SVF SERIES

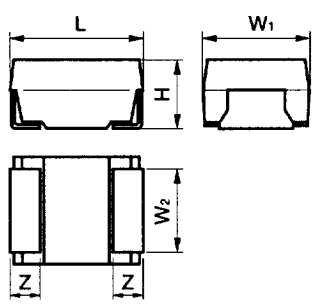
NEC's SVF series capacitors feature a built-in fuse to minimize circuit damage from over current.

Thers fuse-protected capacitors are suitable for noise absorption applications such as those required for computers, terminals and measuring instruments.

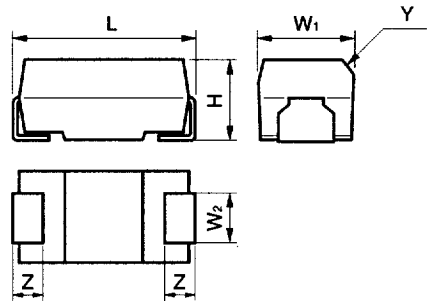
FEATURES

- Built-In Fuse Protection (2A)
- High-Temperature Durability for Either Wave Soldering or Reflow Soldering Applications
- The Same Excellent Performance as NEC's R Series
- Wide Operating Temperature Range (–55°C to –125°C)
- High Reliability (Failure Rate = 1%/1 000 H at 85°C, DC Rated Voltage Applied)

OUTLINE DRAWINGS AND DIMENSIONS



[B2 Case]

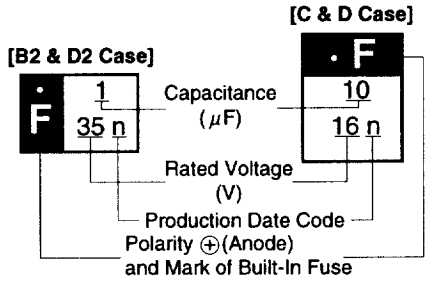


[C, D2 & D Cases]

Unit : mm (inch)

Case Size	EIA Code	L	W_1	W_2	H	Z	Y
B2	3528	3.5±0.2 (0.138±0.008)	2.8±0.2 (0.110±0.008)	2.3±0.1 (0.091±0.004)	1.9±0.2 (0.075±0.008)	0.8±0.3 (0.031±0.012)	—
C	6032	6.0±0.3 (0.236±0.012)	3.2±0.3 (0.126±0.012)	1.8±0.1 (0.071±0.004)	2.5±0.3 (0.098±0.012)	1.3±0.3 (0.051±0.012)	0.4C (0.016)
D2	–	5.8±0.3 (0.228±0.012)	4.6±0.3 (0.181±0.008)	2.4±0.1 (0.094±0.004)	3.2±0.3 (0.126±0.012)	1.3±0.3 (0.051±0.012)	—
D	7343	7.3±0.3 (0.287±0.012)	4.3±0.3 (0.169±0.008)	2.4±0.1 (0.094±0.004)	2.8±0.3 (0.110±0.012)	1.3±0.3 (0.051±0.012)	0.5C (0.020)

MARKING



[Marking of Production Date Code]

Year \ Month	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1998	N	P	Q	R	S	T	U	V	W	X	Y	Z
1999	a	b	c	d	e	f	g	h	j	k	l	m
2000	n	p	q	r	s	t	u	v	w	x	y	z
2001	A	B	C	D	E	F	G	H	J	K	L	M

Date code will resume beginning in 2002.

PRODUCT LINE-UP AND CASE SIZE

Capacitance (μF) \ Rated Voltage (V dc)	10	16	20	25	35	50
1.0					B2	C
1.5				B2		
2.2			B2		C	
3.3		B2		C		D2
4.7	B2	C	C		D2, D	
6.8		C		D2, D	D	
10		C	D2, D	D		
15	C, D2	D2	D			
22		D2, D	D			
33	D2, D	D				
47	D					

PART NUMBERING SYSTEM

– Bulk –

SVF B2 1V 105 M

- SVF Series
- Case Size
- DC Rated Voltage
  1A: 10 V 1C: 16 V 1D: 20 V
  1E: 25 V 1V: 35 V 1H: 50 V
- Capacitance Code in pF
  First two digits represent significant figures.
  Third digit specifies number of zeros to follow.
- Capacitance Tolerance
  M: ±20% K: ±10%

