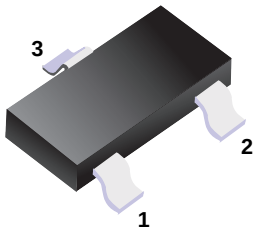
DMZ6005E

N-Channel Depletion Power MOSFET

■ Features

- Halogen and Antimony Free
- Depletion Mode
- ESD Improved Capability



1. Gate
2. Source
3. Drain

■ **Simplified outline(SOT-23)**

■ Absolute Maximum Ratings Ta = 25℃

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DSX}	600	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	0.03	A
Continuous Drain Current T_C=70℃		0.024	
Pulsed Drain Current	I_{DM}	0.12	
Power Dissipation	P_D	0.5	W
Gate Source ESD (HBM-C=100pF, R=1.5kΩ)	$V_{ESD(G-S)}$	300	V
Junction Temperature	T_J	150	°C
Storage Temperature Range	T_{STG}	-55 to 150	°C
Thermal Characteristics			
Parameter	**Symbol**	**Typ.**	**Units**
Maximum Junction-to-Ambient	$R_{\theta JA}$	250	°C/W

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■ Electrical Characteristics Ta = 25℃

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSX}$	V_{GS} = -5V, I_D = 250μA	600	-	-	V
Gate Leakage Current	I_{GSS}	V_{GS} = ±10V	-	-	±100	nA
Off-state Drain to Source Current	$I_{D(off)}$	V_{DS} =600V, V_{GS} = -5V	-	-	0.1	μA
		V_{DS} =480V, V_{GS} = -5V, T_a=125°C	-	-	10	μA
ON Characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = 3V, I_D = 8μA	-2.7	-1.8	-1	V
On-state drain current	I_{DSS}	V_{GS} = 0V, V_{DS} = 25V	12	-	-	mA
Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS} = 0V, I_D = 3mA	-	350	700	Ω
		V_{GS} = 10V, I_D = 16mA	-	400	800	
Dynamic Characteristics						
Forward transconductance	g_{fs}	V_{DS} = 50V, I_D = 0.01A	8	17	-	mS
Input Capacitance	C_{iss}	V_{DS} = 25V, V_{GS} = -5V, f = 1MHz	-	50	-	pF
Output Capacitance	C_{oss}		-	4.53	-	
Reverse Transfer Capacitance	C_{rss}		-	1.08	-	
Switching Characteristics						
Turn-On Delay Time	$t_{d(on)}$	V_{DD}=300V, V_{GS}=-5…7V R_G=6Ω, I_D=0.01A	-	9.9	-	ns
Turn-On Rise Time	t_r		-	55.8	-	
Turn-Off Delay Time	$t_{d(off)}$		-	56.4	-	
Turn-Off Fall Time	t_f		-	136	-	
Total Gate Charge	Q_g	V_{DD}=400V,V_{GS}=-5V to 5V, I_D=0.01A	-	1.14	-	nC
Gate-Source Charge	Q_{gs}		-	0.5	-	
Gate-Drain Charge	Q_{gd}		-	0.37	-	
Drain-source Diode Characteristics						
Diode Forward Current	I_S	T_a=25°C	-	-	0.025	A
Pulse Diode Forward Current	I_{SM}		-	-	0.1	A
Forward Diode Voltage	V_{SD}	V_{GS} = -5V, I_F = 16mA	-	-	1.2	V
Gate-source Zener diode						
Gate-source breakdown voltage	V_{GSO}	I_{GS}= ±1mA (Open Drain)	20	-	-	V

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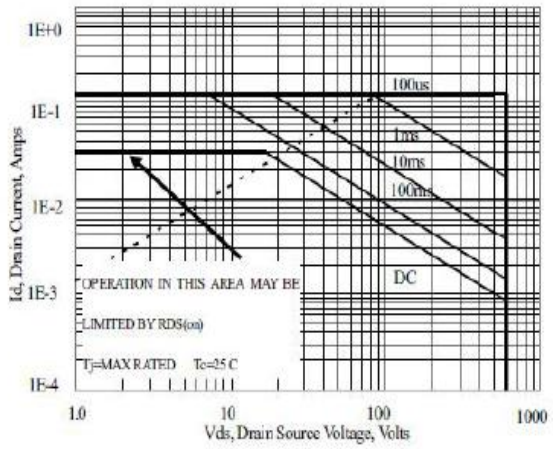

