

# Hitachi Power Diodes

## Status List

Date: Sep. 2021

### 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 recommend 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)	VDC (V)	Tj (°C)	Vz (V)		Test Current (mA)								
				Min.	Max.									
ZSH5MA27 (※)	3.0kW 62A	18	-40 ~+150	24.0	30.0	10	6A	S.C	2000	M				
ZSH5MA27(A)(※)										N				
ZSH5MA27(S)(※)										M				
ZSH5MC27 (※)	3.2kw 65A	18						24.0	30.0	10	6A	S.C	2007	M
ZSH5MC27(S)(※)														
ZSH5MAZ27	3.4kW 70A	22						24.0	30.0	10	8	S.C	2009	M
ZSH5ME27														
ZSH8MD27	5.7kW 130A	32		36.0	44.0	10	6B	S.C	2015	M				
ZSH8MD40	5.7kW 80A													
ZSH5MT27C	3.4kW 70A	22		24.0	30.0	10	7A	S.C	2009	M				
ZSH5MT27(Z)	4.3kW 90A													
ZSH5MT40C	4.3kW 62A	32		36.0	44.0	10						M		
ZSH5MT48C	4.3kW 50A	39		43.2	52.8	10						M		
ZSH5MT53C	4.3kW 45A	43		47.7	58.3	10						O		
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)/27(S) --> 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	
	PRSM (kW)	VRM (V)	Tj (°C)	Vz (V)		Test Current (mA)					
				Min.	Max.						
DAM1MB	0.6	-65 ~+185	12	9.7	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	1.2	-65 ~+185	12	9.7	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	1.8	-65 ~+185	12	9.7	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
	VRRM (V)	IF(AV) (A)	IFSM (A)	Tj (°C)	VFM (at IFM) (V) (A)	trr (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
	VRRM (kV)	* IF(AV) (mA)	IFSM (A)	Tj (°C)	VFM (at IFM) (V) (mA)	trr (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
	VRRM (kV)	IF(AV) (mA)	IFSM (A)	Tj (°C)	VFM (at IFM) (V) (mA)	trr (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	M

## 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
	VRRM (kV)	IF(AV) (mA)	IFSM (A)	Tj (°C)	VFM (at IFM) (V) (mA)	trr (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

## Alternator Diodes

### ◆ 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	-	E
MSM35J22R									
MSM50J22	50	-40~+175	20	24	0.12 (100)	10	S.C	-	E
MSM50J22R									

### ◆ Standard Type 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.					
ZSM35C22	35	-40~+205	20	23	1.3 (100)	9A	S.C	2013	M
ZSM35C22R						9C			
ZSM50C22	50	-40~+205	20	23	1.2 (100)	9A	S.C	2012	M
ZSM50C22R						9C			
ZSM70A22	70 (Tc ≤ 205°C)	-40~+225	20	24	1.2 (100)	9A	S.C	2013	M
ZSM70A22R	50 (Tc ≤ 225°C)					9C			

## Discontinued

### ◆ General-Use Rectifier Diodes

Type	Absolute maximum ratings				Characteristics		Outline	RoHS Status	Production year	Production status	
	VRRM (V)	IF(AV) (A)	IFSM (A)	Tj (°C)	V <sub>FM</sub> (at I <sub>FM</sub> ) (V)	trr (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										
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		D *
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)	PRSM (Wp)	Tj (°C)	Vz (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							

\* EOL notices was issued in July 2018, Last buy order is closed in June 2019.