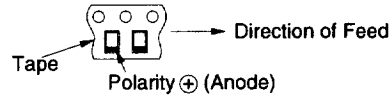
– Tape and Reel –

TE SVFB21V105M 8 R E

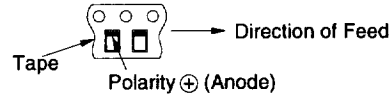
- Tape and Reel
  TE: Reel Diameter 178 mm (7 inch)
  TL: Reel Diameter 330 mm (13 inch)
- Same as Bulk Part
- Tape Width
  8 mm for B2 Case
  12 mm for C, D & D2 Cases
- Packing Orientation (See below)
- In case of the necessity of the hole in embossement of the carrier tape, "E" is put to end of part number.
  (Available for 330 mmϕ Reel Only)

– Packing Orientation –

R: Orientation



L: Orientation



RATINGS

DC Rated Voltage @85°C (125°C) Vdc	Capacitance @20°C, 120 Hz μF	Case Size	Part Number	Leakage Current @20°C μA Max.	tan δ @20°C, 120 Hz % Max.
10 (6.3)	4.7	B2	SVFB21A475M	0.5	4
	15	C	SVFC1A156M	1.5	6
	15	D2	SVFD21A156M	1.5	6
	33	D2	SVFD21A336M	3.3	6
	33	D	SVFD1A336M	3.3	6
	47	D	SVFD1A476M	4.7	6
16 (10)	3.3	B2	SVFB21C335M	0.5	4
	4.7	C	SVFC1C475M	0.7	4
	6.8	C	SVFC1C685M	1.0	6
	10	C	SVFC1C106M	1.6	6
	15	D2	SVFD21C156M	2.4	6
	22	D2	SVFD21C226M	3.5	6
	22	D	SVFD1C226M	3.5	6
	33	D	SVFD1C336M	5.2	6
20 (13)	2.2	B2	SVFB21D225M	0.5	4
	4.7	C	SVFC1D475M	0.9	4
	10	D2	SVFD21D106M	2.0	6
	10	D	SVFD1D106M	2.0	6
	15	D	SVFD1D157M	3.0	6
	22	D	SVFD1D226M	4.4	6
25 (16)	1.5	B2	SVFB21E155M	0.5	4
	3.3	C	SVFC1E335M	0.8	4
	6.8	D2	SVFD21E685M	1.7	6
	6.8	D	SVFD1E685M	1.7	6
	10	D	SVFD1E106M	2.5	6
35 (22)	1	B2	SVFB21V105M	0.5	4
	2.2	C	SVFC1V225M	0.7	4
	4.7	D2	SVFD21V475M	1.6	4
	4.7	D	SVFD1V475M	1.6	4
	6.8	D	SVFD1V685M	2.3	6
50 (32)	1	C	SVFC1H105M	0.5	4
	3.3	D2	SVFD21H335M	1.6	4

