

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
300V	16mΩ@10V	105A



合肥矽普半导体

Siliup Semiconductor Technology Co., Ltd

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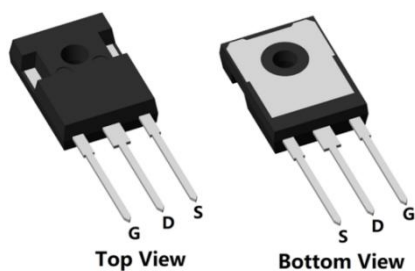
Feature

- Fast Switching
- Low Gate Charge and Rdson
- 100% Single Pulse avalanche energy Test

Applications

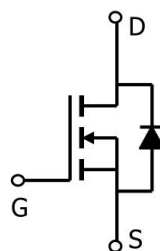
- PWM Application
- Hard switched and high frequency circuits
- Power Management

Package

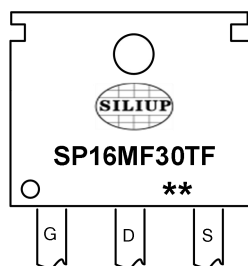


TO-247(1:G 2:D 3:S)

Circuit diagram



Marking



SP16MF30TF : Product code
****** : Week code

Order Information

Device	Package	Unit/Tube
SP16MF30TF	TO-247	30

Absolute maximum ratings (Ta=25°C, unless otherwise noted)

Parameter	Symbol	Rating	Unit
Drain source voltage	V_{DS}	300	V
Gate source voltage	V_{GS}	± 30	V
Continuous drain current (Tc=25°C)	I_D	105	A
Continuous drain current (Tc=100°C)	I_D	70	A
Pulsed drain current	I_{DM}	420	A
Single pulsed avalanche energy ¹	E_{AS}	1126	mJ
Power dissipation (Tc=25°C)	P_D	289	W
Thermal resistance Junction-to-case	$R_{\theta JC}$	0.43	°C/W
Storage Temperature Range	T_{STG}	-55 to 150	°C
Operating Junction Temperature Range	T_J	-55 to 150	°C

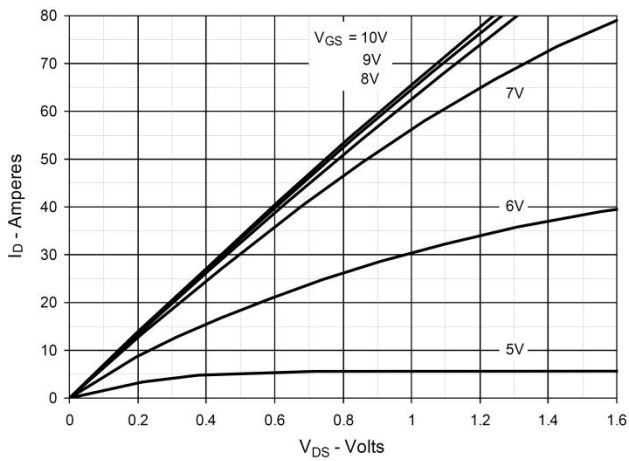
Electrical characteristics (Ta=25°C, unless otherwise noted)

Characteristics	Symbol	Test Condition	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	B _V DSS	VGS = 0V, ID = 250μA	300	-	-	V
Drain Cut-Off Current	IDSS	VDS = 240V, VGS = 0V	-	-	1	μA
Gate Leakage Current	IGSS	VGS = ±30V, VDS = 0V	-	-	±100	nA
Gate Threshold Voltage	VGS(th)	VDS = VGS, ID = 250μA	3	4	5	V
Drain-Source ON Resistance	RDS(ON)	VGS = 10V, ID = 35A	-	16	20	mΩ
Dynamic Characteristics						
Input Capacitance	Ciss	VDS =50V, VGS = 0V, f = 1.0MHz	-	5408	-	pF
Output Capacitance	Coss		-	824	-	
Reverse Transfer Capacitance	Crss		-	2.6	-	
Switching Characteristics						
Total Gate Charge	Qg	VDS=100V , VGS=10V , ID=40A	-	83	-	nC
Gate-Source Charge	Qgs		-	25	-	
Gate-Drain Charge	Qgd		-	29	-	
Turn-On Delay Time	td(on)	VGS = 10V, VDS = 100V, ID=40A , RG = 20Ω	-	23	-	nS
Rise Time	tr		-	25	-	
Turn-Off Delay Time	td(off)		-	88	-	
Fall Time	tf		-	13	-	
Drain-Source Body Diode Characteristics						
Diode Forward Voltage	VSD	VGS=0V , IS=1A , TJ=25℃	-	-	1.2	V
Maximum Body-Diode Continuous Current	IS		-	-	105	A
Reverse Recovery Time	Trr	VR=100V, IS=40A, di/dt=100A/us	-	108	-	nS
Reverse Recovery Charge	Qrr		-	0.92	-	uC

