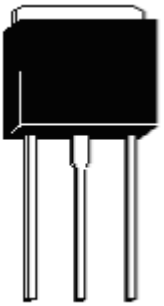
N -Channel Logic Level Enhancement Mode Power MOSFET

Features:

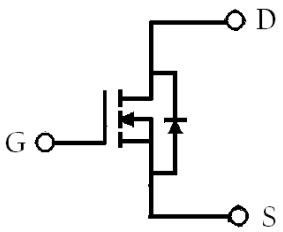
- Low Gate Charge
- Simple Drive Requirement
- Pb-free lead plating package

TO-251



G D S

BV_{DSS}	**150V**
I_D@V_{GS}=10V, T_C=25°C	**20A**
$R_{DS(ON)}$@V_{GS}=10V, I_D=15A	**60mΩ (typ)**
$R_{DS(ON)}$@V_{GS}=5V, I_D=10A	**59mΩ (typ)**
$R_{DS(ON)}$@V_{GS}=3V, I_D=3A	**60mΩ (typ)**



G：Gate D：Drain
S：Source

Ordering Information

Device	Package	Shipping
KIN6515	TO-251 (RoHS compliant and halogen-free package)	80 pcs/tube, 50 tubes/box

Absolute Maximum Ratings (T_C=25°C, unless otherwise noted)

Parameter	Symbol	Limits	Unit
Drain-Source Voltage	V_{DS}	150	V
Gate-Source Voltage	V_{GS}	±16	
Continuous Drain Current @ V_{GS}=10V, T_C=25°C	I_D	20	A
Continuous Drain Current @ V_{GS}=10V, T_C=100°C		14	
Pulsed Drain Current *1	I_{DM}	60	
Avalanche Current	I_{AS}	20	
Avalanche Energy @ L=0.47mH, I_D=20A, R_G=25Ω *3	E_{AS}	94	mJ
Repetitive Avalanche Energy @ L=0.05mH *2	E_{AR}	2.5	
Total Power Dissipation @T_C=25℃	P_D	60	W
Total Power Dissipation @T_C=100℃		30	
Operating Junction and Storage Temperature Range	Tj, Tstg	-55~+175	°C

Note : *1. Pulse width limited by maximum junction temperature.
*2. Duty cycle ≤ 1%.
*3. 100% tested by conditions of L=0.47mH, I_{AS}=12A, V_{GS}=10V, V_{DD}=50V

Thermal Data

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-case, max	$R_{\theta JC}$	2.5	°C/W
Thermal Resistance, Junction-to-ambient, max	$R_{\theta JA}$	100	

Characteristics (Tc=25°C, unless otherwise specified)

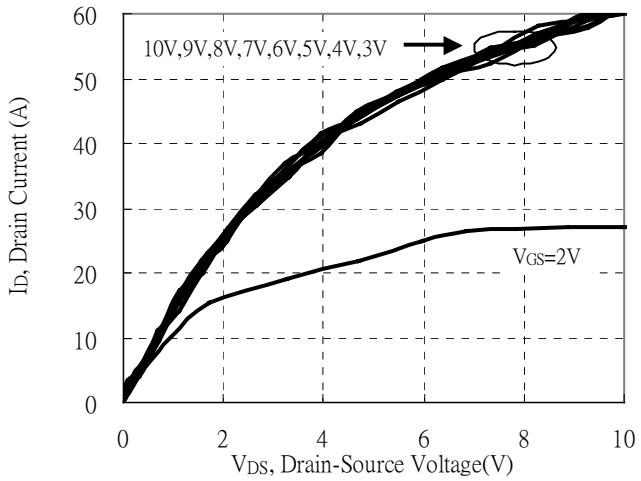
Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static					
BV_{DSS}	150	-	-	V	V_{GS}=0V, I_D=250μA
$V_{GS(th)}$	0.45	-	1.20		V_{DS} =V_{GS}, I_D=250μA
I_{GSS}	-	-	±100	nA	V_{GS}=±12V, V_{DS}=0V
I_{DSS}	-	-	1	μA	V_{DS} =120V, V_{GS} =0V
	-	-	25		V_{DS} =100V, V_{GS} =0V, T_J=125°C
$R_{DS(ON)}$ *1	-	60	75	mΩ	V_{GS} =10V, I_D=15A
	-	59	75		V_{GS} =5V, I_D=10A
	-	60	75		V_{GS} =3V, I_D=3A
G_{FS} *1	-	48	-	S	V_{DS} =5V, I_D=10A
Dynamic					
Qg *1, 2	-	30	-	nC	I_D=10A, V_{DS}=80V, V_{GS}=5V
Qgs *1, 2	-	4.8	-		
Qgd *1, 2	-	16	-		
$t_{d(ON)}$ *1, 2	-	23	-	ns	V_{DS}=75V, I_D=1A, V_{GS}=4.5V, R_G=6Ω
tr *1, 2	-	22	-		
$t_{d(OFF)}$ *1, 2	-	91	-		
t_f *1, 2	-	63	-		

