1W, 7.5V - 200V Surface Mount Zener Diode

FEATURES

- Ideal for automated placement
- Glass passivated chip junction
- Low inductance
- Typical I_R less than 1μA above 11V
- Moisture sensitivity level: level 1, per J-STD-020
- RoHS Compliant
- Halogen-free according to IEC 61249-2-21

APPLICATIONS

- For general purpose regulation and protection applications

MECHANICAL DATA

- Case: DO-214AC (SMA)
- Molding compound meets UL 94V-0 flammability rating
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Meet JESD 201 class 2 whisker test
- Polarity: Indicated by cathode band
- Weight: 0.060g (approximately)

KEY PARAMETERS		
PARAMETER	**VALUE**	**UNIT**
V_Z	7.5 - 200	V
Test current I_{ZT}	1.2 - 34	mA
P_D	1	W
$T_{J\ MAX}$	175	°C
Package	DO-214AC (SMA)	
Configuration	Single die	

Pb-Free RoHS COMPLIANT HALOGEN FREE



DO-214AC (SMA)



ABSOLUTE MAXIMUM RATINGS (T_A = 25°C unless otherwise noted)			
PARAMETER	**SYMBOL**	**VALUE**	**UNIT**
Power dissipation, R_{THJA}<76.8 K/W, T_A = 25°C	P_D	1	W
Power dissipation, R_{THJA}<76.8 K/W, T_A = 60°C	P_D	1.25	W
Non repetitive peak power dissipation(1)	P_{ZSM}	60	W
Peak forward surge current, 8.3ms single half sine-wave superimposed on rated load	I_{FSM}	30	A
Junction temperature	T_J	-55 to +175	°C
Storage temperature	T_{STG}	-55 to +175	°C

Notes:

1. Non Repetitive Peak surge P_D Test Condition: tp = 100μs sq. pulse, T_A = 25°C prior to surge

ELECTRICAL SPECIFICATIONS (T_A = 25°C unless otherwise noted)

Part number (Note 1)	Marking code	Nominal Zener voltage	Test current	Zener Impedance			Leakage current		Surge current
		V_Z @ I_Z	I_{ZT}	Z_{ZT} @ I_{ZT}	Z_{ZK} @ I_{ZK}		I_R @ V_R		I_R
		V	mA	Ω	Ω	mA	μA	V	mA
		(Note 2) (Note 3)					Max		
1SMA4737	737A	7.5	34	4	700	0.50	5	5.0	605
1SMA4738	738A	8.2	31	4.5	700	0.50	5	6.0	550
1SMA4739	739A	9.1	28	5	700	0.50	5	7.0	500
1SMA4740	740A	10	25	7	700	0.25	5	7.6	454
1SMA4741	741A	11	23	8	700	0.25	1	8.4	414
1SMA4742	742A	12	21	9	700	0.25	1	9.1	380
1SMA4743	743A	13	19	10	700	0.25	1	9.9	344
1SMA4744	744A	15	17	14	700	0.25	1	11.4	304
1SMA4745	745A	16	15.5	16	700	0.25	1	12.2	285
1SMA4746	746A	18	14.0	20	750	0.25	1	13.7	250
1SMA4747	747A	20	12.5	22	750	0.25	1	15.2	225
1SMA4748	748A	22	11.5	23	750	0.25	1	16.7	205
1SMA4749	749A	24	10.5	25	750	0.25	1	18.2	190
1SMA4750	750A	27	9.5	35	750	0.25	1	20.6	170
1SMA4751	751A	30	8.5	40	1000	0.25	1	22.8	150
1SMA4752	752A	33	7.5	45	1000	0.25	1	25.1	135
1SMA4753	753A	36	7.0	50	1000	0.25	1	27.4	125
1SMA4754	754A	39	6.5	60	1000	0.25	1	29.7	115
1SMA4755	755A	43	6.0	70	1500	0.25	1	32.7	110
1SMA4756	756A	47	5.5	80	1500	0.25	1	35.8	95
1SMA4757	757A	51	5.0	95	1500	0.25	1	38.8	90
1SMA4758	758A	56	4.5	110	2000	0.25	1	42.6	80
1SMA4759	759A	62	4.0	125	2000	0.25	1	47.1	70
1SMA4760	760A	68	3.7	150	2000	0.25	1	51.7	65
1SMA4761	761A	75	3.3	175	2000	0.25	1	56.0	60
1SMA4762	762A	82	3.0	200	3000	0.25	1	62.2	55
1SMA4763	763A	91	2.8	250	3000	0.25	1	69.2	50
1SMA4764	764A	100	2.5	350	3000	0.25	1	76.0	45
1SMA110Z	110A	110	2.3	450	4000	0.25	1	83.6	-
1SMA120Z	120A	120	2.0	550	4500	0.25	1	91.2	-
1SMA130Z	130A	130	1.9	700	5000	0.25	1	98.8	-
1SMA150Z	150A	150	1.7	1000	6000	0.25	1	114.0	-
1SMA160Z	160A	160	1.6	1100	6500	0.25	1	121.6	-
1SMA180Z	180A	180	1.4	1200	7000	0.25	1	136.8	-
1SMA200Z	200A	200	1.2	1500	8000	0.25	1	152.0	-