PERFORMANCE CHARACTERISTICS

Item		Specification							Test Method
Operating Temperature Range		–55 to +125°C							
Rated Voltage		10	16	20	25	35	50	Vdc	Temperature: 85°C
Surge Voltage		13	20	26	33	46	65	Vdc	Temperature: 85°C
Category Voltage		6.3	10	13	16	22	32	Vdc	Temperature: 125°C (*1)
Capacitance Range		1.0 to 47 μF							Frequency: 120 Hz
Capacitance Tolerance		±20% (±10%)							
Leakage Current (L.C.)		0.01 CV (μA) or 0.5 μA whichever is greater							5 min, after rated voltage applied
Tangent of Loss Angle (tan δ)		1.0 to 4.7 μF: 0.04 max. 6.8 to 47 μF: 0.04 max.							Frequency: 120 Hz
Surge Voltage Test		ΔC/C : ±5% tan δ : Initial Requirement L.C. : Initiail Requirement							Temperature: 85°C Surge Voltage for 30 sec. Series Resistance: 1 kΩ Discharge Voltage for 5 min. 30 sec. 1000 cycles
Characteristics at High and Low Temperature	Temp.	–55°C			+85°C		+125°C		Step 1: 20°C Step 2: –55°C Step 3: 20°C Step 4: 85°C Step 5: 125°C Step 6: 20°C
	ΔC/C	0, –12%			+12, 0%		+15, 0%		
	tan δ	0.1 to 4.7 μF: 0.08 max. 6.8 to 47 μF: 0.10 max.			Initial Requirement		0.1 to 4.7 μF: 0.06 max. 6.8 to 47 μF: 0.08 max.		
	L.C.	–			0.1 CV or 5 μA whichever is greater		0.125 CV or 6.25 μA whichever is greater		
Rapid Change of Temperature		ΔC/C : ±5% tan δ : Initial requirement L.C. : Initial requirement							–55 to +125°C 5 cycles
Resistance to Soldering		ΔC/C : ±5% tan δ : Initial requirement L.C. : Initial requirement							Fully immersion to solder, 260°C, 5 sec.
Damp Heat, Steady State		ΔC/C : ±5% tan δ : Initial Requirement × 1.5 L.C. : Initial Requirement							Temperature: 40°C 90 to 95% RH 500 hours
Endurance		ΔC/C : ±10% tan δ : Initial Requirement L.C. : Initial Requirement × 1.25							Temperature: 85°C Rated Voltage Applied Temperature: 125°C Category Voltage Applied 2000 hours
Failure Rate		λ_0 = 1%/1000H							
Fuse Blow-out Characteristics		B2: 2A - 5 sec. Max. C: 2A - 10 sec. Max. D2, D: 2A - 20 sec. Max.							Temperature: 25°C

LEGEND
CV : Product of capacitance in μF and voltage in V
ΔC/C: Capacitance Change Ratio

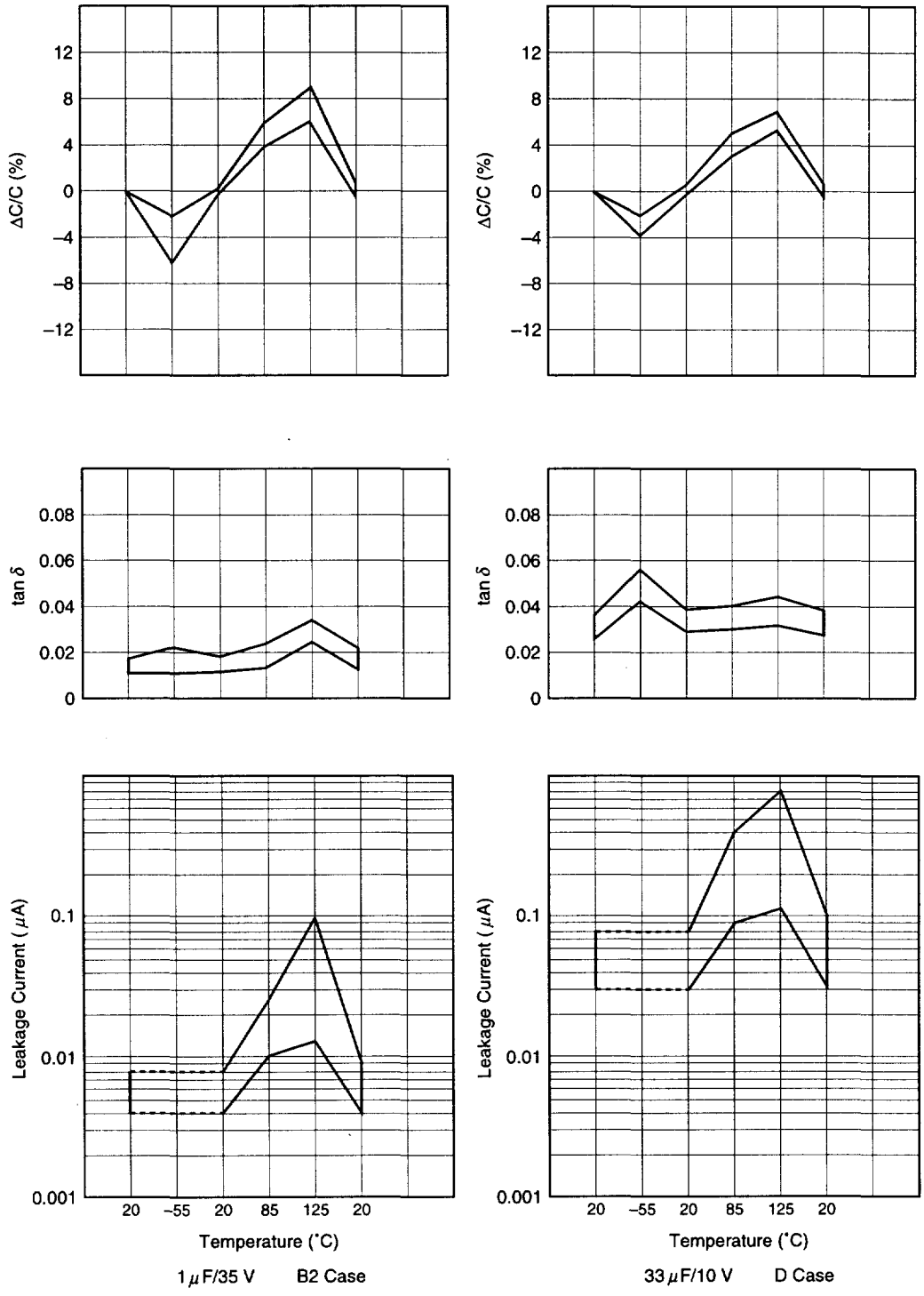
*1: Category voltage at 85°C or more is calculated by following expression.

