Features

★ Split Gate Trench MOSFET technology

★ Excellent package for heat dissipation

★ High density cell design for low RDS(ON)

Product Summary

RoHS

BVDSS	RDSON	ID
100V	3.5mΩ	130A

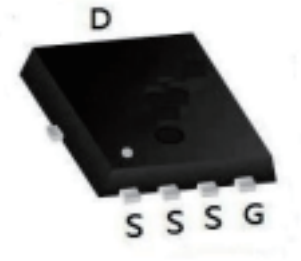
Description

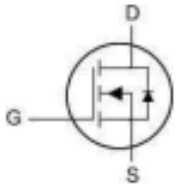
★ DC-DC Converters

★ Power management functions

★ Synchronous-rectification applications

PDFN5*6 Pin Configuration





Absolute Maximum Ratings

Symbol	Parameter		Max.	Unit
V_{DSS}	Drain-Source Voltage		100	V
V_{GSS}	Gate-Source Voltage		±20	V
I_D	Continuous Drain Current	T_C = 25℃	130	A
		T_C = 100℃	76	A
I_{DM}	Pulsed Drain Current note1		480	A
E_{AS}	Single Pulsed Avalanche Energy note2		320	mJ
P_D	Power Dissipation	T_C = 25℃	131.6	W
$R_{\theta JA}$	Thermal Resistance from Junction-to-Ambient3		48	℃/W
$R_{\theta JC}$	Thermal Resistance, Junction to Case		0.95	℃/W
T_J, T_{STG}	Operating and Storage Temperature Range		-55 to +150	℃

Electrical Characteristics (T_J =25 °C unless otherwise specified)

Symbol	Parameter		Test condition	Min.	Typ.	Max.	Units
Static Characteristics							
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage		V_{GS} = 0V, I_D = 250μA	100	-	-	V
I_{GSS}	Gate-body Leakage current		V_{DS} = 0V, V_{GS} = ±20V	-	-	±100	nA
I_{DSS}	Zero Gate Voltage Drain Current	T_J=25°C	V_{DS} =100V, V_{GS} = 0V	-	-	1	μA
		T_J=100°C		-	-	100	μA
$V_{GS(th)}$	Gate-Threshold Voltage		V_{DS} = V_{GS}, I_D = 250μA	1.2	1.8	2.5	V
$R_{DS(on)}$	Drain-Source on-Resistance[4]		V_{GS} = 10V, I_D = 20A	-	3.5	4.5	mΩ
			VGS = 4.5V, ID = 15A	-	5.2	6.7	mΩ
g_{fs}	Forward Transconductance[4]		V_{DS} = 10V, I_D =20A	-	70	-	S
Dynamic Characteristics[5]							
C_{iss}	Input Capacitance		V_{DS} = 50V, V_{GS} =0V, f =1MHz	-	5475	-	pF
C_{oss}	Output Capacitance			-	768	-	pF
C_{rss}	Reverse Transfer Capacitance			-	22	-	pF
R_g	Gate Resistance		f=1MHz	-	1.3	-	Ω
Switching Characteristics[5]							
Q_g	Total Gate Charge		V_{GS} = 10V, V_{DS} = 50V, I_D= 20A	-	111.2	-	nC
Q_{gs}	Gate-Source Charge			-	17.5	-	nC
Q_{gd}	Gate-Drain Charge			-	30.2	-	nC
$t_{d(on)}$	Turn-on Delay Time		V_{GS} =10V, V_{DD} = 50V, R_G = 3Ω, I_D= 20A	-	22.2	-	ns
t_r	Rise Time			-	37.8	-	ns
$t_{d(off)}$	Turn-off Delay Time			-	95.2	-	ns
t_f	Fall Time			-	35.6	-	ns
t_{rr}	Body Diode Reverse Recovery Time		I_F=20A, di/dt = 100A/μS	-	59.4	-	ns
Q_{rr}	Body Diode Reverse Recovery Charge			-	91.8	-	nC
Drain-Source Body Diode Characteristics							
V_{SD}	Diode Forward Voltage[4]		I_S = 20A, V_{GS} = 0V	-	-	1.2	V
I_S	Continuous Source Current	T_C=25°C	-	-	-	130	A

Notes:

1.Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}$=150°C.