## Discontinued

### ◆Fast Recovery Diodes

Type	Absolute maximum ratings				Characteristics		Outline	RoHS Status	Production year	Production status		
	V <sub>RRM</sub> (V)	I <sub>F(AV)</sub> (A)	I <sub>FSM</sub> (A)	T <sub>J</sub> (°C)	V <sub>FM</sub> (at I <sub>FM</sub> ) (V)	t <sub>rr</sub> (ms)						
DFG1D1	100	1.0	30	-65 ~+150	1.5 (1.0)	50ns	2A	S.C	1986	D *		
2	200											
4	400											
DFG1C1	100	1.0	35		-65 ~+150	1.2 (1.0)	0.1	2A	S.C	1985	D *	
2	200											
4	400											
6	600		30									
8	800											
DFG3A1	100	3.0	70			-65 ~+150	1.3 (3.0)	0.1	2B	S.C	1985	D *
2	200											
4	400											
V19B	100	1.0	30	-65 ~+150			1.2 (1.0)	0.2	2A	S.C	1977	D *
C	200											
E	400											
G	600											
DFG1A8	800	1.0	40		-65 ~+165		1.2 (1.0)	0.2	2A	S.C	1982	D *
H114B	200	1.0	40		-40 ~+150		1.15 (1.0)	0.2	2A	S.C	1989	D *
D	400											
E	500											
F	600											
U19B	100	2.5	80		-65 ~+150	1.3 (2.5)	0.2	2B	S.C	1978	D *	
C	200											
E	400											
DFG2A6	600	2.5	80	-65 ~+165		1.3 (2.5)	0.2	2B	S.C	1982	D *	
8	800											
V11J	800	0.4	30		-65 ~+150	2.5 (0.4)	0.4	2A	S.C	1975	D *	
L	1,000											
M	1,300											
N	1,500											
V09C	200	0.8	35	-65 ~+165	1.6 (0.8)	0.4	2A	S.C	1975	D *		
E	400											
G	600											
U07J	800	1.0	50		-65 ~+140	2.5 (1.0)	0.4	2B	S.C	1975	D *	
L	1,000											
M	1,300											
N	1,500											
U06C	200	2.0	80	-65 ~+150	1.2 (2.0)	0.4	2B	S.C	1975	D *		
E	400											
G	600											

### ◆Controlled Avalanche Diodes

Type	Absolute maximum ratings					Characteristics		Outline	RoHS Status	Production year	Production status
	V <sub>RRM</sub> (V)	I <sub>F(AV)</sub> (A)	P <sub>RM</sub> (W)	I <sub>FSM</sub> (A)	T <sub>J</sub> (°C)	V <sub>FM</sub> (at I <sub>FM</sub> ) (V)	(A)				
H24F	600	1.0	1,000	45	-65 ~+175	1.0 (1.0)	2A	S.C	1989	D *	
H	800										
J	1,000				-65 ~+165						
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		-65 ~+175	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										

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## Discontinued

### ◆ Surge Suppressor Diodes

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

### ◆ General-Use Rectifier Diodes

Type	Absolute maximum ratings				Characteristics		Outline	RoHS Status	Production status
	V <sub>RRM</sub> (V)	* I <sub>F(AV)</sub> (A)	I <sub>FSM</sub> (A)	T <sub>j</sub> (°C)	V <sub>FM</sub> (at I <sub>FM</sub> ) (V) (A)	t <sub>rr</sub> (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 <sub>RRM</sub> (V)	* I <sub>F(AV)</sub> (A)	I <sub>FSM</sub> (A)	T <sub>j</sub> (°C)	V <sub>FM</sub> (at I <sub>FM</sub> ) (V) (A)	t <sub>rr</sub> (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								

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## Discontinued

### ◆ Surge Suppressor Diodes

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

### ◆ High Voltage – Fast Recovery Diodes

Type	Absolute maximum ratings				Characteristics		Outline	RoHS Status	Production status
	V <sub>RRM</sub> (kV)	* I <sub>F(AV)</sub> (mA)	I <sub>FSM</sub> (A)	T <sub>j</sub> (°C)	V <sub>FM</sub> (at I <sub>FM</sub> ) (V)	t <sub>rr</sub> (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)	V <sub>DC</sub> (V)	T <sub>j</sub> (°C)	V <sub>Z</sub> (V)		I <sub>Z</sub> (mA)			
				Min.	Max.				
ZSA5A27	3.0kW		-40 ~+150	24.0	30.0	10	3A	S.C	D
ZSA5MA27							62A	3B	S.C

### ◆ Fast Recovery Diodes

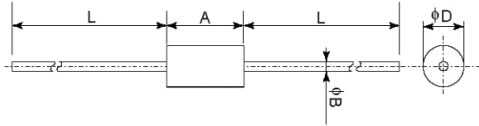
Type	Absolute maximum ratings				Characteristics		Outline	RoHS Status	Production status
	V <sub>RRM</sub> (kV)	* I <sub>F(AV)</sub> (A)	I <sub>FSM</sub> (A)	T <sub>j</sub> (°C)	V <sub>FM</sub> (at I <sub>FM</sub> ) (V)	t <sub>rr</sub> (ms)			
DFG1E 6	600	0.3	5	-65 ~+150	5.0(0.3)	35ns	2A	S.C	D
8	800								
10	1,000								



# Outline

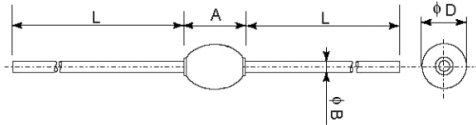
[Dimensions in mm]

