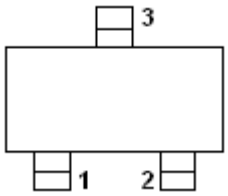
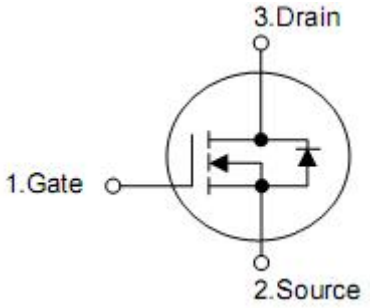
1. Features

- V_{DS}=30V,$R_{DS(on)}$=0.057Ω@V_{GS}=10V,I_D=3.5A
- V_{DS}=30V,$R_{DS(on)}$=0.094Ω@V_{GS}=4.5V,I_D=2.8A
- Power MOSFET
- 100% R_g tested

2.Symbol





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}	30	V
Gate-source voltage		V_{GS}	±20	V
Drain current continuous (T_J=150 ºC) [a, b]	T_A=25°C	I_D	3.5	A
	T_A=70°C		2.8	
Pulsed drain current [a]		I_{DM}	16	
Continuous source current (diode conduction) [a, b]		I_S	1.25	
Power dissipation [a, b]	T_A=25°C	P_D	1.25	W
	T_A=70°C		0.8	
Junction and storage temperature range		T_J,T_{STG}	-55 to150	ºC

Parameter		Symbol	Typ	Max	Units
Maximum junction-ambient [a]	t≤ 5 sec	R_{thJA}	-	100	ºC/W
	steady state		130	-	

Notes
a. Surface mounted on FR4 board,
b. t≤5 sec.

4. Electrical characteristics

(T_A=25°C,unless otherwise noted)

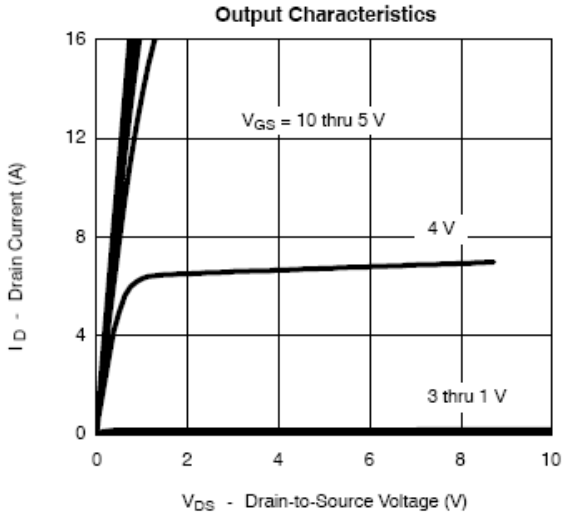
Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Static						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{DS}=0V,I_D=250μA	30	-	-	V
Gate threshold voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	1	-	1.8	V
Gate- body leakage	I_{GSS}	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
Zero gate voltage drain current	I_{DSS}	V_{DS}=25V, V_{GS}=0V	-	-	1	μA
On-state drain current [a]	$I_{D(on)}$	V_{DS}≥4.5V, V_{GS}=10V	6	-	-	A
		V_{DS}≥4.5V, V_{GS}=4.5V	4	-	-	
Static drain-source on-resistance [a]	$R_{DS(on)}$	V_{GS}=10V,I_D=3.5A	-	-	0.057	Ω
		V_{GS}=4.5V,I_D=2.8A	-	-	0.094	
Forward transconductance [a]	gfs	V_{DS}=4.5V, I_D=-3.5A	-	6.9	-	S
Diode forward voltage	V_{SD}	V_{GS}=0V,I_S=1.25A	-	0.8	1.2	V
Dynamic[b]						
Total gate charge	Q_g	V_{DS}=15V, V_{GS}=5V,I_D=3.5A	-	4.2	7	nC
Total gate charge	Q_{gt}	V_{DS}=15V, V_{GS}=10V I_D=3.5A		8.5	20	
Gate-source charge	Q_{gs}		-	1.9		
Gate-drain charge	Q_{gd}		-	1.35	-	
Gate resistance	R_G		0.5	-	2.4	Ω
Input capacitance	C_{iss}	V_{DS}=15V,V_{GS}=0V, f=1MHz	-	555	-	pF
Output capacitance	C_{oss}		-	120	-	
Reverse transfer capacitance	C_{rss}		-	60	-	
Switching						
Turn-on delay time	$t_{d(on)}$	V_{DD}=15V, I_D =1A, R_L=15Ω, R_G=6Ω, V_{GEN}=10V	-	9	20	ns
Rise time	t_r		-	7.5	18	
Turn-off delay time	$t_{d(off)}$		-	17	35	
Fall time	t_f		-	5.2	12	

