V_{DSS}	20	V
I_D	3.5	A
P_D	0.9	W
$R_{DS(ON)}$	50	mΩ

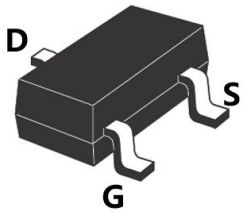
Features:

- Fast Switching
- Low Gate Charge and Rdson
- Low Reverse transfer capacitances
- 100% Single Pulse avalanche energy Test

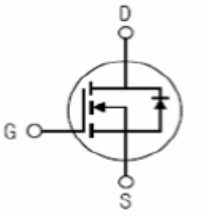
Applications:

- PWM applications
- Load switch
- Power management

SOT-23



Inner Equivalent Principium Chart



Absolute (Tc=25℃ unless otherwise specified):

Symbol	Parameter	Rating	Units
V_{DSS}	Drain-to-Source Voltage	20	V
I_D	Continuous Drain Current	3.5	A
	Continuous Drain Current T_C = 70 °C	2.1	A
I_{DM}[a1]	Pulsed Drain Current	10	A
V_{GS}	Gate-to-Source Voltage	±12	V
dv/dt [a3]	Peak Diode Recovery dv/dt	5.0	V/ns
P_D	Power Dissipation	0.9	W
T_J, T_{stg}	Operating Junction and Storage Temperature Range	150, −55 to 150	℃
T_L	Maximum Temperature for Soldering	300	℃

Electrical Characteristics (Tc= 25℃ unless otherwise specified):

OFF Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
V_{DSS}	Drain to Source Breakdown Voltage	V_{GS}=0V, I_D=-250μA	20	--	--	V
$\Delta BV_{DSS}/\Delta T_J$	Bvdss Temperature Coefficient	I_D=-250uA,Reference25℃	--	0.02	--	V/℃
I_{DSS}	Drain to Source Leakage Current	V_{DS}=20,V_{GS}=0V,T_a=25℃	--	--	1	μA
		V_{DS}=16V,V_{GS}=0V,T_a=125℃	--	--	250	
$I_{GSS(F)}$	Gate to Source Forward Leakage	V_{GS}=+12V	--	--	1	μA
$I_{GSS(R)}$	Gate to Source Reverse Leakage	V_{GS}=-12V	--	--	-1	μA

ON Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
$R_{DS(ON)}$	Drain-to-Source On-Resistance	V_{GS}=4.5V,I_D=2.0A	--	45	60	mΩ
$V_{GS(TH)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=250μA	0.5	0.7	1.5	V
Pulse width tp≤380μs,δ≤2%						

Dynamic Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
g_{fs}	Forward Transconductance	V_{DS}=5V,I_D=3.0A	--	8	--	S
C_{iss}	Input Capacitance	V_{GS}=0V,V_{DS}=10V f=1.0MHz	--	250	--	pF
C_{oss}	Output Capacitance		--	50	--	
C_{rss}	Reverse Transfer Capacitance		--	28	--	

Resistive Switching Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
$t_{d(ON)}$	Turn-on Delay Time	I_D=1.0A,V_{DD}=10V V_{GS}=4.5V,R_G=6.0Ω	--	2.5	--	ns
t_r	Rise Time		--	3.1	--	
$t_{d(OFF)}$	Turn-Off Delay Time		--	20	--	
t_f	Fall Time		--	3.0	--	
Q_g	Total Gate Charge	I_D=3.5A,V_{DD}=10V V_{GS}=4.5V	--	3.0	--	nC
Q_{gs}	Gate to Source Charge		--	0.5	--	
Q_{gd}	Gate to Drain (“Miller”)Charge		--	0.6	--	

Source-Drain Diode Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
I_S	Continuous Source Current (Body Diode)		--	--	3.5	A
I_{SM}	Maximum Pulsed Current (Body Diode)		--	--	110	A
V_{SD}	Diode Forward Voltage	I_S=3.5A,V_{GS}=0V	--	--	1.5	V
t_{rr}	Reverse Recovery Time	I_S=3.5A,T_j=25°C	--	40	--	ns
Q_{rr}	Reverse Recovery Charge	dI_F/dt=100A/us,V_{GS}=0V	--	100	--	nC
Pulse width tp≤380μs,δ≤2%						

