

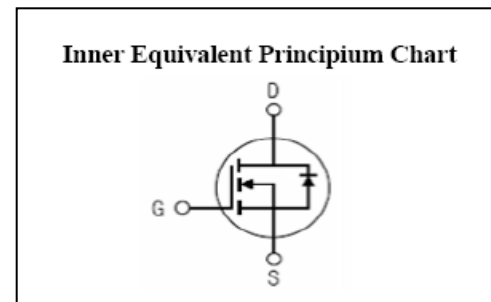
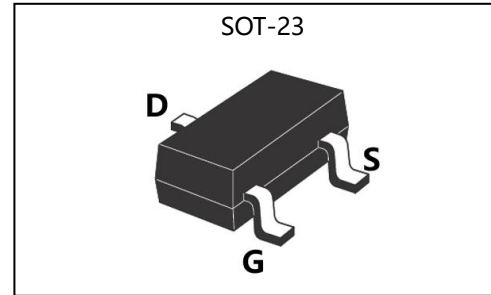
Features:

- Fast Switching
- Low Gate Charge and R_{ds(on)}
- Low Reverse transfer capacitances
- 100% Single Pulse avalanche energy Test

Applications:

- PWM applications
- Load switch
- Power management

V _{DSS}	20	V
I _D	3.5	A
P _D	0.9	W
R _{DS(ON)}	50	mΩ



Absolute (T_c=25°C 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	°C
T _L	Maximum Temperature for Soldering	300	°C

Electrical Characteristics (Tc= 25°C 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
ΔBV _{DSS} /ΔT _J	Bvdss Temperature Coefficient	I _D =-250uA, Reference 25°C	--	0.02	--	V/°C
I _{DSS}	Drain to Source Leakage Current	V _{DS} =20, V _{GS} =0V, T _a =25°C	--	--	1	μA
		V _{DS} =16V, V _{GS} =0V, T _a =125°C	--	--	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	$I_S=3.5A, T_J=25^\circ C$	--	40	--	ns
Q_{rr}	Reverse Recovery Charge	$di_F/dt=100A/us, V_{GS}=0V$	--	100	--	nC
Pulse width $t_p \leq 380\mu s, \delta \leq 2\%$						

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

^{a1}: Repetitive rating; pulse width limited by maximum junction temperature

^{a3}: $I_{SD} = 5A, di/dt \leq 100A/us, V_{DD} \leq BV_{DS}, \text{Start } T_J = 25^\circ C$

Typical Electrical and Thermal Characteristics

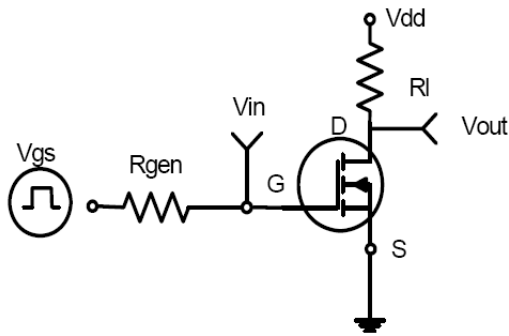


Figure 1: Switching Test Circuit

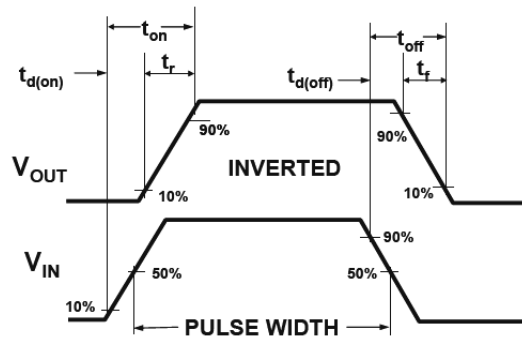
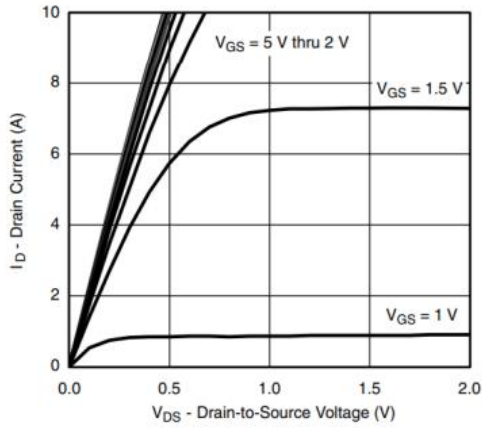
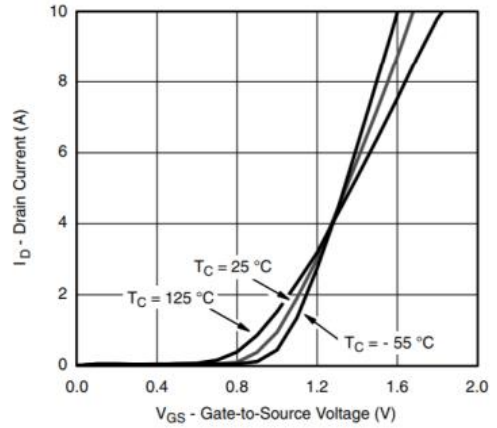