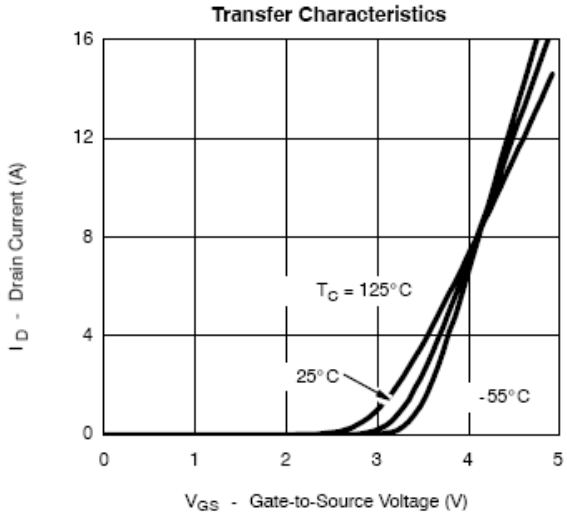
Notes

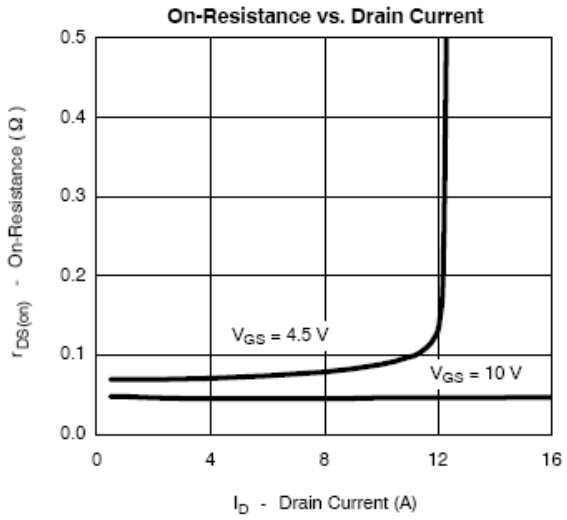
a. Guaranteed by design, not subject to production testing.

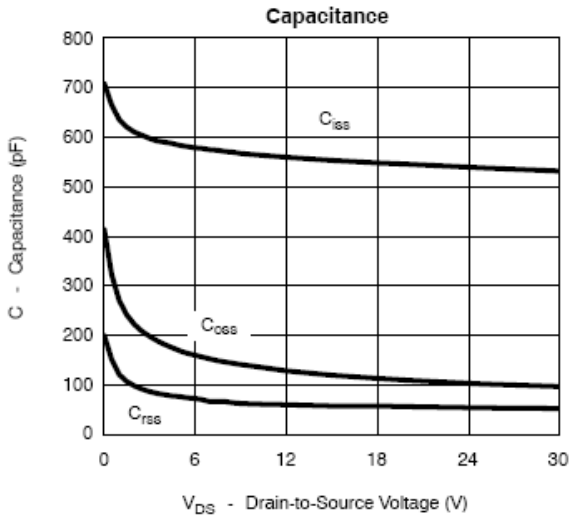
b. Pulse test; pulse width≤300μs, duty cycle≤2%.