$$U_T = U_R - \frac{U_R - U_C}{40} (T - 85)$$

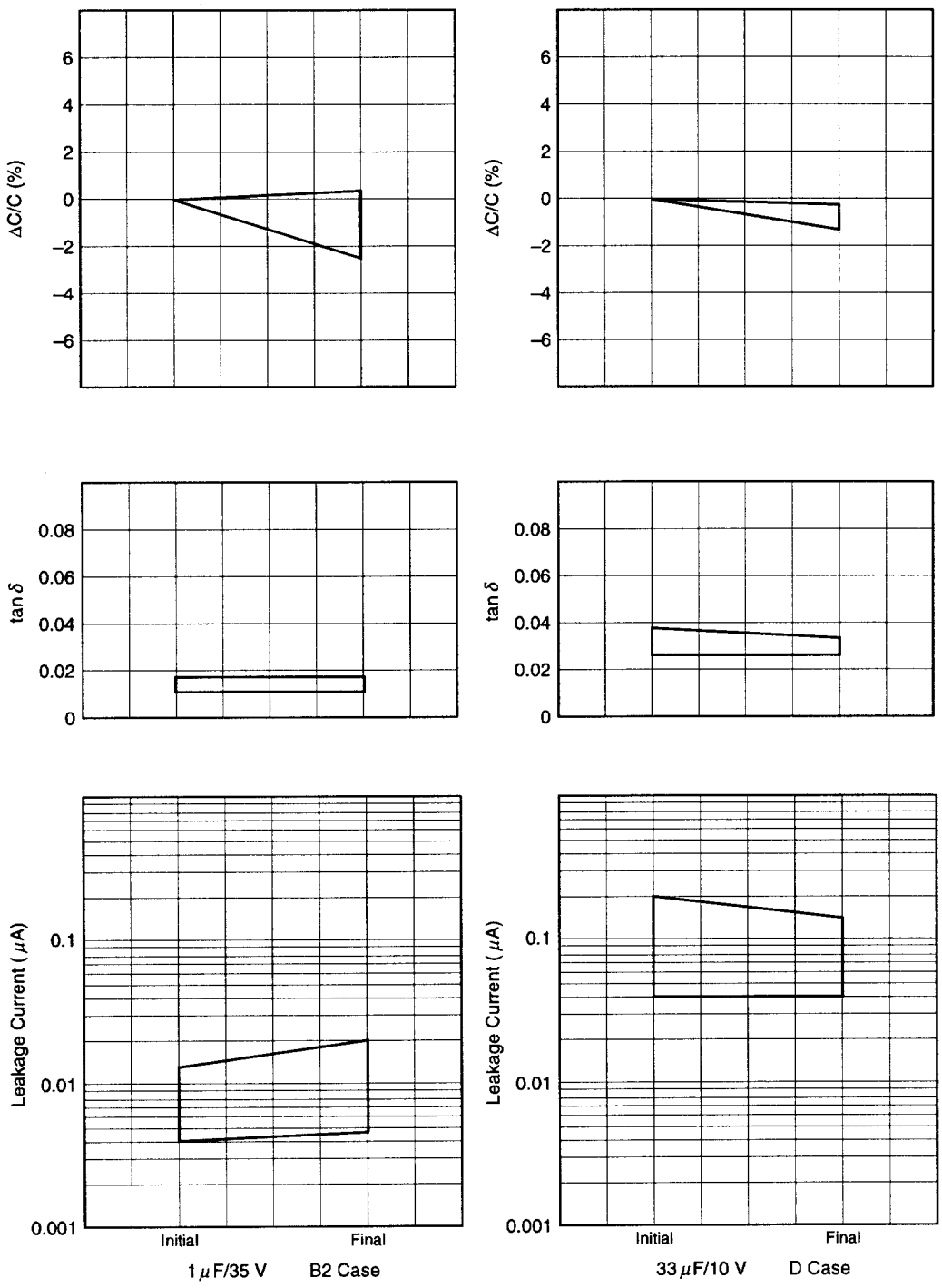
U_R : Rated Voltage
U_C : Category Voltage at 125°C

