

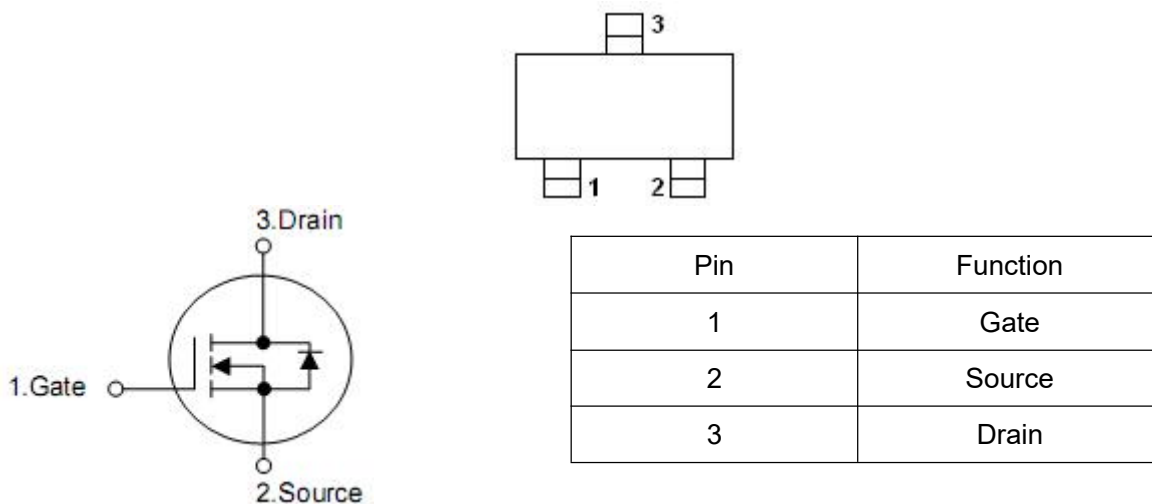
1. Features

- $V_{DS}=60V, R_{DS(on)(TYP)}=0.08\Omega @ V_{GS}=10V, I_D=3.0A$
- $V_{DS}=60V, R_{DS(on)(TYP)}=0.11\Omega @ V_{GS}=4.5V, I_D=2.0A$

2. Application

- Battery switch
- DC/DC converter

3. Symbol



4. Absolute maximum ratings

($T_A=25^\circ\text{C}$, unless otherwise noted)

Parameter		Symbol	Limit	Units
Drain-source voltage		V_{DS}	60	V
Gate-source voltage		V_{GS}	± 20	V
Continuous drain current	$T_A=25^\circ\text{C}$	I_D	3	A
Pulsed drain current ^(a)		I_{DM}	10	A
Total power dissipation	$T_A=25^\circ\text{C}$	P_D	1.2	W
Junction and storage temperature range		T_J, T_{STG}	-55 to 150	$^\circ\text{C}$

5. Thermal characteristics

Parameter	Symbol	Limit	Unit
Thermal Resistance, Junction-to-Ambient ^(b)	$R_{\theta JA}$	73.5	$^\circ\text{C/W}$