Figure 1 Maximum Forward Bias Safe Operating Area

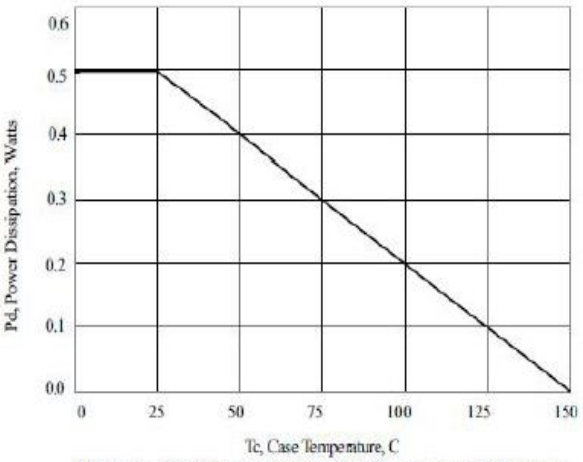

Figure 2 Maximum Power Dissipation vs Case Temperature

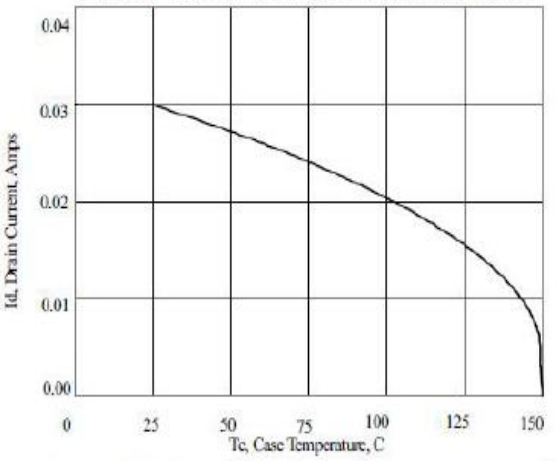

Figure 3 Maximum Continuous Drain Current vs Case Temperature

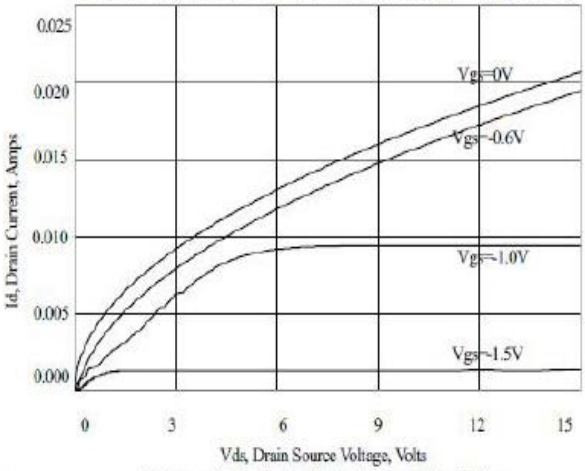

Figure 4 Typical Output Characteristics

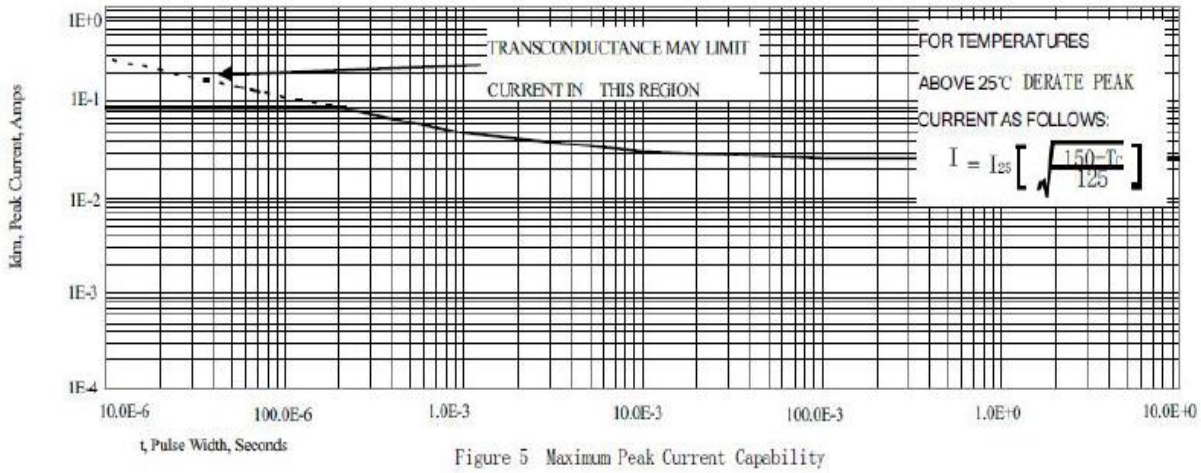

Figure 5 Maximum Peak Current Capability

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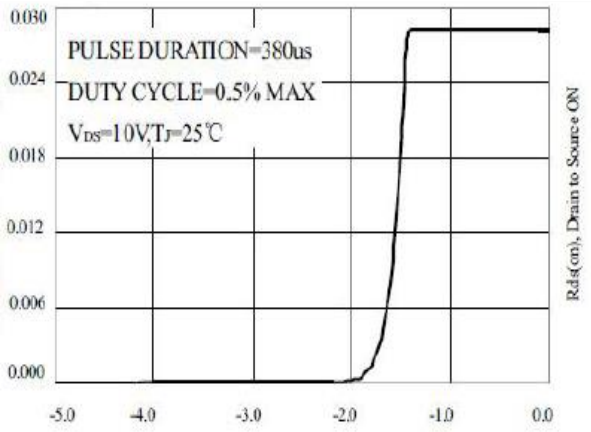