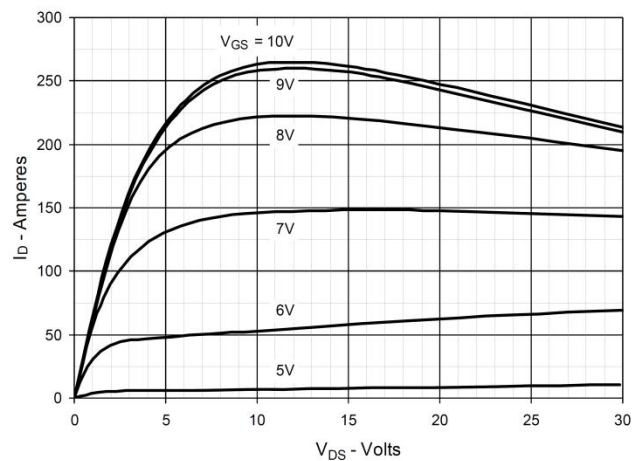
Note :

1. The test condition is $V_{DD} = 50V, V_{GS} = 10V, L = 0.5mH, RG = 25\Omega$

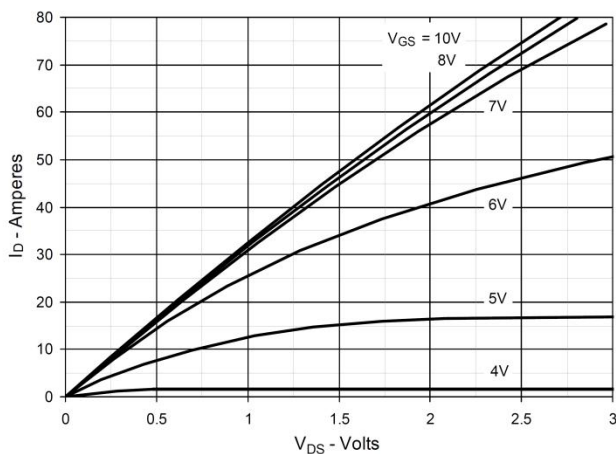
Typical Characteristics



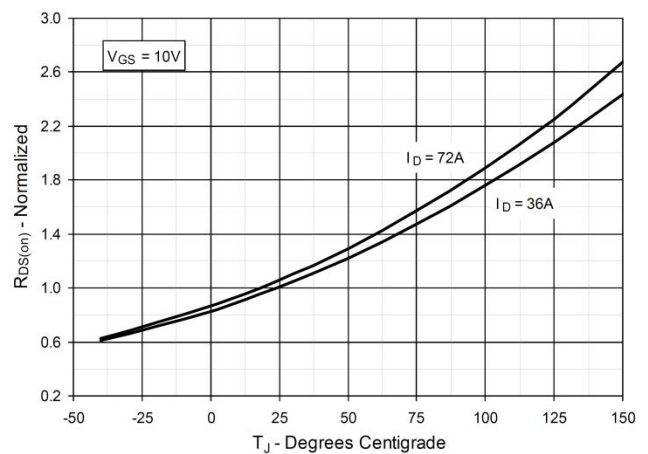
