

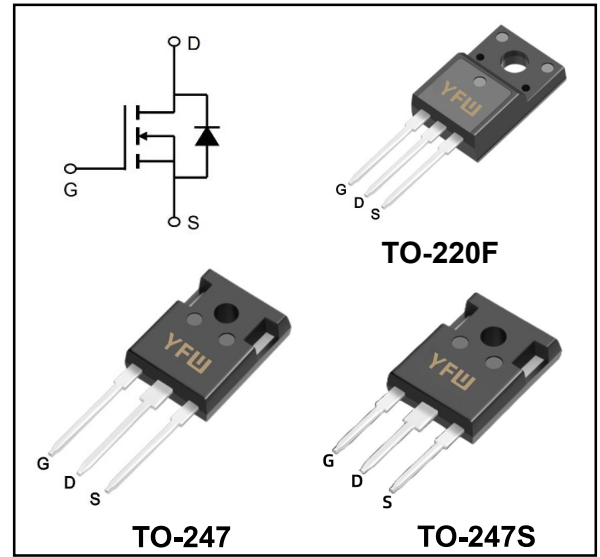
**500V N-CHANNEL ENHANCEMENT MODE MOSFET**

**MAIN CHARACTERISTICS**

<b>I<sub>D</sub></b>	18A
<b>V<sub>DSS</sub></b>	500V
<b>R<sub>DS(on)-typ(@V<sub>GS</sub>=10V)</sub></b>	<0.4Ω (Type:0.28 Ω)

**Features**

- ◆Fast Switching
- ◆Low ON Resistance
- ◆Low Gate Charge
- ◆100% Single Pulse avalanche energy Test
- ◆LeadfreeincomplywithEURoHS2011/65/EUdirectives



**Mechanical Data**

- ◆Case: Molded plastic
- ◆Mounting Position: Any
- ◆Molded Plastic: UL Flammability Classification Rating 94V-0
- ◆Solder bath temperature275°C maximum,10s per JESD22-106

**Maximum Ratings at Tc=25°C unless otherwise specified**

Characteristics	Symbols	Value		Units
		220F	247/247S	
Drain-Source Voltage	<b>V<sub>DS</sub></b>	500		<b>V</b>
Gate-Source Voltage	<b>V<sub>GS</sub></b>	±30		<b>V</b>
Continue Drain Current	<b>I<sub>b</sub></b>	18		<b>A</b>
-Continuous (TC = 100°C)		11		
Pulsed Drain Current (Note1)	<b>I<sub>BM</sub></b>	72		<b>A</b>
Power Dissipation	<b>P<sub>D</sub></b>	60	230	<b>W</b>
-Derate above 25°C		0.48	1.95	
Single Pulse Avalanche Energy (Note2)	<b>E<sub>AS</sub></b>	970		<b>mJ</b>
Avalanche Current (Note 1)	<b>I<sub>AR</sub></b>	18		<b>A</b>
Repetitive Avalanche Energy (Note 1)	<b>E<sub>AS</sub></b>	23.5		<b>mJ</b>
Operating Temperature Range	<b>T<sub>J</sub></b>	150		<b>°C</b>
Storage Temperature Range	<b>T<sub>STG</sub></b>	-55 to +150		<b>°C</b>
Thermal Resistance, Junction to Case	<b>R<sub>θJC</sub></b>	2.35	0.54	<b>°C/W</b>
Thermal Resistance, Junction to Ambient	<b>R<sub>θJA</sub></b>	62.5	45	<b>°C/W</b>

