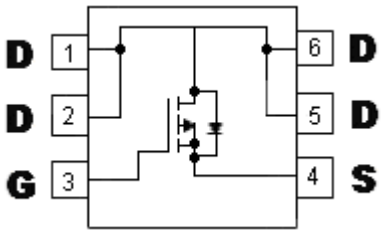
P-Channel Enhancement Mode MOSFET

Features:

- Simple drive requirement
- Low on-resistance
- Small package outline
- Pb-free lead plating package

Equivalent Circuit



G：Gate S：Source D：Drain

Description:

The KWP658G6 is a P-channel enhancement-mode MOSFET, providing the designer with the best combination of fast switching, ruggedized device design, low on-resistance and cost effectiveness. The TSOP-6 package is universally preferred for all commercial-industrial surface mount applications.

BV_{DSS}	-30V
I_D	-5.2A
R_{DSON}@V_{GS}=-10V, I_D=-5A	39mΩ (typ.)
R_{DSON}@V_{GS}=-4.5V, I_D=-3.7A	61mΩ (typ.)
R_{DSON}@V_{GS}=-4V, I_D=-3A	69mΩ (typ.)
R_{DSON}@V_{GS}=-3V, I_D=-1.5A	116mΩ (typ.)

Ordering Information

Device	Package	Shipping
KWP658G6	TSOP-6 (Pb-free lead plating and halogen-free package)	3000 pcs / Tape & Reel

Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Drain-Source Voltage	V_{DS}	-30	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current @V_{GS}=-4.5V, T_A=25 °C (Note 1)	I_D	-5.2	A
Continuous Drain Current @ V_{GS}=-4.5V, T_A=70 °C (Note 1)	I_D	-4.2	A
Pulsed Drain Current (Note 2, 3)	I_{DM}	-30	A
Total Power Dissipation @ T_A=25 °C	Pd	1.6	W
Linear Derating Factor		0.013	W / °C
Operating Junction and Storage Temperature Range	Tj ; Tstg	-55~+150	°C
Thermal Resistance, Junction-to-Ambient (Note 1)	$R_{\theta JA}$	78	°C/W
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	25	

Note : 1.Surface mounted on 1 in² copper pad of FR-4 board. 156℃/W when mounted on minimum copper pad.
2.Pulse width limited by maximum junction temperature.
3.Pulse Width ≤300μs, Duty Cycle≤2%

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

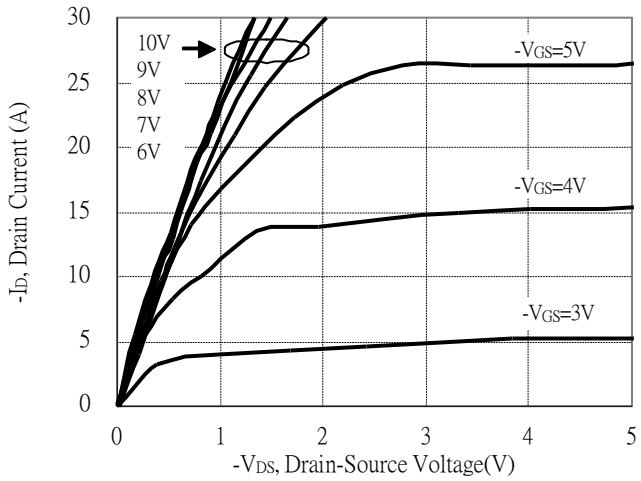
Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static					
BV_{DSS}	-30	-	-	V	V_{GS}=0V, I_D=-250μA
$\Delta BV_{DSS}/\Delta Tj$	-	-0.02	-	V/℃	Reference to 25℃, I_D=-1mA
$V_{GS(th)}$	-1	-1.6	-2.5	V	V_{DS}=V_{GS}, I_D=-250μA
I_{GSS}	-	-	±100	nA	V_{GS}=±20V, V_{DS}=0V
I_{DSS}	-	-	-1	μA	V_{DS}=-24V, V_{GS}=0V
	-	-	-10		V_{DS}=-24V, V_{GS}=0V, Tj=55℃
*$R_{DS(ON)}$	-	39	50	mΩ	I_D=-5A, V_{GS}=-10V
	-	61	75		I_D=-3.7A, V_{GS}=-4.5V
	-	69	85		I_D=-3A, V_{GS}=-4V
	-	116	150		I_D=-1.5A, V_{GS}=-3V
*G_{FS}	-	6.2	-	S	V_{DS}=-5V, I_D=-4A
	-	3.3	-	S	V_{DS}=-10V, I_D=-1.75A
Dynamic					
Ciss	-	829	-	pF	V_{DS}=-15V, V_{GS}=0, f=1MHz
Coss	-	85	-		
Crss	-	69	-		
$t_{d(ON)}$	-	17	-	ns	V_{DS}=-15V, I_D=-1A, V_{GS}=-10V, R_G=6Ω
t_r	-	12	-		
$t_{d(OFF)}$	-	24	-		
t_f	-	12	-		
Qg	-	10	-	nC	V_{DS}=-24V, I_D=-5A, V_{GS}=-5V
Qgs	-	2.6	-		
Qgd	-	4.9	-		