Output Characteristics



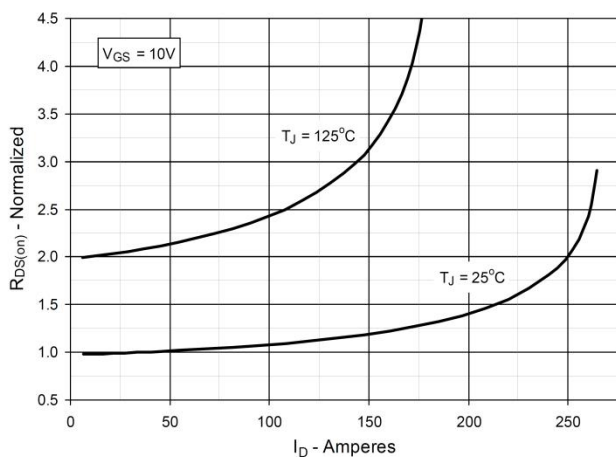
Extended Output Characteristics



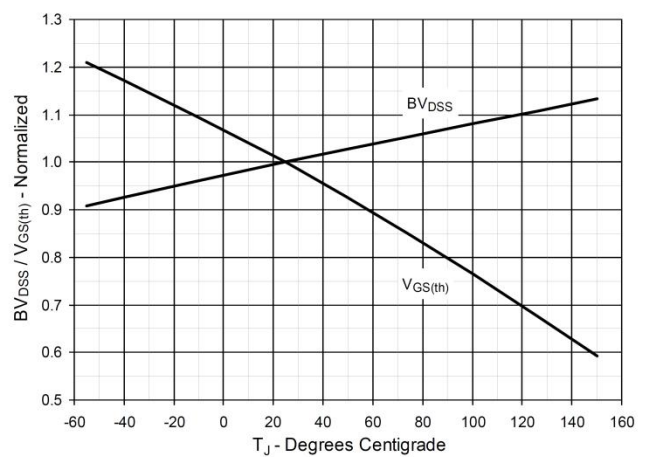
Output Characteristics



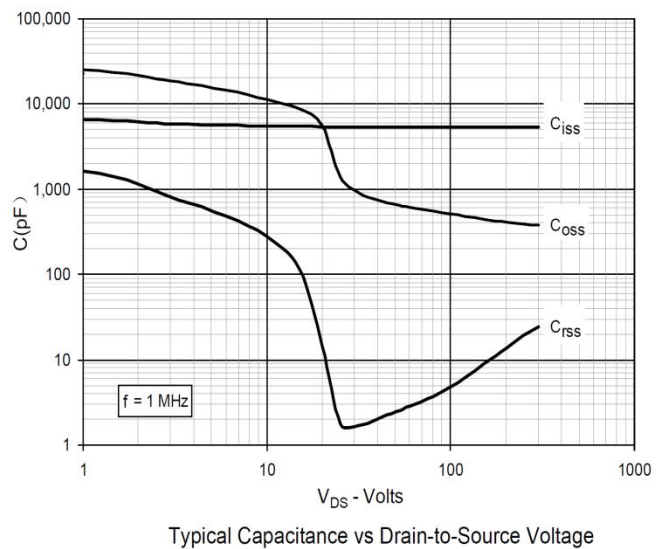