2.The EAS data shows Max. rating . The test condition is V_{DD}= 25V, V_{GS}= 10V, L= 0.4mH, IAS= 40A.

3.The data tested by surface mounted on a 1 inch2 FR-4 board with 2OZ copper, The value in any given application depends on the user's specific board design.

4.The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%.

5.This value is guaranteed by design hence it is not included in the production test.

Typical Electrical and Thermal Characteristics (Curves)

Figure1: Output Characteristics

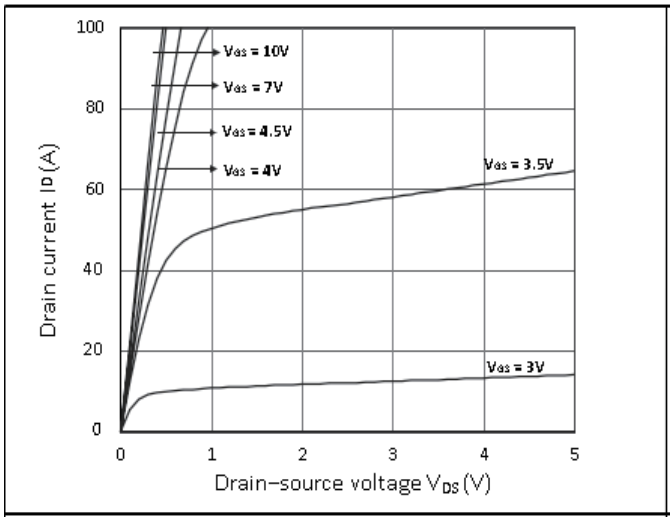


Figure 2: Typ. Transfer Characteristics

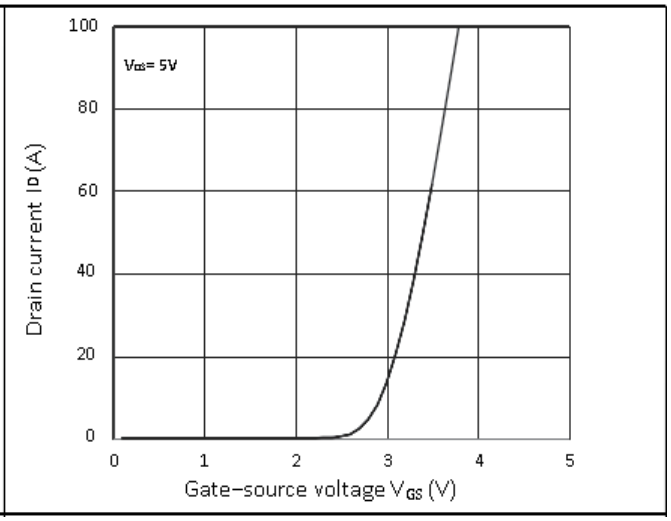


Figure 3: Forward Characteristics of Reve

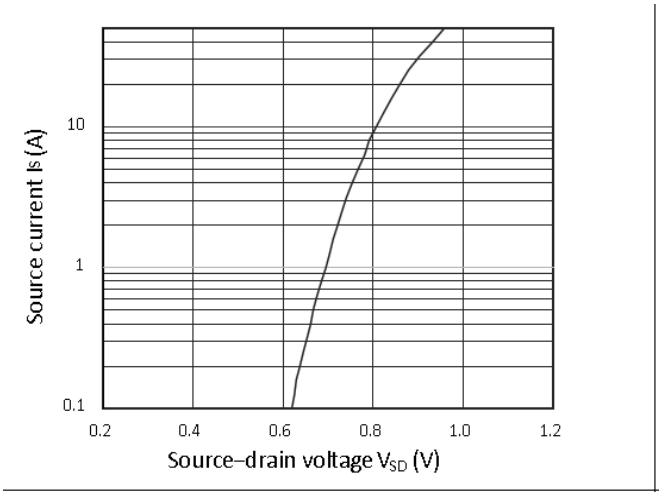


Figure 4: RDS(ON) vs. VGS

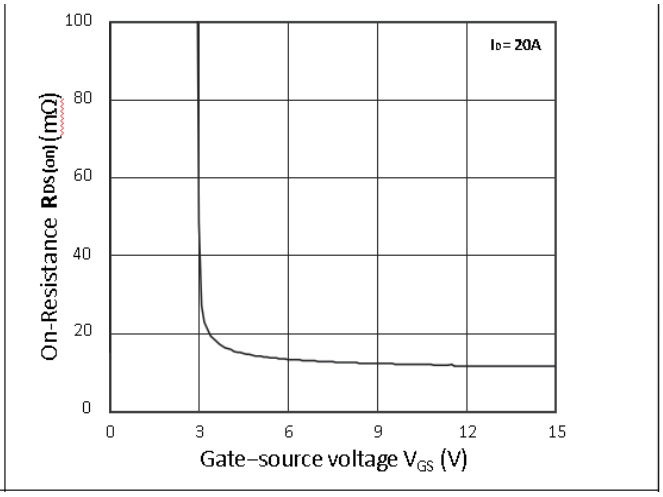


Figure 5: RDS(ON) vs. ID

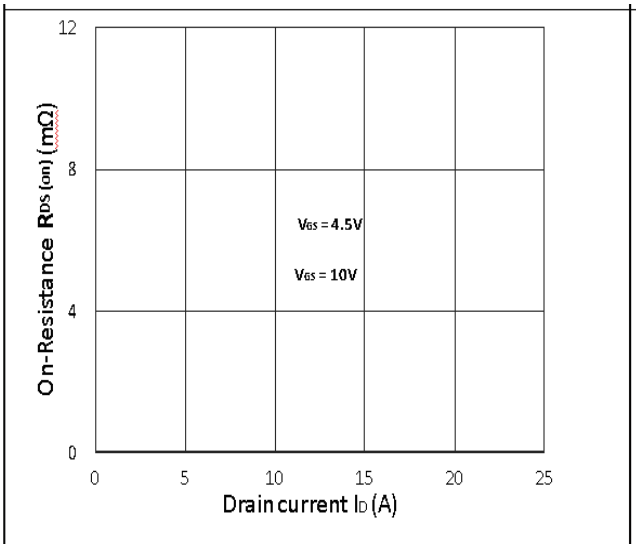
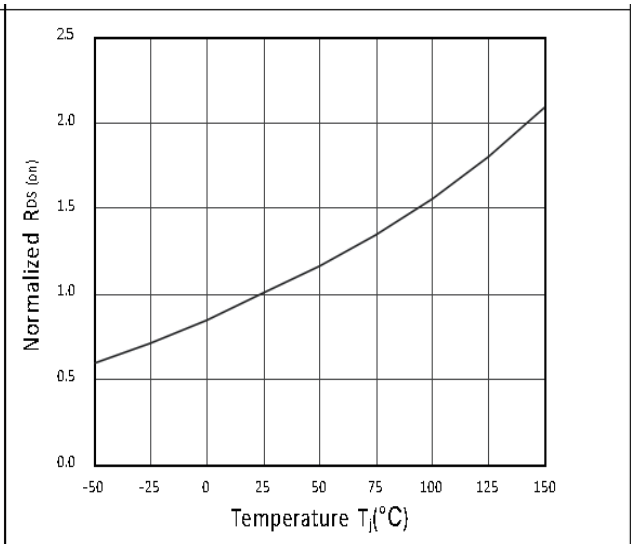