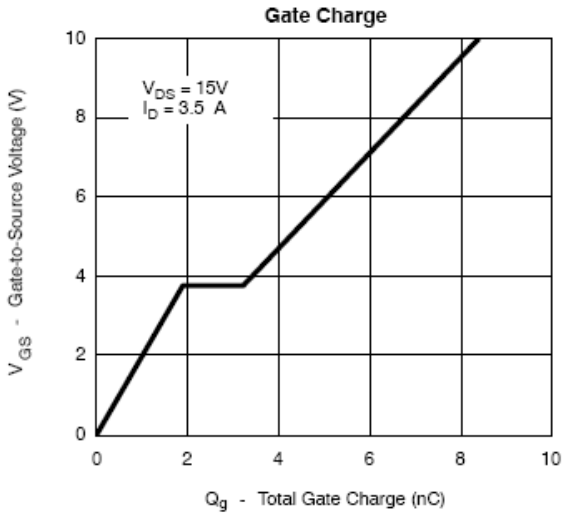
5. Test circuits and waveforms

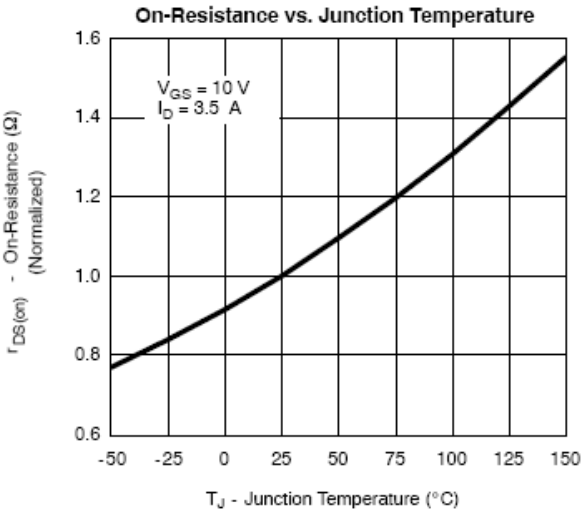


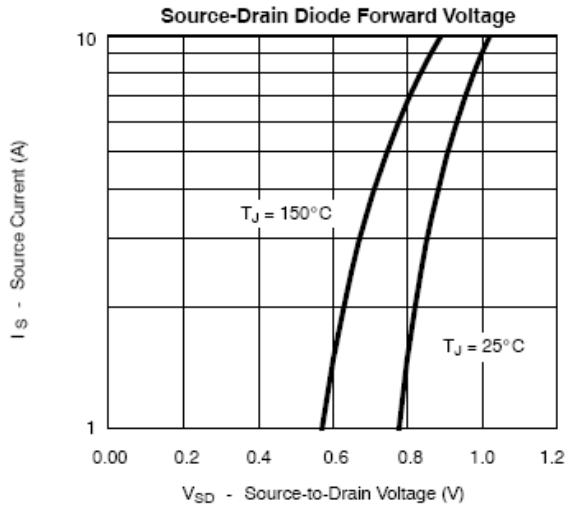


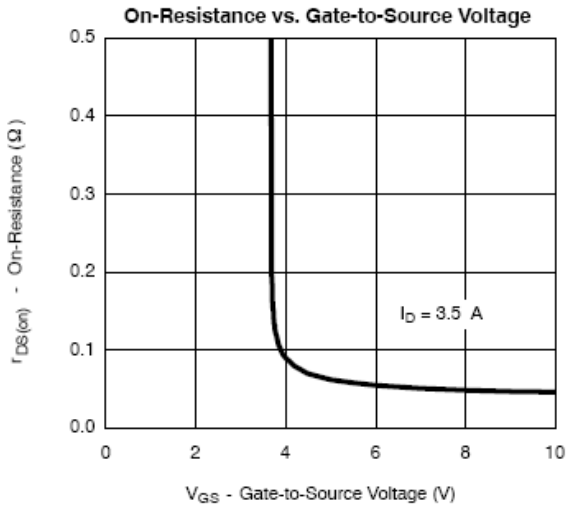


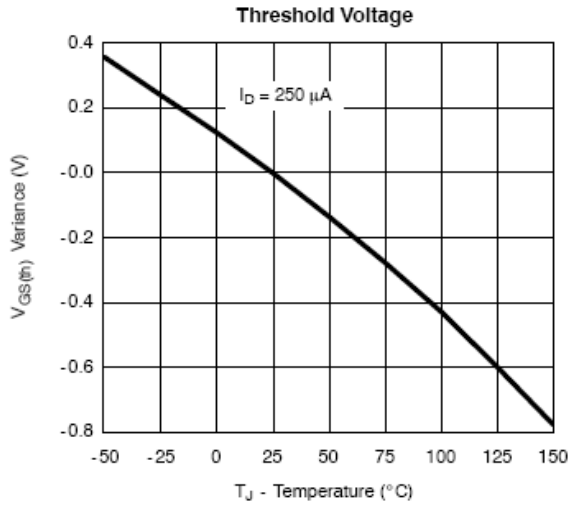


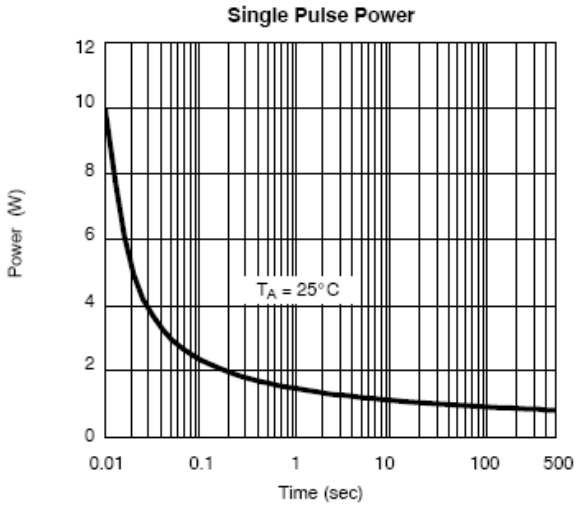


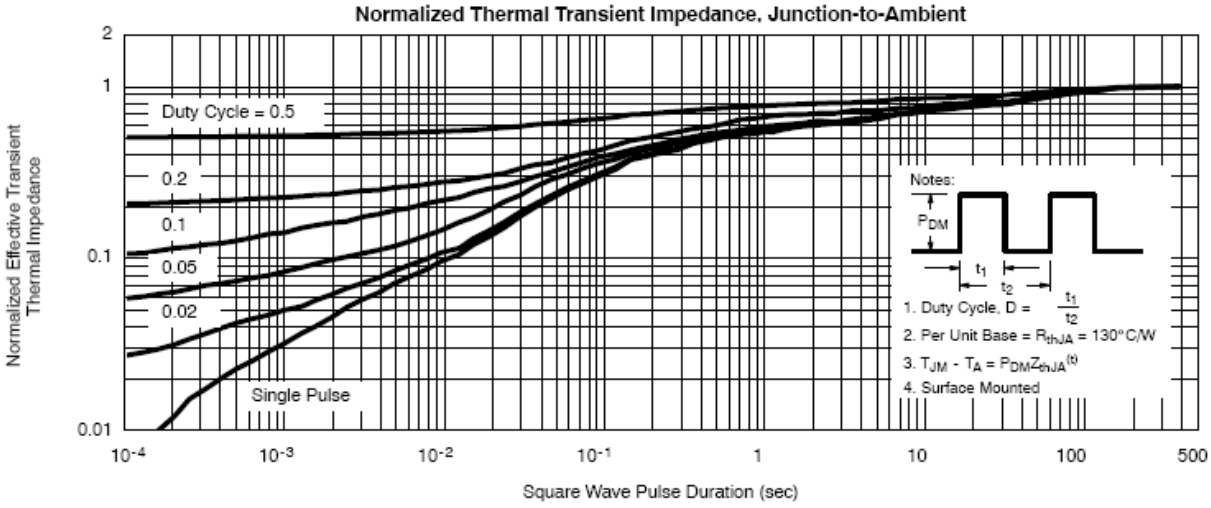



Source-Drain Diode Forward Voltage
10
1
T_J = 150°C
T_J = 25°C
0.00 0.2 0.4 0.6 0.8 1.0 1.2
I_S - Source Current (A)
V_{SD} - Source-to-Drain Voltage (V)


On-Resistance vs. Gate-to-Source Voltage
0.5
0.4
0.3
0.2
0.1
0.0
I_D = 3.5 A
0 2 4 6 8 10
$r_{DS(on)}$ - On-Resistance (Ω)
V_{GS} - Gate-to-Source Voltage (V)


Threshold Voltage
0.4
0.2
-0.0
-0.2
-0.4
-0.6
-0.8
I_D = 250 µA
-50 -25 0 25 50 75 100 125 150
$V_{GS(th)}$ Variance (V)
T_J - Temperature (°C)


Single Pulse Power
12
10
8
6
4
2
0
T_A = 25°C
0.01 0.1 1 10 100 500
Power (W)
Time (sec)


Normalized Thermal Transient Impedance, Junction-to-Ambient
2
1
0.1
0.01
Duty Cycle = 0.5
0.2
0.1
0.05
0.02
Single Pulse
Notes:
P_{DM}
t_1
t_2
1. Duty Cycle, D = t_1/t_2
2. Per Unit Base = R_{thJA} = 130°C/W
3. T_{JM} - T_A = $P_{DM}Z_{thJA}(t)$
4. Surface Mounted
10^{-4} 10^{-3} 10^{-2} 10^{-1} 1 10 100 500
Normalized Effective Transient Thermal Impedance
Square Wave Pulse Duration (sec)