Zener Diode Silicon Epitaxial Planar

XCEZ series

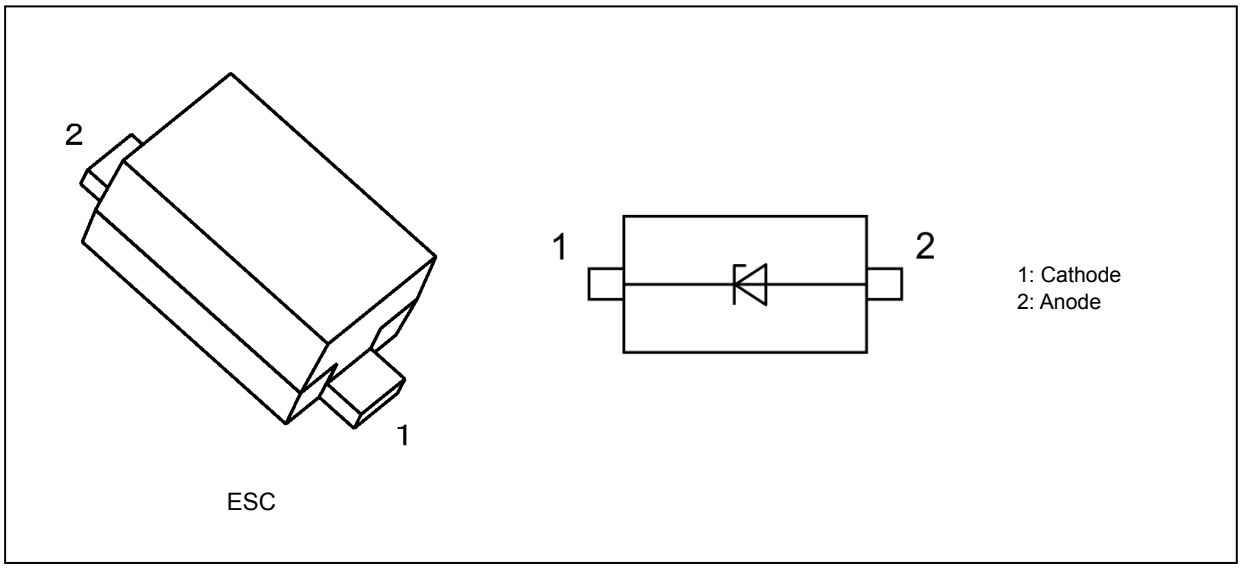
1. Applications

(1) Automotive
(2) Voltage surge protection

2. Features

(1) AEC-Q101 qualified
(2) Small package
(3) The typical voltage of VZ is accorded to E24 series.

3. Packaging and Internal Circuit



4. Absolute Maximum Ratings 1 (Note) (Unless otherwise specified, T_a = 25 °C)

Characteristics	Symbol	Note	Rating	Unit
Power dissipation	P_D	(Note 1)	150	mW
		(Note 2)	300	
Junction temperature	T_j		150	°C
Storage temperature	T_{stg}		-55 to 150	

Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings.
Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

Note 1: Mounted on a glass epoxy circuit board of 20 mm × 20 mm, pad dimensions of 16 mm^2

Note 2: Mounted on a glass epoxy circuit board of 25.4 mm × 25.4 mm × 1.6 mm, Cu pad: 645 mm^2

Start of commercial production
2025-06

5. Absolute Maximum Ratings 2 (Note) (Unless otherwise specified, T_a = 25 °C)

Type No.	Electrostatic discharge voltage IEC61000-4-2 (Contact, Air) V_{ESD}(kV) (Note 1)	Electrostatic discharge voltage ISO10605 (Cotact, Air) V_{ESD}(kV) (Note 2)	Peak pulse power P_{PK}(W) (Note 3)	Peak pulse current I_{PP}(A) (Note 3)
XCEZ5V6	±30	±30	155	12.0
XCEZ6V2	±30	±30	175	11.0
XCEZ6V8	±30	±30	180	10.0
XCEZ7V5	±30	±30	190	9.5
XCEZ8V2	±30	±30	200	8.5
XCEZ9V1	±30	±30	200	8.0
XCEZ10V	±30	±30	200	7.5
XCEZ11V	±30	±30	200	7.25
XCEZ12V	±30	±30	200	7.0
XCEZ13V	±30	±30	200	6.5
XCEZ15V	±30	±30	200	5.6
XCEZ16V	±30	±30	200	5.5
XCEZ18V	±30	±30	200	5.1
XCEZ20V	±30	±30	200	5.0
XCEZ22V	±30	±30	200	4.75
XCEZ24V	±30	±30	200	4.5
XCEZ27V	±20	±30	200	4.1
XCEZ30V	±20	±30	200	4.0
XCEZ33V	±17	±25	200	3.5
XCEZ36V	±12	±20	200	3.0

Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings.
Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

Note1: according to IEC61000-4-2(C = 150 pF / R = 330 Ω)
Note2: according to ISO10605(C = 330 pF / R = 2 kΩ)
Note3: according to IEC61000-4-5(tp = 8 / 20 μs)

6. Electrical Characteristics 1 (Unless otherwise specified, T_a = 25 °C)

	Zener Voltage V_Z (V)				Dinamic Impedance Z_Z (Ω)		Reverse Current $I_R(1)$ (μA)		Reverse Current $I_R(2)$ (μA)	
Type No.	Min	Typ.	Max	Test Current I_Z (mA)	Max	Test Current I_Z (mA)	Max	Test Voltage V_R (V)	Max	Test Voltage V_R (V)
XCEZ5V6	5.3	5.6	6.0	5	30	5	1.0	2.5	1.0	3.5
XCEZ6V2	5.8	6.2	6.6	5	30	5	1.0	3.0	2.5	5.0
XCEZ6V8	6.4	6.8	7.2	5	30	5	0.5	3.5	1.5	5.5
XCEZ7V5	7.0	7.5	7.9	5	30	5	0.1	4.0	0.1	6.0
XCEZ8V2	7.7	8.2	8.7	5	30	5	0.1	5.0	0.1	7.0
XCEZ9V1	8.5	9.1	9.6	5	30	5	0.1	6.0	0.1	7.5
XCEZ10V	9.4	10.0	10.6	5	30	5	0.1	7.0	0.1	8.0
XCEZ11V	10.4	11.0	11.6	5	30	5	0.1	8.0	0.1	9.0
XCEZ12V	11.4	12.0	12.6	5	30	5	0.1	9.0	0.1	10.0
XCEZ13V	12.4	13.0	14.1	5	30	5	0.1	10.0	0.1	11.0
XCEZ15V	13.8	15.0	15.6	5	30	5	0.1	11.0	0.1	12.0
XCEZ16V	15.3	16.0	17.1	5	35	5	0.1	12.0	0.1	14.0
XCEZ18V	16.8	18.0	19.1	5	45	5	0.1	13.0	0.1	16.0
XCEZ20V	18.8	20.0	21.2	5	70	5	0.1	15.0	0.1	17.6
XCEZ22V	20.8	22.0	23.3	5	70	5	0.1	17.0	0.1	18.0
XCEZ24V	22.8	24.0	25.6	5	70	5	0.1	19.0	0.1	19.0
XCEZ27V	25.1	27.0	28.9	2	70	2	0.1	21.0	0.1	23.0
XCEZ30V	28.0	30.0	32.0	2	100	2	0.1	23.0	0.1	27.0
XCEZ33V	31.0	33.0	35.0	2	100	2	0.1	25.0	0.1	30.0
XCEZ36V	34.0	36.0	38.0	2	100	2	0.1	27.0	0.1	32.5

7. Electrical Characteristics 2 (Unless otherwise specified, Ta = 25 °C)

	Dynamic Resistance R_{DYN} (Ω) (Note 1)	Clamp Voltage V_C (V) (Note 1) (Note 2)	Total Capacitance C_t (pF) (Note 3)
Type No.	Typ.	Typ.	Typ.
XCEZ5V6	0.16	9.0	125
XCEZ6V2	0.21	10.0	105
XCEZ6V8	0.27	13.0	88
XCEZ7V5	0.32	14.0	78
XCEZ8V2	0.37	16.5	67
XCEZ9V1	0.44	17.0	62
XCEZ10V	0.52	19.0	60
XCEZ11V	0.60	24.0	48
XCEZ12V	0.70	26.0	44
XCEZ13V	0.80	27.0	42
XCEZ15V	0.60	24.0	36
XCEZ16V	0.50	27.0	35
XCEZ18V	0.40	28.5	31
XCEZ20V	0.35	30.5	29
XCEZ22V	0.40	32.0	27
XCEZ24V	0.60	36.5	26
XCEZ27V	0.90	45.0	23
XCEZ30V	1.25	47.5	21
XCEZ33V	1.80	57.0	19
XCEZ36V	2.60	63.0	18

Note1: TLP parameters: Z0 = 50 Ω, tp = 100 ns, tr = 300 ps, averaging window: t1 = 30 ns to t2 = 60 ns, extraction of dynamic resistance using least squares fit of TLP characteristics between I_{TLP1} = 16 A and I_{TLP2} = 30 A.

Note2: I_{TLP} = 16 A

Note3: V_R = 0 V, f = 1 MHz

8. Marking List

Type No.	Marking	Type No.	Marking	Type No.	Marking
XCEZ5V6	NL	XCEZ11V	P3	XCEZ22V	PA
XCEZ6V2	NM	XCEZ12V	P4	XCEZ24V	PB
XCEZ6V8	NN	XCEZ13V	P5	XCEZ27V	PC
XCEZ7V5	NP	XCEZ15V	P6	XCEZ30V	PD
XCEZ8V2	NQ	XCEZ16V	P7	XCEZ33V	PE
XCEZ9V1	NR	XCEZ18V	P8	XCEZ36V	PF
XCEZ10V	P2	XCEZ20V	P9	—	—

9. Marking

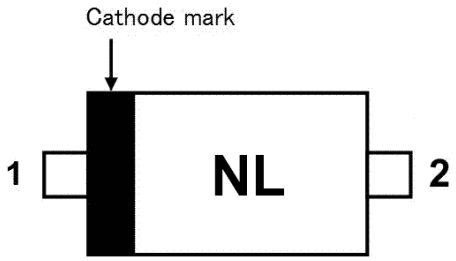


Fig. 9.1 XCEZ5V6

10. Land Pattern Dimensions (for reference only)

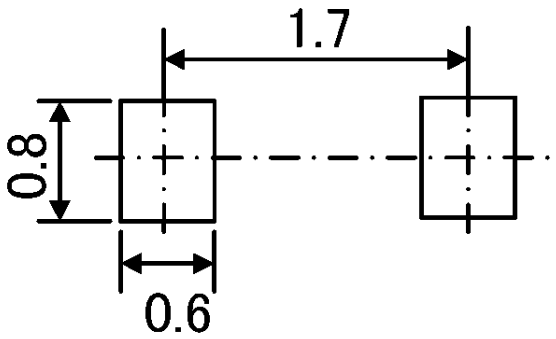


Fig. 10.1 Land Pattern Dimensions
(for reference only) (Unit: mm)

11. Characteristics Curves

11.1. XCEZ series Characteristics Curves(Note)

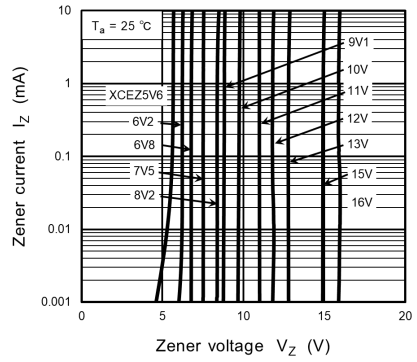


Fig. 11.1.1 I_Z - V_Z(1)

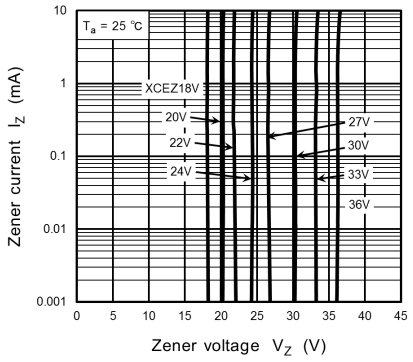


Fig. 11.1.2 I_Z - V_Z(2)