6. Electrical characteristics

(T_A=25°C, unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Off Characteristics						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =250μA	60	-	-	V
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1.0	1.3	2.0	V
Gate- body leakage	I _{GSS}	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
Zero gate voltage drain current	I _{DSS}	V _{DS} =60V, V _{GS} =0V	-	-	1	uA
On Characteristics ^(c)						
Gate threshold voltage	V _{th}	V _{DS} =V _{GS} , I _D =250μA	1.0	1.3	2.0	V
Static drain-source on-resistance	R _{DS(on)}	V _{GS} =10V, I _D =3.0A	-	0.08	0.09	Ω
		V _{GS} =4.5V, I _D =2A	-	0.11	0.12	
Forward transconductance	g _{fs}	V _{DS} =15V, I _D =-2A	-	3	-	S
Dynamic Characteristics ^(d)						
Input capacitance	C _{iss}	V _{DS} =30V, V _{GS} =0V, f=1MHz	-	248	-	pF
Output capacitance	C _{oss}		-	35	-	
Reverse transfer capacitance	C _{rss}		-	19	-	
Switching Characteristics ^(d)						
Total gate charge	Q _g	V _{DS} =30V, V _{GS} =4.5V I _D =3.0A	-	5.0	-	nC
Gate-source charge	Q _{gs}		-	1.0	-	
Gate-drain charge	Q _{gd}		-	1.3	-	
Turn-on delay time	t _{d(on)}	V _{DD} =30V, I _D = 1.5A, R _G =1Ω, V _{GS} =10V	-	6.1	-	ns
Rise time	t _r		-	14.8	-	
Turn-off delay time	t _{d(off)}		-	14.5	-	
Fall time	t _f		-	9.9	-	
Drain-Source Diode Characteristics						
Diode forward voltage ^(c)	V _{SD}	V _{GS} =0V, I _S =1.0A	-	-	1.3	V
Diode forward Current ^(b)	I _S		-	1.0	-	A

Notes

- Repetitive Rating: Pulse width limited by maximum junction temperature.
- Surface Mounted on FR4 Board, t ≤ 10 sec.
- Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
- Guaranteed by design, not subject to production