**Maximum Ratings at Tc=25°C unless otherwise specified**

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{GS} = 0\text{ V}, I_D = 250\ \mu\text{A}$	<b>BV<sub>DSS</sub></b>	500	-	-	<b>V</b>
Drain-Source Leakage Current	$V_{DS} = 500\text{ V}, V_{GS} = 0\text{ V}$	<b>I<sub>DSS</sub></b>	-	-	1	<b>uA</b>
	$V_{DS} = 400\text{ V}, T_c = 125^\circ\text{C}$		-	-	10	
Gate Leakage Current	$V_{GS} = \pm 30\text{ V}, V_{DS} = 0\text{ V}$	<b>I<sub>GSS</sub></b>	-	-	±100	<b>nA</b>
Gate-Source Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\ \mu\text{A}$	<b>V<sub>GS(th)</sub></b>	2	-	4	<b>V</b>
Drain-Source On-State Resistance	$V_{GS} = 10\text{ V}, I_D = 8\text{ A}$	<b>R<sub>DS(on)</sub></b>	-	0.28	0.4	<b>Ω</b>
Forward Transconductance	$V_{DS} = 15\text{ V}, I_D = 8\text{ A}$	<b>g<sub>fs</sub></b>	-	6	-	<b>S</b>
Input Capacitance	$V_{GS} = 0\text{ V}, V_{DS} = 25\text{ V}, f = 1\text{MHz}$	<b>C<sub>iss</sub></b>	-	2250	-	<b>pF</b>
Output Capacitance		<b>C<sub>oss</sub></b>	-	360	-	
Reverse Transfer Capacitance		<b>C<sub>rss</sub></b>	-	7.2	-	
Turn-on Delay Time	$I_D = 18, V_{DD} = 250\text{V}, R_G = 25\Omega(\text{Note}3,4)$	<b>td(ON)</b>	-	60	-	<b>nS</b>
Rise Time		<b>tr</b>	-	132	-	
Turn-Off Delay Time		<b>td(OFF)</b>	-	116	-	
Fall Time		<b>tf</b>	-	76	-	
Total Gate Charge	$I_D = 18\text{ A}, V_{DD} = 400\text{ V}, V_{GS} = 10\text{ V}(\text{Note}3,4)$	<b>Q<sub>G</sub></b>	-	71	-	<b>nC</b>
Gate to Source Charge		<b>Q<sub>GS</sub></b>	-	13	-	
Gate to Drain Charge		<b>Q<sub>GD</sub></b>	-	12	-	