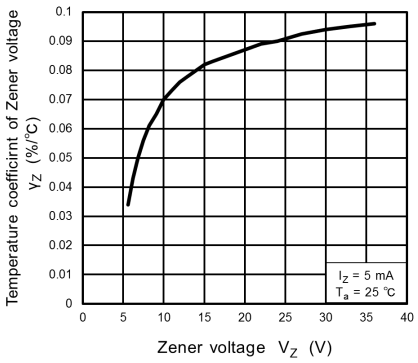


Fig. 11.1.3 γ_Z - V_Z

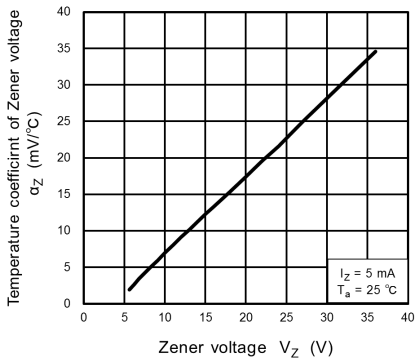


Fig. 11.1.4 α_Z - V_Z

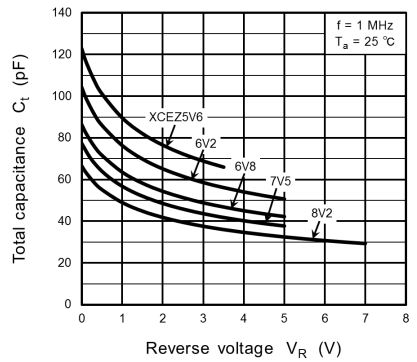


Fig. 11.1.5 C_t - V_R (1)

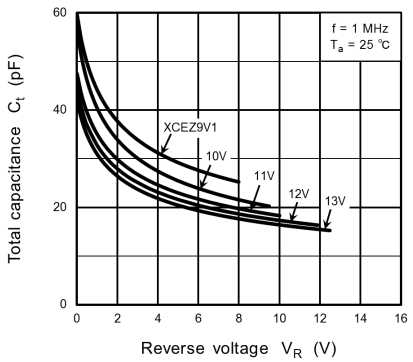


Fig. 11.1.6 C_t - V_R (2)

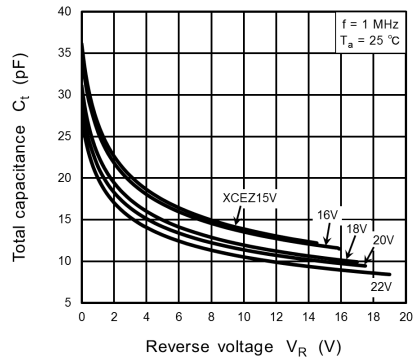


Fig. 11.1.7 C_t - V_R (3)

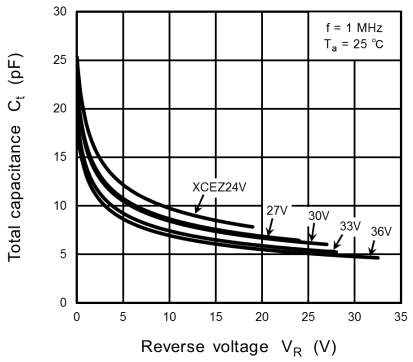


Fig. 11.1.8 C_t - V_R (4)

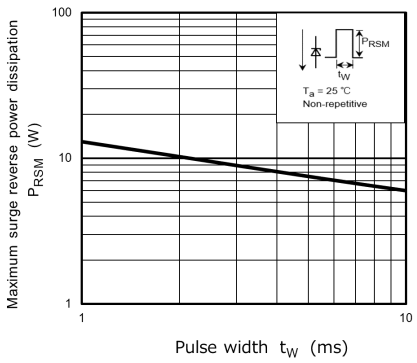


Fig. 11.1.9 P_{RSM} - t_w

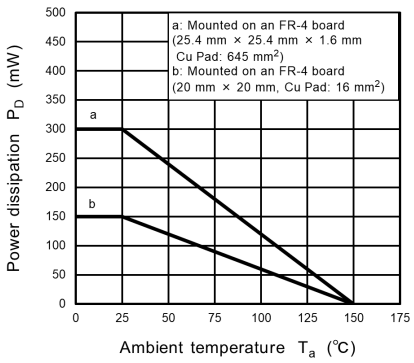


Fig. 11.1.10 P_D - T_a

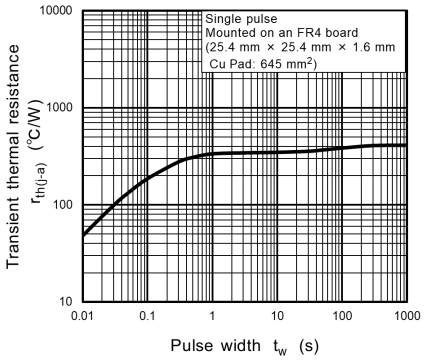


Fig. 11.1.11 $r_{th(j-a)}$ - t_w

Note: The above characteristics curves are presented for reference only and not guaranteed by production test, unless otherwise noted.

11.2. XCEZ5V6 Characteristics Curves(Note)

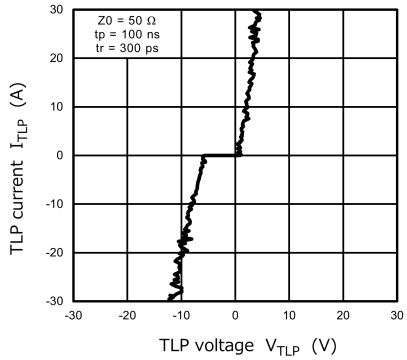


Fig. 11.2.1 I_{TLP} - V_{TLP}

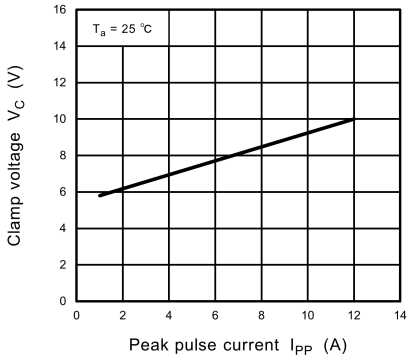


Fig. 11.2.2 V_C - I_{PP}

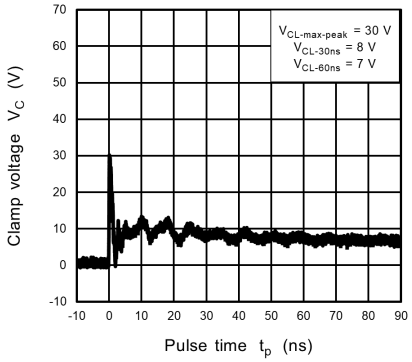


Fig. 11.2.3 IEC61000-4-2 Clamp Waveform +8 kV

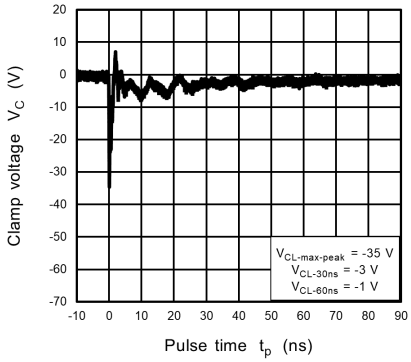


Fig. 11.2.4 IEC61000-4-2 Clamp Waveform -8 kV

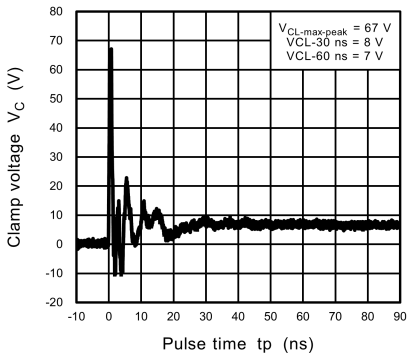


Fig. 11.2.5 ISO10605 Clamp Waveform +8 kV

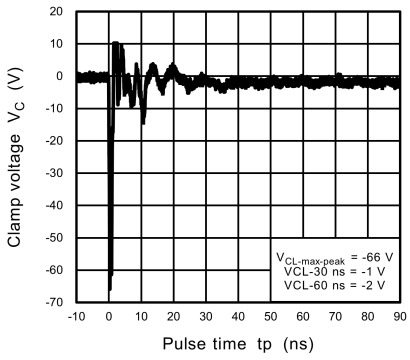


Fig. 11.2.6 ISO10605 Clamp Waveform -8 kV

Note: The above characteristics curves are presented for reference only and not guaranteed by production test, unless otherwise noted.
Refer to Fig.11.22.1, Fig.11.22.2, Fig.11.22.3 for peak pulse current(V_C-I_{PP}) and clamp waveform measurement circuit.

11.3. XCEZ6V2 Characteristics Curves(Note)

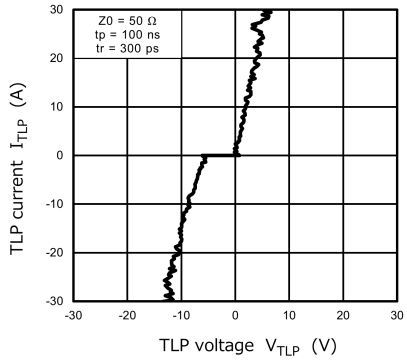


Fig. 11.3.1 I_{TLP} - V_{TLP}

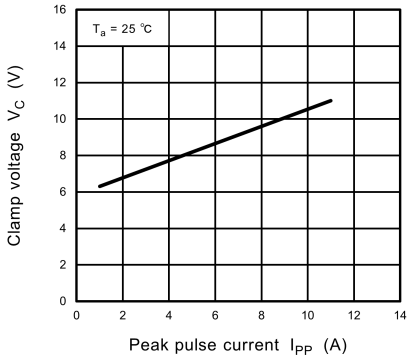


Fig. 11.3.2 V_C - I_{PP}

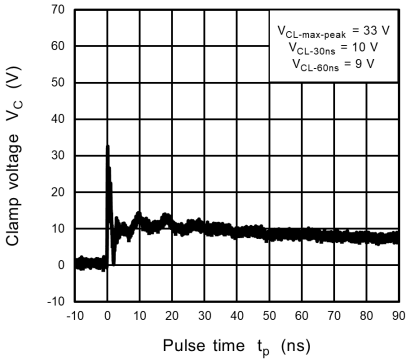


Fig. 11.3.3 IEC61000-4-2 Clamp Waveform +8 kV

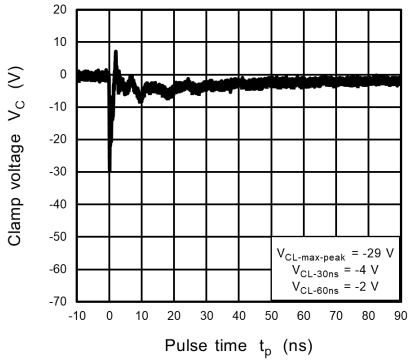


Fig. 11.3.4 IEC61000-4-2 Clamp Waveform -8 kV

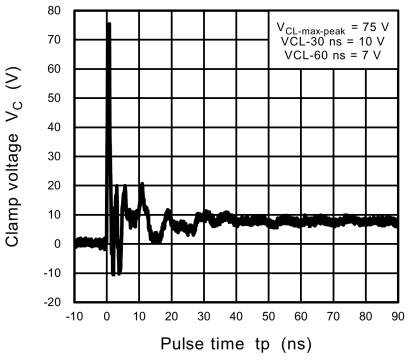


Fig. 11.3.5 ISO10605 Clamp Waveform +8 kV

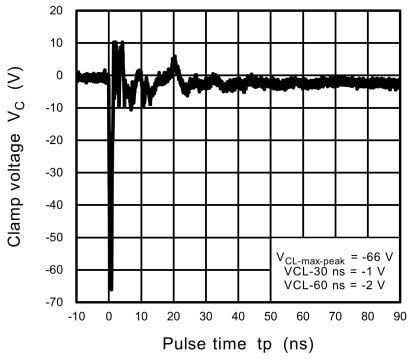


Fig. 11.3.6 ISO10605 Clamp Waveform -8 kV

Note: The above characteristics curves are presented for reference only and not guaranteed by production test, unless otherwise noted.
Refer to Fig.11.22.1, Fig.11.22.2, Fig.11.22.3 for peak pulse current(V_C-I_{PP}) and clamp waveform measurement circuit.