Note:

1. Tolerance and Type Number Designation. The type numbers listed have a standard tolerance on the nominal zener voltage of ±5%
2. Specials Available Include:
   A. Nominal zener voltages between the voltages shown and tighter voltage tolerances
   B. Matched sets
3. Zener Voltage (V_z) Measurement. Guarantees the zener voltage when measured at 90 seconds while maintaining the lead temperature(T_L) at 30℃±1℃, from the diode body
4. Zener Impedance (Z_z) Derivation. The zener impedance is derives from the 60 cycle AC voltage, which results when an ac current having and rms value equal to 10% of the DC zener current (I_{ZT} or I_{ZK}) is superimposed on I_{ZT} or I_{ZK}
5. Surge Current (I_R) Non-Repetitive. The rating list in the electrical characteristics table is maximum peak, non-repetitive, reverse surge current of 1/2 square wave or equivalent sine wave pulse of 1/120 second duration superimposed on the test current, I_{ZT} per JEDEC registration; however, actual device capability is as described in Figure.10

ORDERING INFORMATION		
ORDERING CODE[1]	**PACKAGE**	**PACKING**
1SMAx	DO-214AC (SMA)	7,500 / Tape & Reel

Notes:

1. "x" defines voltage from 7.5V(1SMA4737) to 200V(1SMA200Z)

CHARACTERISTICS CURVES

(T_A = 25°C unless otherwise noted)

