



Micro Commercial Components

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1N4678 THRU 1N4713

Features

- Zener Voltage 1.8V to 30V
- Very Sharp Reverse Characteristic
- VZ – tolerance $\pm 5\%$
- High Reliability

500mW Silicon Zener Diodes

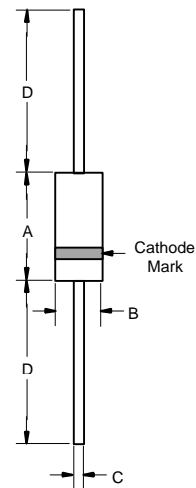
Mechanical Data

- Case: Double slug type, hermetically sealed glass
- Marking : Cathode band and type number

Maximum Ratings*

	Symbol	Value	Units
Max. Steady State Power Dissipation at $T_L < 75^\circ\text{C}$, Lead Length=3/8"	P_D	500	mW
Junction Temperature	T_J	200	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-65 to 200	$^\circ\text{C}$
Thermal Resistance(Junction to Ambient)	T_{thJA}	300	K/W

DO-35



Electrical Characteristics @ 25°C Unless Otherwise Specified

	Symbol	Maximum	Unit
Max. Forward Voltage @ $I_F=100\text{mA}$	V_F	1.5	V

NOTE:

- 1) Some part number series have lower JEDEC registered ratings.

DIM	DIMENSIONS				NOTE
	INCHES		MM		
	MIN	MAX	MIN	MAX	
A	---	.166	---	4.2	
B	---	.079	---	2.00	
C	---	.020	---	.52	
D	1.000	---	25.40	---	

Electrical Characteristics (T_c= 30°C Unless Otherwise Noted, V_F=1.5V Max @ I_F=100mA for all types)

Device ⁽¹⁾	Device Marking	Zener Voltage ⁽²⁾				Leakage Current ⁽³⁾		I _{ZM} ⁽⁴⁾	ΔV _Z ⁽⁵⁾
		V _Z (Volts)			@ I _{ZT}	I _R @ V _R			
		Min	Nom	Max	uA	uA Max	Volts	mA	Volts
1N4678	1N4678	1.71	1.8	1.89	50	7.5	1.0	120	0.7
1N4679	1N4679	1.90	2.0	2.10	50	5.0	1.0	110	0.7
1N4680	1N4680	2.09	2.2	2.31	50	5.0	1.0	100	0.75
1N4681	1N4681	2.28	2.4	2.52	50	2.0	1.0	95	0.8
1N4682	1N4682	2.565	2.7	2.835	50	1.0	1.0	90	0.85
1N4683	1N4683	2.85	3.0	3.15	50	0.8	1.0	85	0.9
1N4684	1N4684	3.135	3.3	3.465	50	7.5	1.5	80	0.95
1N4685	1N4685	3.42	3.6	3.78	50	7.5	2.0	75	0.95
1N4686	1N4686	3.705	3.9	4.095	50	5.0	2.0	70	0.97
1N4687	1N4687	4.085	4.3	4.515	50	4.0	2.0	65	0.99
1N4688	1N4688	4.465	4.7	4.935	50	10	3.0	60	0.99
1N4689	1N4689	4.845	5.1	5.355	50	10	3.0	55	0.97
1N4690	1N4690	5.32	5.6	5.88	50	10	4.0	50	0.96
1N4691	1N4691	5.89	6.2	6.51	50	10	5.0	45	0.95
1N4692	1N4692	6.46	6.8	7.14	50	10	5.1	35	0.9
1N4693	1N4693	7.125	7.5	7.875	50	10	5.7	31.8	0.75
1N4694	1N4694	7.79	8.2	8.61	50	1.0	6.2	29	0.5
1N4695	1N4695	8.265	8.7	9.135	50	1.0	6.6	27.4	0.4
1N4696	1N4696	8.645	9.1	9.555	50	1.0	6.9	26.2	0.08
1N4697	1N4697	9.50	10	10.5	50	1.0	7.6	24.8	0.1
1N4698	1N4698	10.45	11	11.55	50	0.05	8.4	21.6	0.11
1N4699	1N4699	11.40	12	12.6	50	0.05	9.1	20.4	0.12
1N4700	1N4700	12.35	13	13.65	50	0.05	9.8	19	0.13
1N4701	1N4701	13.30	14	14.7	50	0.05	10.6	17.5	0.14
1N4702	1N4702	14.25	15	15.75	50	0.05	11.4	16.3	0.15
1N4703	1N4703	15.20	16	16.8	50	0.05	12.1	15.4	0.16
1N4704	1N4704	16.15	17	17.85	50	0.05	12.9	14.5	0.17
1N4705	1N4705	17.10	18	18.9	50	0.05	13.6	13.2	0.18
1N4707	1N4707	19.00	20	21	50	0.01	15.2	11.9	0.2
1N4711	1N4711	25.65	27	28.35	50	0.01	20.4	8.8	0.27
1N4713	1N4713	28.5	30	31.5	50	0.01	22.8	7.9	0.3