11.4. XCEZ6V8 Characteristics Curves(Note)

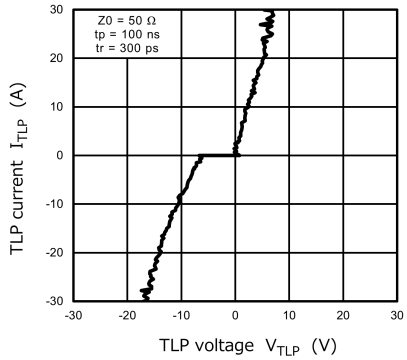


Fig. 11.4.1 I_{TLP} - V_{TLP}

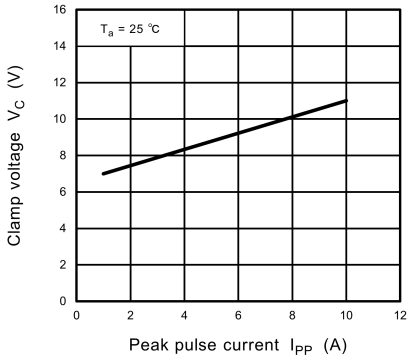


Fig. 11.4.2 V_C - I_{PP}

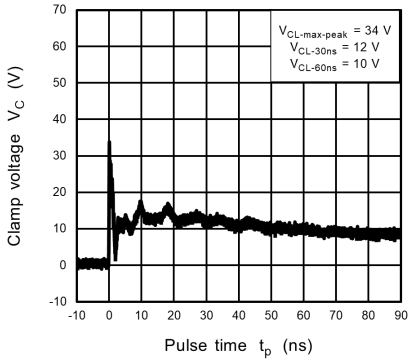


Fig. 11.4.3 IEC61000-4-2
Clamp Waveform +8 kV

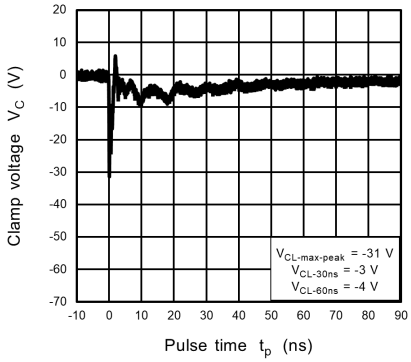


Fig. 11.4.4 IEC61000-4-2
Clamp Waveform -8 kV

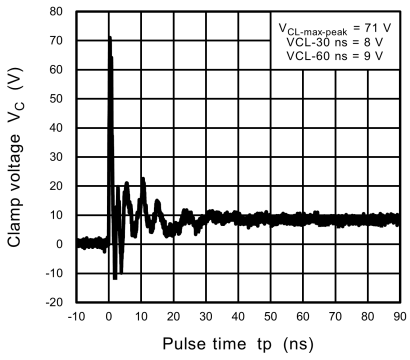


Fig. 11.4.5 ISO10605
Clamp Waveform +8 kV

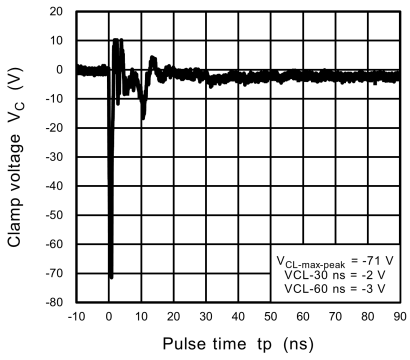


Fig. 11.4.6 ISO10605
Clamp Waveform -8 kV

Note: The above characteristics curves are presented for reference only and not guaranteed by production test, unless otherwise noted.
Refer to Fig.11.22.1, Fig.11.22.2, Fig.11.22.3 for peak pulse current(V_C-I_{PP}) and clamp waveform measurement circuit.

11.5. XCEZ7V5 Characteristics Curves(Note)

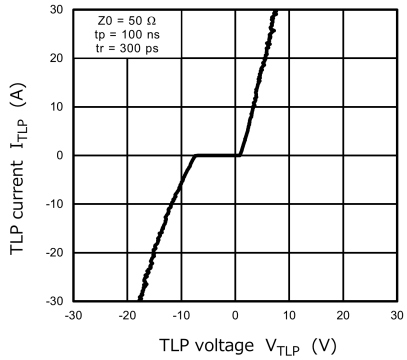


Fig. 11.5.1 I_{TLP} - V_{TLP}

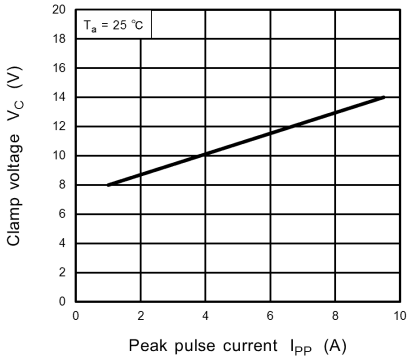


Fig. 11.5.2 V_C - I_{PP}

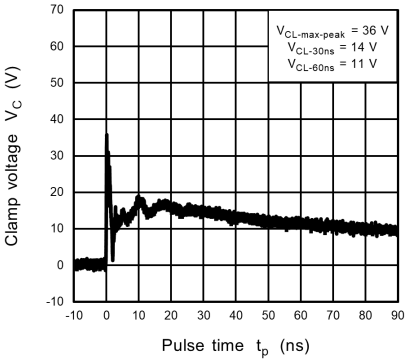


Fig. 11.5.3 IEC61000-4-2
Clamp Waveform +8 kV

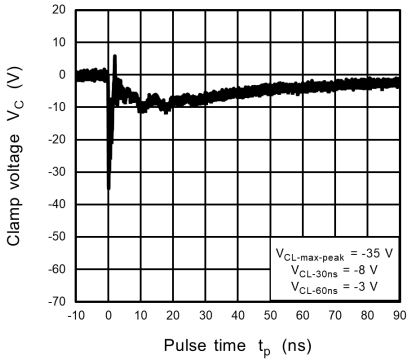


Fig. 11.5.4 IEC61000-4-2
Clamp Waveform -8 kV

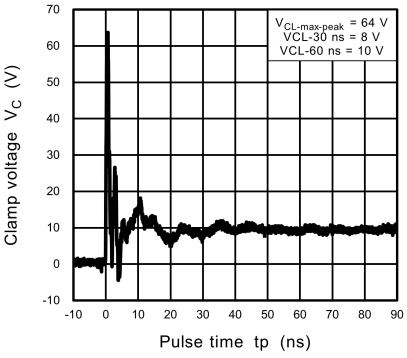


Fig. 11.5.5 ISO10605
Clamp Waveform +8 kV

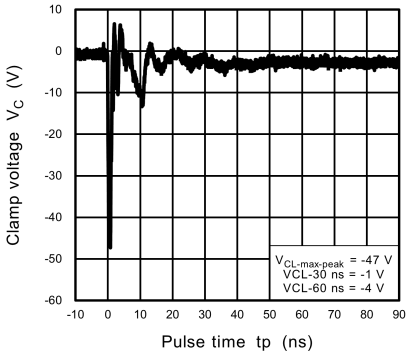


Fig. 11.5.6 ISO10605
Clamp Waveform -8 kV

Note: The above characteristics curves are presented for reference only and not guaranteed by production test, unless otherwise noted.
Refer to Fig.11.22.1, Fig.11.22.2, Fig.11.22.3 for peak pulse current(V_C-I_{PP}) and clamp waveform measurement circuit.

11.6. XCEZ8V2 Characteristics Curves(Note)

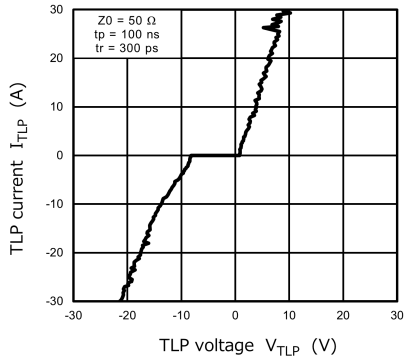


Fig. 11.6.1 I_{TLP} - V_{TLP}

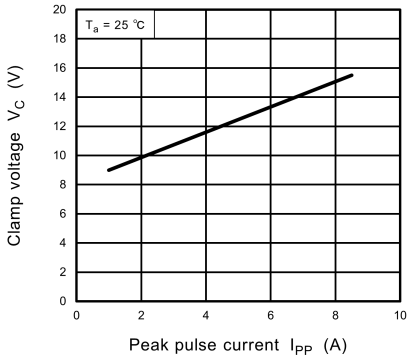


Fig. 11.6.2 V_C - I_{PP}

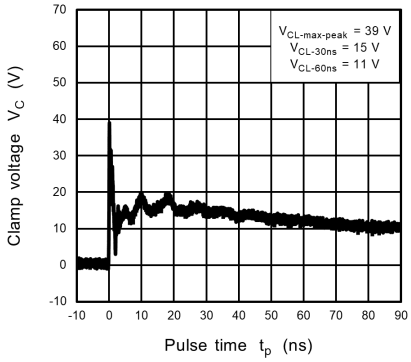


Fig. 11.6.3 IEC61000-4-2
Clamp Waveform +8 kV

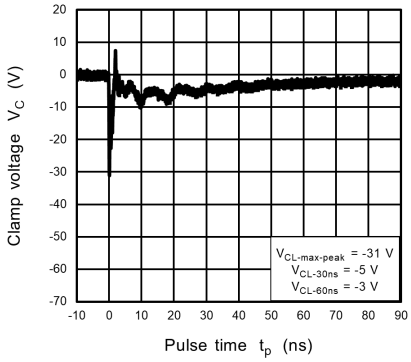


Fig. 11.6.4 IEC61000-4-2
Clamp Waveform -8 kV

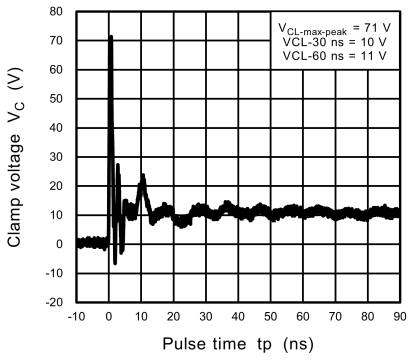


Fig. 11.6.5 ISO10605
Clamp Waveform +8 kV

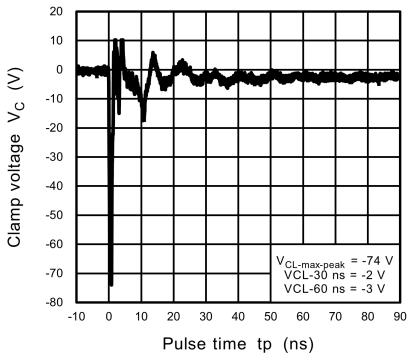


Fig. 11.6.6 ISO10605
Clamp Waveform -8 kV

Note: The above characteristics curves are presented for reference only and not guaranteed by production test, unless otherwise noted.
Refer to Fig.11.22.1, Fig.11.22.2, Fig.11.22.3 for peak pulse current(V_C-I_{PP}) and clamp waveform measurement circuit.