CHARACTERISTICS DATA

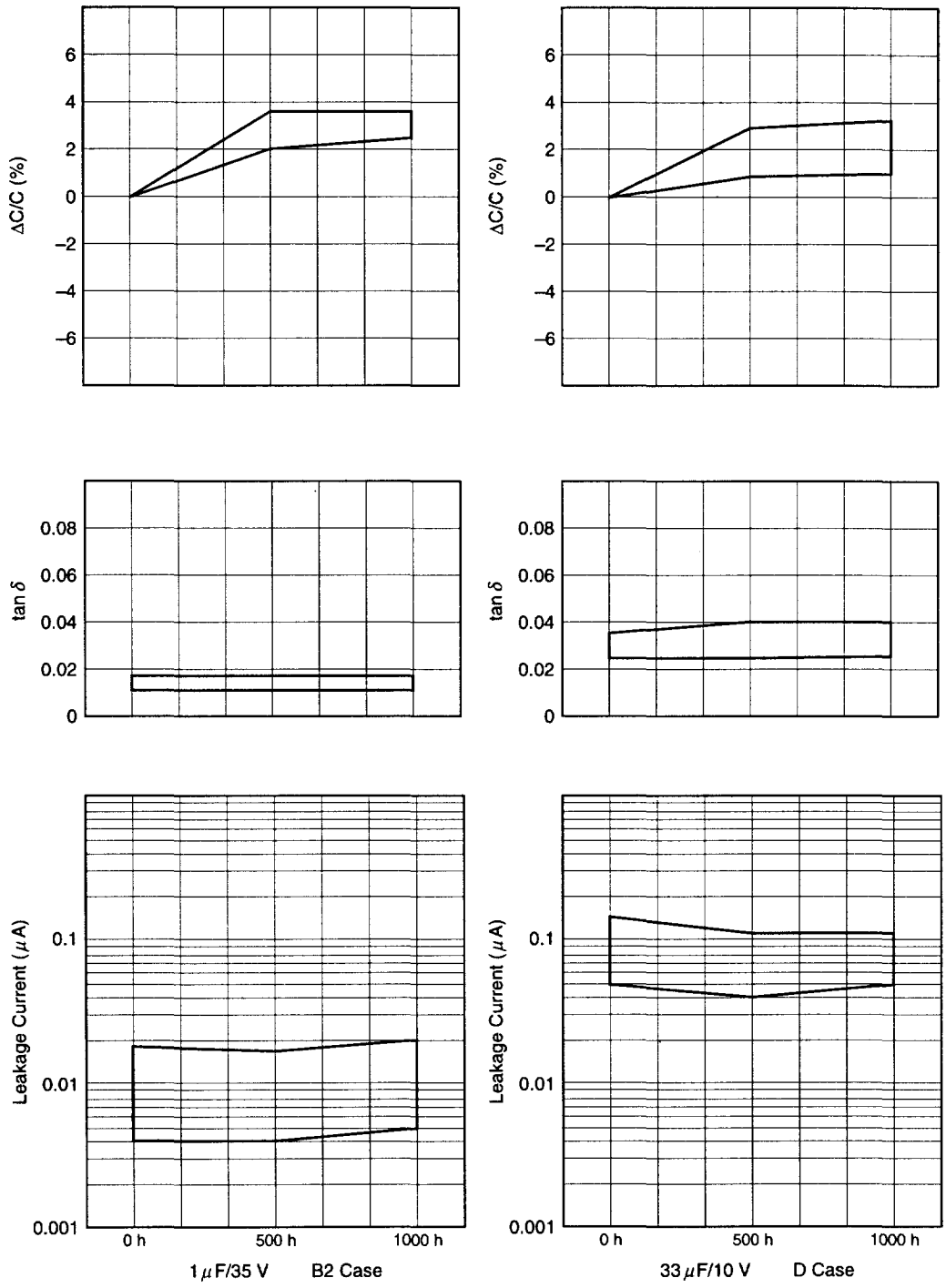
Characteristics at High and Low Temperature