Figure 2: Switching Waveforms

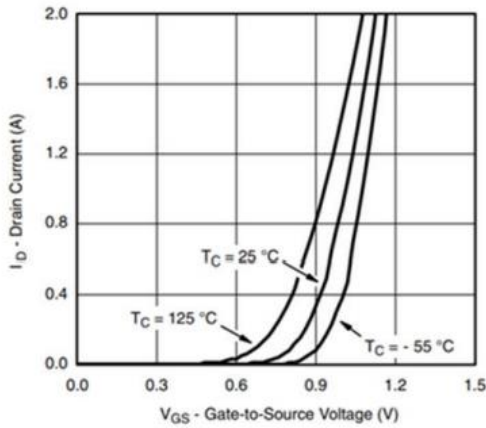
Characteristics Curve:



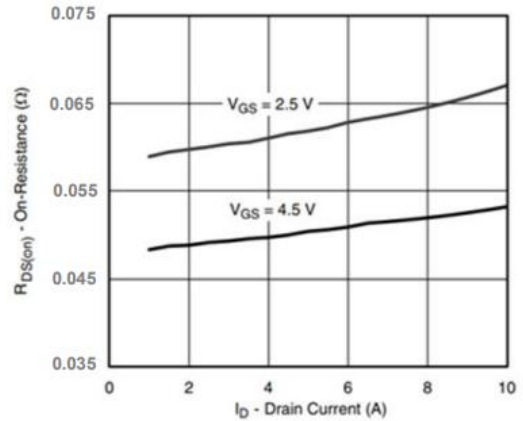
Output Characteristics



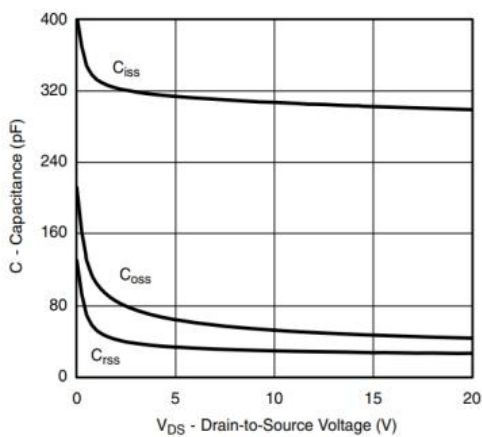
Transfer Characteristics



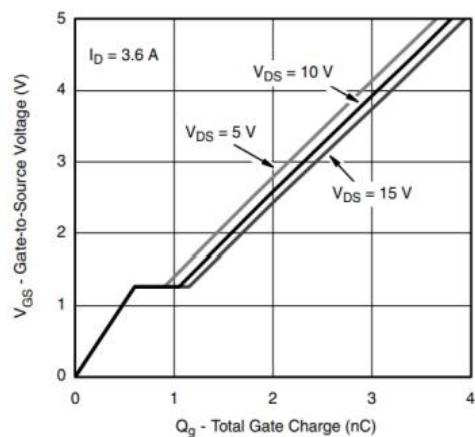
Transfer Characteristics



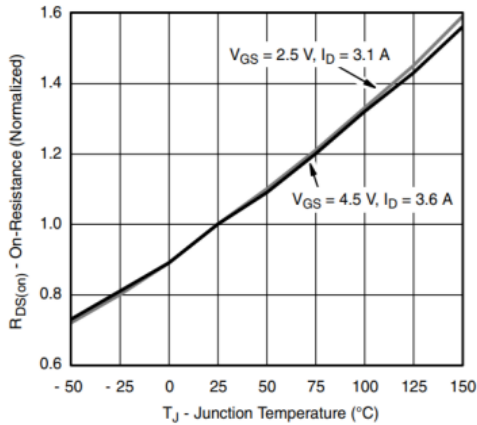
On-Resistance vs. Drain Current



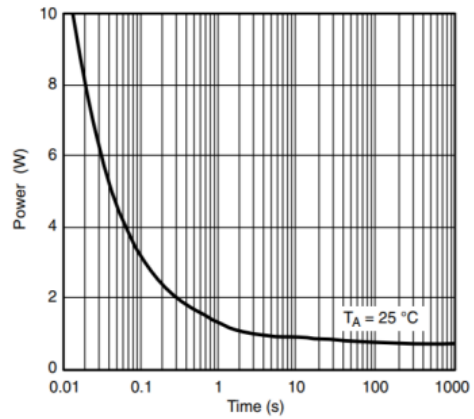
Capacitance