Ciss	-	2282	-	pF	V_{GS}=0V, V_{DS}=25V, f=1MHz
Coss	-	120	-		
Crss	-	66	-		
Source-Drain Diode					
I_S *1	-	-	20	A	
I_{SM} *3	-	-	60		
V_{SD} *1	-	0.85	1.3	V	I_F=I_S, V_{GS}=0V
trr	-	50	-	ns	I_F=20A, dI_F/dt=100A/μs
Qrr	-	120	-	nC	

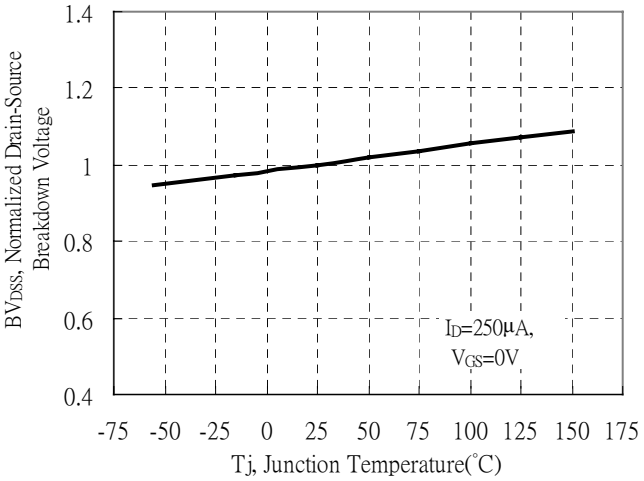
Note : *1.Pulse Test : Pulse Width ≤300μs, Duty Cycle≤2%
*2.Independent of operating temperature
*3.Pulse width limited by maximum junction temperature.