Figure 6: Normalized RDS(on) vs. Tempe



Typical Performance Characteristics

Figure 7:Capacitance Characteristics

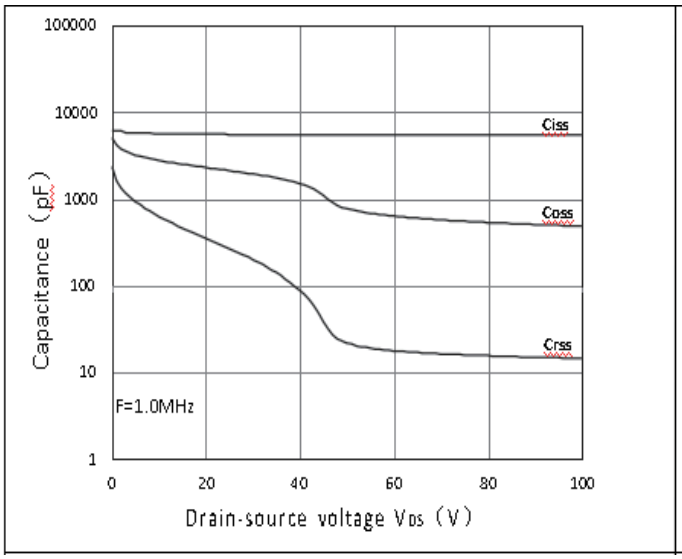


Figure 8:Gate Charge Characteristics