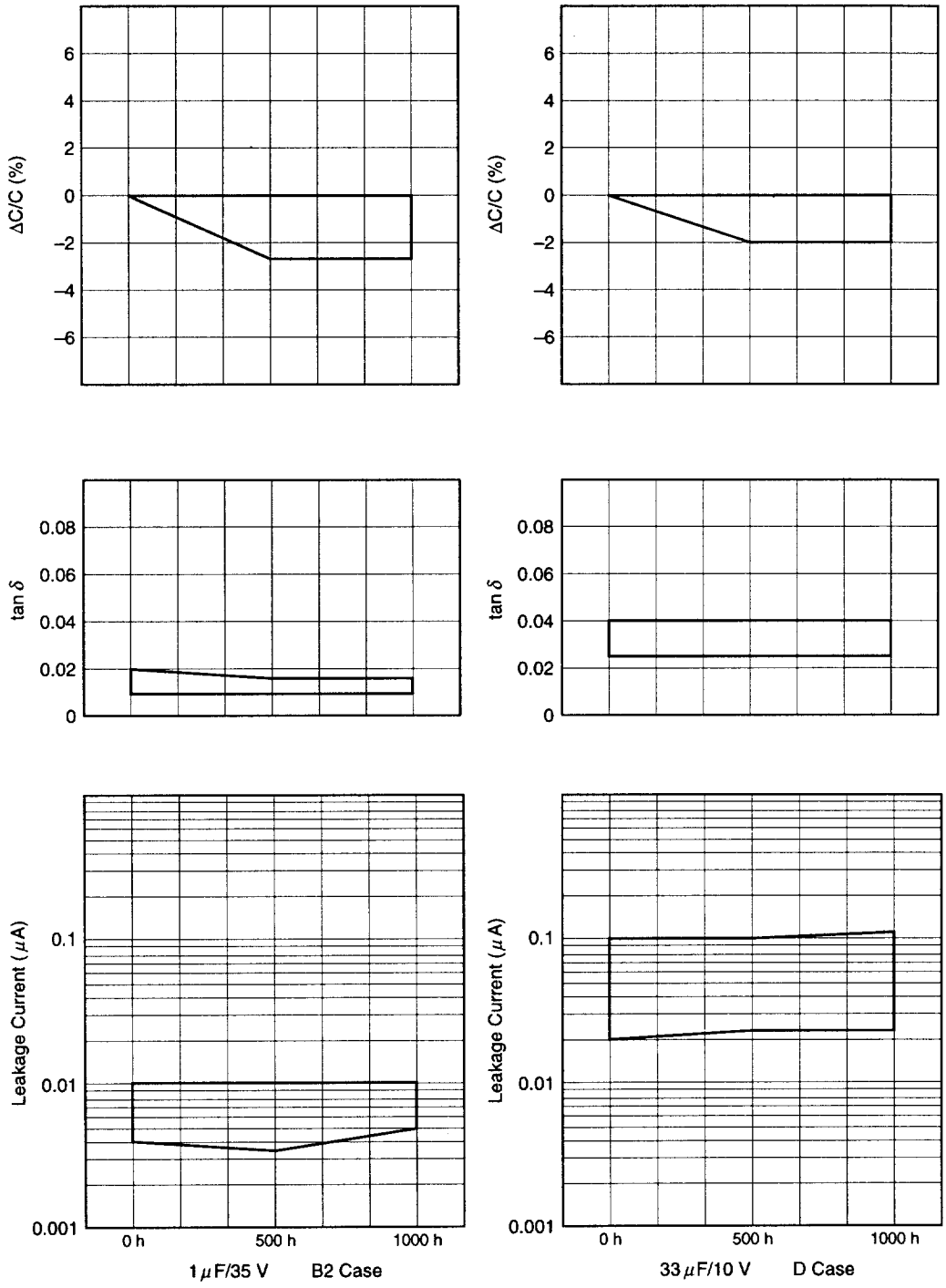
Resistance to Soldering Heat (Immersing for 10 sec. at 260˚C)
(Reference Data)