Fig.1 Power Temperature Derating Curve

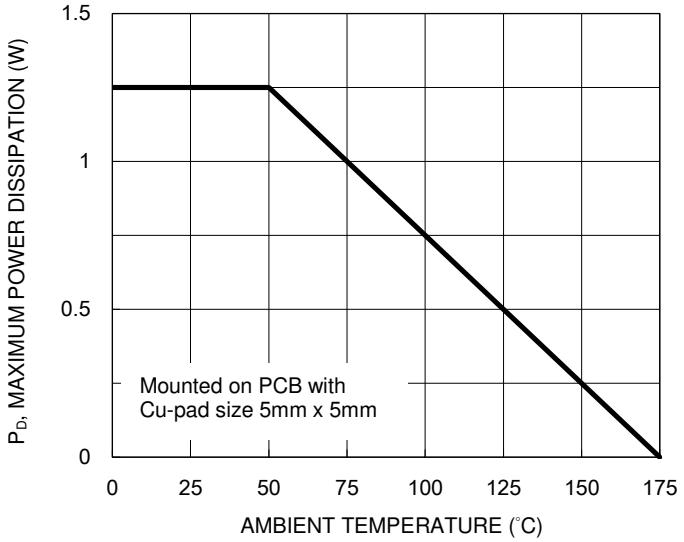


Fig.2 Typical Forward Characteristics

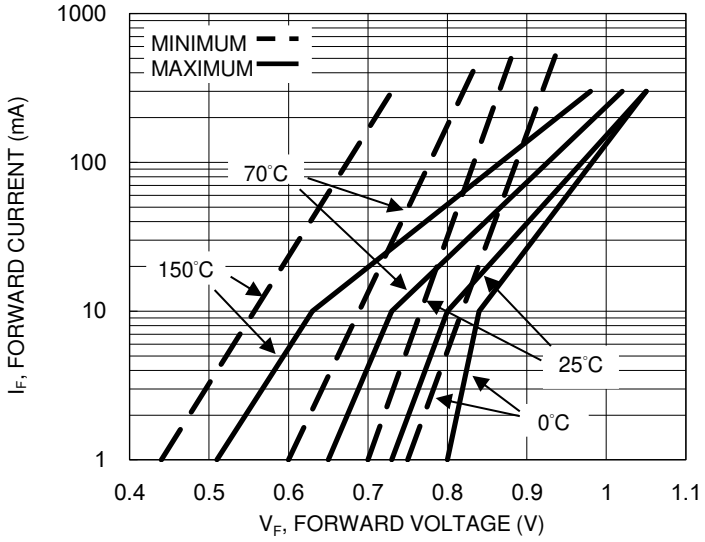


Fig.3 Effect Of Zener Current On Zener Impedance

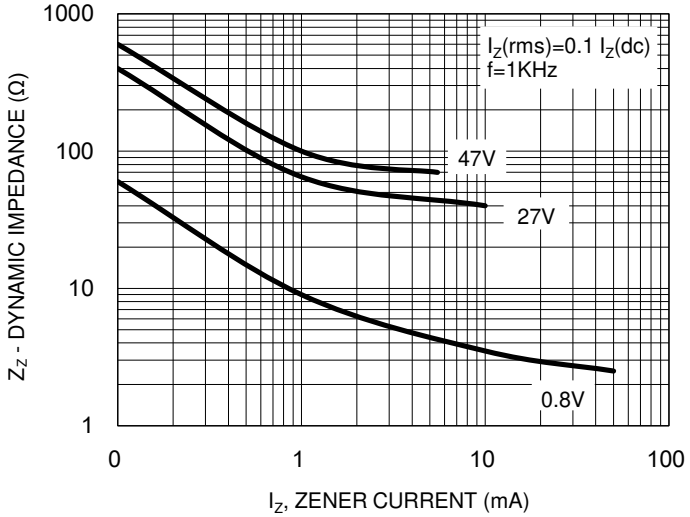
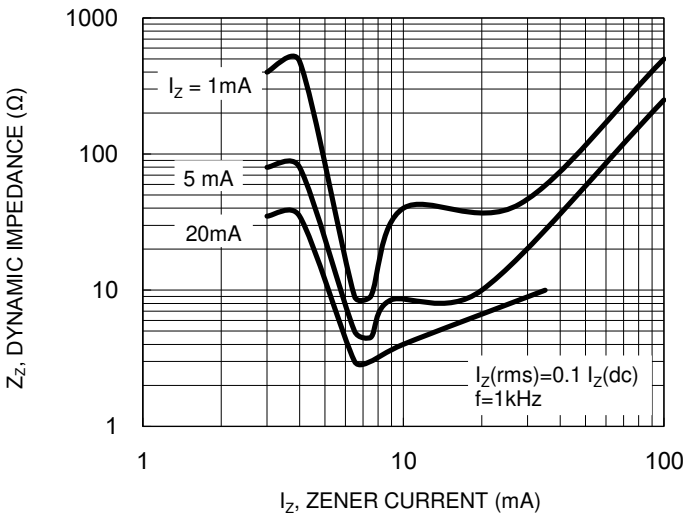


Fig.4 Effect Of Zener Voltage On Zener Impedance



CHARACTERISTICS CURVES

(T_A = 25°C unless otherwise noted)