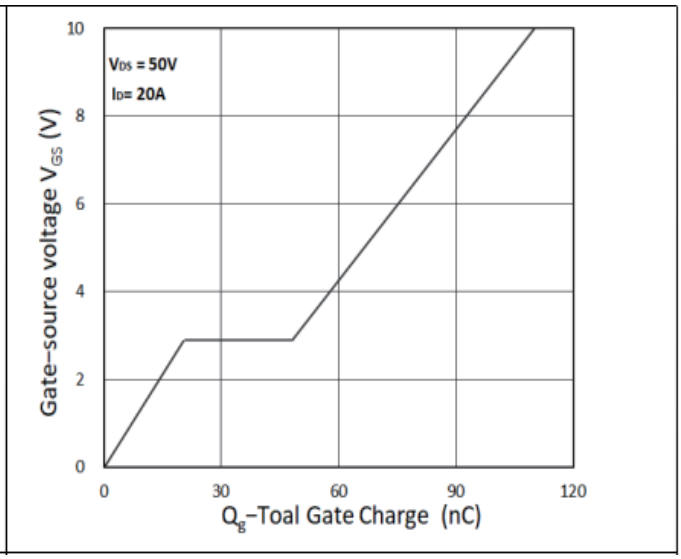


Figure 9:Power Dissipation

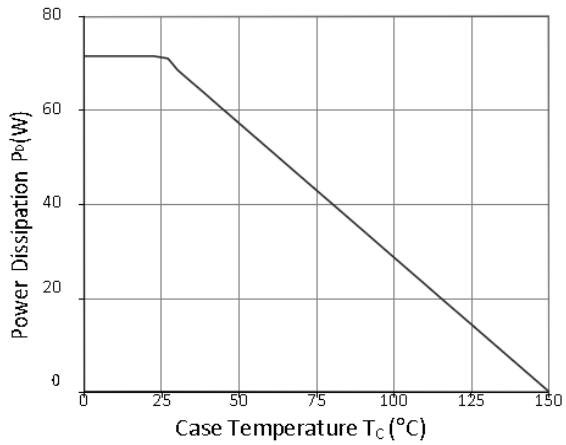


Figure 10:Safe Operating Area

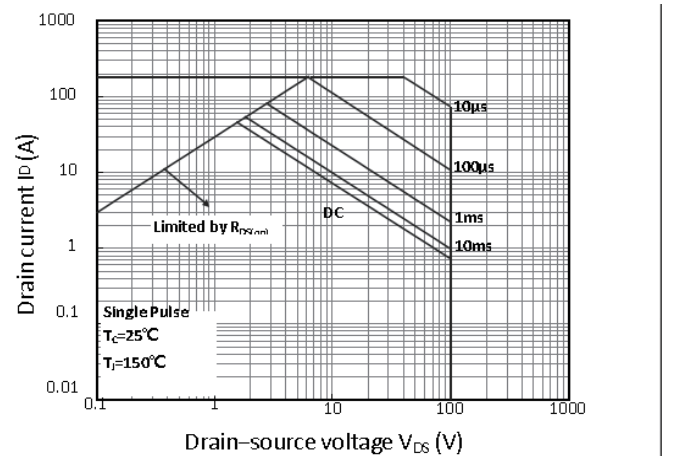
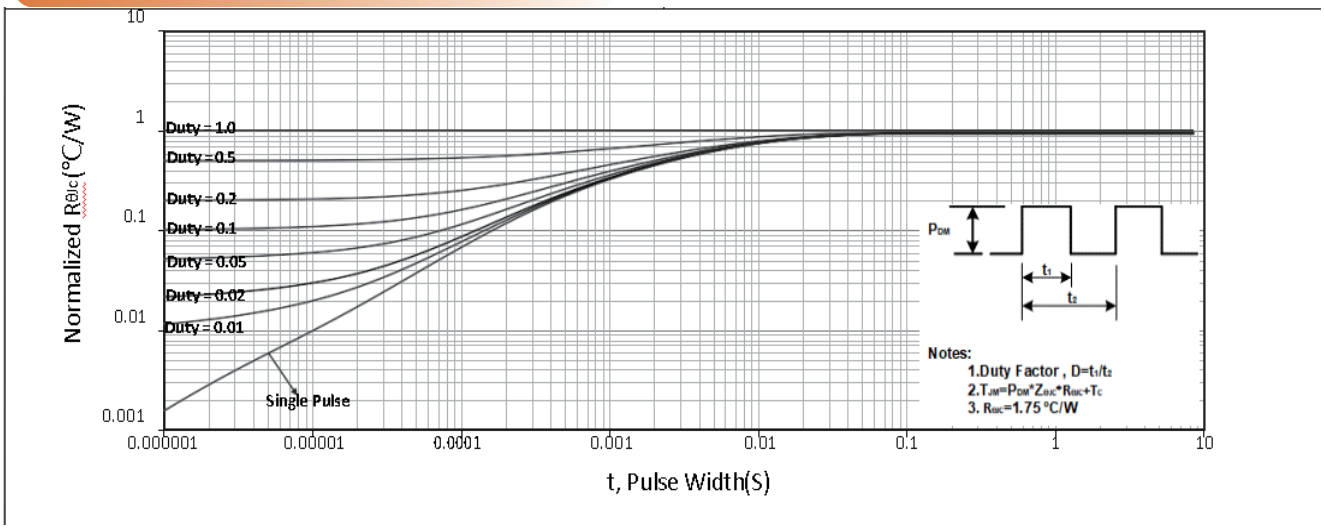