7. Test circuits and waveforms

Typical Electrical and Thermal Characteristics

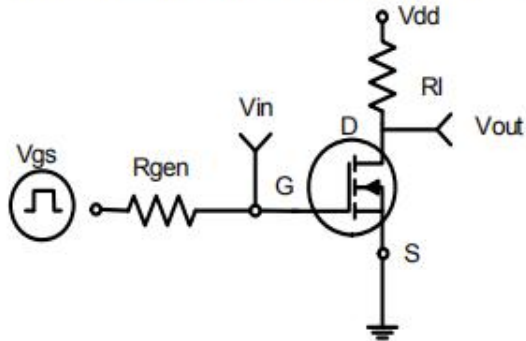


Figure 1: Switching Test Circuit

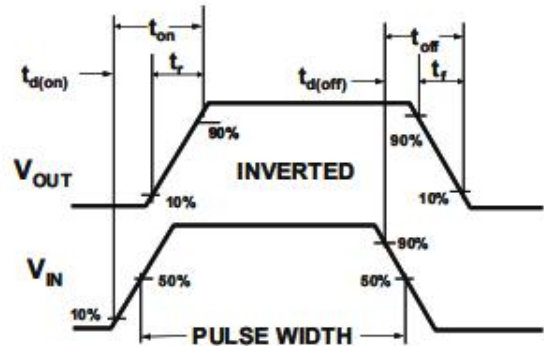


Figure 2: Switching Waveforms

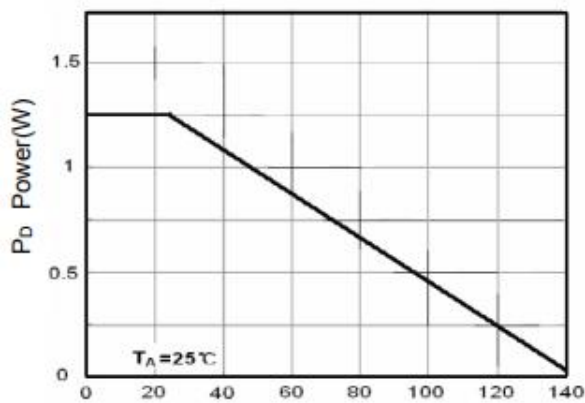


Figure 3 Power Dissipation

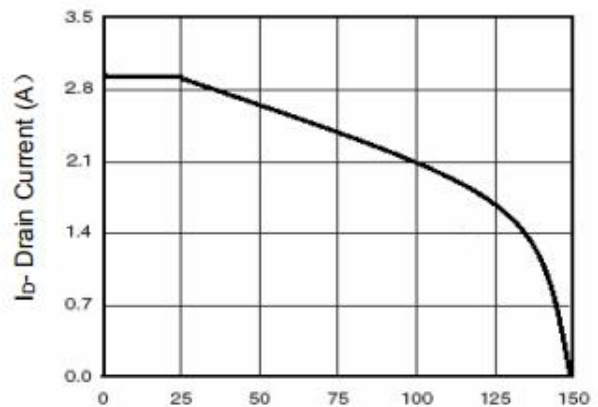


Figure 4 Drain Current