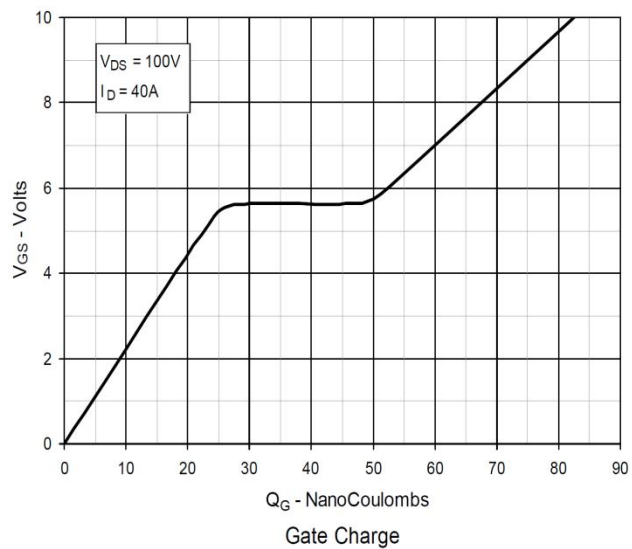
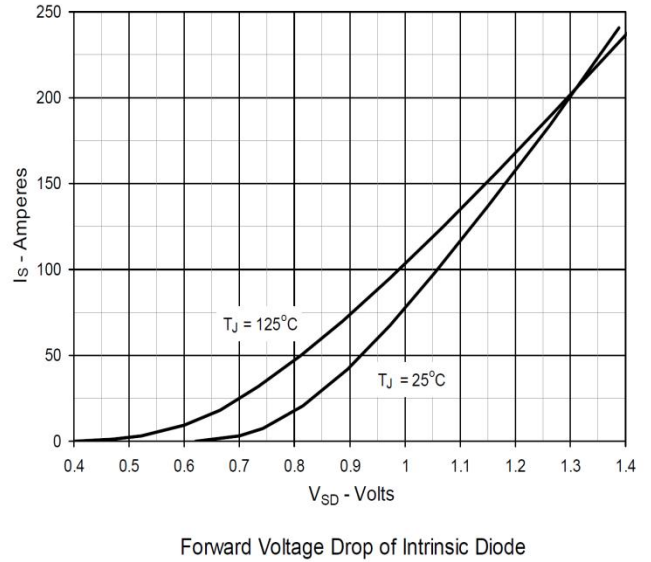
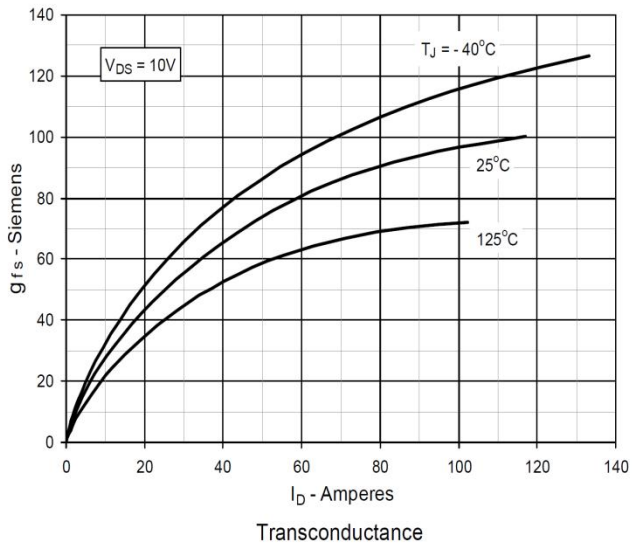
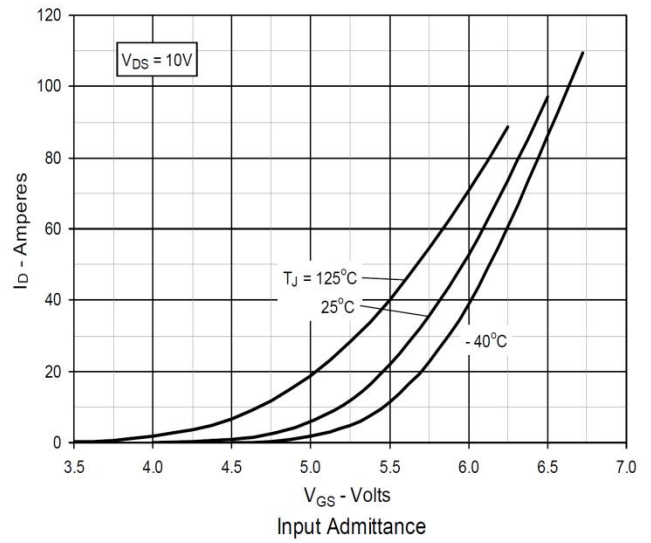
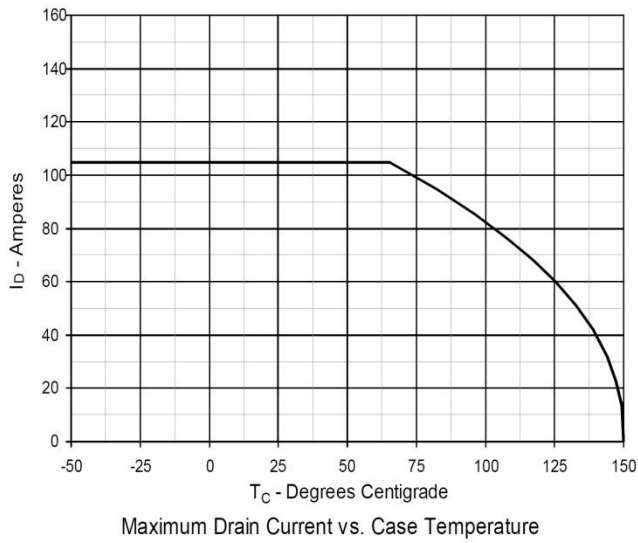
$R_{DS(on)}$ vs. Junction Temperature