Figure 6 Typical Transfer Characteristics

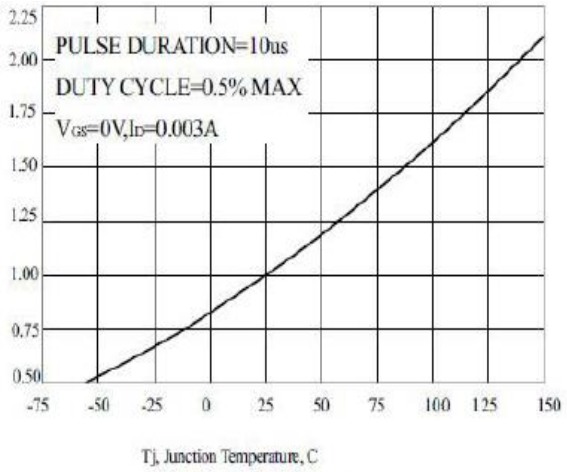

Figure 7 Typical Drain to Source ON Resistance vs Junction Temperature

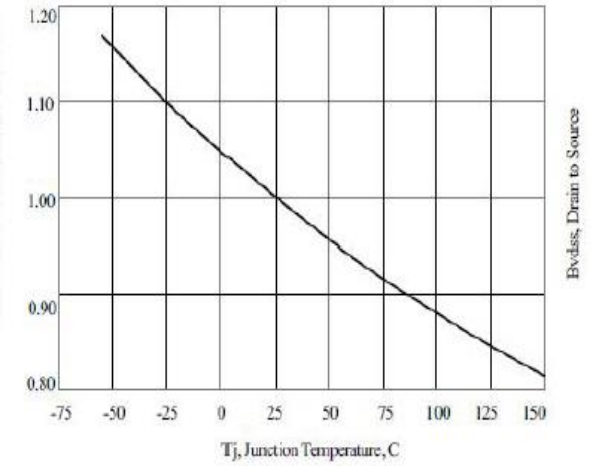

Figure 8 Typical Threshold Voltage vs Junction Temperature

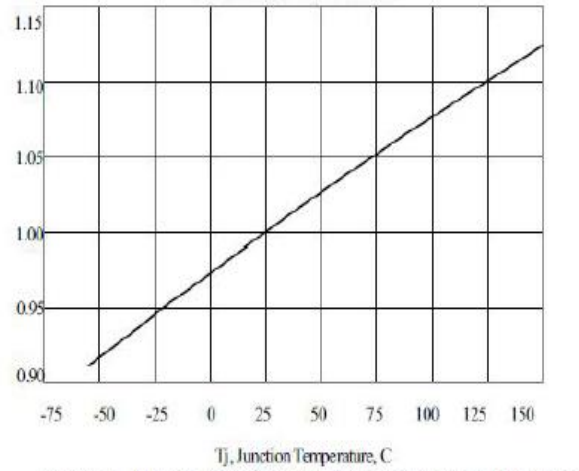