Source Drain Diode					
*I_S	-	-	-2	A	
*I_{SM}	-	-	-8		
*V_{SD}	-	-0.77	-1.2	V	I_S=-1.7A,V_{GS}=0V
*T_{rr}	-	28	-	ns	I_S=-1.7A,V_{GS}=0V,dI/dt=100A/μs
Q_{rr}	-	22	-	nC	

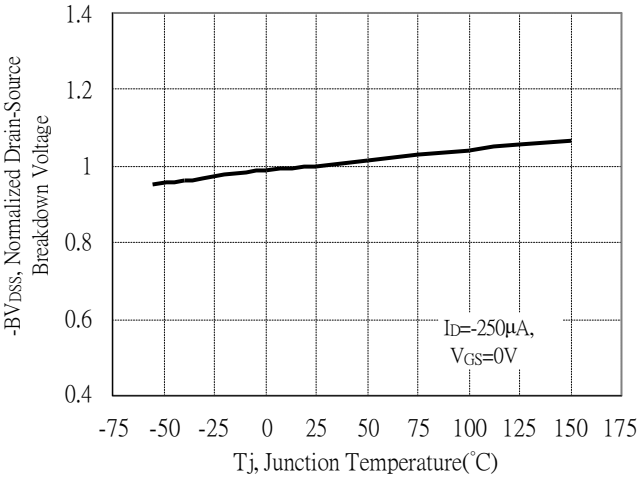
*Pulse Test : Pulse Width ≤300μs, Duty Cycle≤2%