Typical Characteristics

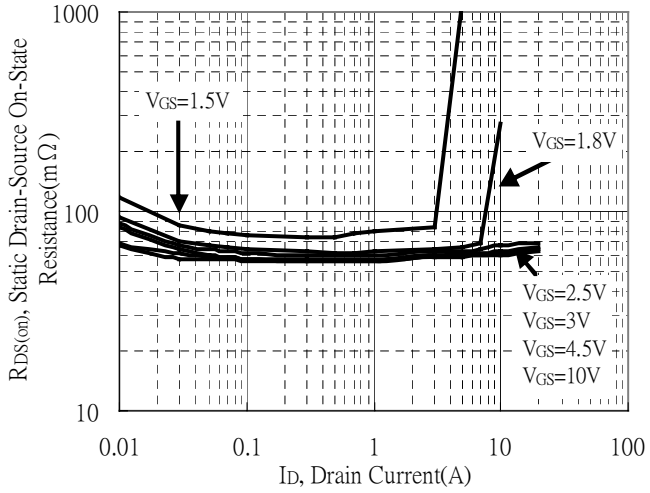
Typical Output Characteristics



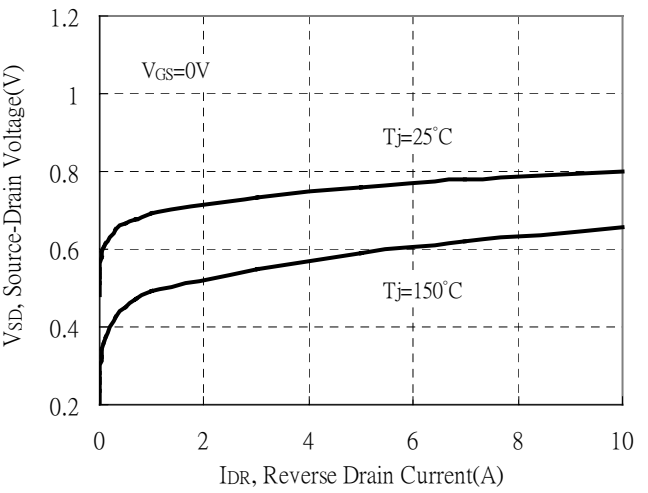
Brekdown Voltage vs Ambient Temperature



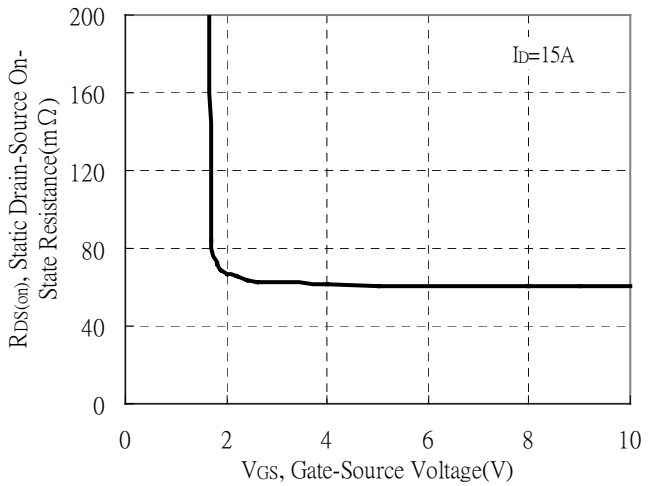
Static Drain-Source On-State resistance vs Drain Current



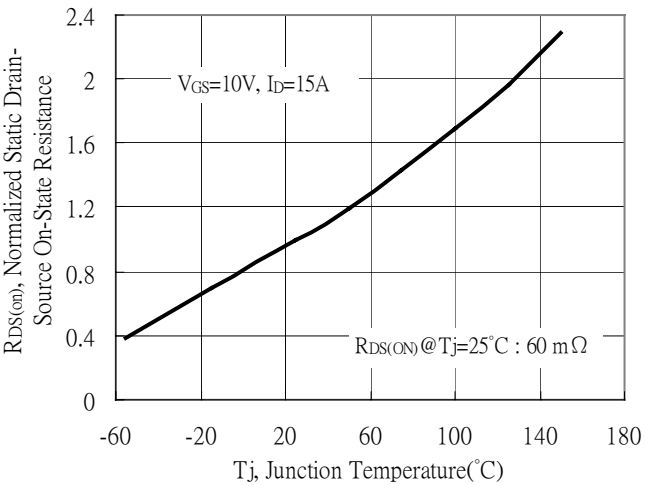
Reverse Drain Current vs Source-Drain Voltage