Figure 11: Normalized Maximum Transien



Test Circuit and Waveform

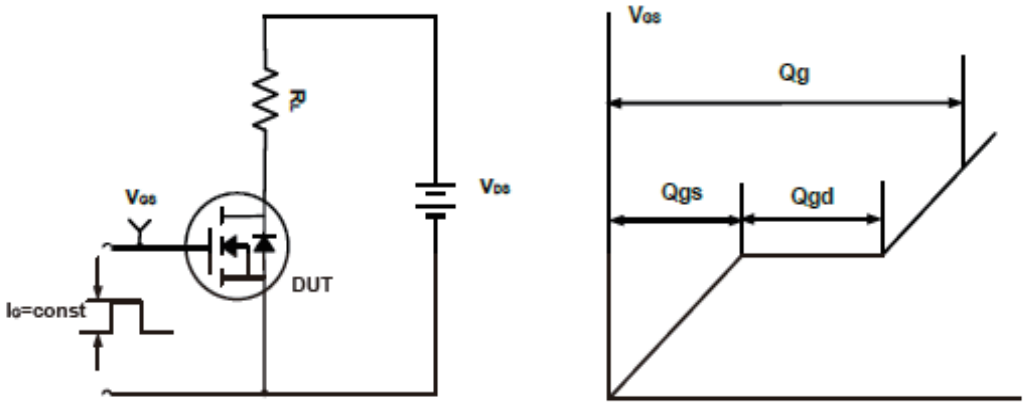


Figure A. Gate Charge Test Circuit & Waveforms

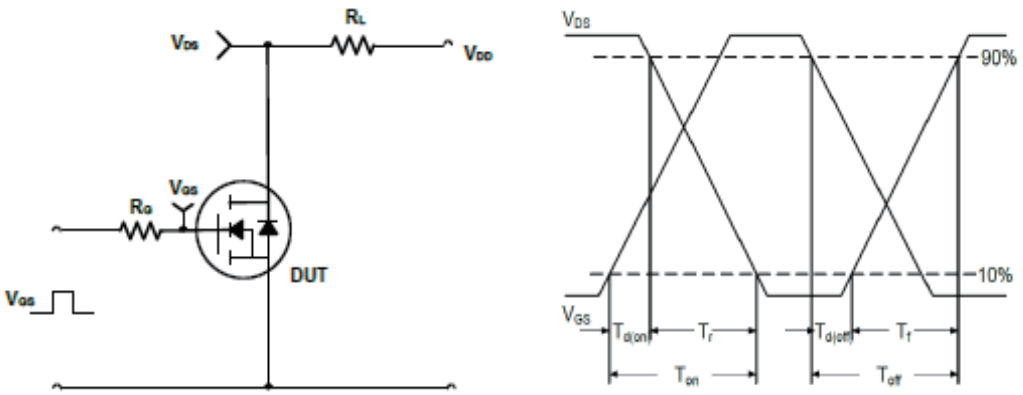


Figure B. Switching Test Circuit & Waveforms

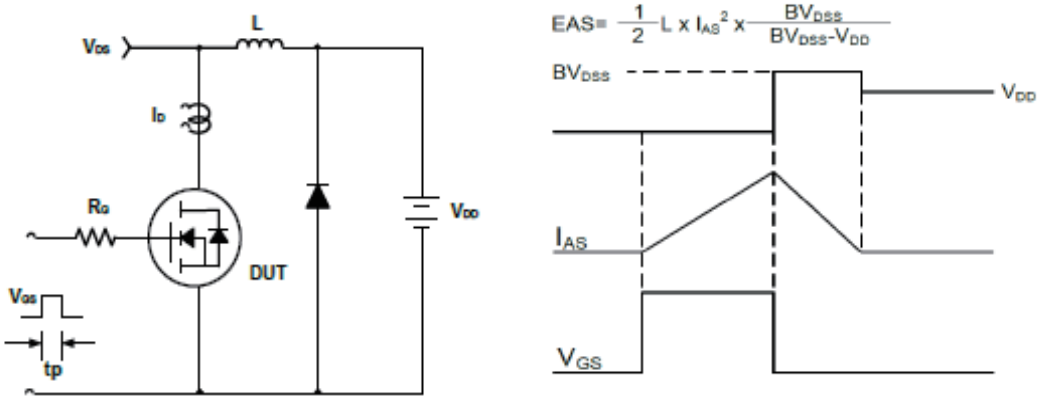
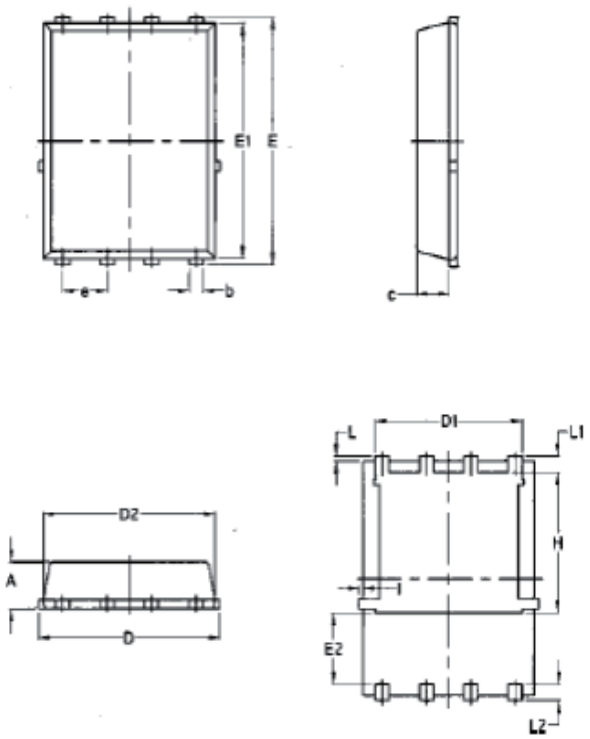


Figure C. Unclamped Inductive Switching Circuit & Waveforms

Package Mechanical Data-DFN5*6-8L-Single



Symbol	Common			
	mm		Inch	
	Mim	Max	Min	Max
A	1.03	1.17	0.0406	0.0461
b	0.34	0.48	0.0134	0.0189
c	0.824	0.0970	0.0324	0.082
D	4.80	5.40	0.1890	0.2126
D1	4.11	4.31	0.1618	0.1697
D2	4.80	5.00	0.1890	0.1969
E	5.95	6.15	0.2343	0.2421
E1	5.65	5.85	0.2224	0.2303
E2	1.60	/	0.0630	/
e	1.27 BSC		0.05 BSC	
L	0.05	0.25	0.0020	0.0098
L1	0.38	0.50	0.0150	0.0197
L2	0.38	0.50	0.0150	0.0197
H	3.30	3.50	0.1299	0.1378
I	/	0.18	/	0.0070

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