11.7. XCEZ9V1 Characteristics Curves(Note)

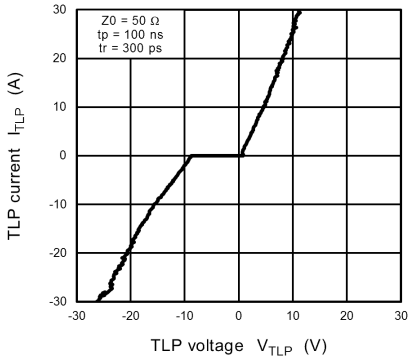


Fig. 11.7.1 I_{TLP} - V_{TLP}

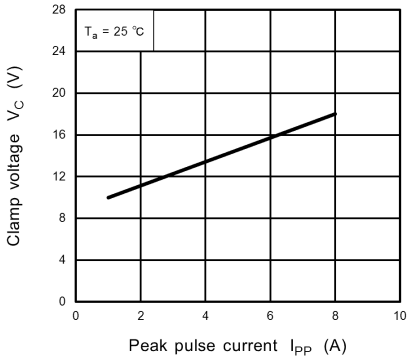


Fig. 11.7.2 V_C - I_{PP}

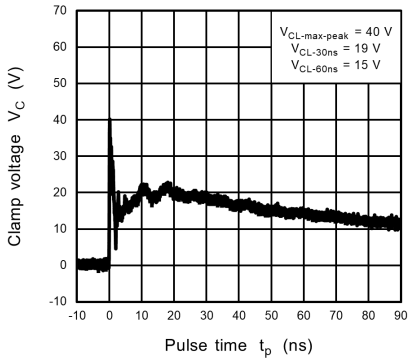


Fig. 11.7.3 IEC61000-4-2
Clamp Waveform +8 kV

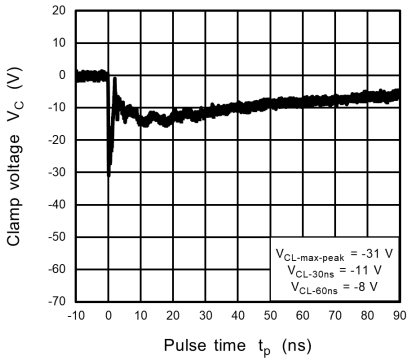


Fig. 11.7.4 IEC61000-4-2
Clamp Waveform -8 kV

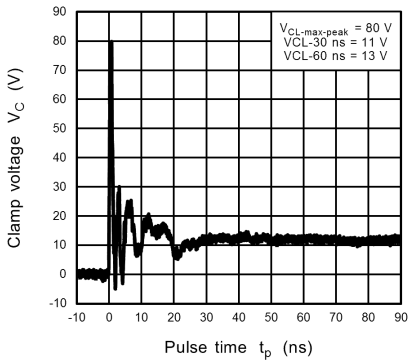


Fig. 11.7.5 ISO10605
Clamp Waveform +8 kV

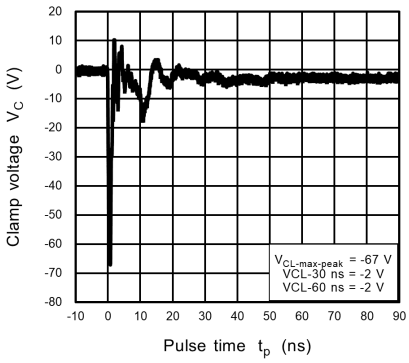


Fig. 11.7.6 ISO10605
Clamp Waveform -8 kV

Note: The above characteristics curves are presented for reference only and not guaranteed by production test, unless otherwise noted.
Refer to Fig.11.22.1, Fig.11.22.2, Fig.11.22.3 for peak pulse current(V_C-I_{PP}) and clamp waveform measurement circuit.

11.8. XCEZ10V Characteristics Curves(Note)

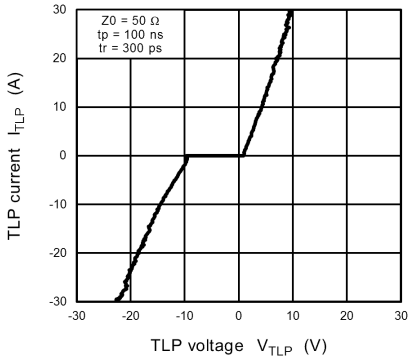


Fig. 11.8.1 I_{TLP} - V_{TLP}

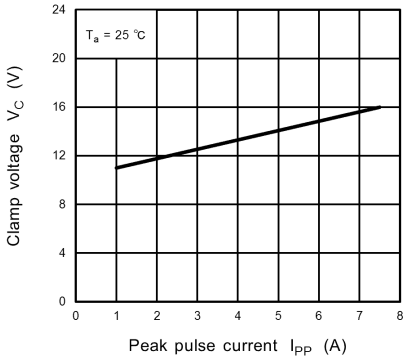


Fig. 11.8.2 V_C - I_{PP}

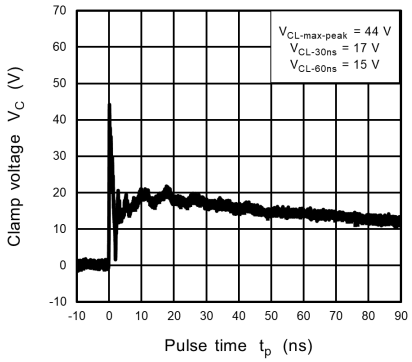


Fig. 11.8.3 IEC61000-4-2
Clamp Waveform +8 kV

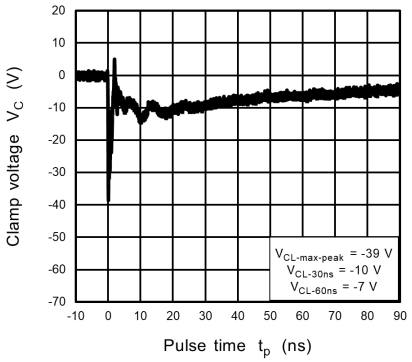


Fig. 11.8.4 IEC61000-4-2
Clamp Waveform -8 kV

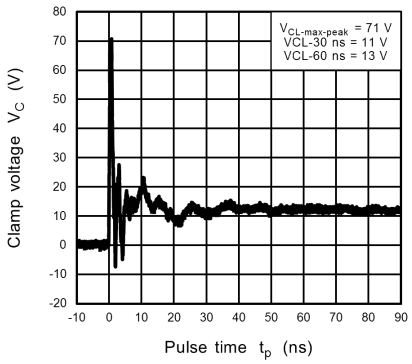


Fig. 11.8.5 ISO10605
Clamp Waveform +8 kV

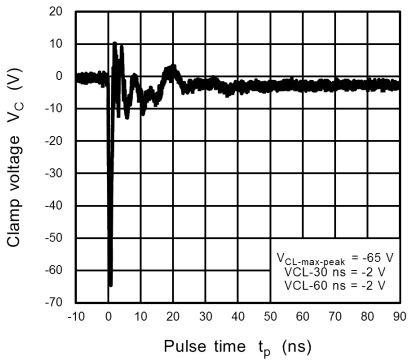


Fig. 11.8.6 ISO10605
Clamp Waveform -8 kV

Note: The above characteristics curves are presented for reference only and not guaranteed by production test, unless otherwise noted.
Refer to Fig.11.22.1, Fig.11.22.2, Fig.11.22.3 for peak pulse current(V_C-I_{PP}) and clamp waveform measurement circuit.

11.9. XCEZ11V Characteristics Curves(Note)

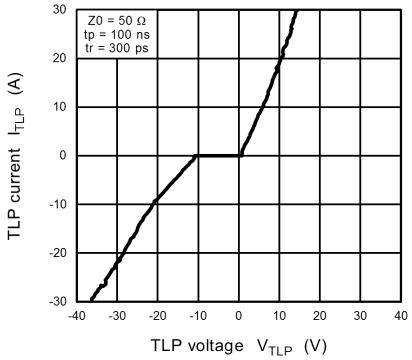


Fig. 11.9.1 I_{TLP} - V_{TLP}

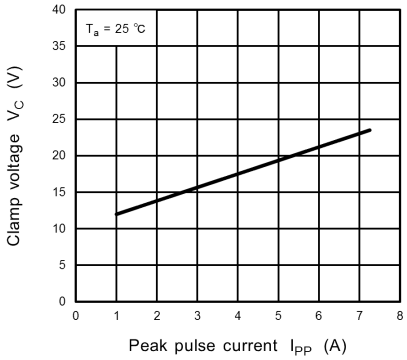


Fig. 11.9.2 V_C - I_{PP}

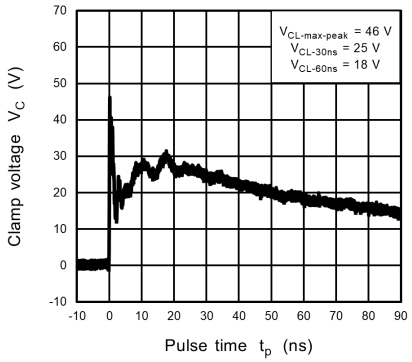


Fig. 11.9.3 IEC61000-4-2
Clamp Waveform +8 kV

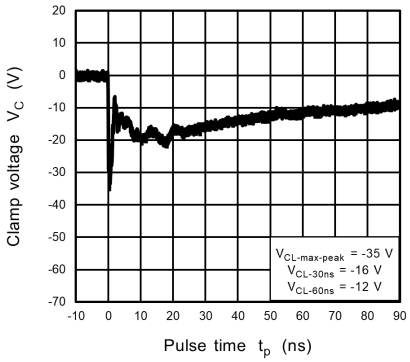


Fig. 11.9.4 IEC61000-4-2
Clamp Waveform -8 kV

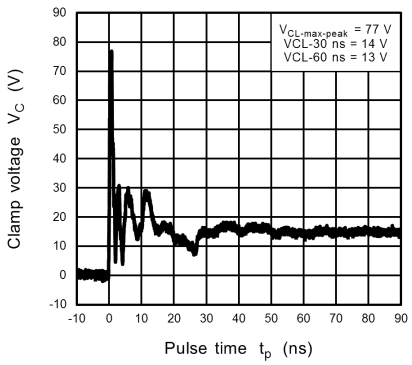


Fig. 11.9.5 ISO10605
Clamp Waveform +8 kV

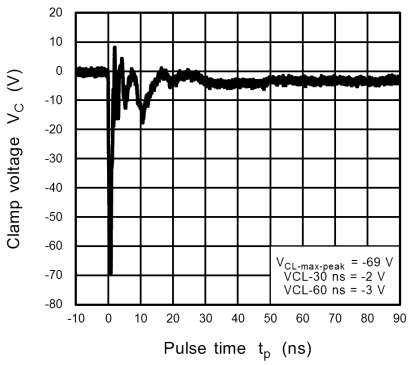


Fig. 11.9.6 ISO10605
Clamp Waveform -8 kV

Note: The above characteristics curves are presented for reference only and not guaranteed by production test, unless otherwise noted.
Refer to Fig.11.22.1, Fig.11.22.2, Fig.11.22.3 for peak pulse current(V_C-I_{PP}) and clamp waveform measurement circuit.