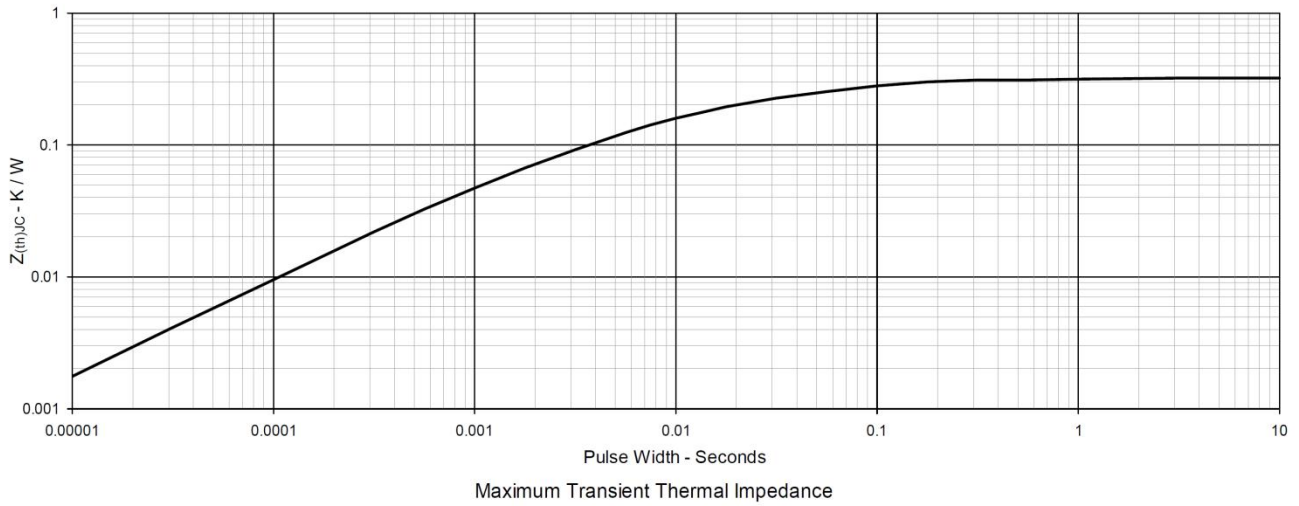
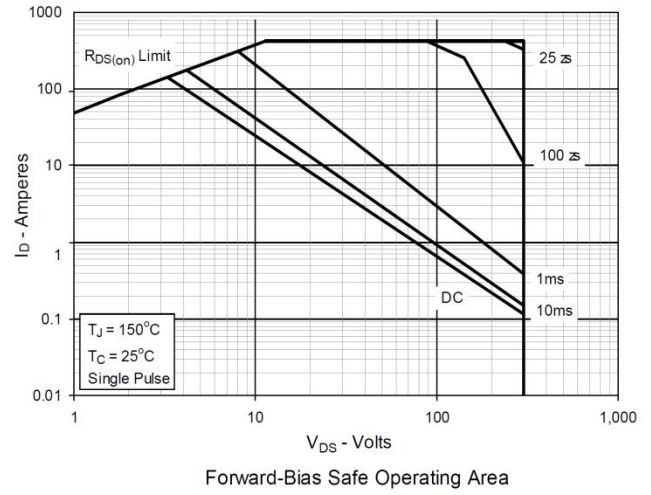
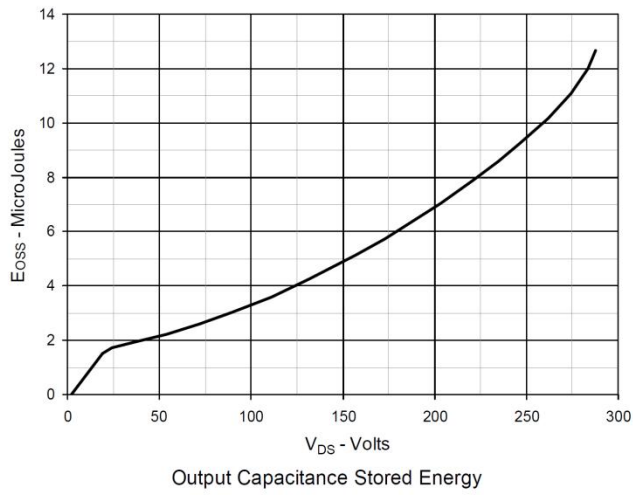


