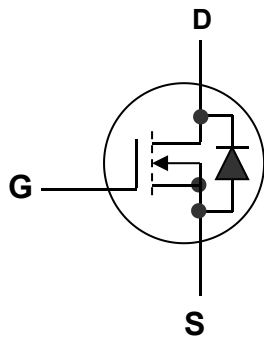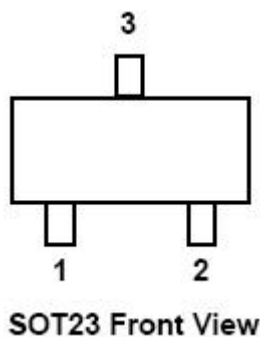## 1. Features

- $V_{DS}=20V, R_{DS(on)}=30m\Omega(max.)@V_{GS}=10V, I_D=6.0A$

- $V_{DS}=20V, R_{DS(on)}=40m\Omega(max.)@V_{GS}=4.5V, I_D=3.0A$

- $V_{DS}=20V, R_{DS(on)}=55m\Omega(max.)@V_{GS}=2.5V, I_D=2.0A$

2.Symbol

SOT23 Front View

Pin	Function
1	Gate
2	Source
3	Drain

3. Absolute maximum ratings

($T_A=25°C$,unless otherwise noted)

Parameter	Symbol	Rating	Units
Drain-source voltage	V_{DS}	20	V
Gate-source voltage	V_{GS}	±10	V
Drain current continuous *T_J=125 ºC	I_D	6.0	A
Drain current pulsed	I_{DM}	20	
Power dissipation*	P_D	1.25	W
Thermal resistance, junction-ambient	R_{thJA}	100	ºC/W
Junction and storage temperature range	T_J, T_{STG}	-55 to150	ºC

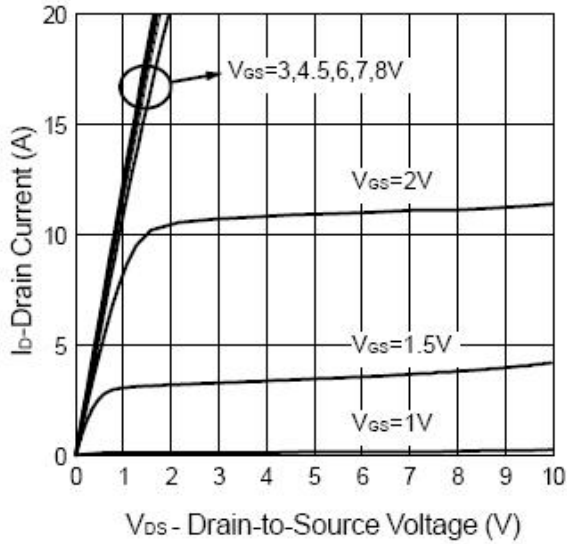 *Surface mounted on FR 4 board, t≤10 sec.

4. Electrical characteristics

(T_A=25°C,unless otherwise noted)