11.10. XCEZ12V Characteristics Curves(Note)

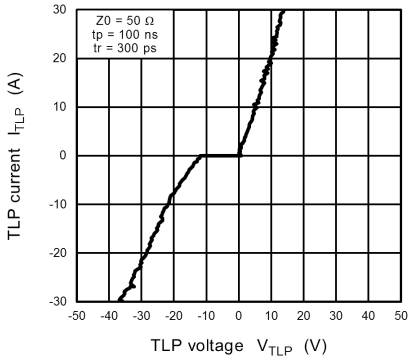


Fig. 11.10.1 I_{TLP} - V_{TLP}

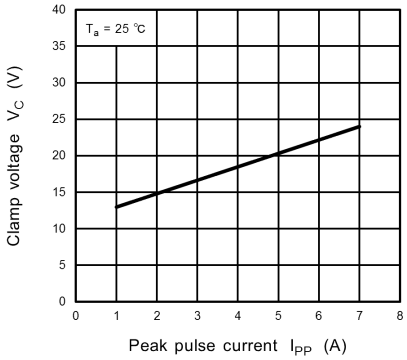


Fig. 11.10.2 V_C - I_{PP}

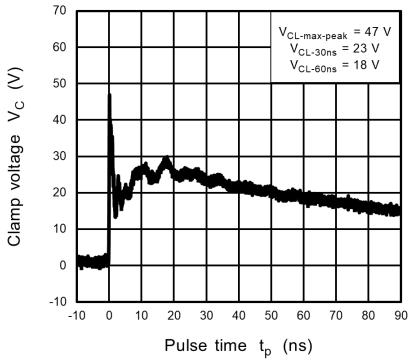


Fig. 11.10.3 IEC61000-4-2
Clamp Waveform +8 kV

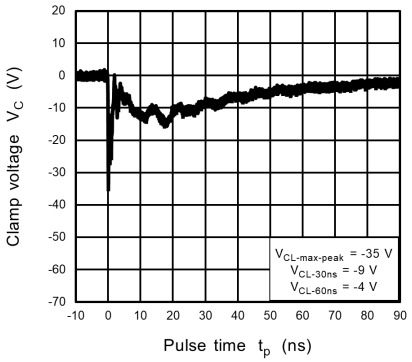


Fig. 11.10.4 IEC61000-4-2
Clamp Waveform -8 kV

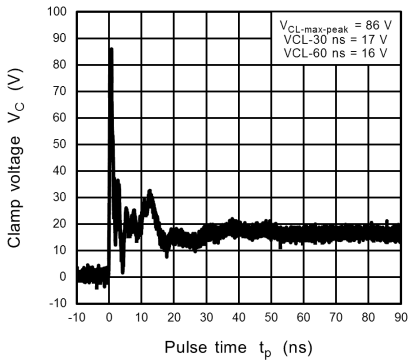


Fig. 11.10.5 ISO10605
Clamp Waveform +8 kV

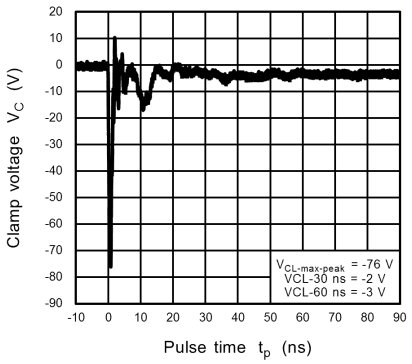


Fig. 11.10.6 ISO10605
Clamp Waveform -8 kV

Note: The above characteristics curves are presented for reference only and not guaranteed by production test, unless otherwise noted.
Refer to Fig.11.22.1, Fig.11.22.2, Fig.11.22.3 for peak pulse current(V_C-I_{PP}) and clamp waveform measurement circuit.

11.11. XCEZ13V Characteristics Curves(Note)

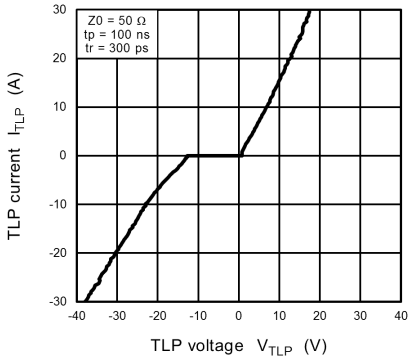


Fig. 11.11.1 I_{TLP} - V_{TLP}

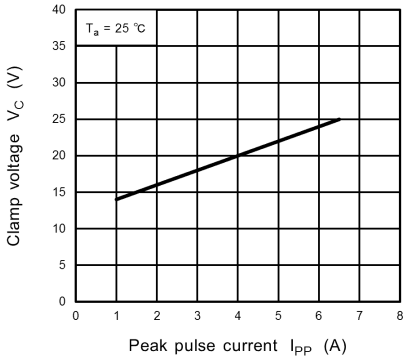


Fig. 11.11.2 V_C - I_{PP}

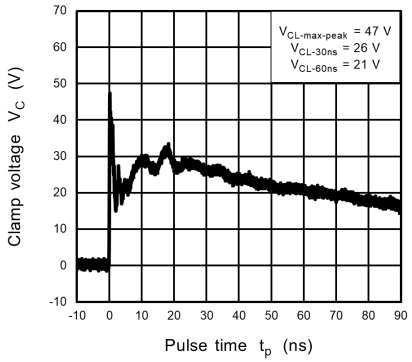


Fig. 11.11.3 IEC61000-4-2 Clamp Waveform +8 kV

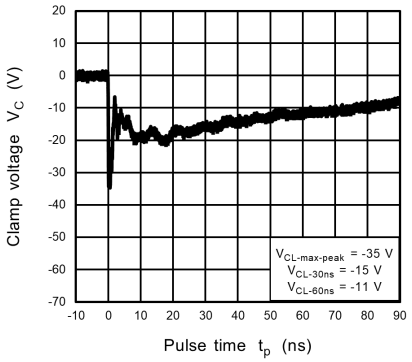


Fig. 11.11.4 IEC61000-4-2 Clamp Waveform -8 kV

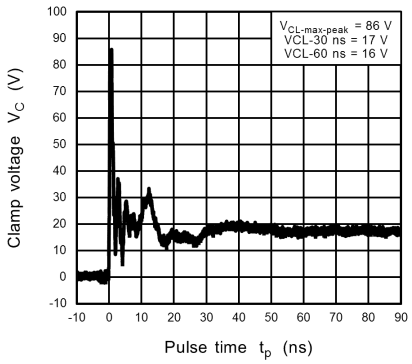


Fig. 11.11.5 ISO10605 Clamp Waveform +8 kV

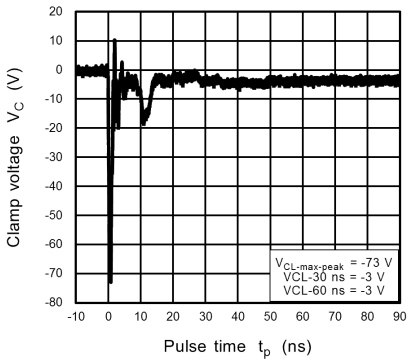


Fig. 11.11.6 ISO10605 Clamp Waveform -8 kV

Note: The above characteristics curves are presented for reference only and not guaranteed by production test, unless otherwise noted.
Refer to Fig.11.22.1, Fig.11.22.2, Fig.11.22.3 for peak pulse current(V_C-I_{PP}) and clamp waveform measurement circuit.

11.12. XCEZ15V Characteristics Curves(Note)

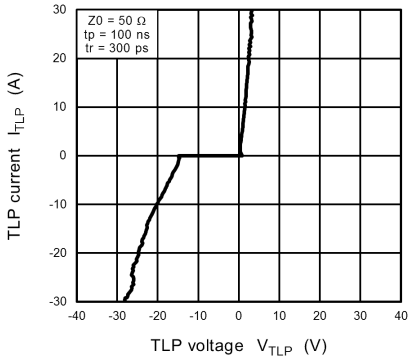


Fig. 11.12.1 I_{TLP} - V_{TLP}

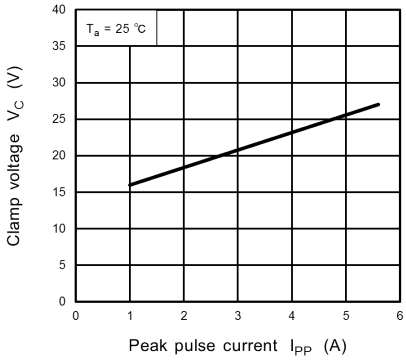


Fig. 11.12.2 V_C - I_{PP}

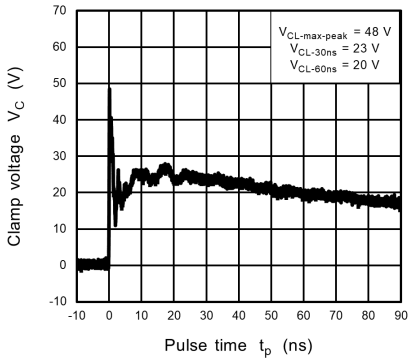


Fig. 11.12.3 IEC61000-4-2
Clamp Waveform +8 kV

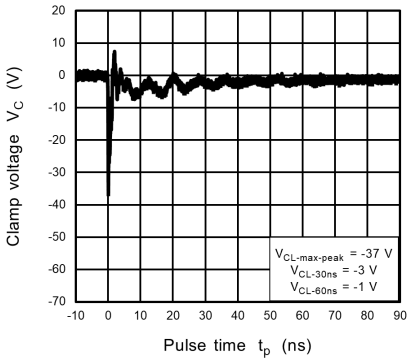


Fig. 11.12.4 IEC61000-4-2
Clamp Waveform -8 kV

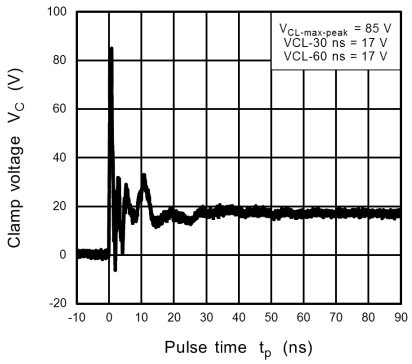


Fig. 11.12.5 ISO10605
Clamp Waveform +8 kV

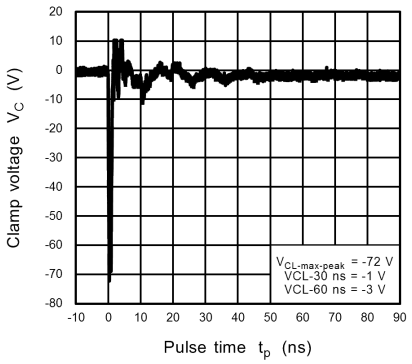


Fig. 11.12.6 ISO10605
Clamp Waveform -8 kV

Note: The above characteristics curves are presented for reference only and not guaranteed by production test, unless otherwise noted.
Refer to Fig.11.22.1, Fig.11.22.2, Fig.11.22.3 for peak pulse current(V_C-I_{PP}) and clamp waveform measurement circuit.

11.13. XCEZ16V Characteristics Curves(Note)

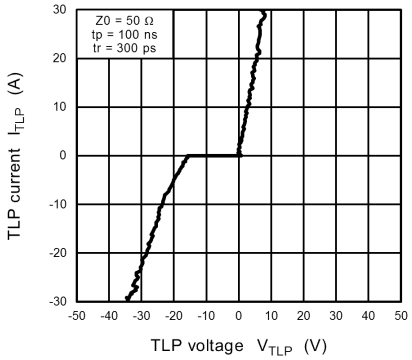


Fig. 11.13.1 I_{TLP} - V_{TLP}

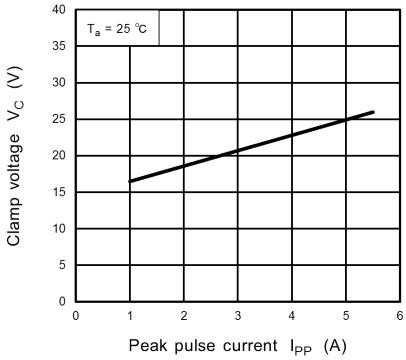


Fig. 11.13.2 V_C - I_{PP}

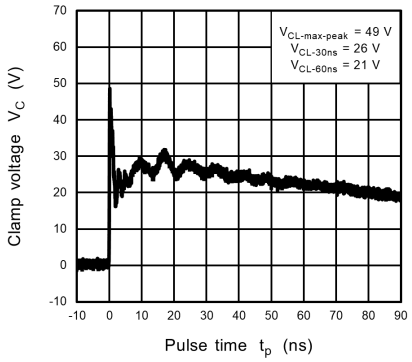


Fig. 11.13.3 IEC61000-4-2
Clamp Waveform +8 kV

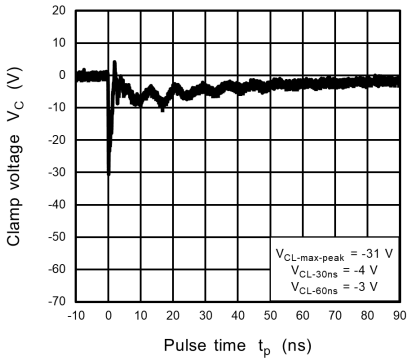


Fig. 11.13.4 IEC61000-4-2
Clamp Waveform -8 kV

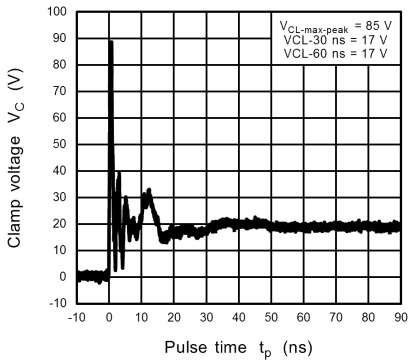


Fig. 11.13.5 ISO10605
Clamp Waveform +8 kV

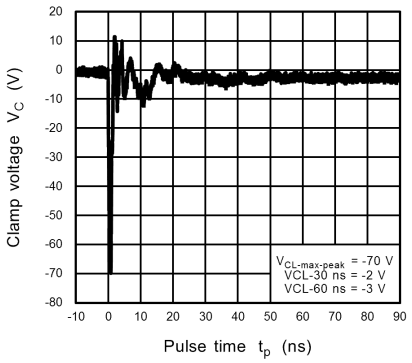


Fig. 11.13.6 ISO10605
Clamp Waveform -8 kV

Note: The above characteristics curves are presented for reference only and not guaranteed by production test, unless otherwise noted.
Refer to Fig.11.22.1, Fig.11.22.2, Fig.11.22.3 for peak pulse current(V_C-I_{PP}) and clamp waveform measurement circuit.