Note:

- 1) Tolerance and type number designation (V_Z)
The type numbers listed have a standard tolerance of ±5% on the nominal zener voltage. C for 2%, D for 1%.
- 2) Zener voltage (V_Z) measurement
The zener voltage is measured with the device junction in the thermal equilibrium at the lead temperature (T_L) at 30°C ± 1°C and 3/8" lead length.
- 3) Reverse leakage current (I_R)
Reverse leakage currents are guaranteed and measured at V_R shown on the table.
- 4) Maximum zener current rating (I_{ZM})
Maximum zener current ratings are based on maximum zener voltage of the individual units and JEDEC 250mW rating.
- 5) Maximum voltage change (ΔV_Z)
Voltage change is equal to the difference between V_Z at 100uA and at 10uA

1N4678 thru 1N4713

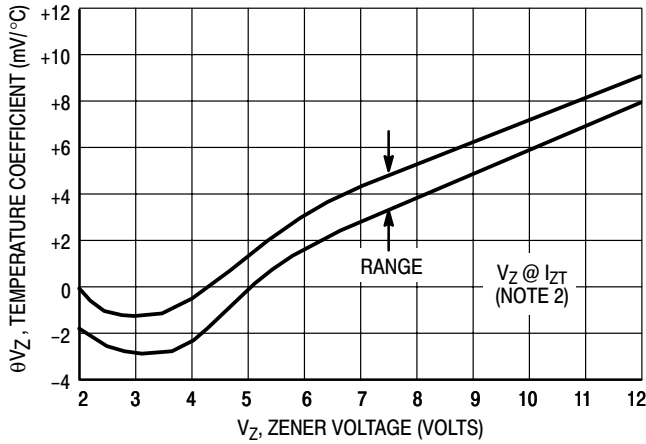


Figure 1. Range for Units to 12 Volts

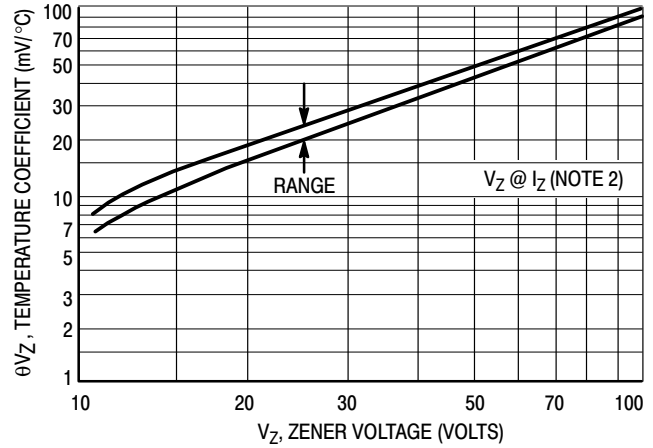


Figure 2. Range for Units 12 to 100 Volts

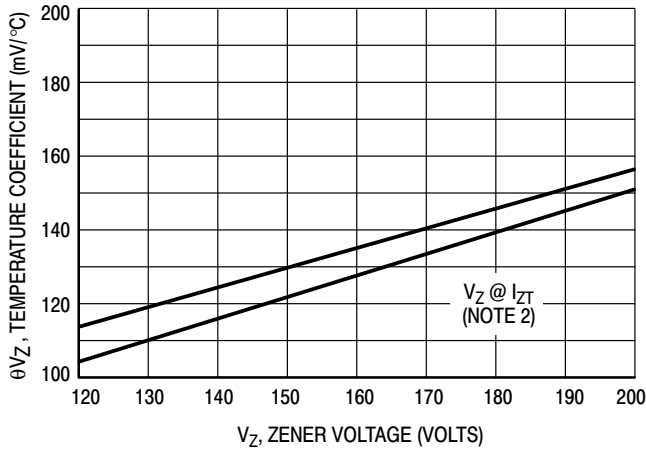


Figure 3. Range for Units 120 to 200 Volts

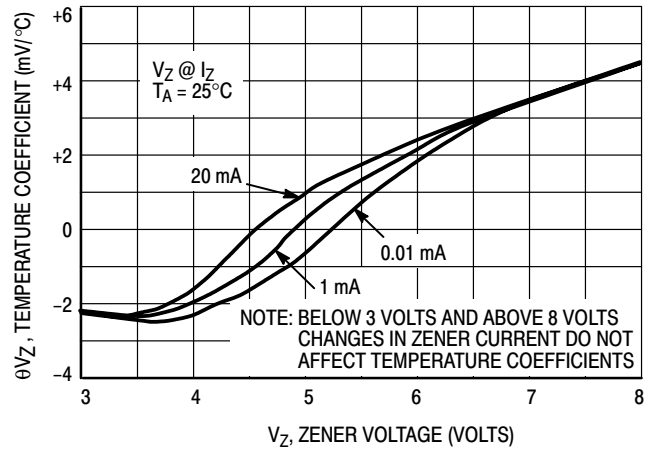


Figure 4. Effect of Zener Current

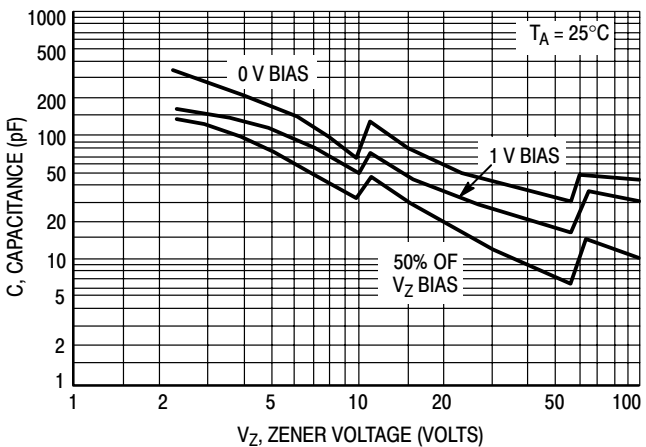


Figure 5. Typical Capacitance 2.4–100 Volts

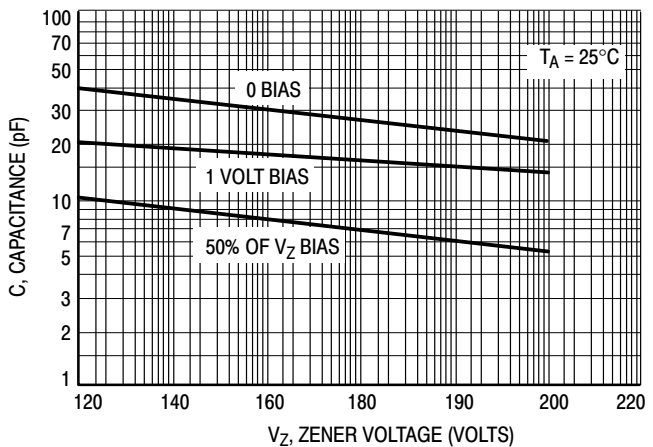