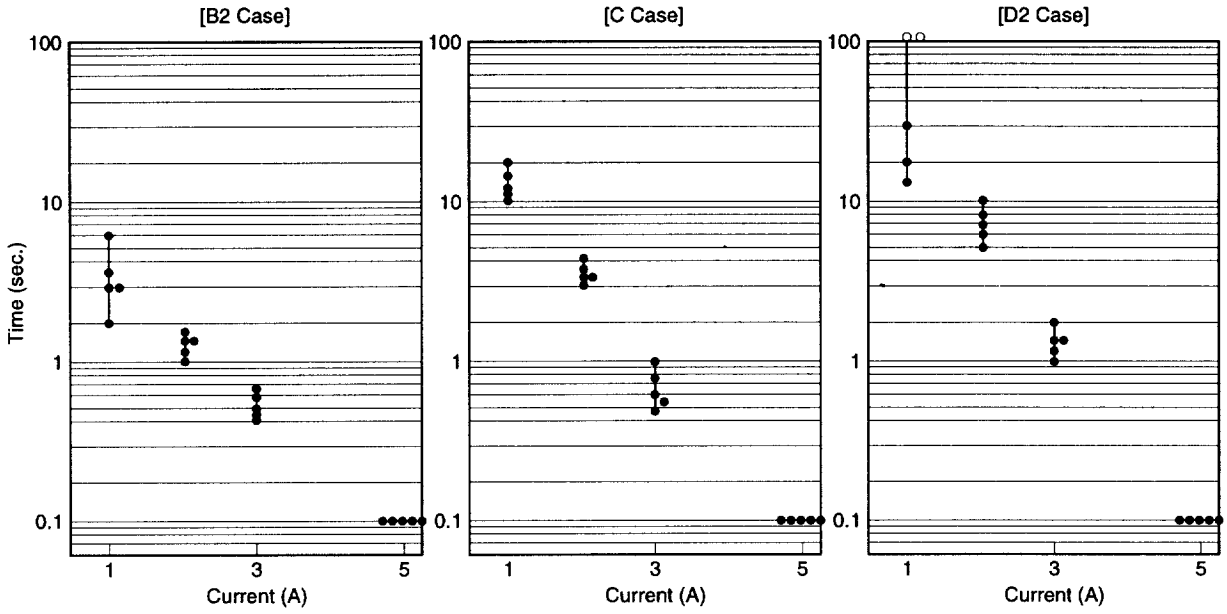
Damp Heat, Steady State (65°C, 90 to 95% RH)
(Reference Data)



Endurance (85°C, Rated Voltage × 1.3 Applied)
(Reference Data)



Fuse Blow-Out Characteristics



Note: "○" indicates no blow-out.

Impedance – Frequency Characteristics