11.14. XCEZ18V Characteristics Curves(Note)

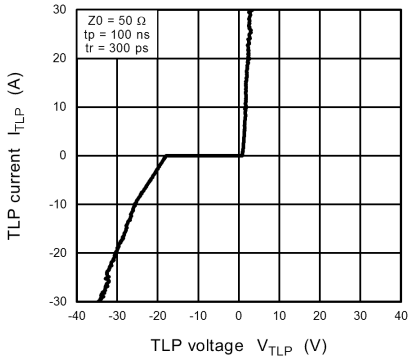


Fig. 11.14.1 I_{TLP} - V_{TLP}

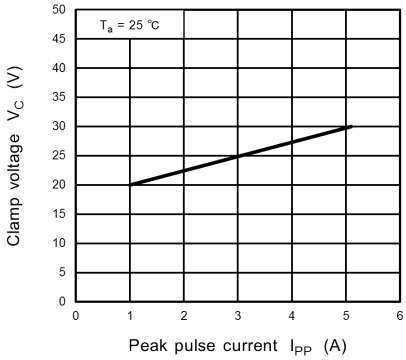


Fig. 11.14.2 V_C - I_{PP}

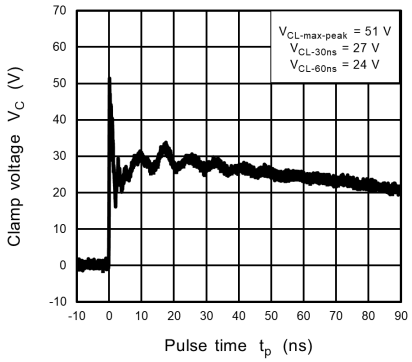


Fig. 11.14.3 IEC61000-4-2
Clamp Waveform +8 kV

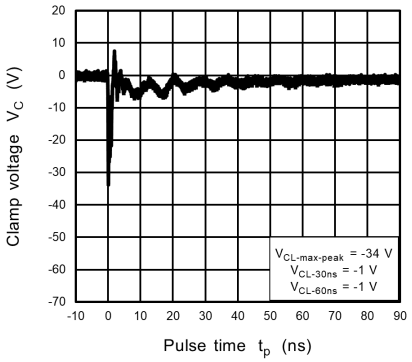


Fig. 11.14.4 IEC61000-4-2
Clamp Waveform -8 kV

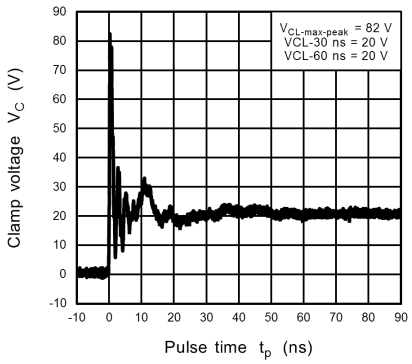


Fig. 11.14.5 ISO10605
Clamp Waveform +8 kV

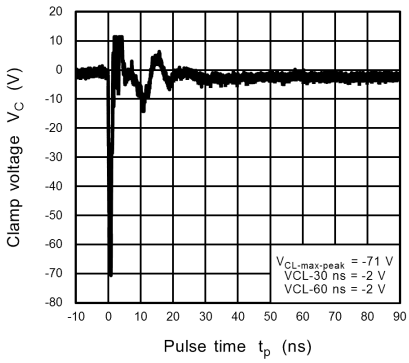


Fig. 11.14.6 ISO10605
Clamp Waveform -8 kV

Note: The above characteristics curves are presented for reference only and not guaranteed by production test, unless otherwise noted.
Refer to Fig.11.22.1, Fig.11.22.2, Fig.11.22.3 for peak pulse current(V_C-I_{PP}) and clamp waveform measurement circuit.

11.15. XCEZ20V Characteristics Curves(Note)

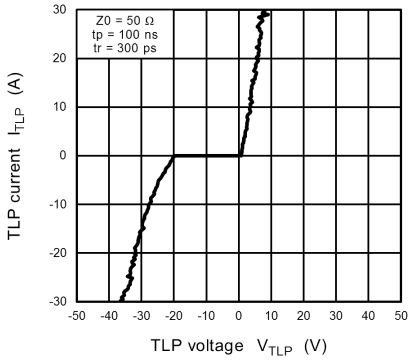


Fig. 11.15.1 I_{TLP} - V_{TLP}

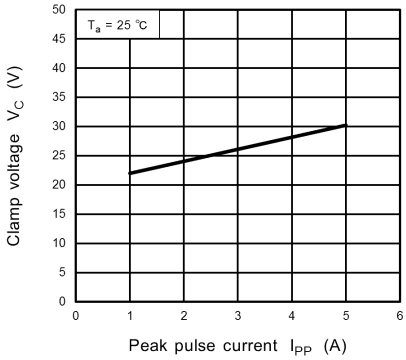


Fig. 11.15.2 V_C - I_{PP}

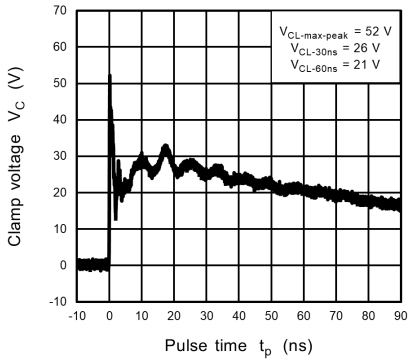


Fig. 11.15.3 IEC61000-4-2
Clamp Waveform +8 kV

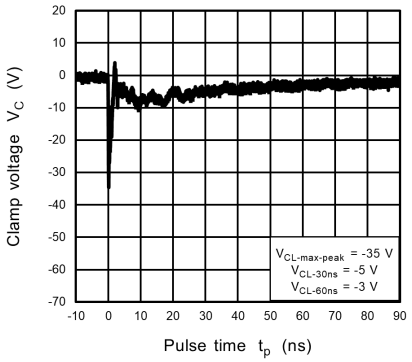


Fig. 11.15.4 IEC61000-4-2
Clamp Waveform -8 kV

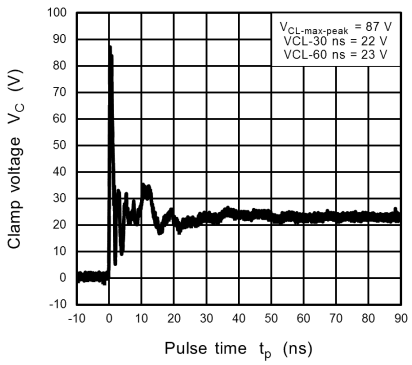


Fig. 11.15.5 ISO10605
Clamp Waveform +8 kV

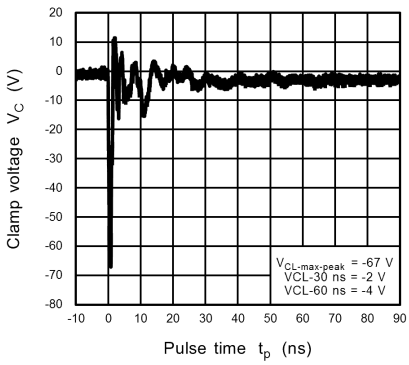


Fig. 11.15.6 ISO10605
Clamp Waveform -8 kV

Note: The above characteristics curves are presented for reference only and not guaranteed by production test, unless otherwise noted.
Refer to Fig.11.22.1, Fig.11.22.2, Fig.11.22.3 for peak pulse current(V_C-I_{PP}) and clamp waveform measurement circuit.

11.16. XCEZ22V Characteristics Curves(Note)

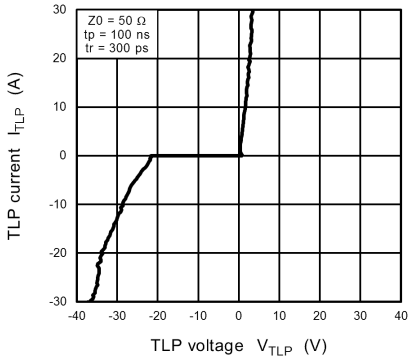


Fig. 11.16.1 I_{TLP} - V_{TLP}

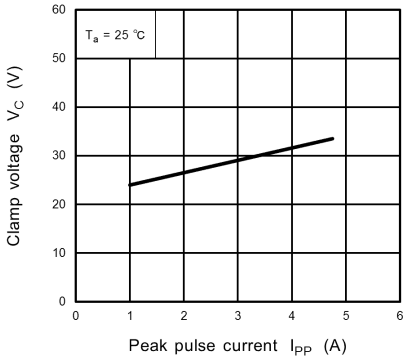


Fig. 11.16.2 V_C - I_{PP}

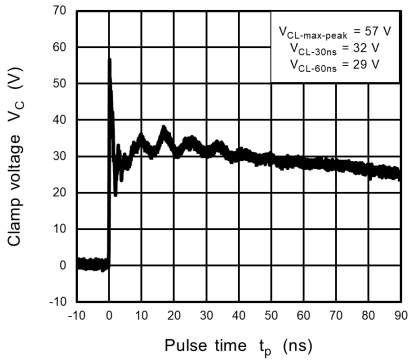


Fig. 11.16.3 IEC61000-4-2
Clamp Waveform +8 kV

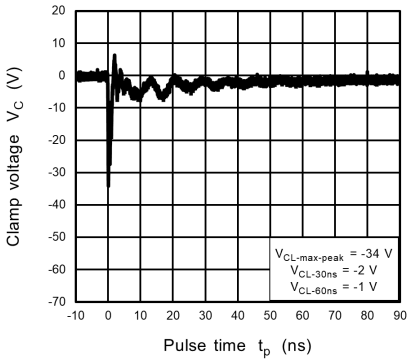


Fig. 11.16.4 IEC61000-4-2
Clamp Waveform -8 kV

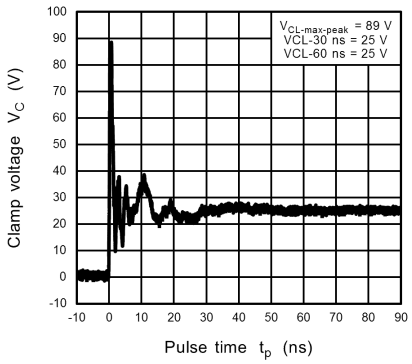


Fig. 11.16.5 ISO10605
Clamp Waveform +8 kV

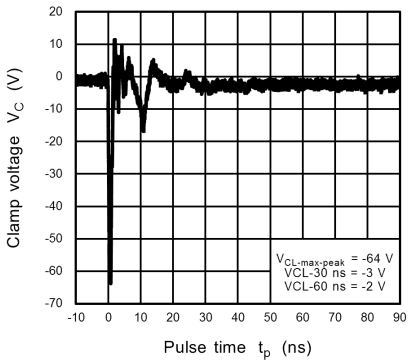


Fig. 11.16.6 ISO10605
Clamp Waveform -8 kV

Note: The above characteristics curves are presented for reference only and not guaranteed by production test, unless otherwise noted.
Refer to Fig.11.22.1, Fig.11.22.2, Fig.11.22.3 for peak pulse current(V_C-I_{PP}) and clamp waveform measurement circuit.