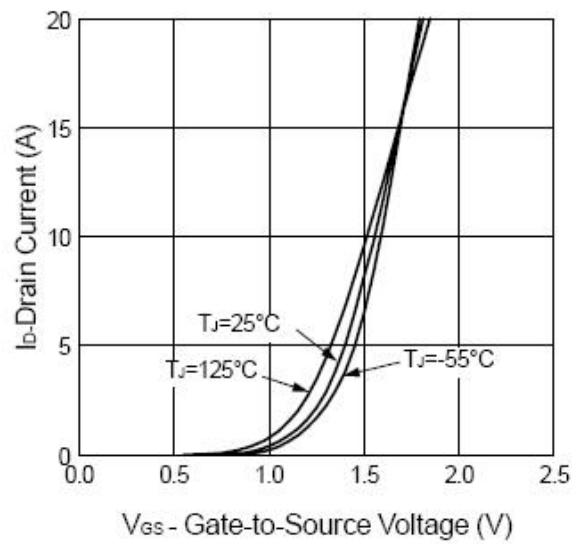| Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Drain-source breakdown voltage	BV_{DSS}	V_{GS}=0V,I_D=250μA	20	-	-	V
Zero gate voltage drain current	I_{DSS}	V_{DS}=16V, V_{GS}=0V	-	-	1	μA
Gate- body leakage	I_{GSS}	V_{GS}=±10V, V_{DS}=0V	-	-	±100	nA
Gate threshold voltage*	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	0.5	0.78	1.0	V
On state drain current	$I_{D(on)}$	V_{DS}=5V, V_{GS}=4.5V	5	-	-	A
Static drain-source on-resistance*	$R_{DS(on)}$	V_{GS}=10V,I_D=6.0A	-	25	30	mΩ
		V_{GS}=4.5V,I_D=3.0A	-	35	40	
		V_{GS}=2.5V,I_D=2.0A	-	52	55	
Forward transconductance*	gfs	V_{DS}=15V, I_D=5A	30	-	-	S
Input capacitance	C_{iss}	V_{DS}=15V,V_{GS}=0V, f=1MHz	-	888	-	pF
Output capacitance	C_{oss}		-	144	-	
Reverse transfer capacitance	C_{rss}		-	115	-	
Turn-on delay time	$t_{d(on)}$	V_{DD}=10V, I_D =1.0A, R_L=10Ω, R_G=6Ω, V_{GS}=4.5V	-	31.8	-	ns
Rise time	t_r		-	14.5	-	
Turn-off delay time	$t_{d(off)}$		-	50.3	-	
Fall time	t_f		-	31.9	-	
Total gate charge	Q_g	V_{DS}=10V, V_{GS}=4.5V I_D =3.5A	-	16.8	-	nC
Gate-source charge	Q_{gs}		-	2.5	-	
Gate-drain charge	Q_{gd}		-	5.4	-	
Diode forward voltage	V_{SD}	V_{GS}=0V,I_S=1.25A	-	0.825	1.3	V
Drain-source diode forward current*	I_S		-	-	1.25	A

*Pulsed test:pulse width≤300μs,duty cycle≤2%

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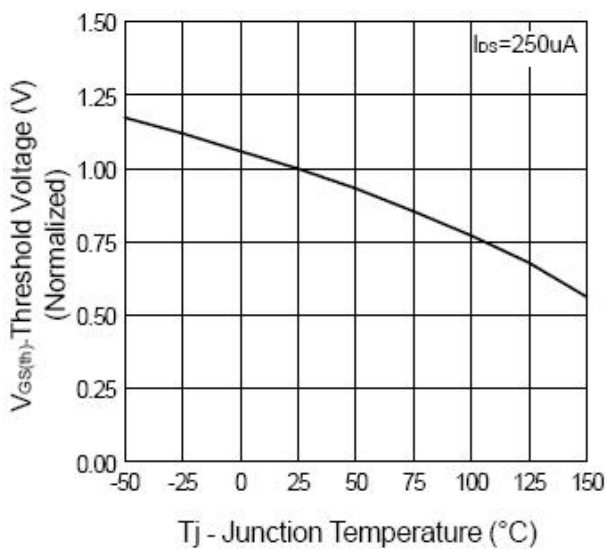## 5. Test circuits and waveforms

Output Characteristics

V_{GS}=3,4.5,6,7,8V

V_{GS}=2V

V_{GS}=1.5V

V_{GS}=1V

I_D-Drain Current (A)

V_{DS} - Drain-to-Source Voltage (V)

Transfer Characteristics

T_J=25°C

T_J=125°C

T_J=-55°C

I_D-Drain Current (A)

V_{GS} - Gate-to-Source Voltage (V)

Threshold Voltage vs. Junction Temperature

I_{DS}=250uA

$V_{GS(th)}$-Threshold Voltage (V) (Normalized)

Tj - Junction Temperature (°C)

