
	V _{RRM} (kV)	* I _{F(AV)} (mA)	I _{FSM} (A)	T _j (°C)	V _{FM} (at I _{FM}) (V) (mA)	t _{rr} (ns)				
DHM3T30	3	3 [15.75]	0.5	-40 ~+120	13 (5)	100	1B	S.C	1989	M
DHM3P40	4				13 (5)	100	1B	S.C	1989	M
DHM3G80	8				25 (5)	100	1F	S.C	1999	M
DHM3J120	12				42 (5)	100	1G	S.C	1999	M
DHM3C140	14				45 (5)	100	1H	S.C	1999	N
DHM3FJ60	6	1 [63]	0.5		22 (5)	70	1F	S.C	1999	M
DHM3FG80	8	3 [15.75]			28 (5)	70	1F	S.C	1999	M
DHM3UM80	8	1 [100] 3 [15.75]	0.5		23 (5)	40	1F	S.C	1998	M

* [] : Frequency, unit (kHz)

High Voltage – Fast Recovery Diodes (For Automotive)

◆Resin Molded Type

Type	Absolute maximum ratings				Characteristics		Outline	RoHS Status	Production year	Production status
	V _{RRM} (kV)	I _{F(AV)} (mA)	I _{FSM} (A)	T _j (°C)	V _{FM} (at I _{FM}) (V) (mA)	t _{rr} (ns)				
DHM10A30	3.0	10	1	+150	8.4 (10)	-	1K	S.C	2011	M
DHM30A10	1.0	30	3		2.0 (10)	-	1M	S.C	2013	M
DHM30A20	2.0	30	3		5.0 (10)	-	1M	S.C	2013	M
DHM30A25	2.5	30	3		5.0 (10)	-	1M	S.C	2014	M
DHM30A30	3.0	30	3		6.0 (10)	-	1F	S.C	2013	M
DHM30A40	4.0	30	3		10.0 (10)	-	1L	S.C	2011	O

High Voltage – Fast Recovery Diodes (For Automotive) Lead(Pb)–Free

◆Resin Molded Type

Type	Absolute maximum ratings				Characteristics		Outline	RoHS Status	Production year	Production status
	V _{RRM} (kV)	I _{F(AV)} (mA)	I _{FSM} (A)	T _j (°C)	V _{FM} (at I _{FM}) (V) (mA)	t _{rr} (ns)				
DHM30A10E	1.0	30	3	+150	2.0 (10)	-	1M	C	2017	M
DHM30A20E	2.0	30	3		5.0 (10)	-	1M	C	2017	M
DHM30A25E	2.5	30	3		5.0 (10)	-	1M	C	2016	M
DHM30A30E	3.0	30	3		6.0 (10)	-	1F	C	2017	M
DHM30A40E	4.0	30	3		10.0 (10)	-	1L	C	2017	M

◆ Super Low Loss Diodes

Type	Absolute maximum ratings		Characteristics			Outline	RoHS Status	Production year	Production status
	IF(AV) (A)	Tj (°C)	Vz (V)		VFM (at IFM) (V) (A)				
			Min.	Max.					
MSM35J22	35	-40~+175	20	24	0.3 (100)	10	S.C	-	M
MSM35J22R									
MSM50J22	50	-40~+175	20	24	0.12 (100)	10	S.C	-	M
MSM50J22R									

◆ Standard Type Diodes

Type	Absolute maximum ratings		Characteristics			Outline	RoHS Status	Production year	Production status
	IF(AV)	Tj	Vz (V)		VFM (at IFM)				
			Min.	Max.					
ZSM35C22	35	-40~+205	20	23	1.3 (100)	9A	S.C	2013	D
ZSM35C22R						9C			
ZSM50C22	50				1.2 (100)	9A		2012	D
ZSM50C22R						9C			
ZSM70A22	70 (Tc≤205℃)	-40~+225		24	1.2 (100)	9A		2013	D
ZSM70A22R	50 (Tc≤225℃)					9C			