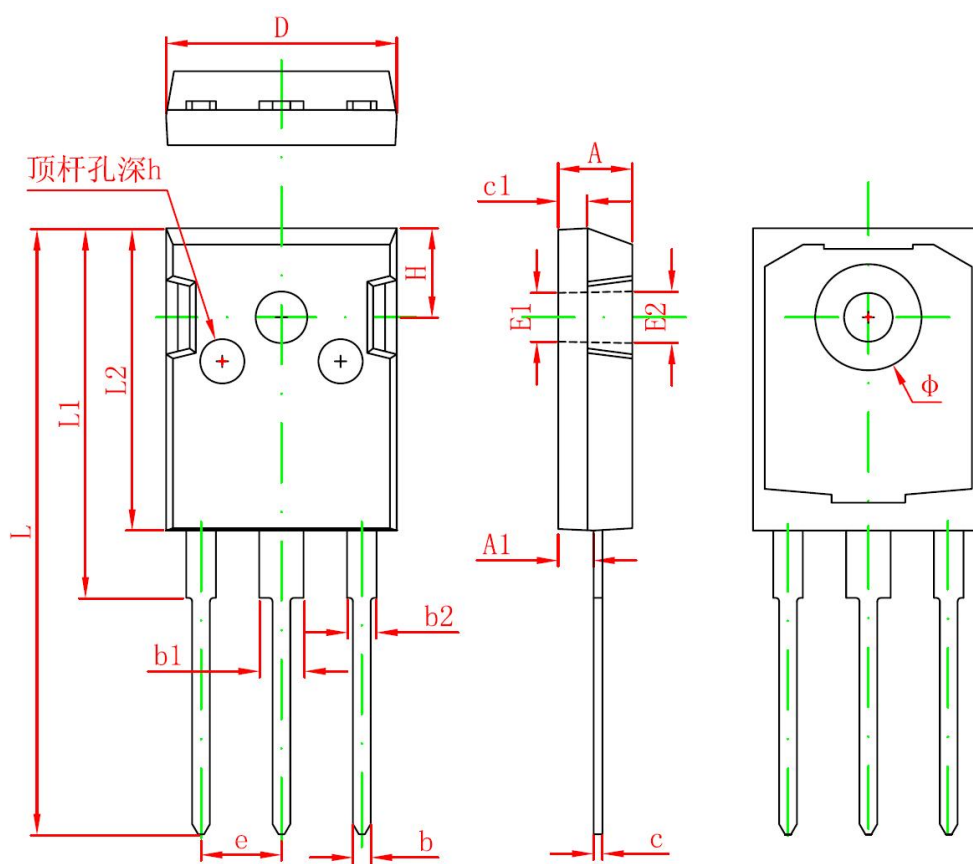
$R_{DS(on)}$ vs. Drain Current



Normalized Breakdown & Threshold Voltages vs. Junction Temperature





TO-247 Package Information


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.850	5.150	0.191	0.200
A1	2.200	2.600	0.087	0.102
b	1.000	1.400	0.039	0.055
b1	2.800	3.200	0.110	0.126
b2	1.800	2.200	0.071	0.087
c	0.500	0.700	0.020	0.028
c1	1.900	2.100	0.075	0.083
D	15.450	15.750	0.608	0.620
E1	3.500 REF.		0.138 REF.	
E2	3.600 REF.		0.142 REF.	
L	40.900	41.300	1.610	1.626
L1	24.800	25.100	0.976	0.988
L2	20.300	20.600	0.799	0.811
Φ	7.100	7.300	0.280	0.287
e	5.450 TYP.		0.215 TYP.	
H	5.980 REF.		0.235 REF.	
h	0.000	0.300	0.000	0.012