Symbol	Parameter	Typ.	Units
$R_{\theta JA}$	Junction-to-Ambient	138	°C/W

[a1]: Repetitive rating; pulse width limited by maximum junction temperature

[a3]: I_{SD} =5A,di/dt ≤100A/us,V_{DD}≤BV_{DS}, Start T_J=25℃

Typical Electrical and Thermal Characteristics

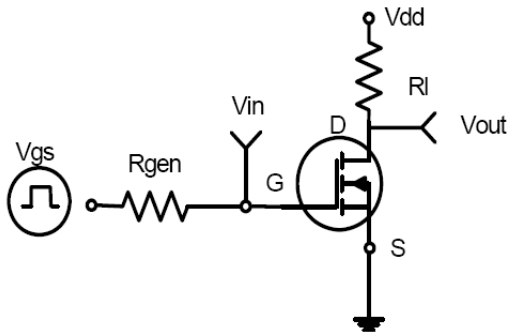


Figure 1:Switching Test Circuit

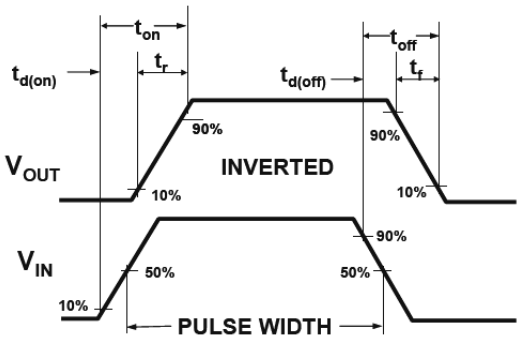
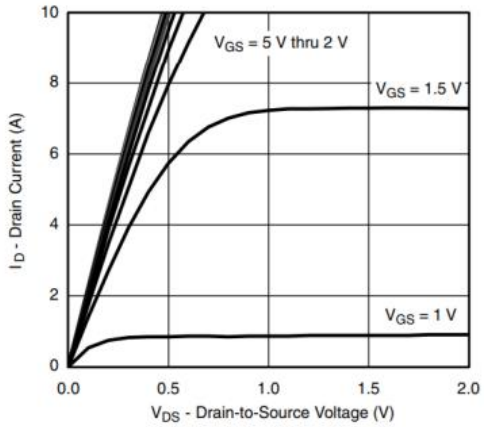
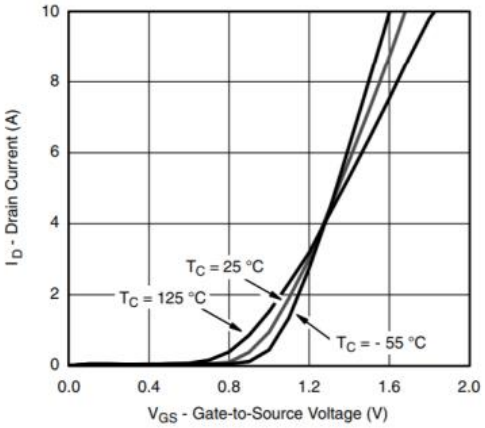


Figure 2:Switching Waveforms

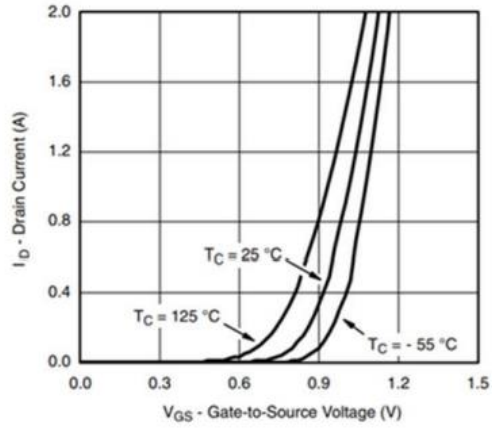
Characteristics Curve:



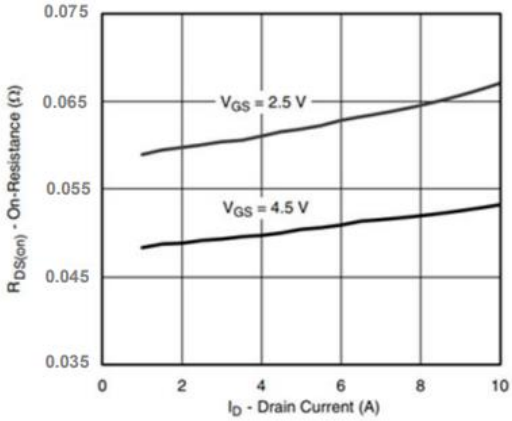
Output Characteristics



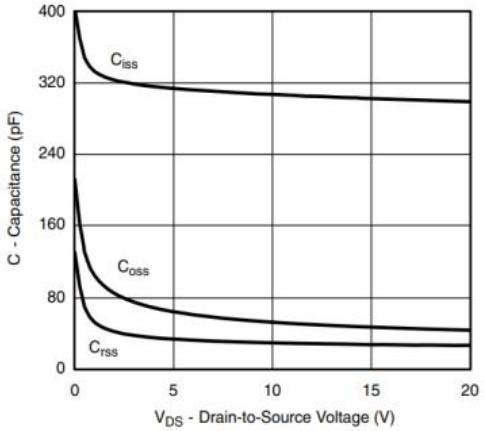
Transfer Characteristics



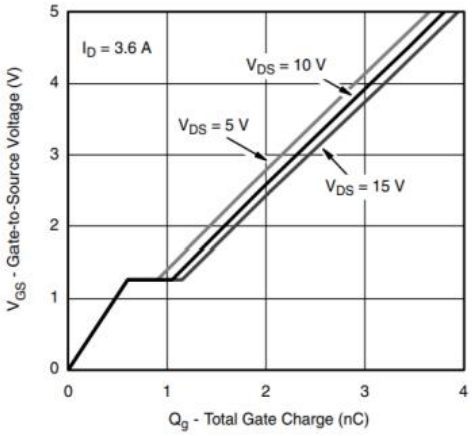
Transfer Characteristics



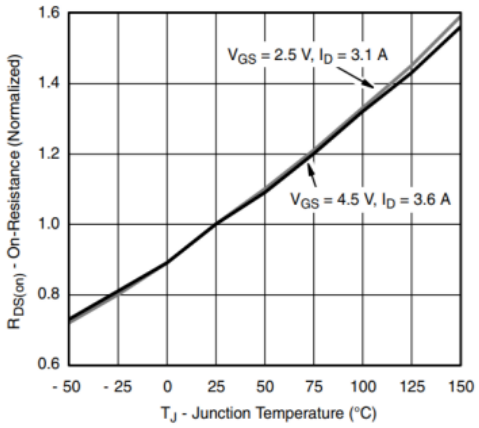
On-Resistance vs. Drain Current



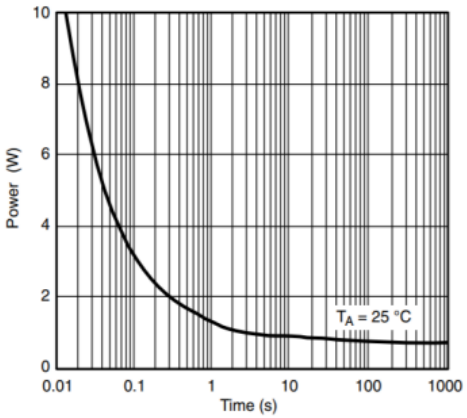
Capacitance



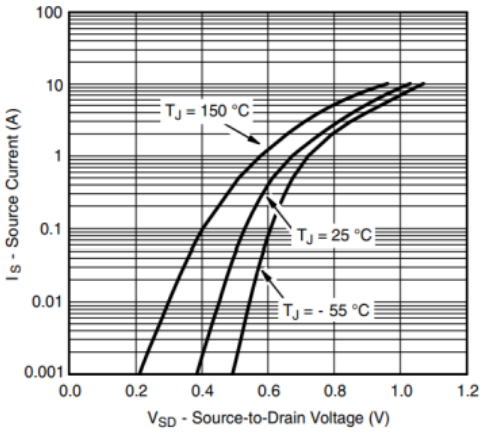
Gate Charge



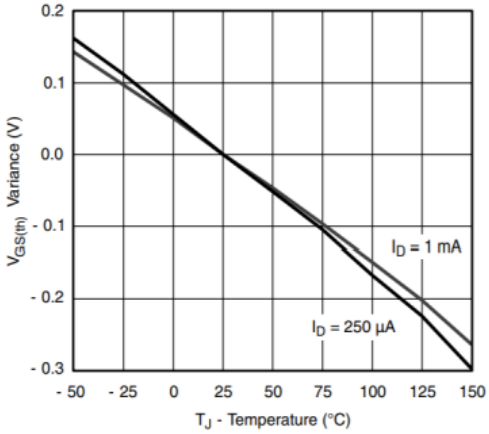
On-Resistance vs. Junction Temperature



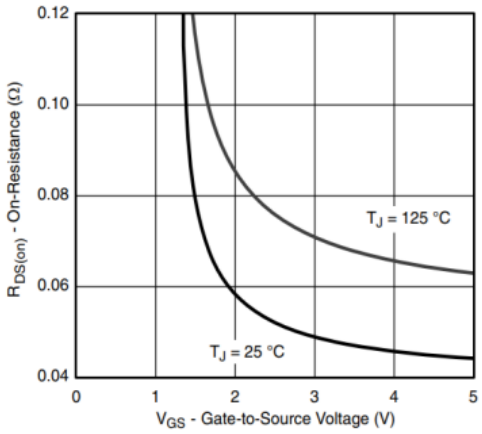
Single Pulse Power



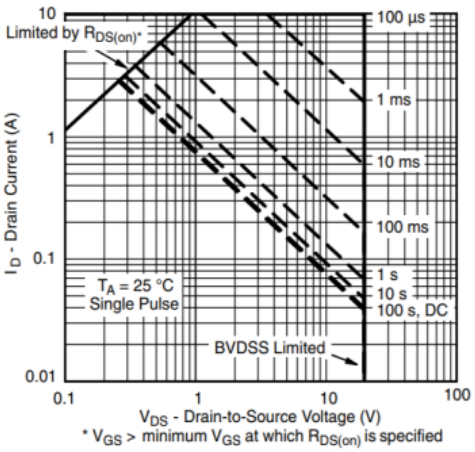
Source-Drain Diode Forward Voltage



Threshold Voltage



On-Resistance vs. Gate-to-Source Voltage



Safe Operating Area, Junction-to-Ambient