Figure 9 Typical Breakdown Voltage vs Junction Temperature

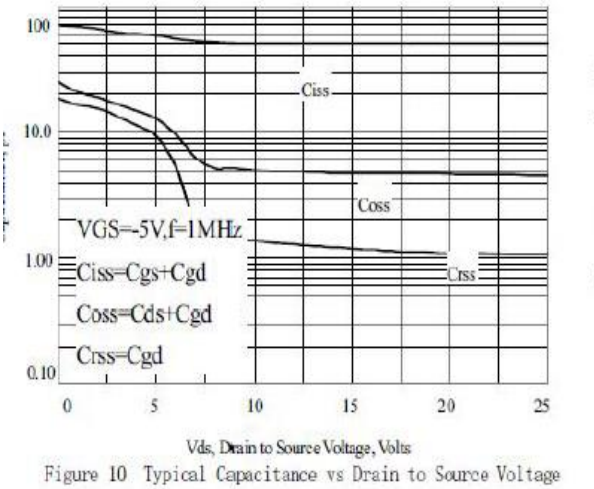

Figure 10 Typical Capacitance vs Drain to Source Voltage

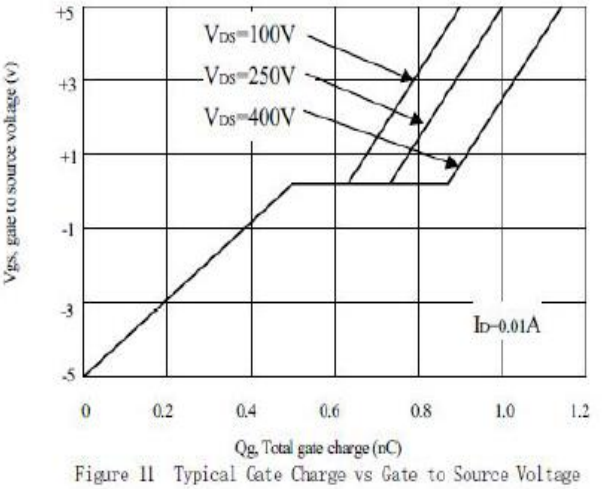

Figure 11 Typical Gate Charge vs Gate to Source Voltage

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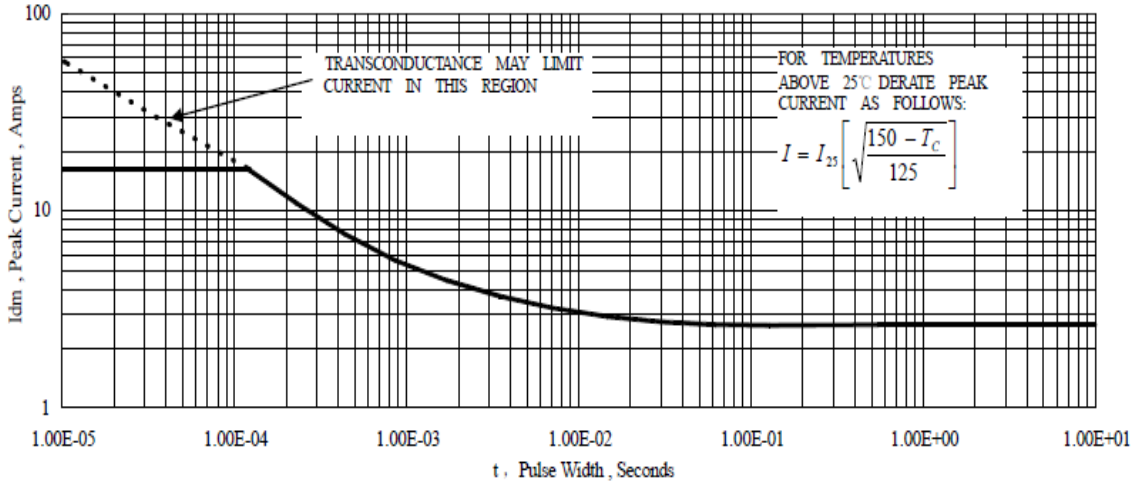