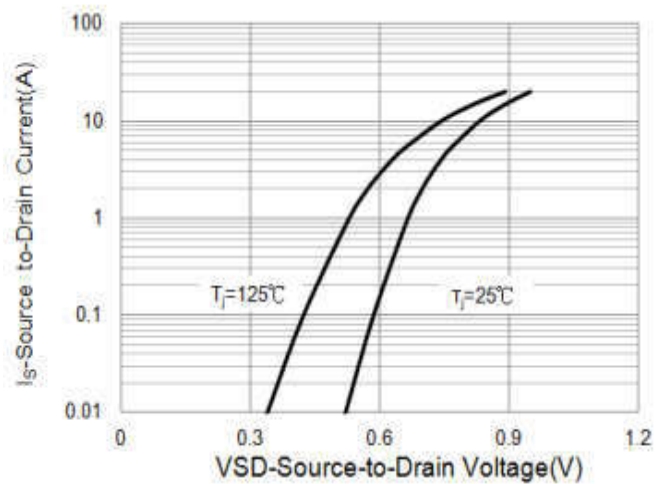
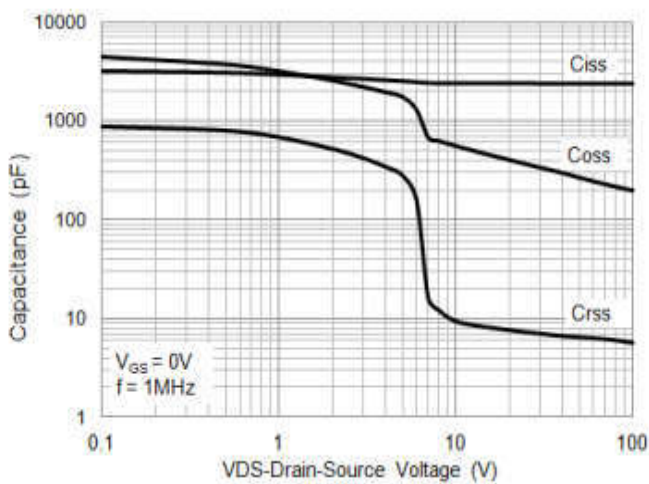
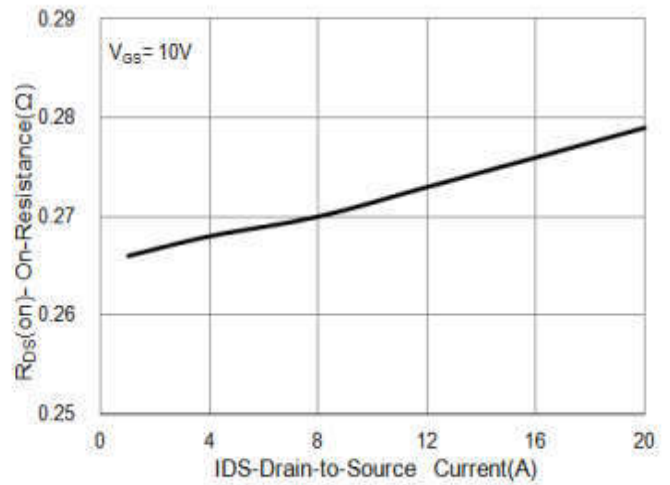
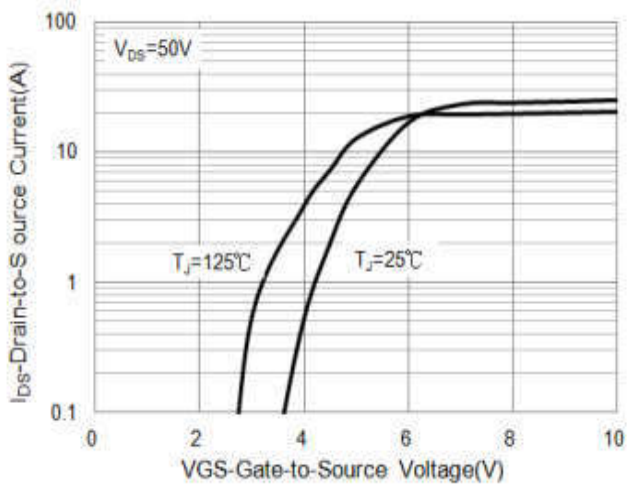
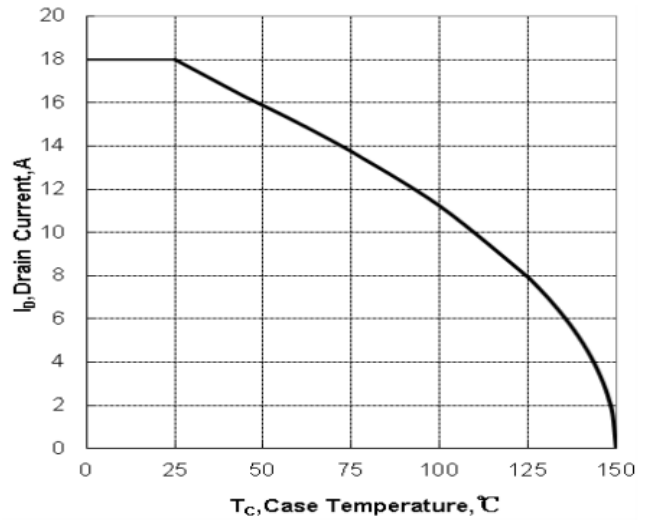
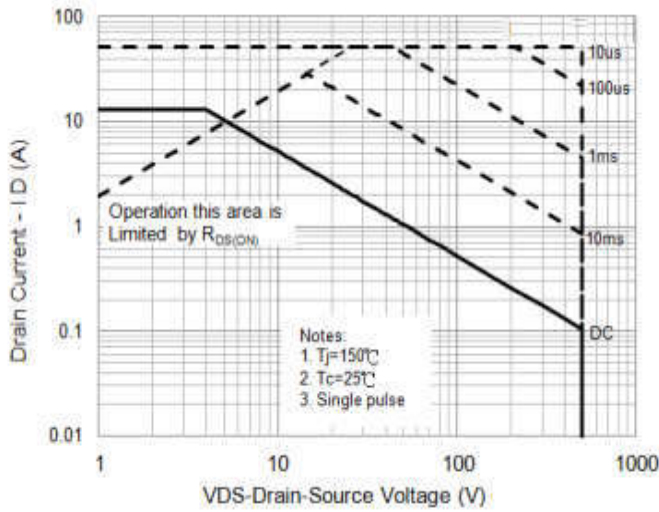
**Source-Drain Diode Characteristics at Ta=25°C unless otherwise specified**