Typical Characteristics

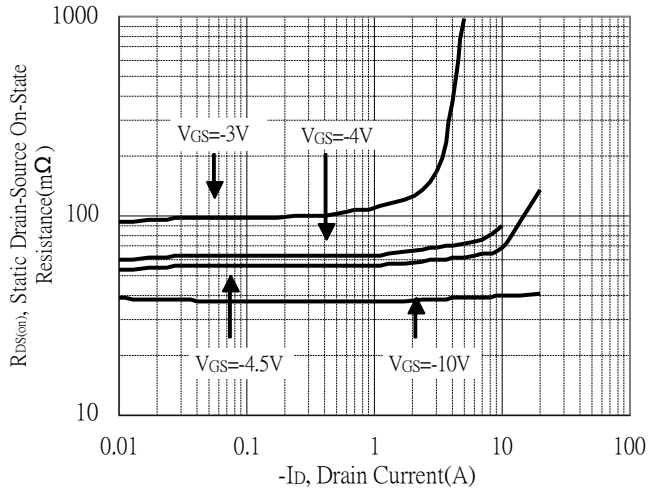
Typical Output Characteristics



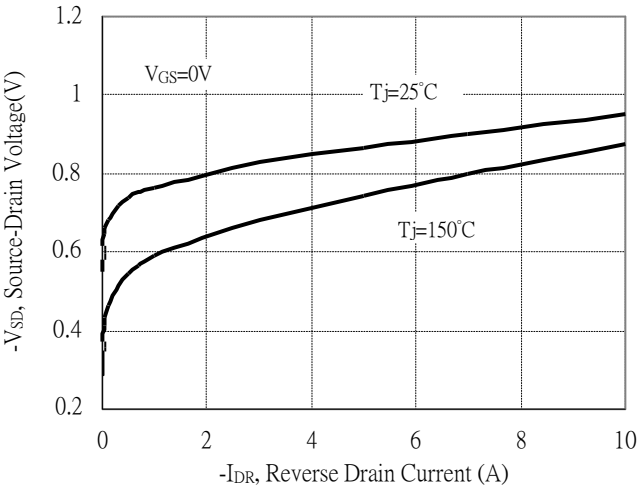
Brekdown Voltage vs Ambient Temperature



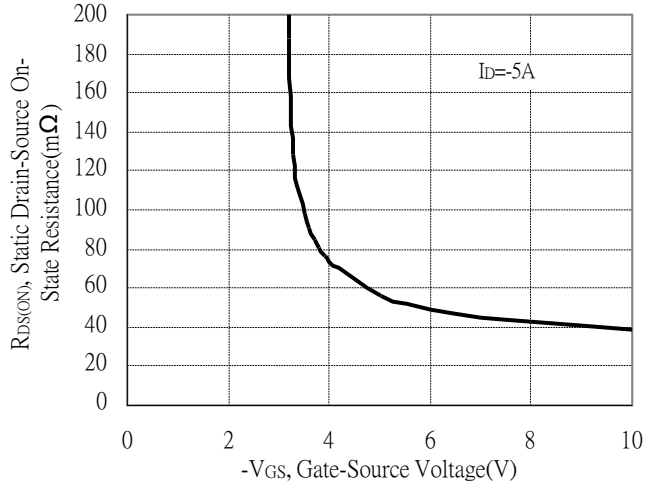
Static Drain-Source On-State resistance vs Drain Current



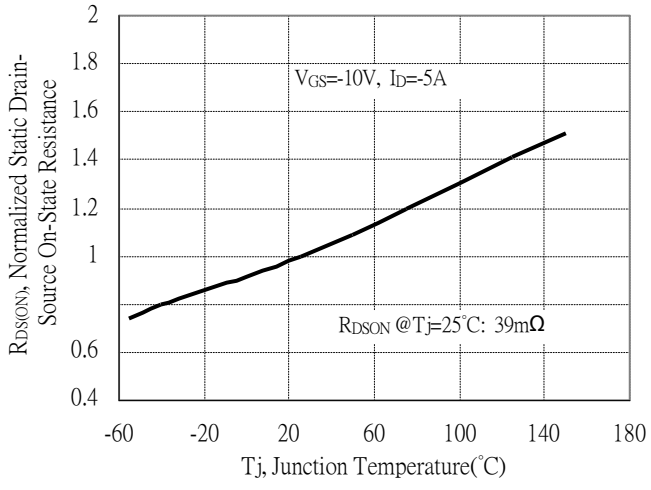
Reverse Drain Current vs Source-Drain Voltage