◆General-Use Rectifier Diodes

Type	Absolute maximum ratings				Characteristics		Outline	RoHS Status	Production year	Production status
	V _{RRM} (V)	I _{F(AV)} (A)	I _{FSM} (A)	T _j (°C)	V _{FM} (at I _{FM}) (V) (A)	t _{rr} (ms)				
H14A	100	1.0	45	-40 ~+175	1.0 (1.0)	–	2A	S.C	1989	D
B	200									
C	300									
D	400									
E	500			-40 ~+165						
F	600									
H	800									
J	1,000									
V06C	200	1.1	35	-65 ~+175	1.4 (1.1)	–	2A	S.C	1976	D
E	400									
G	600									
J	800									
V03C	200	1.3	40		1.1 (1.3)	–	2A	S.C	1975	
E	400									
G	600									
J	800									
U05B	100	2.5	100		1.1 (2.5)	–	2B	S.C	1975	D
C	200									
E	400									
G	600									
J	800									
U15B	100	3	80		1.0 (3.0)	–	2B	S.C	1978	D
C	200									
E	400									
G	600									
J	800									
			60							

◆Zener Diodes

Type	Absolute maximum ratings			Characteristics			Outline	RoHS Status	Production year	Production status
	P (W)	P _{PRSM} (Wp)	T _j (°C)	V _Z (V)		Test Current (mA)				
				Min.	Max.					
AW01- 06	1.0	80	-40 ~+150	5.2	6.8	60	2A	S.C	1976	D
AW01/AU01-07	1.0/2.5	80/160	-40 ~+150 / -40 ~+165	6.2	7.9	25/65	2A/2B	S.C/S.C	1976	D / D
08				7.7	8.7	25/65				
09				8.5	9.6	25/65				
10				9.4	10.6	25/65				
11				10.4	11.6	25/65				
12				11.4	12.7	25/65				
13				12.4	14.1	25/65				
15				13.5	15.6	15/40				
16				15.3	17.1	15/40				
18				16.8	19.1	15/40				
20				18.8	21.2	15/40				
22				20.8	23.3	15/40				
24				22.7	25.6	10/25				
27				25.1	28.9	10/25				
30				28.0	32.0	10/25				
33				31.0	35.0	10/25				

◆Fast Recovery Diodes

Type	Absolute maximum ratings				Characteristics		Outline	RoHS Status	Production year	Production status										
	V _{RRM} (V)	I _{F(AV)} (A)	I _{FSM} (A)	T _j (°C)	V _{FM} (at I _{FM}) (V) (A)	t _{rr} (ms)														
DFG1D1 2 4	100 200 400	1.0	30	-65 ~+150	1.5 (1.0)	50ns	2A	S.C	1986	D										
DFG1C1 2 4 6 8	100 200 400 600 800				1.0	35	1.2 (1.0)	0.1	2A	S.C	1985	D								
						30	1.6 (1.0)													
DFG3A1 2 4	100 200 400	3.0	70			1.3 (3.0)	0.1						2B	S.C	1985	D				
V19B C E G	100 200 400 600	1.0	30			1.2 (1.0)	0.2	2A	S.C	1977	D									
DFG1A8	800				1.0	40	-65 ~+165	1.2 (1.0)	0.2	2A	S.C	1982	D							
H114B D E F	200 400 500 600				1.0	40	-40 ~+150	1.15 (1.0)	0.2	2A	S.C	1989	D							
U19B C E	100 200 400	2.5	80											-65 ~+150	1.3 (2.5)	0.2	2B	S.C	1978	D
DFG2A6 8	600 800																			
V11J L M N	800 1,000 1,300 1,500				0.4	30	-65 ~+150	2.5 (0.4)	0.4	2A	S.C	1975	D							
V09C E G	200 400 600	0.8	35											-65 ~+165	1.6 (0.8)	0.4	2A	S.C	1975	D
U07J L M N	800 1,000 1,300 1,500																			
U06C E G	200 400 600				2.0	80	-65 ~+150	1.2 (2.0)	0.4	2B	S.C	1975	D							