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Maximun Body-Diode Continuous Current		<b>I<sub>S</sub></b>	-	-	18	<b>A</b>
Maximun Body-Diode Pulsed Current		<b>I<sub>SM</sub></b>	-	-	72	<b>A</b>
Drain-Source Diode Forward Voltage	$I_{SD} = 18\text{A}$	<b>V<sub>SD</sub></b>	-	-	1.5	<b>V</b>
Reverse Recovery Time	$I_{SD} = 18\text{A}, V_{GS} = 0\text{ V}, dI_F / dt = 100\text{ A}/\mu\text{s}(\text{Note}3)$	<b>trr</b>	-	449	-	<b>nS</b>
Reverse Recovery Charge		<b>Qrr</b>	-	4.8	-	<b>uC</b>

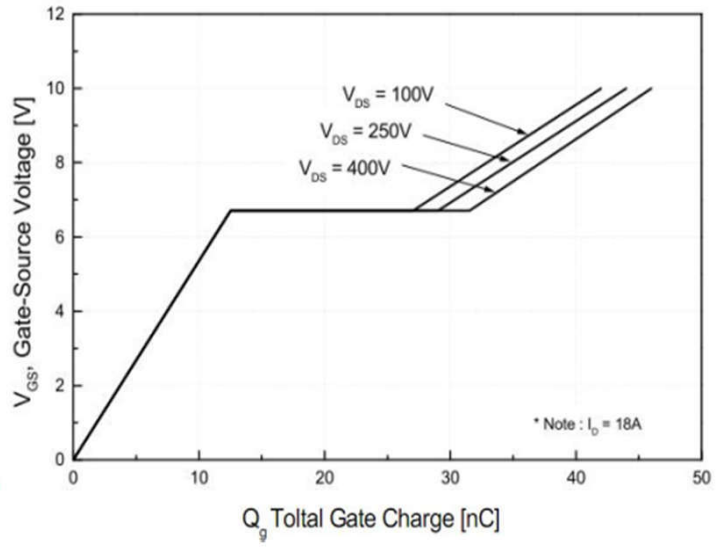
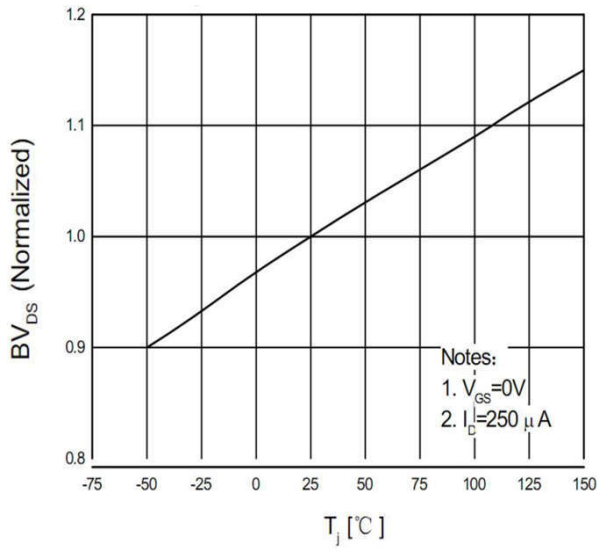
Note:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. IAS = 18 A, VDD = 50 V, L = 6mH, RG = 25Ω, starting TJ = 25°C.
3. ulse test: Pulse Width ≤300 μ s, Duty Cycle≤2%.
4. Essentially Independent of Operating Temperature.