## ● Outline No.1



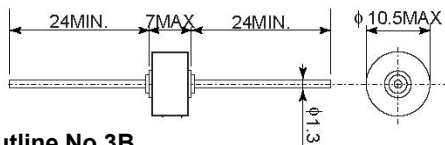
Items	A	φD	φB	L (Min.)
1A	3	2.5	0.6	28
1B	5	2.65	0.6	27
1C	5	2.65	0.8	27
1D	6	3.6	0.8	26
1E	7.5	6.4	1.2	26
1F	6.5	2.5	0.5	28
1G	10	2.5	0.5	26
1H	10	3	0.6	26,28
1J	8	3	0.6	28
1K	6.5	2.5	0.5	27
1L	8	3	0.6	27
1M	5	2.5	0.5	27

## ● Outline No.2

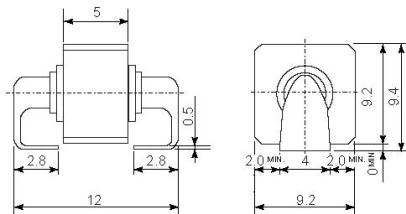


Items	A (Max.)	φD (Max.)	φB	L (Min.)
2A	5	3.5	0.8	29
2B	7	5	1.2	28
2C	7	5	1.2	27

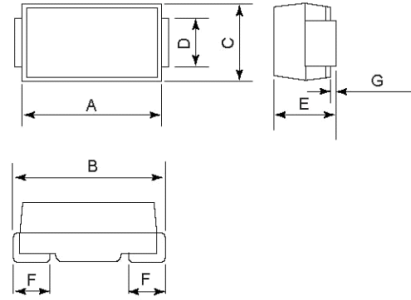
## ● Outline No.3A



## ● Outline No.3B

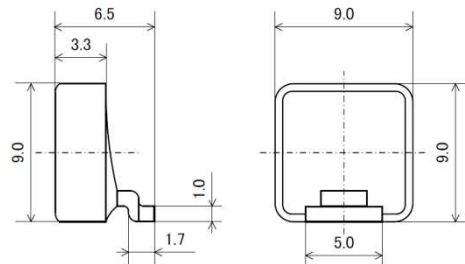


## ● Outline No.4

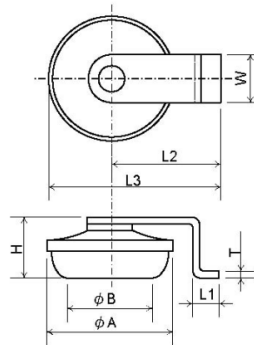


Items	A	B	C	D	E	F	G
4A	4.3	4.7	2.5	1.5	2.0	1.2	0.1
4B	4.4	5.4	3.6	2.0	2.3	1.2	0.2
4C	7.0	7.6	4.0	2.0	2.5	1.4	0.2

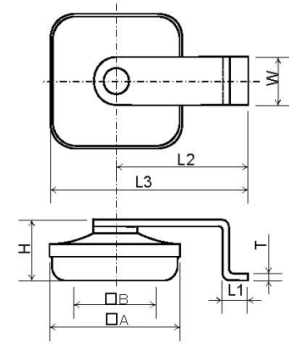
## ● Outline No.5



## ● 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

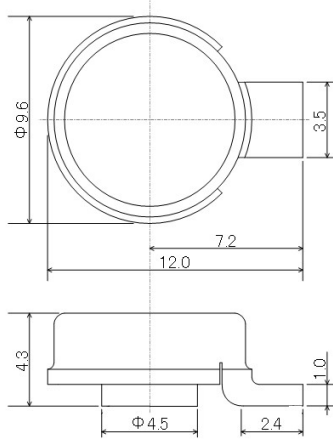
\*Packages is different

\*\*JEDEC DO-218AB Compatible

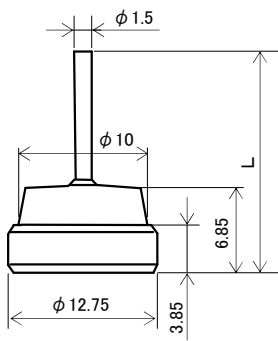
# Outline

[Dimensions in mm]

## ● Outline No.8

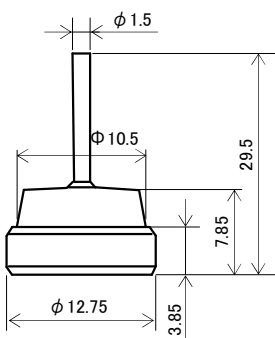


## ● Outline No.9A, 9B, 9C, 9D



Items	L
9A	19.2
9B	28.5
9C	17.0

## ● Outline No.10



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