Figure 6 Maximum Peak Current Capability

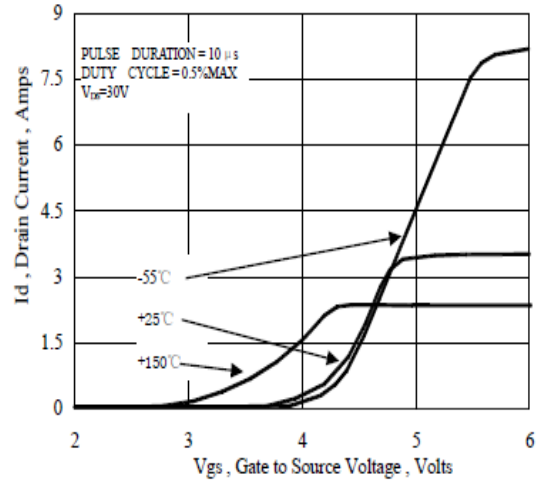

Figure 7 Typical Transfer Characteristics

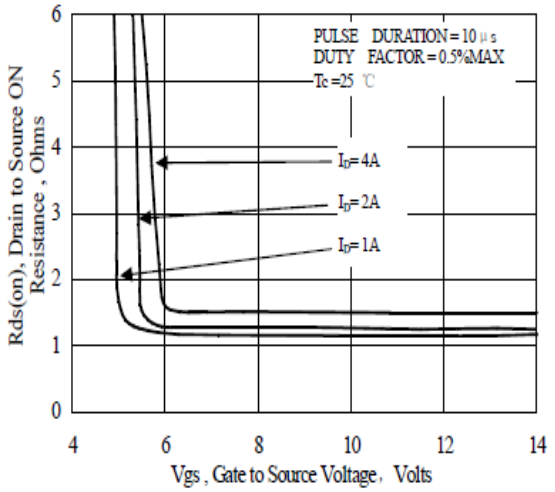

Figure 8 Typical Drain to Source ON Resistance vs Gate Voltage and Drain Current

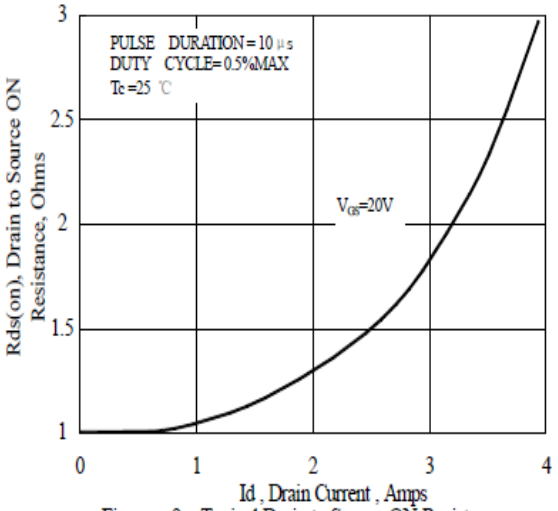

Figure 9 Typical Drain to Source ON Resistance vs Drain Current

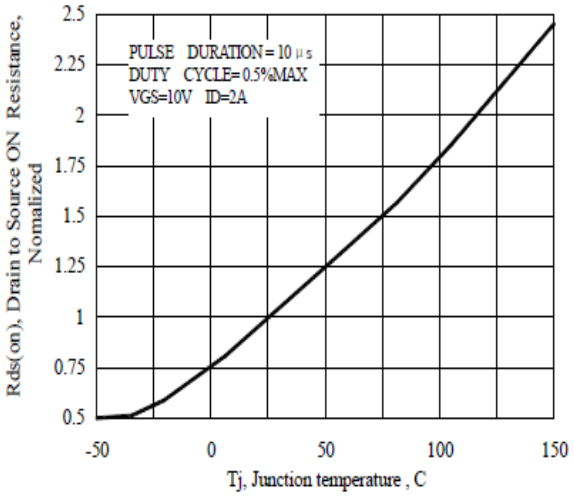