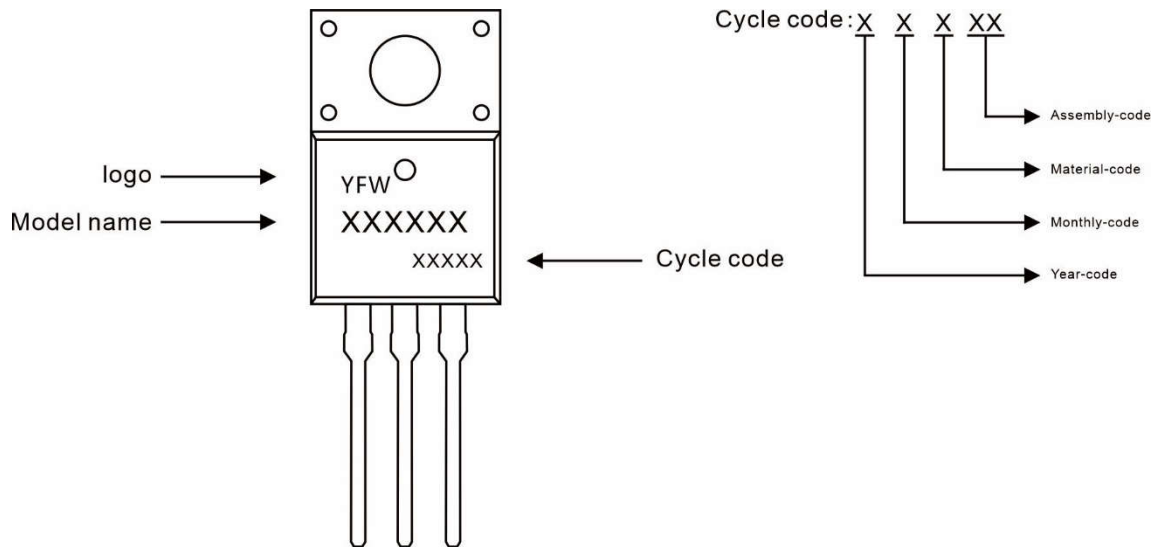
Ratings and Characteristic Curves



**Ratings and Characteristic Curves**



**Marking Diagram**



**Ordering information**

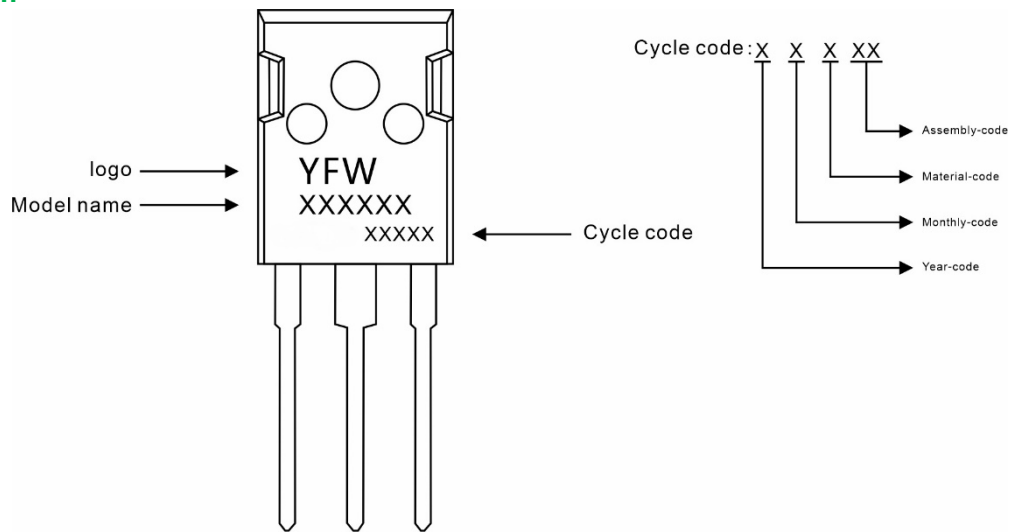
Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFW18N50AF	TO-220F	0.06oz(1.74g)	50pcs/tube	1000PCS/Box 5000PCS/Carton

**Package Dimensions**

**TO-220F**

Symbol	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.50	4.90	0.177	0.193
A1	2.34	2.74	0.092	0.108
A2	2.66	2.86	0.105	0.113
b	0.75	0.85	0.030	0.033
b1	1.24	1.44	0.049	0.057
c	0.40	0.60	0.016	0.024
D	10.00	10.32	0.394	0.406
E	15.75	16.05	0.620	0.632
e	2.44	2.64	0.096	0.104
e1	4.88	5.28	0.192	0.208
F	3.10	3.5	0.122	0.138
L	13.50	13.90	0.531	0.547
L1	2.90	3.30	0.114	0.130
Φ	3.10	3.30	0.122	0.130