Static Drain-Source On-State Resistance vs Gate-Source Voltage

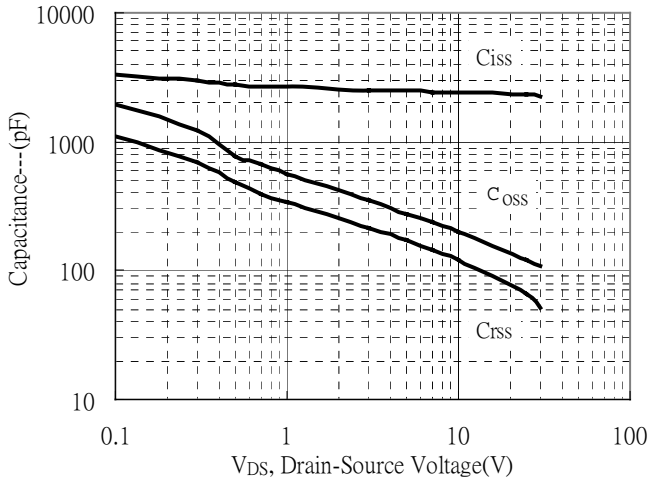


Drain-Source On-State Resistance vs Junction Tempearture

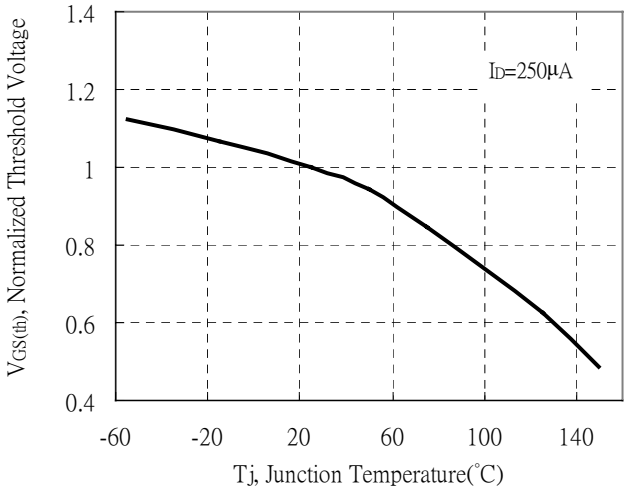


Typical Characteristics (Cont.)

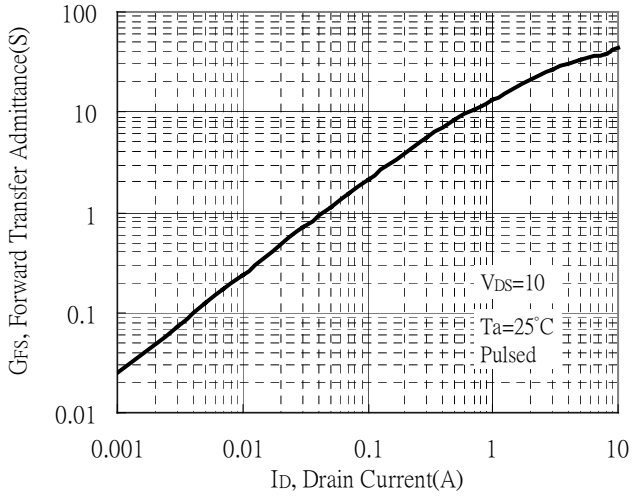
Capacitance vs Drain-to-Source Voltage



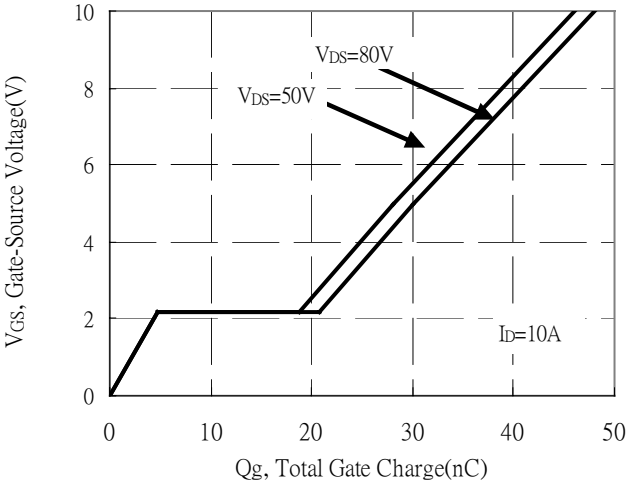
Threshold Voltage vs Junction Tempearture



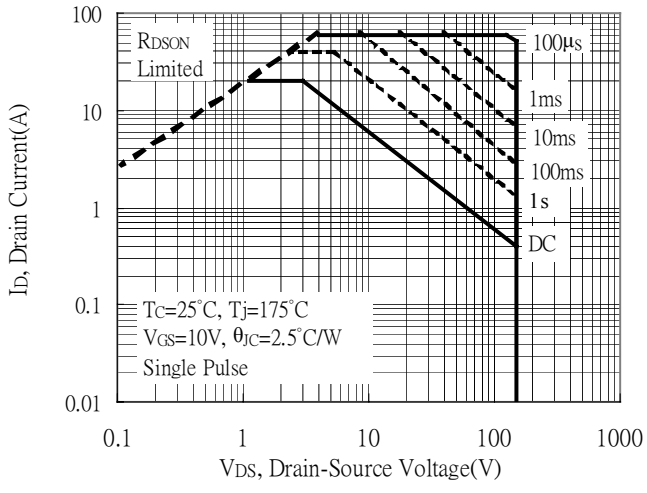
Forward Transfer Admittance vs Drain Current