Fig.5 Typical Capacitance versus Vz

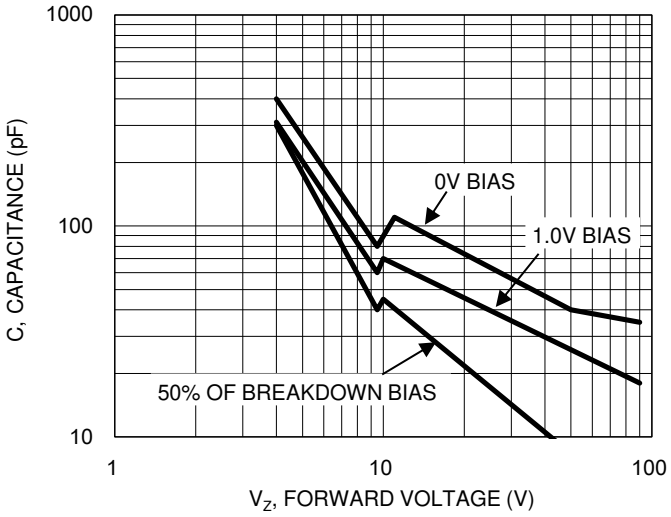


Fig.6 Temperature Coefficients

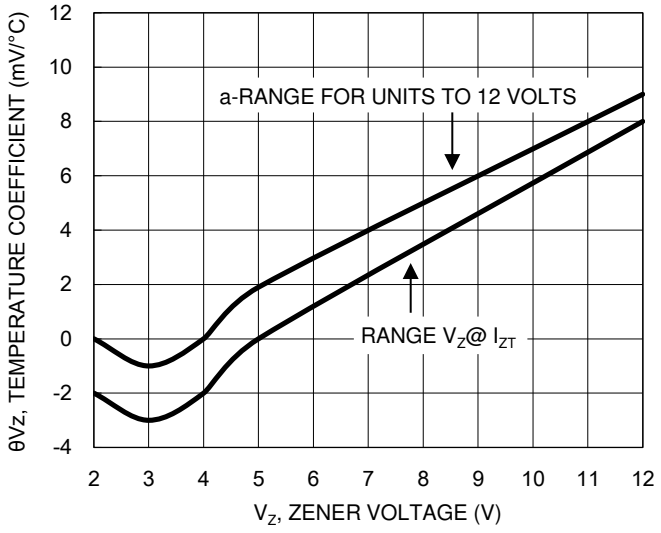
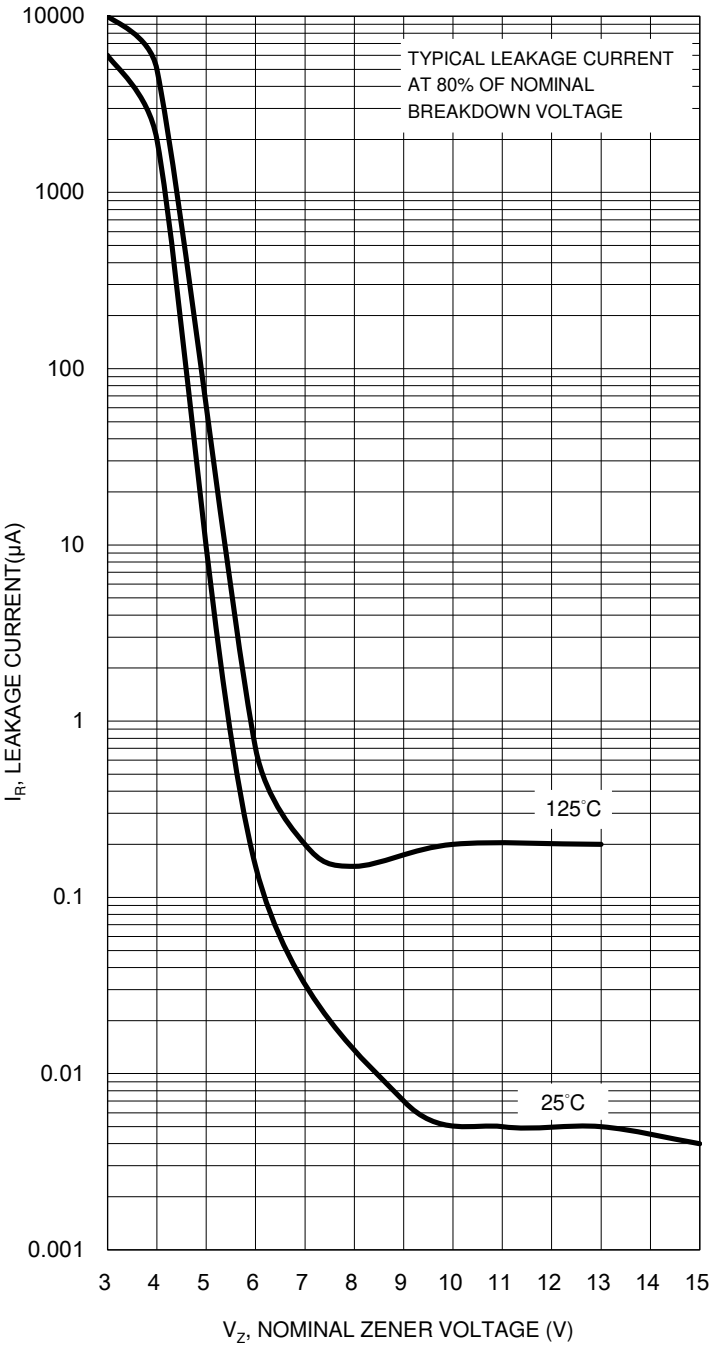