**Marking Diagram**



**Ordering information**

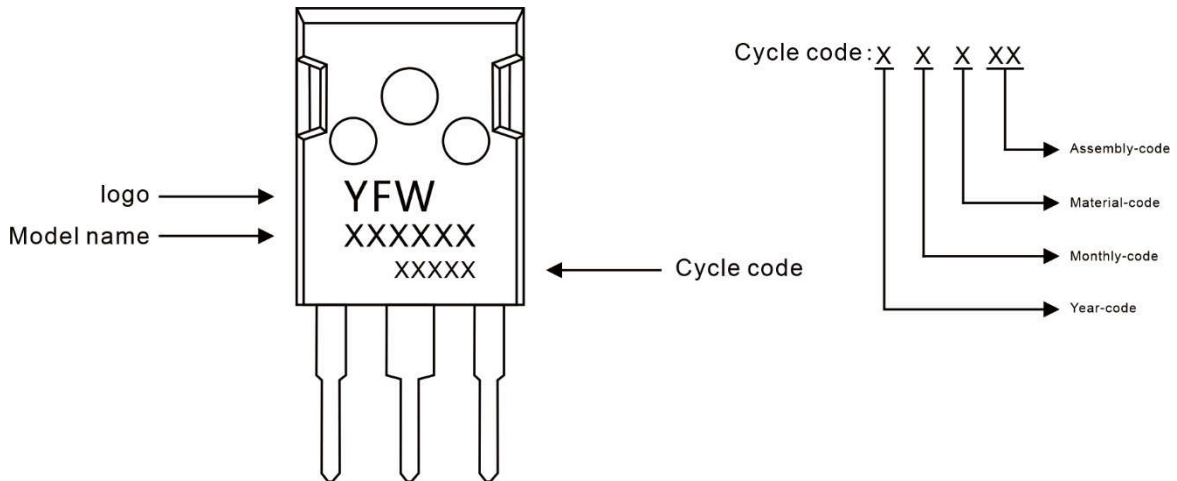
Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFW18N50AP	TO-247	0.209oz(5.93g)	30pcs/tube	600PCS/Box 2400PCS/Carton

**Package Dimensions**

**TO-247**

Symbol	Dimensions in mm		Dimensions in Inch	
	Min.	Max.	Min.	Max.
A	4.90	5.10	0.193	0.201
A1	1.90	2.10	0.075	0.083
A2	2.29	2.54	0.090	0.100
b	1.00	1.40	0.039	0.055
b1	2.00	2.20	0.079	0.087
b2	3.00	3.20	0.118	0.126
c	0.50	0.70	0.020	0.028
D	15.75	16.05	0.620	0.632
E	20.20	20.80	0.795	0.819
e	5.45 (BSC)		0.215 (BSC)	
e1	10.90 (BSC)		0.429 (BSC)	
F	6.05	6.25	0.238	0.246
F1	5.80	6.00	0.228	0.236
L	20.10	20.40	0.791	0.803
L1	4.05	4.35	0.159	0.171
Φ	3.50	3.70	0.138	0.146

**Marking Diagram**



**Ordering information**

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFW18N50APS	TO-247S	0.158oz(4.48g)	30pcs/tube	600PCS/Box 2400PCS/Carton

**Package Dimensions**

**TO-247S**

Symbol	Dimensions in mm		Dimensions in Inch	
	Min.	Max.	Min.	Max.
A	15.0	16.0	0.59	0.63
B	19.5	20.5	0.77	0.81
C	33.5	35.5	1.32	1.40
D	5.0	6.0	0.20	0.24
E	3.5	4.5	0.14	0.18
F	2.5	3.5	0.10	0.14
G	1.75	2.5	0.07	0.14
H	3.0	4.0	0.12	0.16
I	9.0	11.0	0.35	0.43
J	4.9	5.1	0.19	0.20
K	1.0	1.3	0.04	0.05
L	3.75	4.25	0.15	0.17
M	4.75	5.25	0.19	0.21
N	1.8	2.2	0.07	0.09
O	0.45	0.6	0.018	0.024
P	5.08		0.2	
Q	1.2	1.3	0.05	0.051

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