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

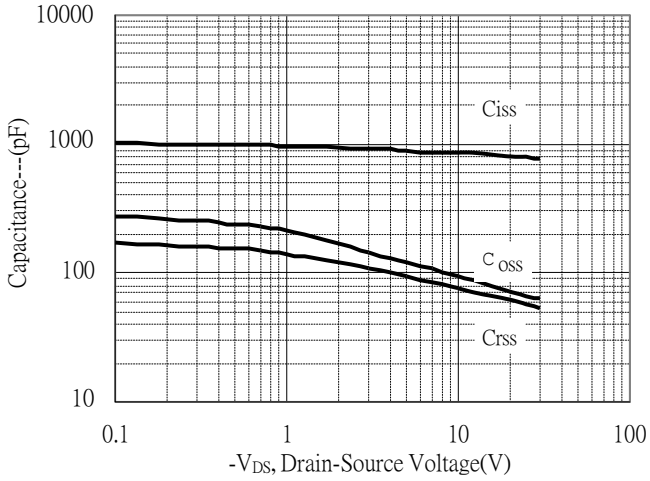


Drain-Source On-State Resistance vs Junction Tempearture

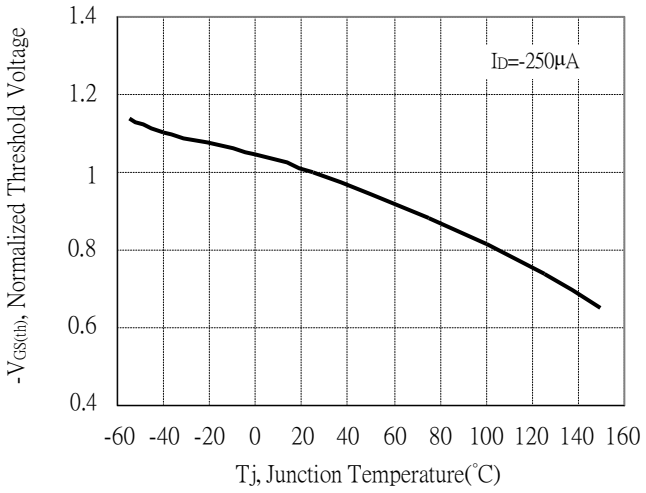


Typical Characteristics(Cont.)

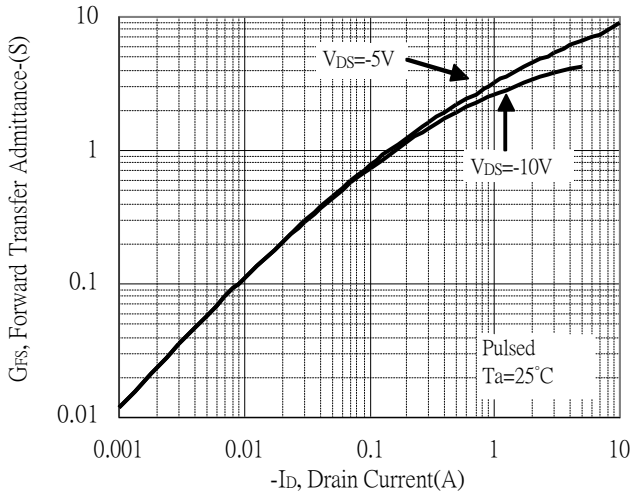
Capacitance vs Drain-to-Source Voltage



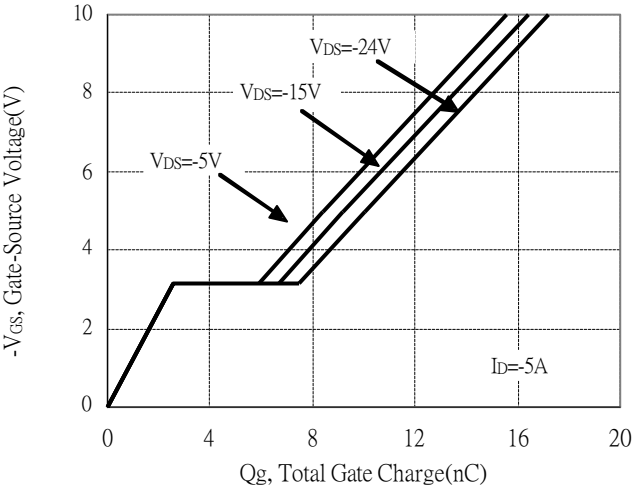
Threshold Voltage vs Junction Tempearture



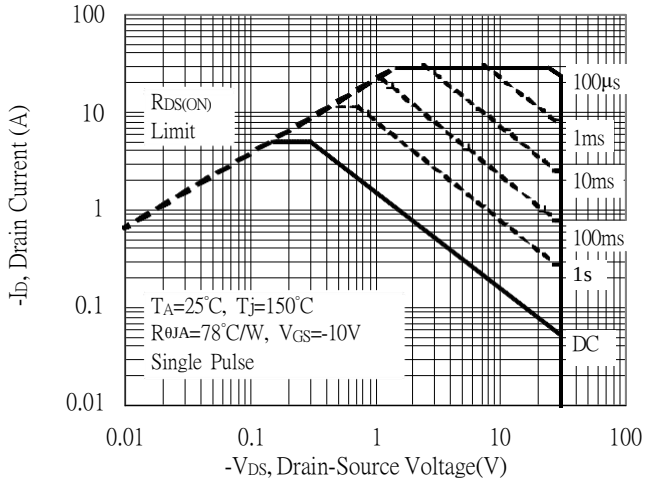
Forward Transfer Admittance vs Drain Current