11.17. XCEZ24V Characteristics Curves(Note)

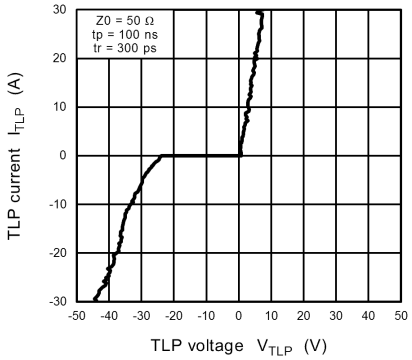


Fig. 11.17.1 I_{TLP} - V_{TLP}

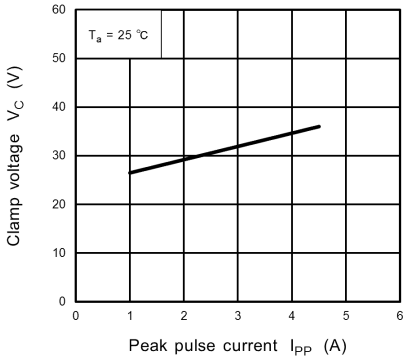


Fig. 11.17.2 V_C - I_{PP}

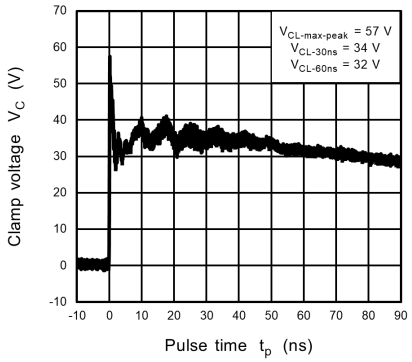


Fig. 11.17.3 IEC61000-4-2
Clamp Waveform +8 kV

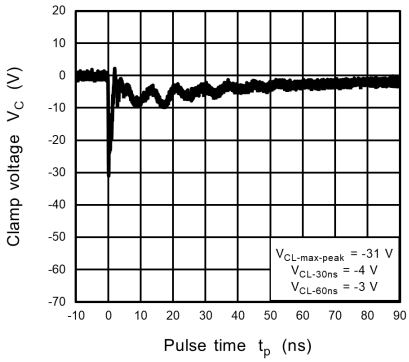


Fig. 11.17.4 IEC61000-4-2
Clamp Waveform -8 kV

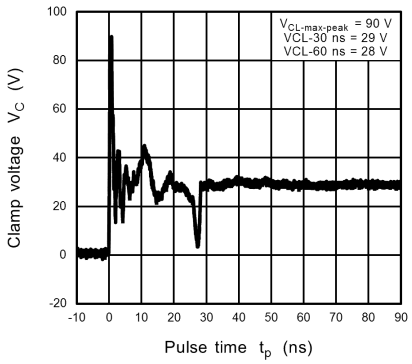


Fig. 11.17.5 ISO10605
Clamp Waveform +8 kV

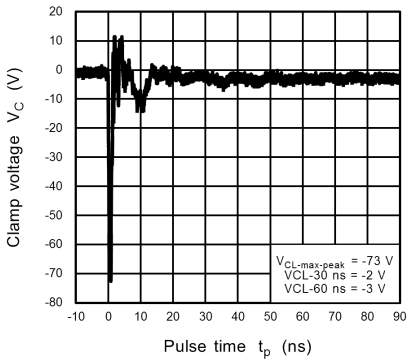


Fig. 11.17.6 ISO10605
Clamp Waveform -8 kV

Note: The above characteristics curves are presented for reference only and not guaranteed by production test, unless otherwise noted.
Refer to Fig.11.22.1, Fig.11.22.2, Fig.11.22.3 for peak pulse current(V_C-I_{PP}) and clamp waveform measurement circuit.

11.18. XCEZ27V Characteristics Curves(Note)

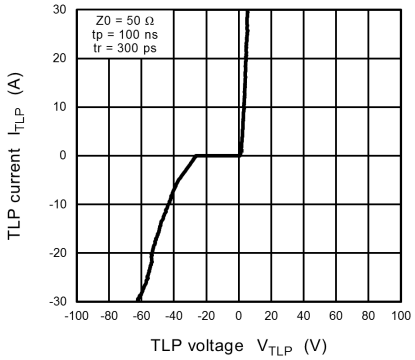


Fig. 11.18.1 I_{TLP} - V_{TLP}

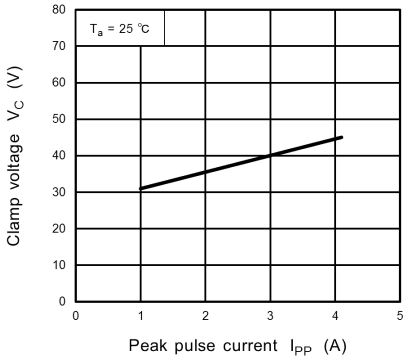


Fig. 11.18.2 V_C - I_{PP}

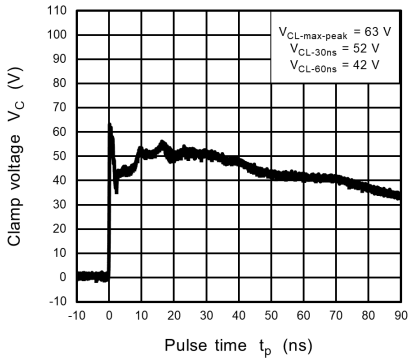


Fig. 11.18.3 IEC61000-4-2 Clamp Waveform +8 kV

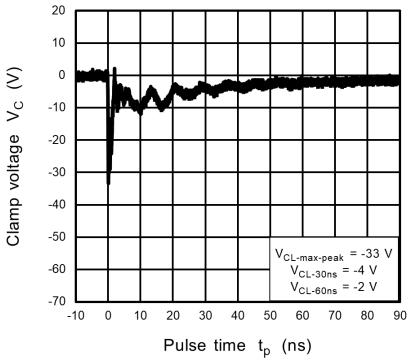


Fig. 11.18.4 IEC61000-4-2 Clamp Waveform -8 kV

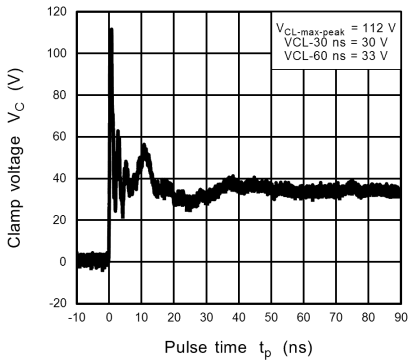


Fig. 11.18.5 ISO10605 Clamp Waveform +8 kV

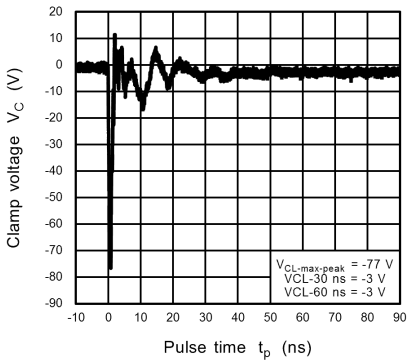


Fig. 11.18.6 ISO10605 Clamp Waveform -8 kV

Note: The above characteristics curves are presented for reference only and not guaranteed by production test, unless otherwise noted.
Refer to Fig.11.22.1, Fig.11.22.2, Fig.11.22.3 for peak pulse current(V_C-I_{PP}) and clamp waveform measurement circuit.

11.19. XCEZ30V Characteristics Curves(Note)

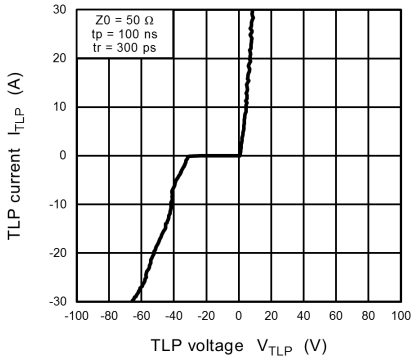


Fig. 11.19.1 I_{TLP} - V_{TLP}

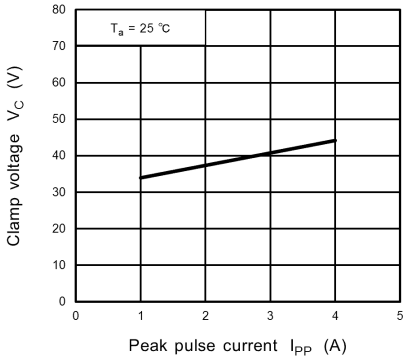


Fig. 11.19.2 V_C - I_{PP}

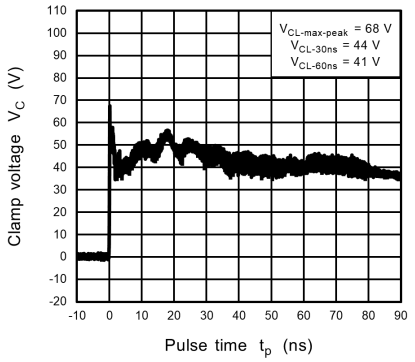


Fig. 11.19.3 IEC61000-4-2
Clamp Waveform +8 kV

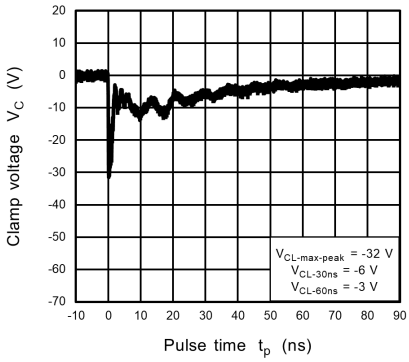


Fig. 11.19.4 IEC61000-4-2
Clamp Waveform -8 kV

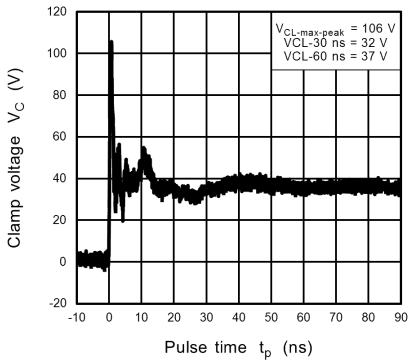


Fig. 11.19.5 ISO10605
Clamp Waveform +8 kV

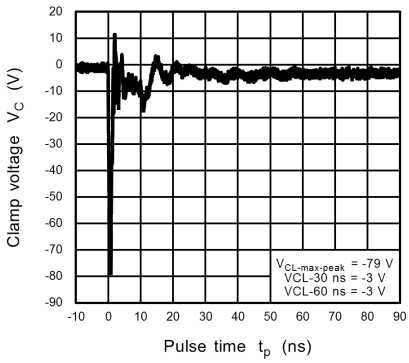


Fig. 11.19.6 ISO10605
Clamp Waveform -8 kV

Note: The above characteristics curves are presented for reference only and not guaranteed by production test, unless otherwise noted.
Refer to Fig.11.22.1, Fig.11.22.2, Fig.11.22.3 for peak pulse current(V_C-I_{PP}) and clamp waveform measurement circuit.