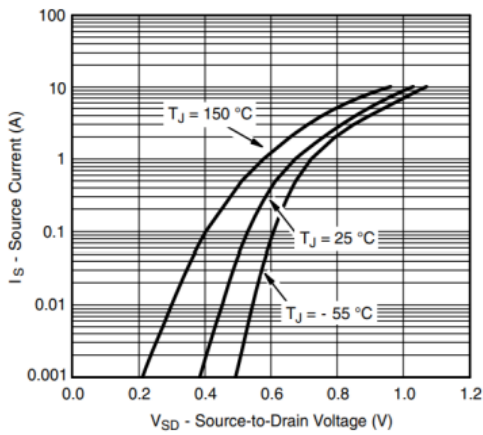
Gate Charge



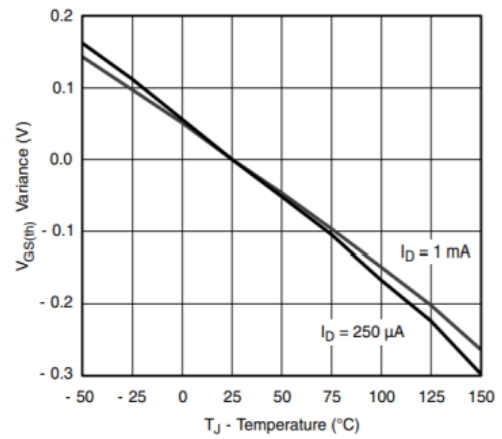
On-Resistance vs. Junction Temperature



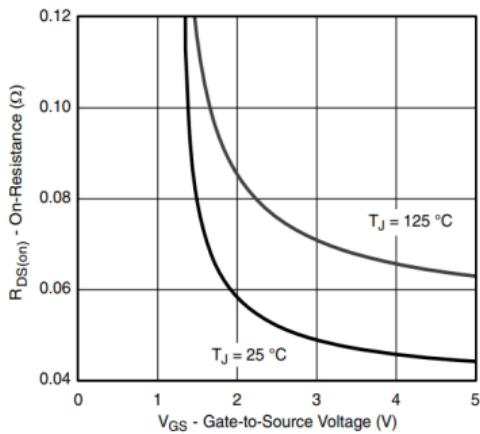
Single Pulse Power



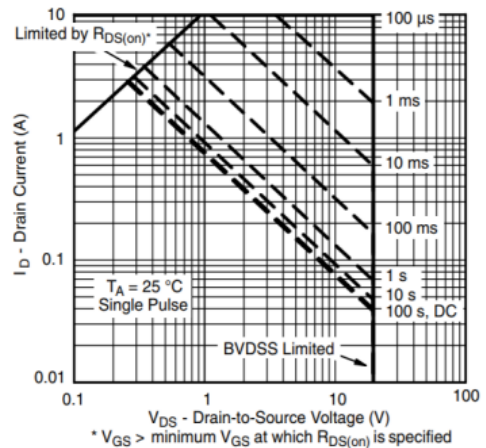
Source-Drain Diode Forward Voltage



Threshold Voltage



On-Resistance vs. Gate-to-Source Voltage



Safe Operating Area, Junction-to-Ambient

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