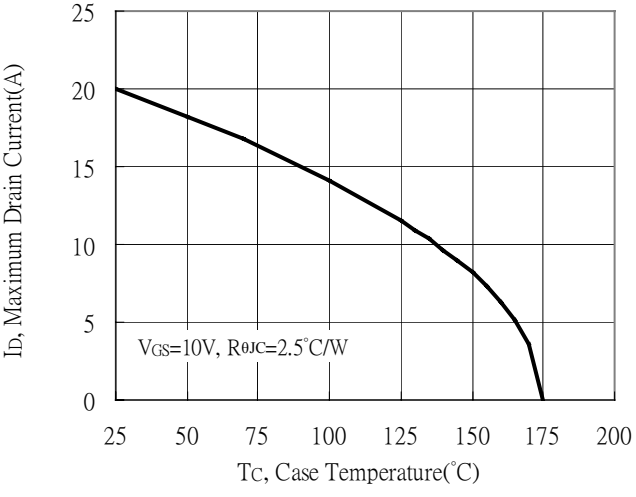
Gate Charge Characteristics



Maximum Safe Operating Area

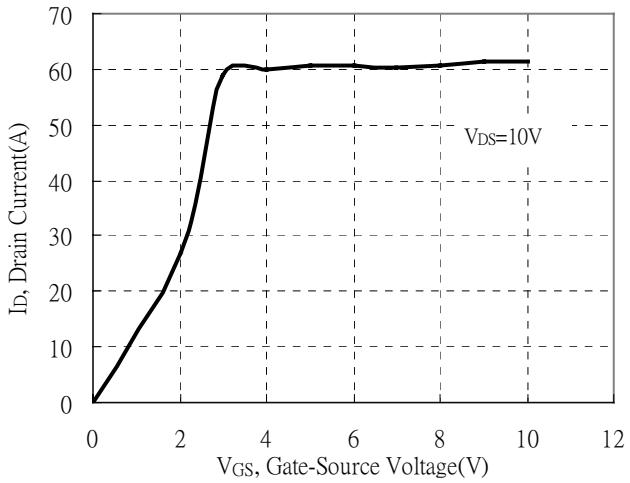


Maximum Drain Current vs Case Temperature

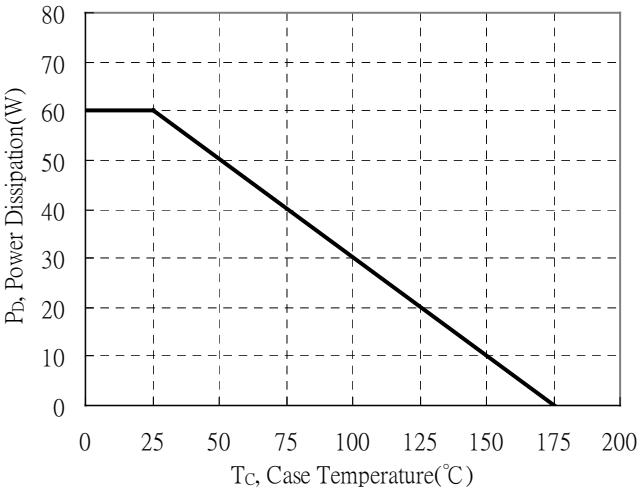


Typical Characteristics (Cont.)