11.20. XCEZ33V Characteristics Curves(Note)

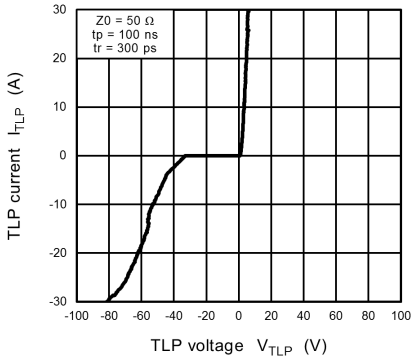


Fig. 11.20.1 I_{TLP} - V_{TLP}

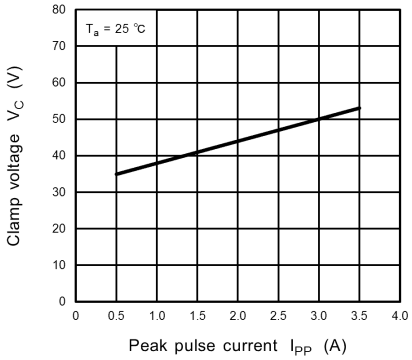


Fig. 11.20.2 V_C - I_{PP}

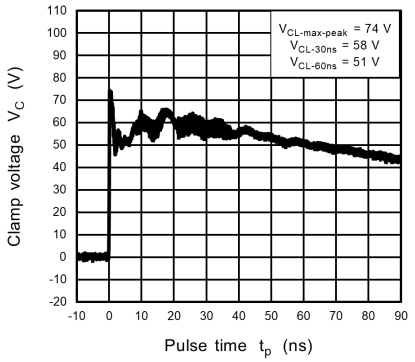


Fig. 11.20.3 IEC61000-4-2
Clamp Waveform +8 kV

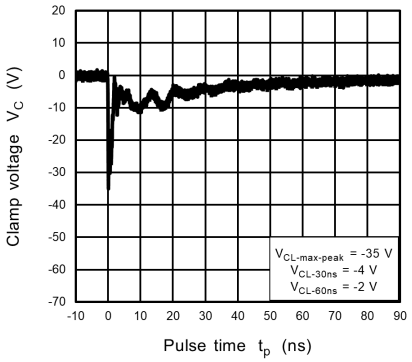


Fig. 11.20.4 IEC61000-4-2
Clamp Waveform -8 kV

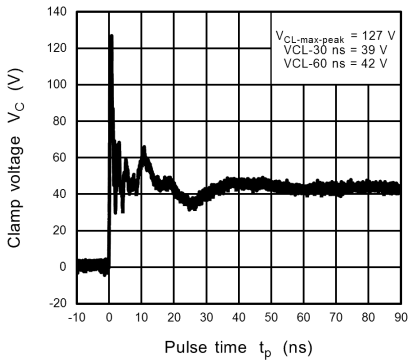


Fig. 11.20.5 ISO10605
Clamp Waveform +8 kV

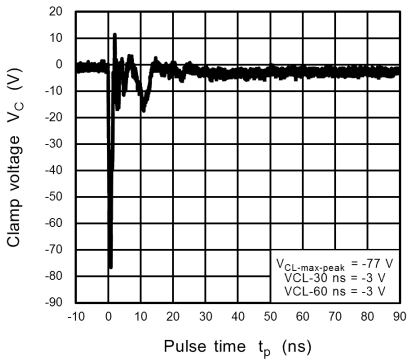


Fig. 11.20.6 ISO10605
Clamp Waveform -8 kV

Note: The above characteristics curves are presented for reference only and not guaranteed by production test, unless otherwise noted.
Refer to Fig.11.22.1, Fig.11.22.2, Fig.11.22.3 for peak pulse current(V_C-I_{PP}) and clamp waveform measurement circuit.

11.21. XCEZ36V Characteristics Curves(Note)

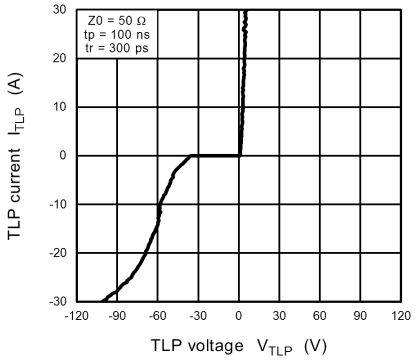


Fig. 11.21.1 I_{TLP} - V_{TLP}

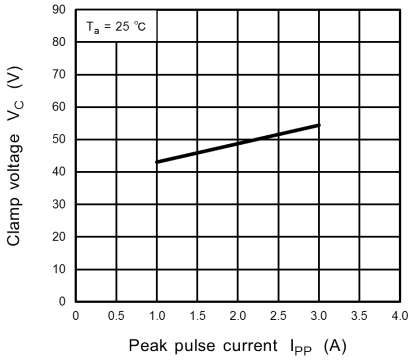


Fig. 11.21.2 V_C - I_{PP}

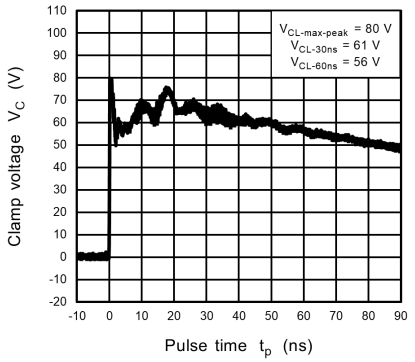


Fig. 11.21.3 IEC61000-4-2
Clamp Waveform +8 kV

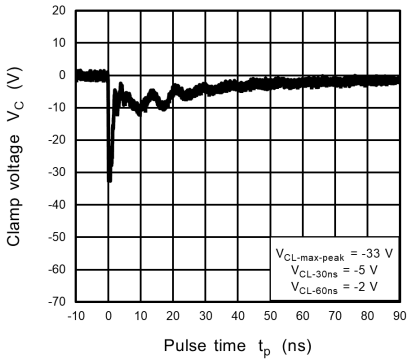


Fig. 11.21.4 IEC61000-4-2
Clamp Waveform -8 kV

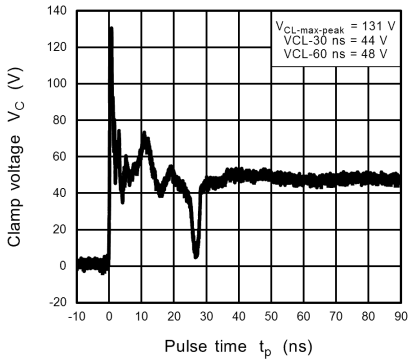


Fig. 11.21.5 ISO10605
Clamp Waveform +8 kV

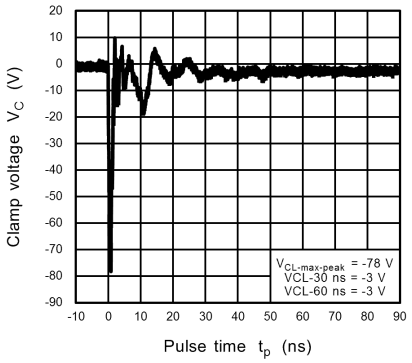


Fig. 11.21.6 ISO10605
Clamp Waveform -8 kV

Note: The above characteristics curves are presented for reference only and not guaranteed by production test, unless otherwise noted.
Refer to Fig.11.22.1, Fig.11.22.2, Fig.11.22.3 for peak pulse current(V_C-I_{PP}) and clamp waveform measurement circuit.

11.22. V_C-I_{PP} Peak Pulse and Clamp waveform measurement circuit

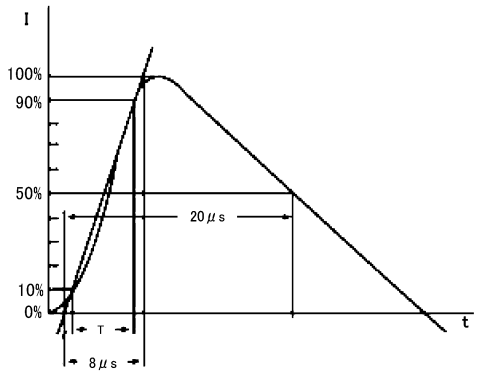


Fig. 11.22.1 V_C-I_{PP} Peak Pulse Current (according to IEC61000-4-5 8/20 μs pulse)

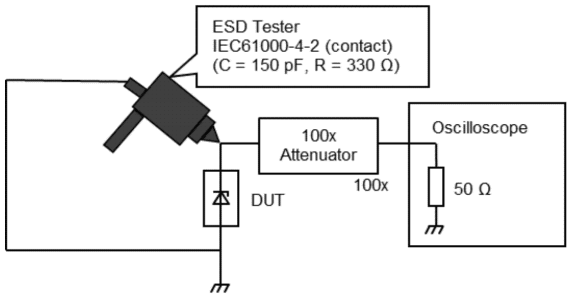


Fig. 11.22.2 Clamp waveform measurement circuit(according to IEC61000-4-2)

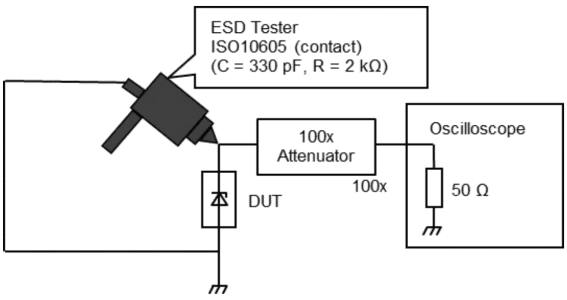
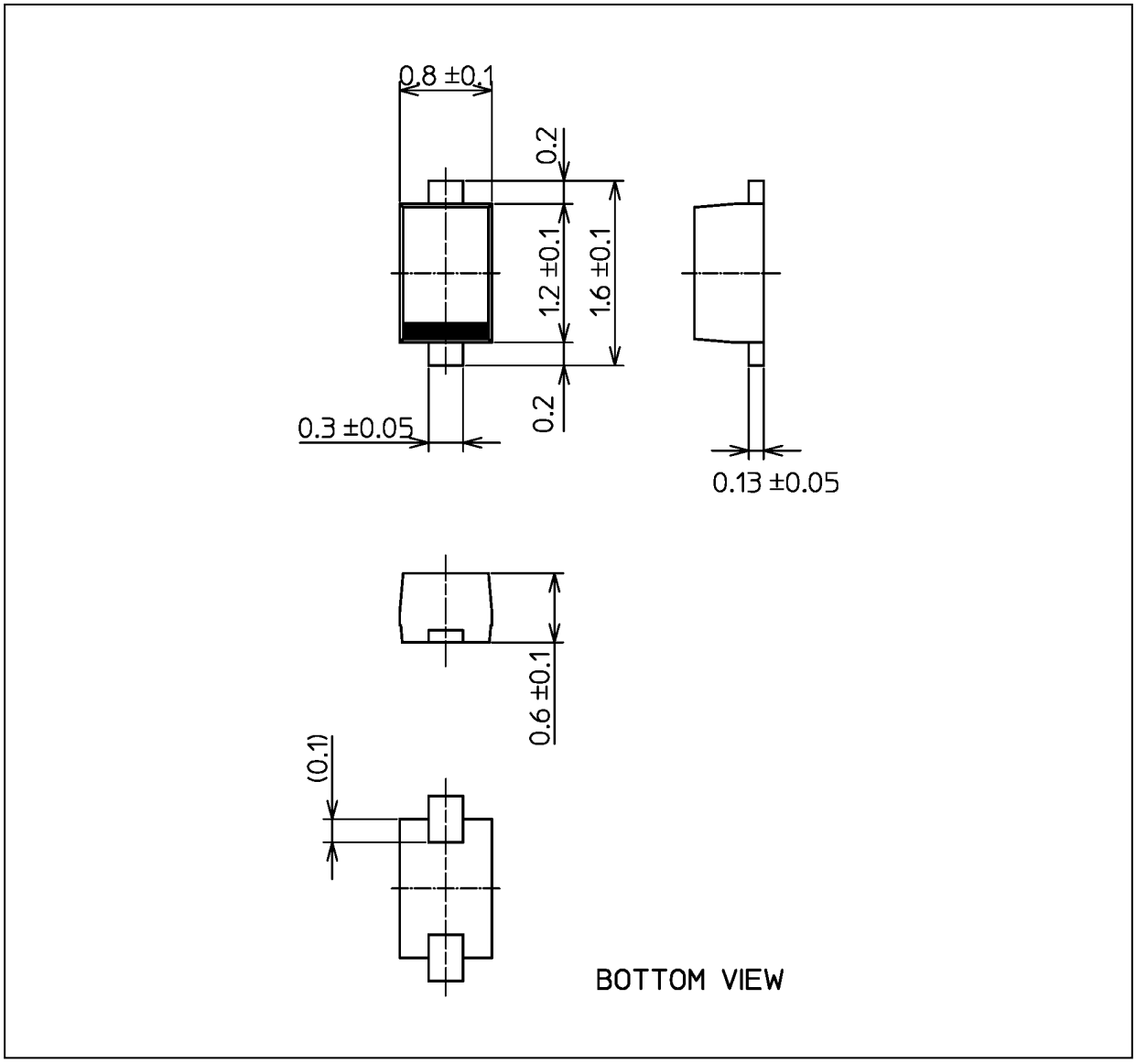


Fig. 11.22.3 Clamp waveform measurement circuit(according to ISO10605)

Package Dimensions

Unit: mm



Weight: 1.4 mg (typ.)

Package Name(s)
JEDEC: SOD-523
Nickname: ESC

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