◆Controlled Avalanche Diodes

Type	Absolute maximum ratings					Characteristics	Outline	RoHS Status	Production year	Production status
	V _{RRM} (V)	I _{F(AV)} (A)	P _{RM} (W)	I _{FSM} (A)	T _J (°C)	V _{FM} (at I _{FM}) (V) (A)				
H24F	600	1.0	1,000	45	-65 ~+175	1.0 (1.0)	2A	S.C	1989	D
H	800				-65 ~+165					
J	1,000									
V08E	400	1.1	40	35	-65 ~+175	1.4 (1.1)	2A	S.C	1975	D
G	600									
J	800									
V07E	400	1.3	40	40		1.1 (1.3)	2A	S.C	1975	D
G	600									
J	800									
V17A	50	1.3	1,500	50	-40 ~+165	1.1 (1.3)	2A	S.C	1975	D
B	100									
C	200									
D	300									
E	400									
U17B	100	2.5	3,000	100	-40 ~+175	1.1 (2.5)	2B	S.C	1975	D
C	200									
D	300									
E	400									

◆Surge Suppressor Diodes

Type	Absolute maximum ratings			Characteristics			Outline	RoHS Status	Production status
	P _{RSM} (kW)	V _{DC} (V)	T _j (°C)	V _z (V)		Test Current (mA)			
				Min.	Max.				
DAM1MA/3MA10	0.6/1.8	7	-40~+150	9.4	10.6	25/75	4A/4C	S.C	D
11		8		10.4	11.6	25/75			D
12		9		11.4	12.7	25/75			
13		10		12.4	14.1	25/75			
15		11		13.5	15.6	25/75			
16		12		15.3	17.1	15/75			
18		13		16.8	19.1	15/45			
20		14		18.8	21.2	15/45			
22		16		20.8	23.3	15/45			
24		18		22.7	25.6	10/30			
27		20		25.1	28.9	10/30			
30		22		28.0	32.0	10/30			
33		24		31.0	35.0	10/30			
36		26		33.4	38.6	10/30			
39		28		36.1	41.9	10/20			
43		31		39.8	46.2	6/20			
47		34		43.3	50.7	6/20			
51		37		46.9	55.1	6/20			
68		49		61.2	74.8	4/10			
75		54		67.5	82.5	4/10			
82		59		73.8	90.2	3/10			

◆General-Use Rectifier Diodes

Type	Absolute maximum ratings				Characteristics		Outline	RoHS Status	Production status
	V _{RRM} (V)	* I _{F(AV)} (A)	I _{FSM} (A)	T _j (°C)	V _{FM} (at I _{FM}) (V) (A)	t _{rr} (ms)			
DSA3A1	100	3.0	120	-40~+150	1.0 (3.0)	-	2C	S.C	D
2	200								
4	400								

◆General-Use Rectifier Diodes

Type	Absolute maximum ratings				Characteristics		Outline	RoHS Status	Production status
	V _{RRM} (V)	* I _{F(AV)} (A)	I _{FSM} (A)	T _j (°C)	V _{FM} (at I _{FM}) (V) (A)	t _{rr} (ms)			
DSM1MA1	100	1.0	25	-40 ~+150	1.1 (1.0)	-	4A	S.C	D
2	200								
4	400								
DSM3MA1	100	3.0	80	-40 ~+150	1.0 (3.0)	-	4B	S.C	D
2	200								
4	400								