Figure 6. Typical Capacitance 120–200 Volts

1N4678 thru 1N4713

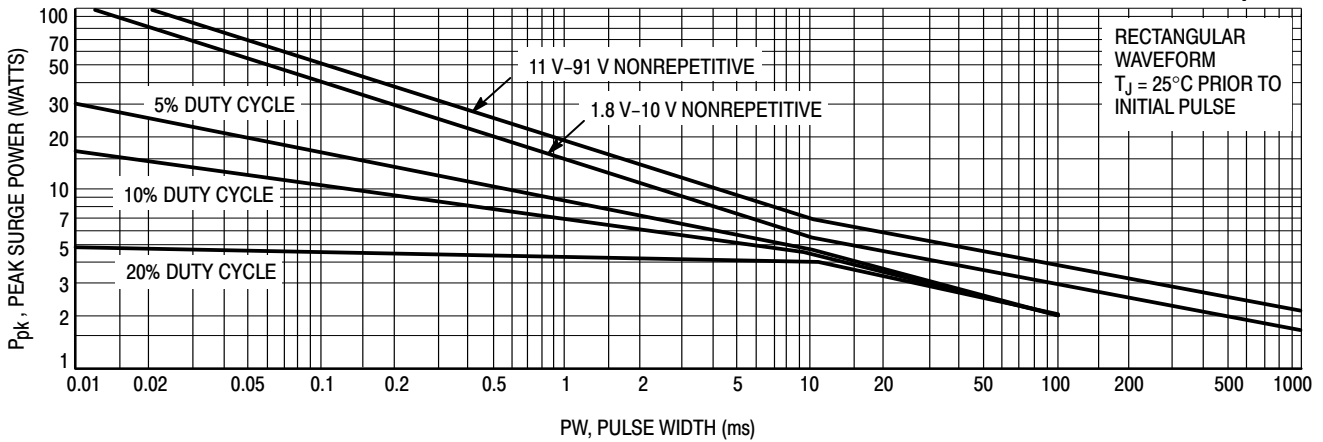
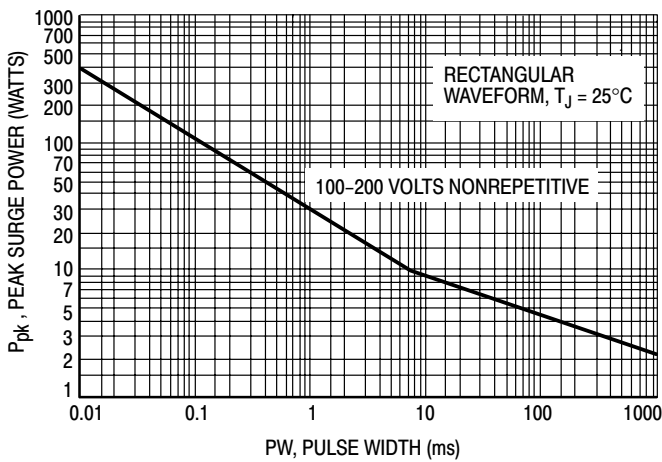
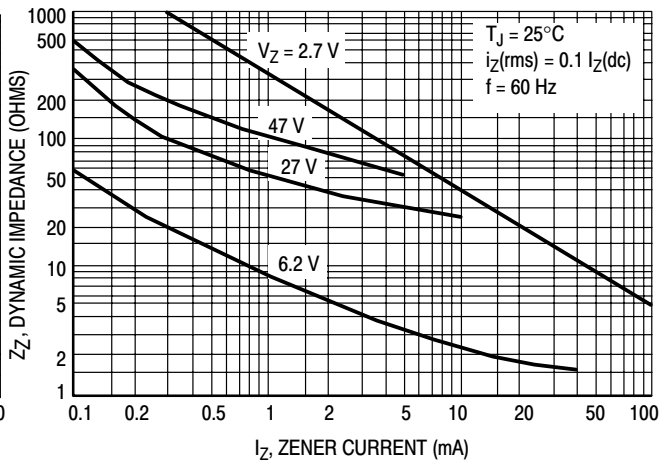


Figure 7. Maximum Surge Power 1.8–91 Volts



**Figure 8. Maximum Surge Power DO-204AH
100–200 Volts**



**Figure 9. Effect of Zener Current on
Zener Impedance**

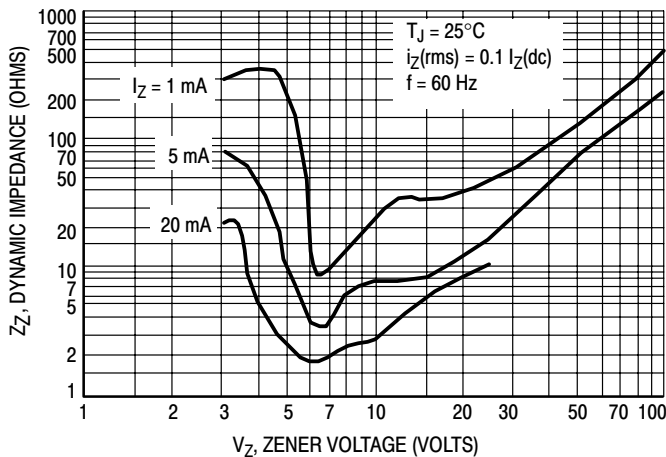


Figure 10. Effect of Zener Voltage on Zener Impedance

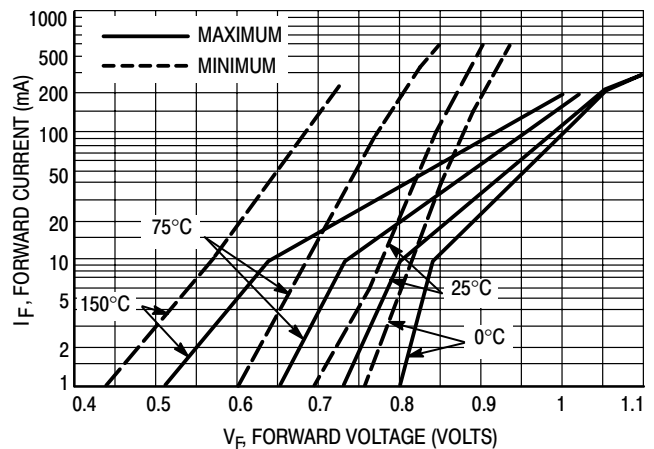


Figure 11. Typical Forward Characteristics



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