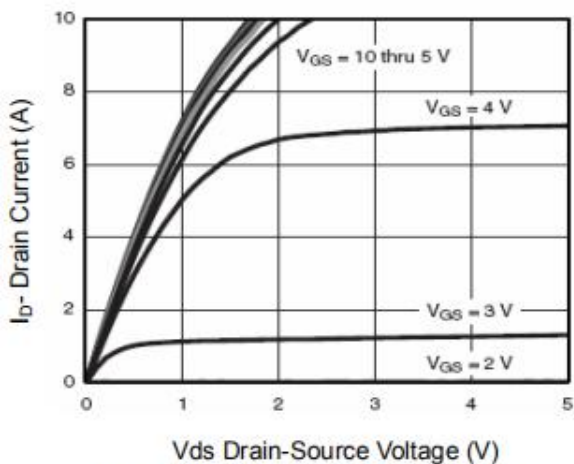


Figure 5 Output Characteristics

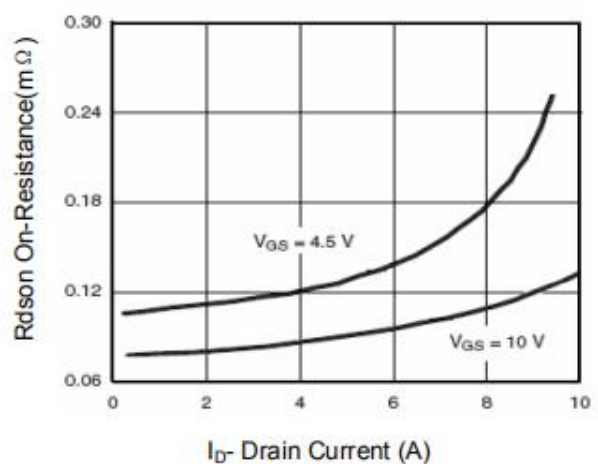


Figure 6 Drain-Source On-Resistance

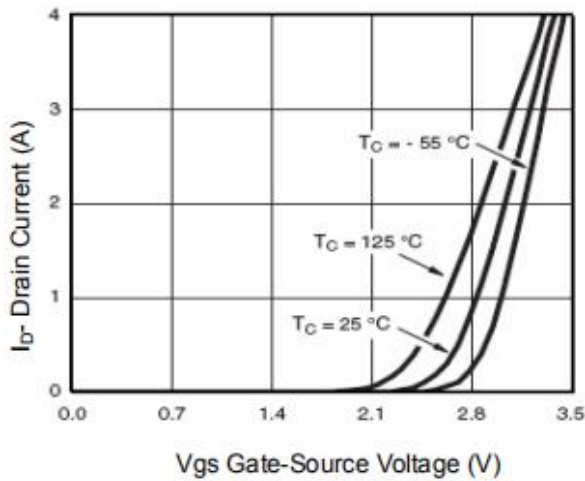


Figure 7 Transfer Characteristics

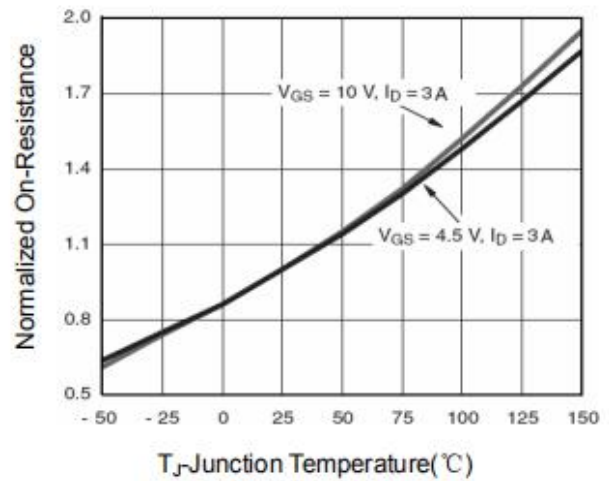


Figure 8 Drain-Source On-Resistance

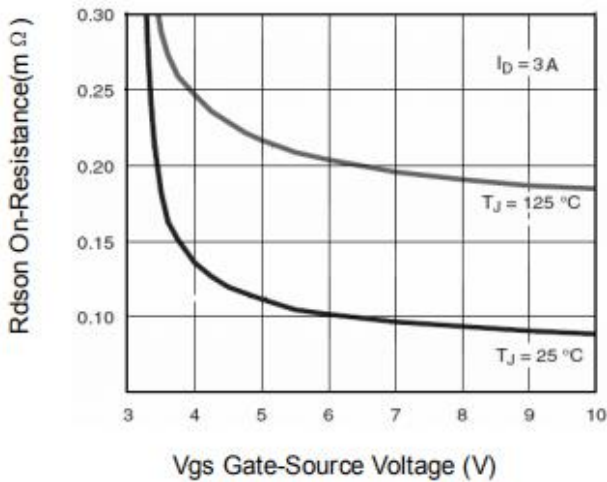


Figure 9 Rdson vs Vgs