Discontinued

◆ Surge Suppressor Diodes

Type	Absolute maximum ratings			Characteristics			Outline	RoHS Status	Production status
	PRSM (kW)	V _{DC} (V)	T _j (°C)	V _Z (V)		Test Current			
				Min.	Max.	(mA)			
DAM1SA/1A10	0.6	7	-40 ~+150	9.4	10.6	25	1A/1B	S.C / S.C	D / D
11		8		10.4	11.6	25			
12		9		11.4	12.7	25			
13		10		12.4	14.1	25			
15		11		13.5	15.6	25			
16		12		15.3	17.1	15			
18		13		16.8	19.1	15			
20		14		18.8	21.2	15			
22		16		20.8	23.3	15			
24		18		22.7	25.6	10			
27		20		25.1	28.9	10			
30		22		28.0	32.0	10			
33		24		31.0	35.0	10			
36		26		33.4	38.6	10			
39		28		36.1	41.9	10			
43		31		39.8	46.2	6			
47		34		43.3	50.7	6			
51		37		46.9	55.1	6			
DAM3A/3B10	1.8	7	-40 ~+150	9.4	10.6	75	1E/1D	S.C / S.C	D / D
11		8		10.4	11.6	75			
12		9		11.4	12.7	75			
13		10		12.4	14.1	75			
15		11		13.5	15.6	75			
16		12		15.3	17.1	75			
18		13		16.8	19.1	45			
20		14		18.8	21.2	45			
22		16		20.8	23.3	45			
24		18		22.7	25.6	30			
27		20		25.1	28.9	30			
30		22		28.0	32.0	30			
33		24		31.0	35.0	30			
36		26		33.4	38.6	30			
39		28		36.1	41.9	30			
43		31		39.8	46.2	20			
47		34		43.3	50.7	20			
51		37		46.9	55.1	20			

◆ High Voltage – Fast Recovery Diodes

Type	Absolute maximum ratings				Characteristics		Outline	RoHS Status	Production status
	VRRM (kV)	* If(AV) (mA)	IFSM (A)	Tj (°C)	VFM (at IFM) (V)	trr (ns)			
DHM3S20	2	3 [15.75]	0.5	-40 ~+120	10 (5)	100	1B	S.C	D
DHM3UG120	12	1 [100] 3 [15.75]			36 (5)	40	1G	S.C	D

*[] : Frequency,unit (kHz)

◆ Load Dump Surge Suppressor Diodes

Type	Absolute maximum ratings			Characteristics			Outline	RoHS Status	Production status
	PRSM(kW) IRSM(A)	VDC (V)	Tj (°C)	Vz (V)		Iz (mA)			
				Min.	Max.				
ZSA5A27	3.0kW	18	-40 ~+150	24.0	30.0	10	3A	S.C	D
ZSA5MA27	62A						3B	S.C	D
ZSH5MA27(S)							6A	S.C	D
ZSH5MT53C	4.3kW 45A	43		47.7	58.3	10	7A	S.C	D
ZSH5ME27	3.4kW 70A	22		24.0	30.0	10	8	S.C	D

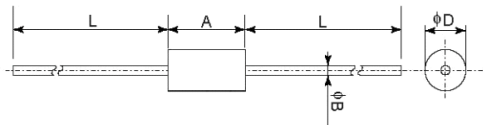
◆ Fast Recovery Diodes

Type	Absolute maximum ratings				Characteristics		Outline	RoHS Status	Production status
	VRRM (kV)	* If(AV) (A)	IFSM (A)	Tj (°C)	VFM (at IFM) (V)	trr (ms)			
DFG1E 6	600	0.3	5	-65~+150	5.0(0.3)	35ns	2A	S.C	D
8	800								
10	1,000								

Outline

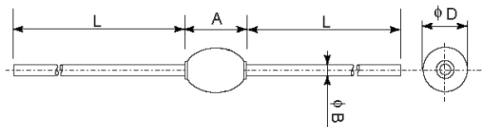
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●Outline No.1



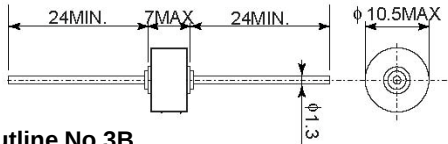
Items	A	ϕD	ϕB	L (Min.)
1A	3	2.5	0.6	28
1B	5	2.65	0.6	27
1C	5	2.65	0.8	27
1D	6	3.6	0.8	26
1E	7.5	6.4	1.2	26
1F	6.5	2.5	0.5	28
1G	10	2.5	0.5	26
1H	10	3	0.6	26,28
1J	8	3	0.6	28
1K	6.5	2.5	0.5	27
1L	8	3	0.6	27
1M	5	2.5	0.5	27