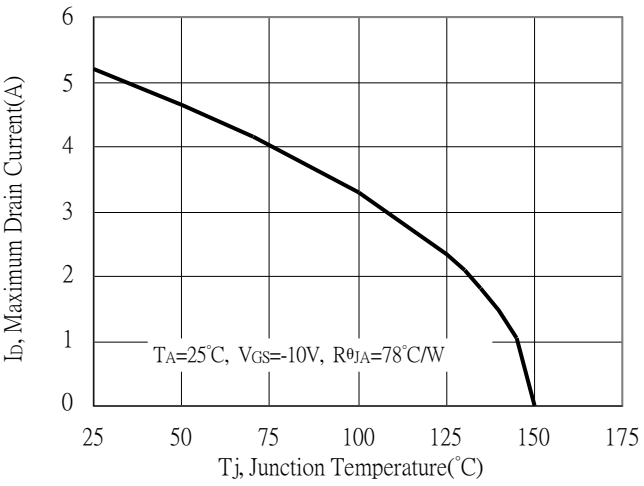
Gate Charge Characteristics



Maximum Safe Operating Area

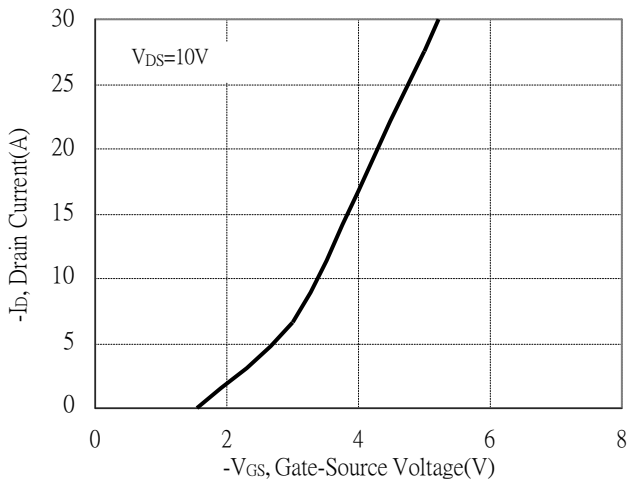


Maximum Drain Current vs JunctionTemperature

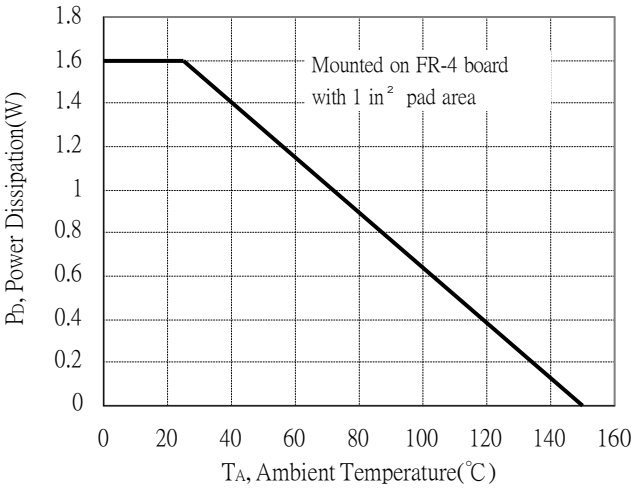


Typical Characteristics(Cont.)