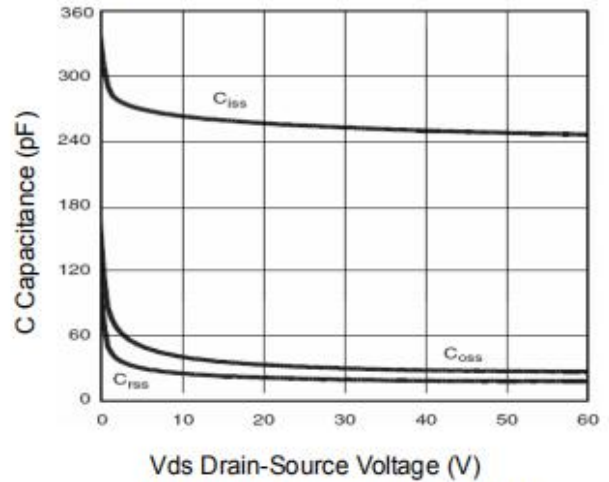


Figure 10 Capacitance vs Vds

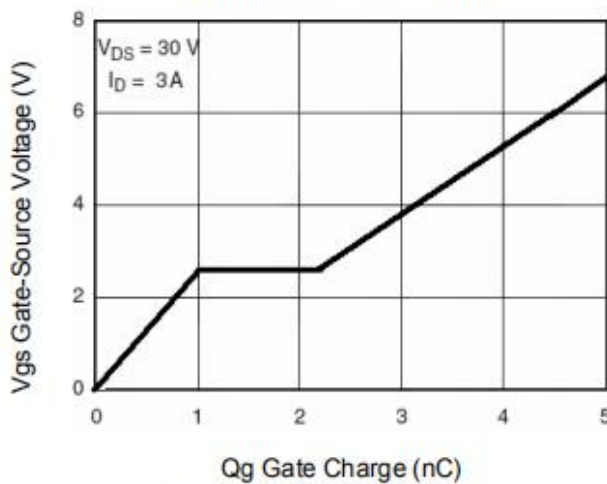


Figure 11 Gate Charge

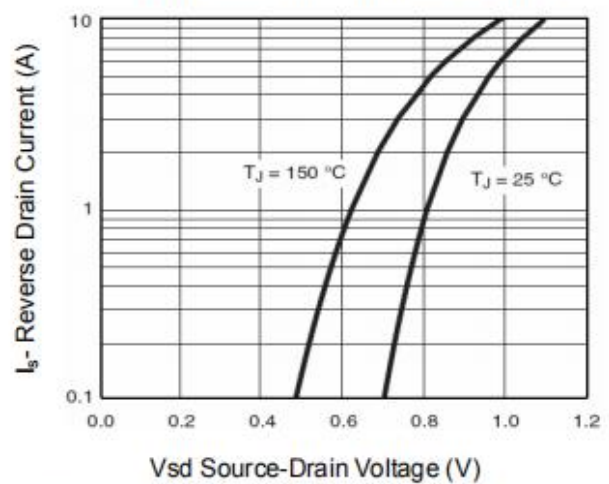


Figure 12 Source- Drain Diode Forward

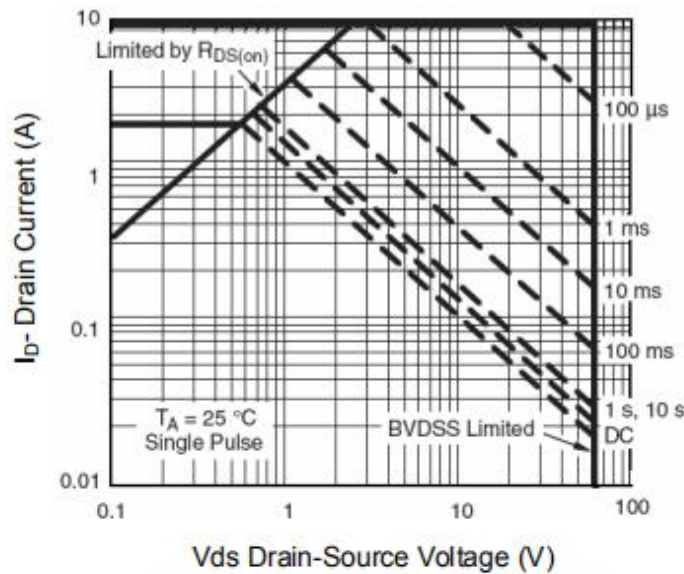


Figure 13 Safe Operation Area

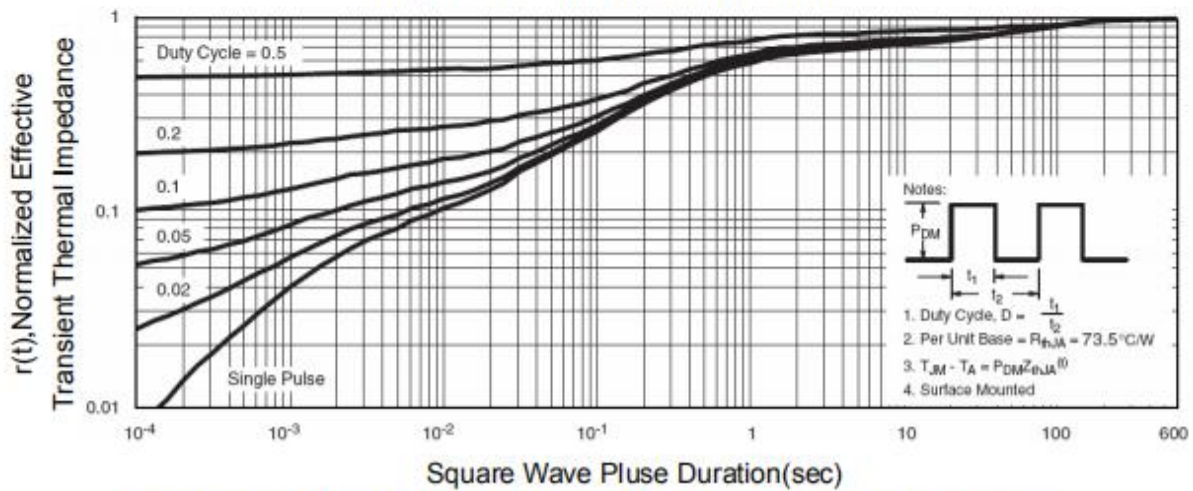


Figure 14 Normalized Maximum Transient Thermal Impedance