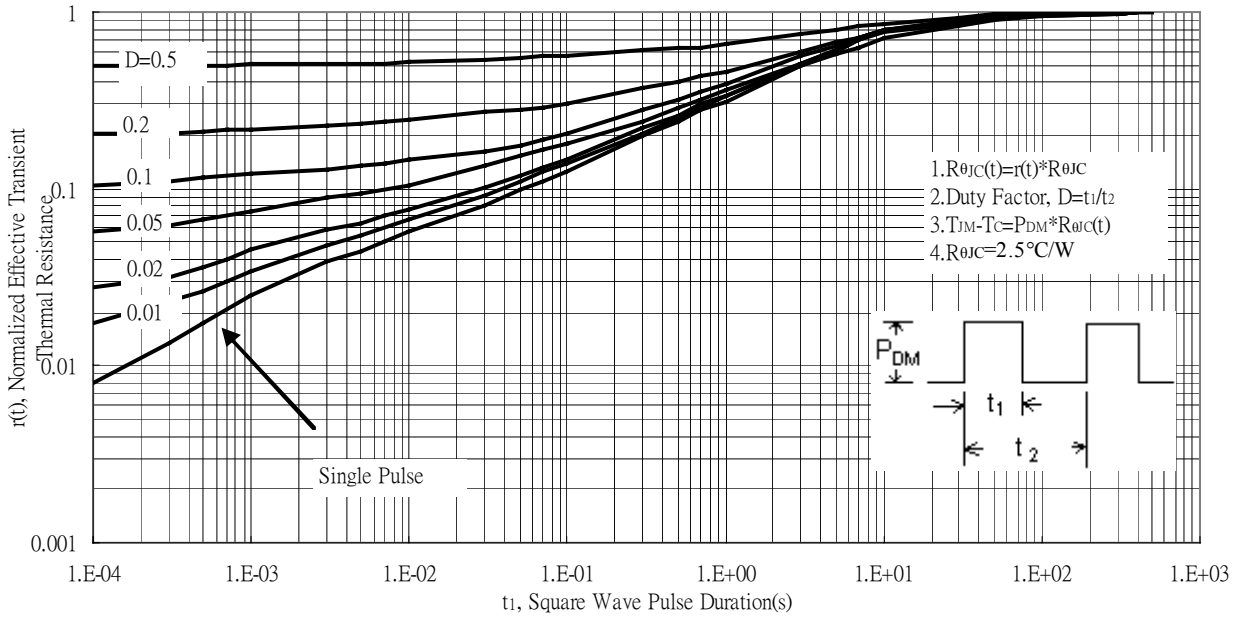
Typical Transfer Characteristics



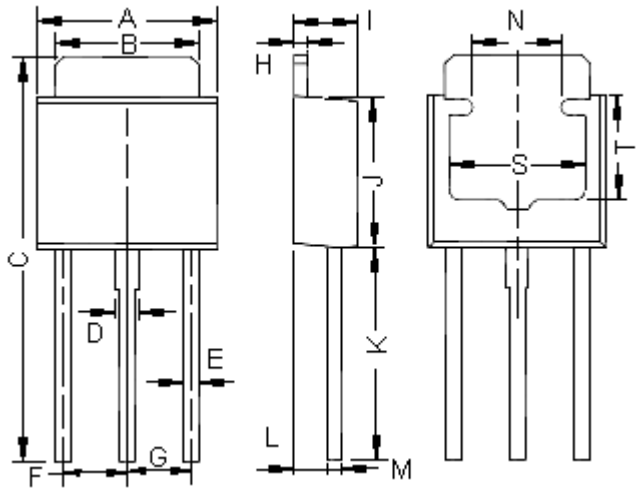
Power Derating Curve



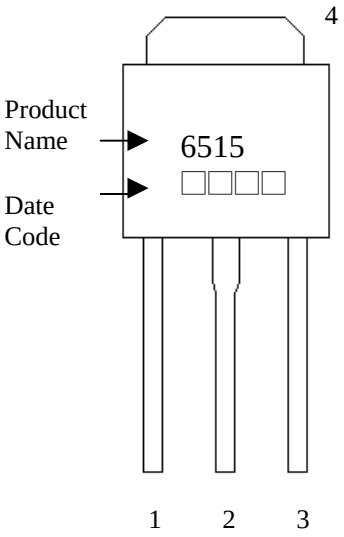
Transient Thermal Response Curves



TO-251 Dimension



Marking:



Style: Pin 1.Gate 2.Drain 3.Source
4 Drain

3-Lead TO-251 Plastic Package

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.2500	0.2618	6.35	6.65	I	0.0866	0.0945	2.20	2.40
B	0.2047	0.2126	5.20	5.40	J	0.2126	0.2244	5.40	5.70
C	0.5709	0.5866	14.50	14.90	K	0.2992	0.3071	7.60	7.80
D	0.0276	0.0354	0.70	0.90	L	0.0453	0.0492	1.15	1.25
E	0.0199	0.0276	0.50	0.70	M	0.0169	0.0228	0.43	0.58
F	0.0886	0.0925	2.25	2.35	N	0.1181 REF		3.00 REF	
G	0.0886	0.0925	2.25	2.35	S	0.1969 REF		5.00 REF	
H	0.0169	0.0228	0.43	0.58	T	0.1496 REF		3.80 REF	