Fig.7 Typical Leakage Current



CHARACTERISTICS CURVES

(T_A = 25°C unless otherwise noted)

Fig.8 Temperature Coefficients

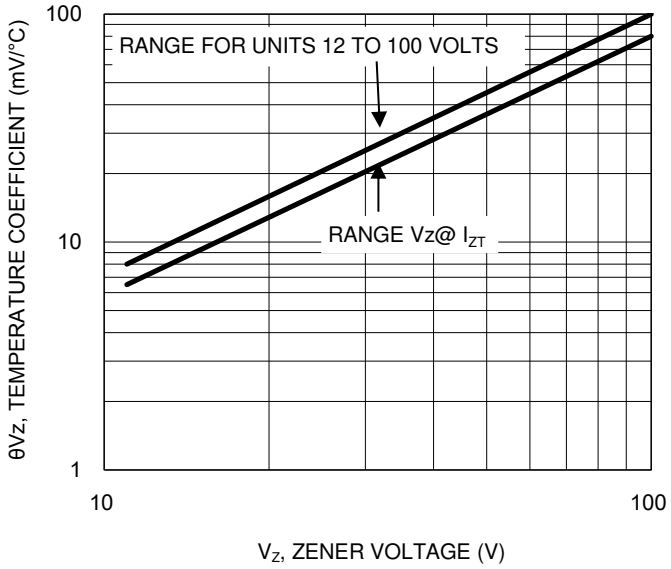


Fig.9 Effect Of Zener Current

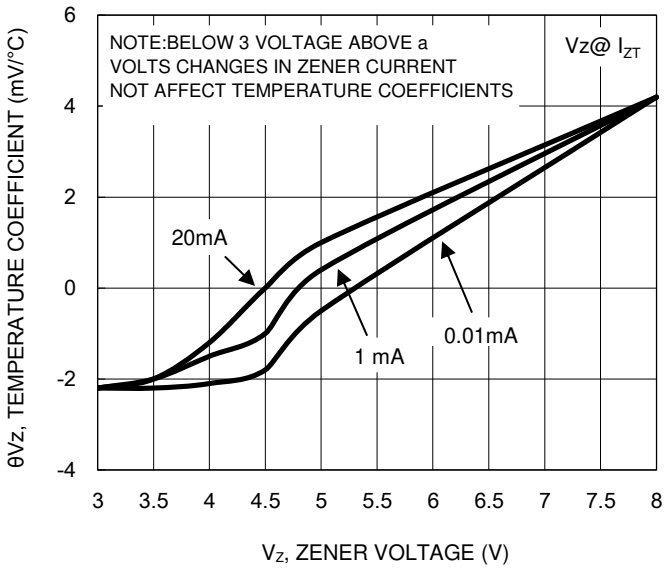
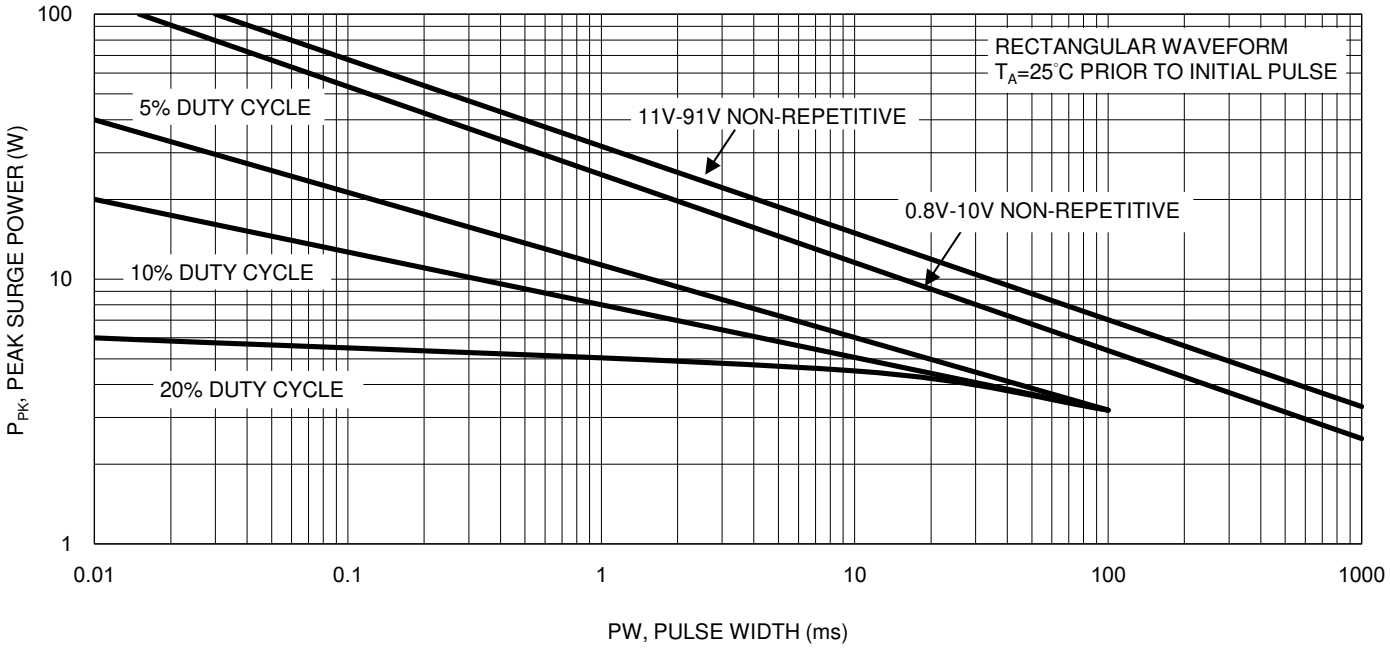
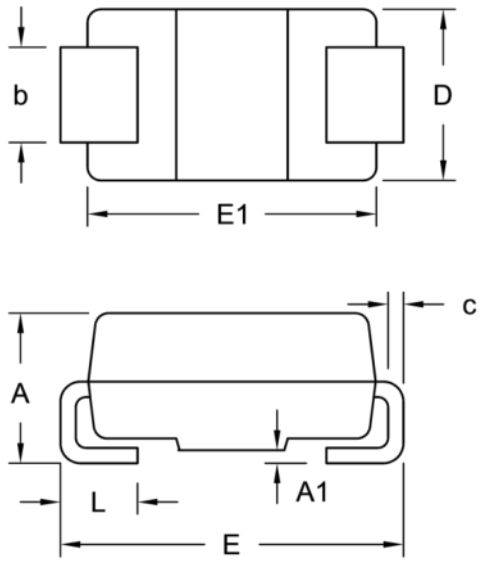


Fig.10 Maximum Surge Power



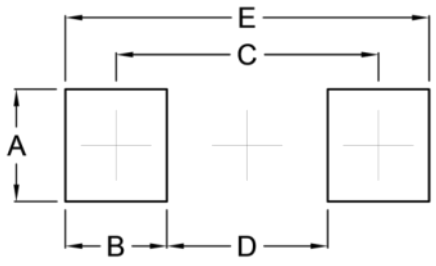
PACKAGE OUTLINE DIMENSIONS

DO-214AC (SMA)



DIM.	Unit (mm)		Unit (inch)	
	Min.	Max.	Min.	Max.
A	1.99	2.50	0.078	0.098
A1	0.10	0.20	0.004	0.008
b	1.27	1.58	0.050	0.062
c	0.15	0.31	0.006	0.012
D	2.29	2.83	0.090	0.111
E	4.95	5.33	0.195	0.210
E1	4.06	4.60	0.160	0.181
L	0.90	1.41	0.035	0.056

SUGGESTED PAD LAYOUT



Symbol	Unit (mm)	Unit (inch)
A	1.68	0.066
B	1.52	0.060
C	3.93	0.155
D	2.41	0.095
E	5.45	0.215

MARKING DIAGRAM



P/N = Marking Code
G = Green Compound
YW = Date Code
F = Factory Code

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