On-Resistance vs. Drain Current

V_{GS}=2.5V

V_{GS}=4.5V
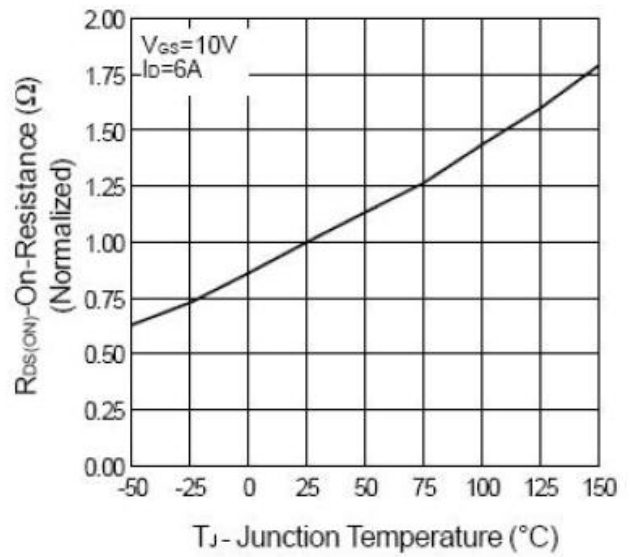
$R_{DS(ON)}$-On-Resistance (Ω)
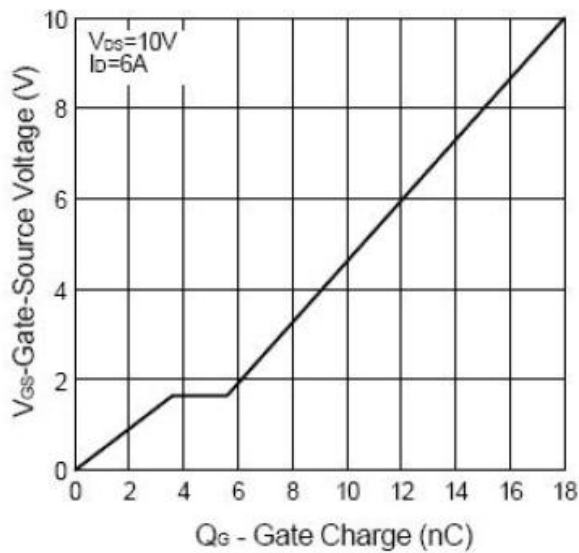
I_D - Drain Current (A)
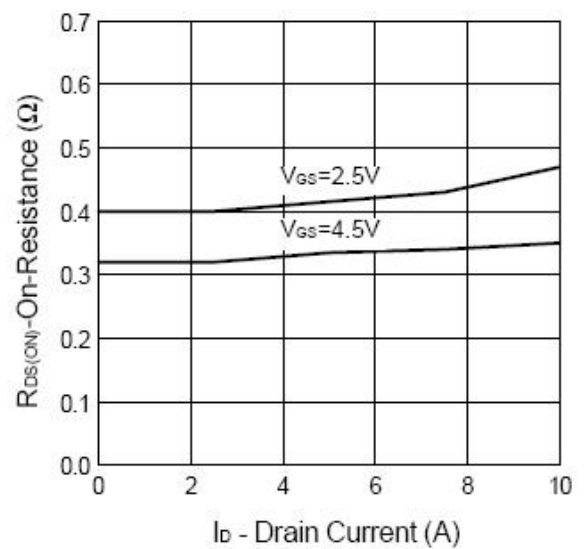
On-Resistance vs. Gate-to-Source Voltage
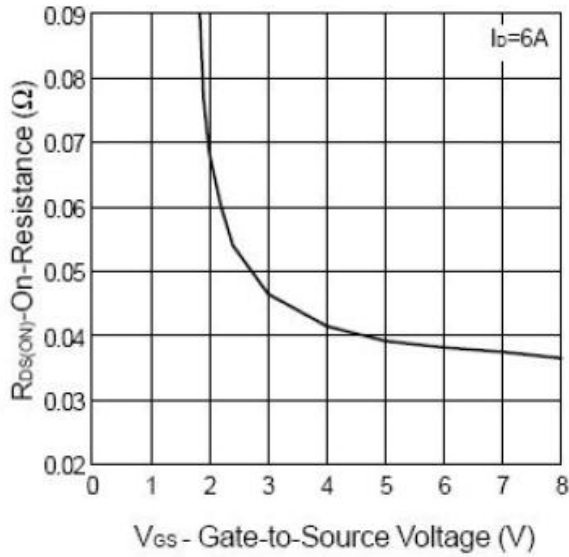
On-Resistance vs. Junction Temperature

Gate Charge

Capacitance

Source-Drain Diode Forward Voltage

Single Pulse Power

Normalized Thermal Transient Impedance, Junction to Ambient

1.Duty Cycle, D=t1/t2
2.Per Unit Base=$R_{\theta JA}$=100°C/W
3.$T_{JM}-T_A=P_{DM}Z_{\theta JA}$