Figure 10 Typical Drian to Source on Resistance vs Junction Temperature

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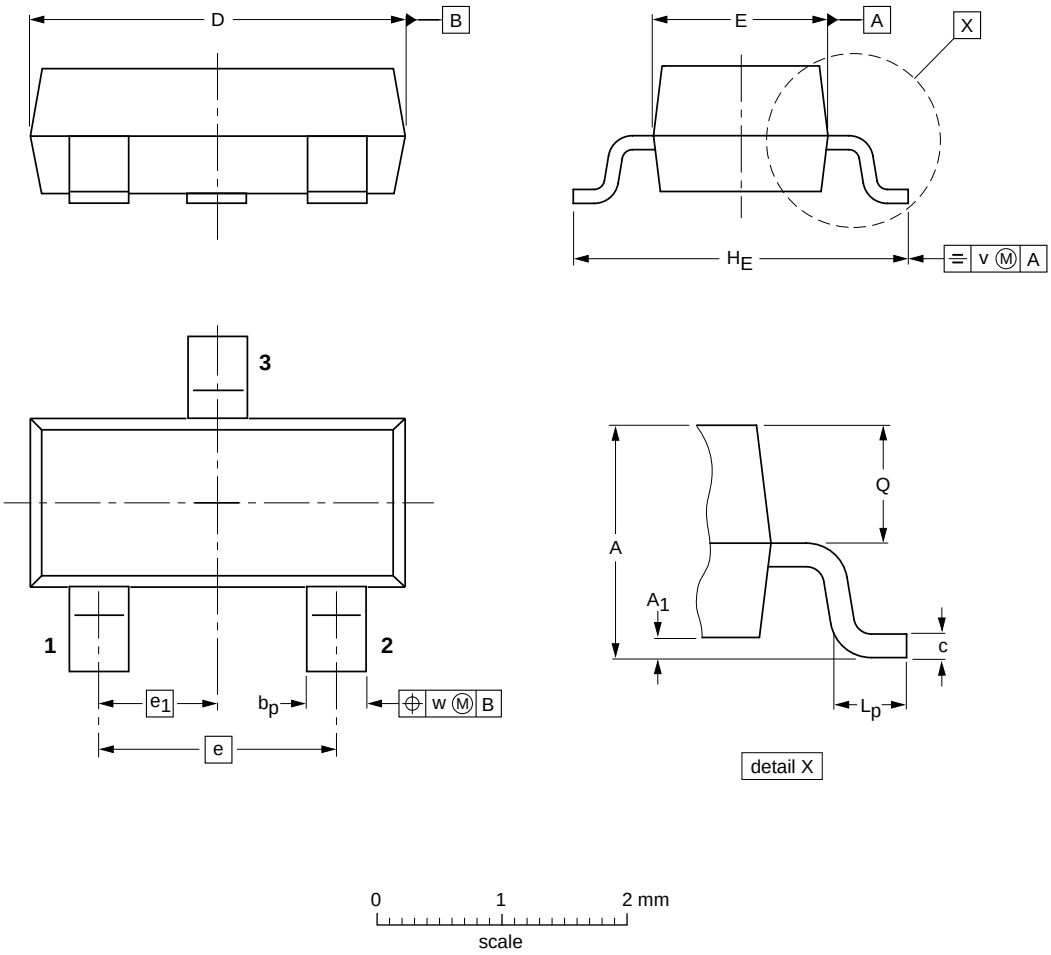
■ SOT-23



DIMENSIONS (mm are the original dimensions)

UNIT	A	A_1 max.	b_p	c	D	E	e	e_1	H_E	L_p	Q	v	w
mm	1.1 0.9	0.1	0.48 0.38	0.15 0.09	3.0 2.8	1.4 1.2	1.9	0.95	2.5 2.1	0.45 0.15	0.55 0.45	0.2	0.1

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