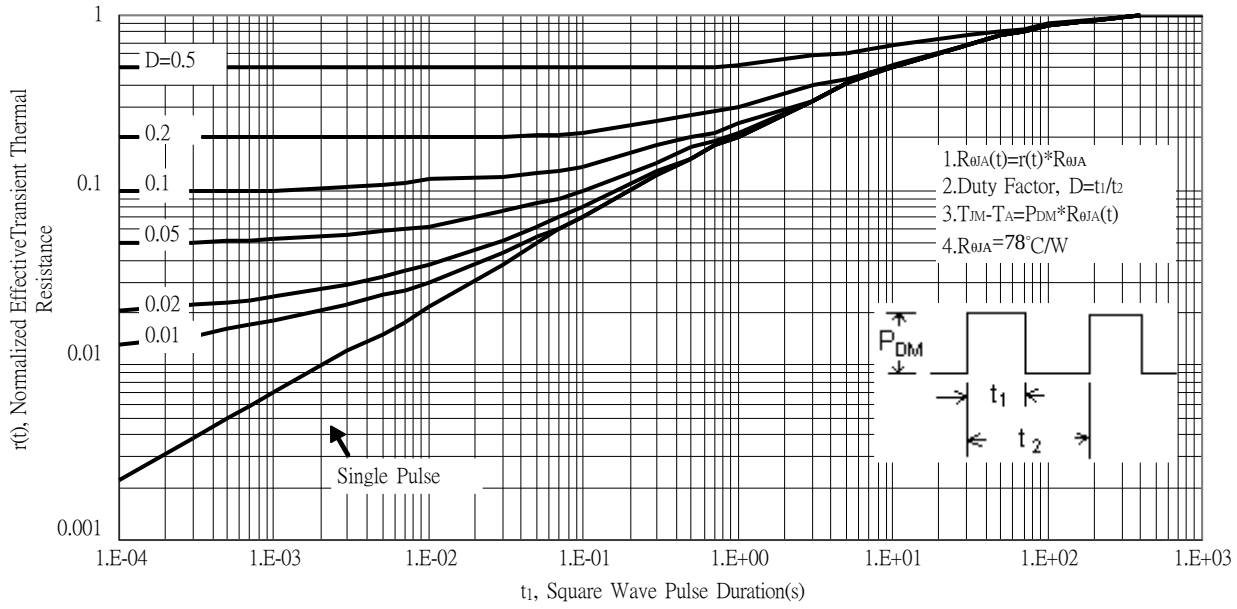
Typical Transfer Characteristics



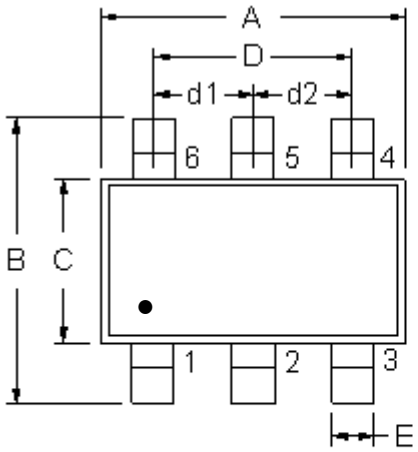
Power Derating Curve



Transient Thermal Response Curves

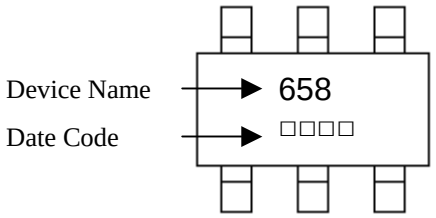


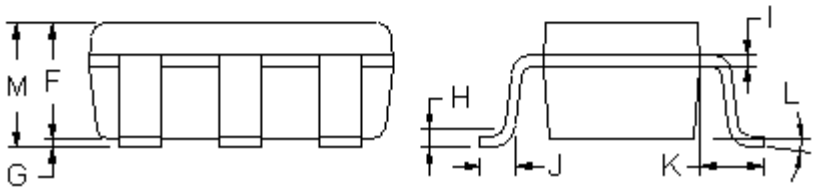
TSOP-6 Dimension



Style:
Pin 1. Drain (D)
Pin 2. Drain (D)
Pin 3. Gate (G)
Pin 4. Source (S)
Pin 5. Drain (D)
Pin 6. Drain (D)

Marking:





DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.1063	0.1220	2.70	3.10	G	0	0.0039	0	0.10
B	0.1024	0.1181	2.60	3.00	H	-	0.0098	-	0.25
C	0.0551	0.0709	1.40	1.80	I	0.0047 REF		0.12 REF	
D	0.0748 REF		1.90 REF		J	0.0177 REF		0.45 REF	
d1	0.0374 REF		0.95 REF		K	0.0236 REF		0.60 REF	
d2	0.0374 REF		0.95 REF		L	0°	10°	0°	10°
E	0.0118	0.0197	0.30	0.50	M	-	0.0433	-	1.10
F	0.0276	0.0394	0.70	1.00					