●Outline No.2

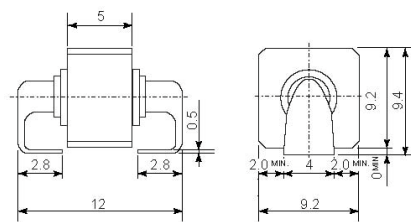


Items	A (Max.)	ϕD (Max.)	ϕB	L (Min.)
2A	5	3.5	0.8	29
2B	7	5	1.2	28
2C	7	5	1.2	27

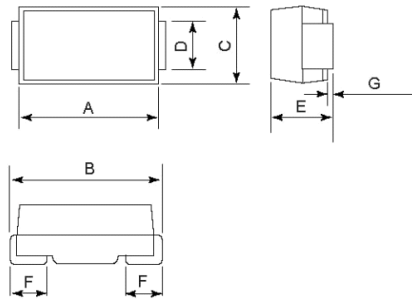
●Outline No.3A



●Outline No.3B

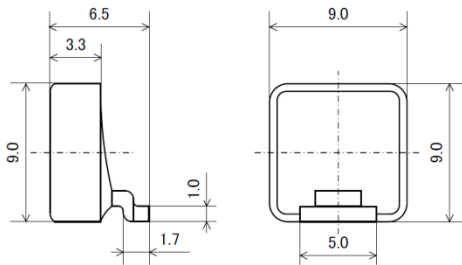


●Outline No.4

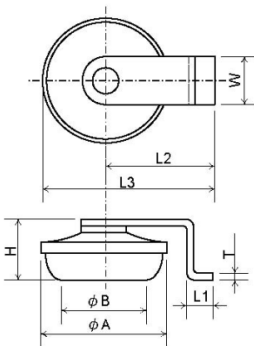


Items	A	B	C	D	E	F	G
4A	4.3	4.7	2.5	1.5	2.0	1.2	0.1
4B	4.4	5.4	3.6	2.0	2.3	1.2	0.2
4C	7.0	7.6	4.0	2.0	2.5	1.4	0.2

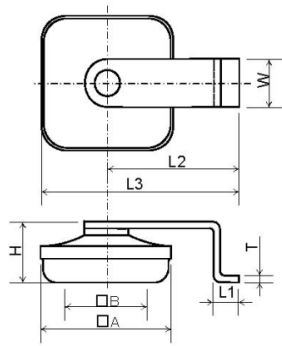
●Outline No.5



●Outline No.6



●Outline No.7A, 7B



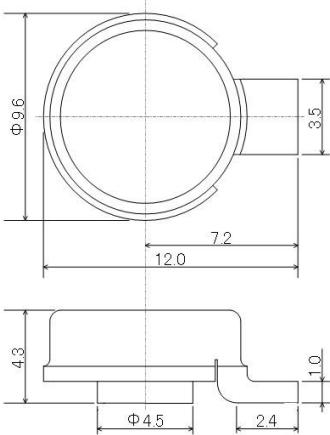
Items	A	B	L1	L2	L3	H	W	T
6A	9.6	7.4	2.0	8.3	13.1	4.4	3.5	0.5
6B*	9.6	-	2.0	8.3	13.1	6.0	3.5	0.5
7A	10.0	7.5	2.0	10.0	15.0	4.4	3.5	0.5
7B**	10.0	7.5	2.0	10.0	15.0	4.4	2.7	0.5

*:Packages is different **:JEDEC DO-218AB Compatible

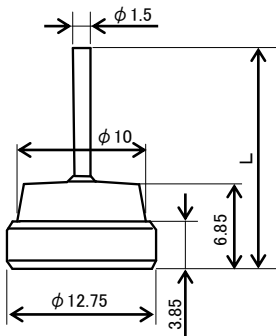
Outline

[Dimensions in mm]

●Outline No.8

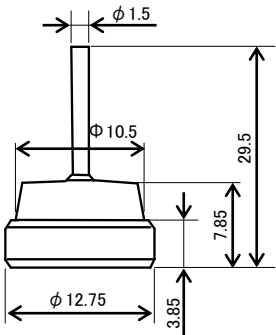


●Outline No.9A, 9B, 9C, 9D



Items	L
9A	19.2
9B	28.5
9C	17.0

●Outline No.10



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