

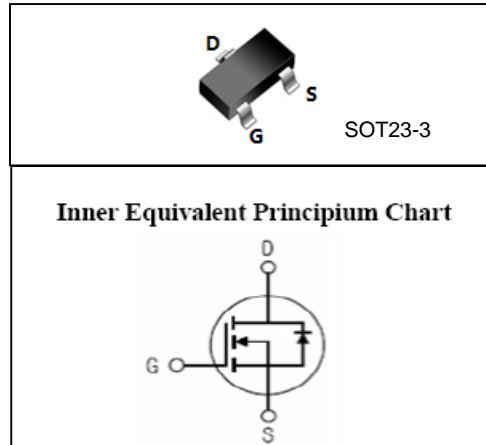
### Features:

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

### Applications:

PWM applications  
Load switch  
Power management

V <sub>DSS</sub>	30	V
I <sub>D</sub>	3.0	A
P <sub>D</sub>	0.9	W
R <sub>DS(ON)</sub>	65	mΩ



### Absolute (T<sub>c</sub>= 25°C unless otherwise specified):

Symbol	Parameter	Rating	Units
V <sub>DSS</sub>	Drain-to-Source Voltage	30	V
I <sub>D</sub>	Continuous Drain Current	3.0	A
	Continuous Drain Current T <sub>c</sub> = 70 °C	2.5	A
I <sub>DM</sub> <sup>a1</sup>	Pulsed Drain Current	20	A
V <sub>GS</sub>	Gate-to-Source Voltage	± 20	V
dv/dt <sup>a3</sup>	Peak Diode Recovery dv/dt	5.0	V/ns
P <sub>D</sub>	Power Dissipation	0.9	W
T <sub>J</sub> , T <sub>stg</sub>	Operating Junction and Storage Temperature Range	150, -55 to 150	°C
T <sub>L</sub>	Maximum Temperature for Soldering	300	°C

OFF Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
$V_{DSS}$	Drain to Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	30	--	--	V
$\Delta BV_{DSS}/\Delta T_J$	Bvdss Temperature Coefficient	$I_D=-250\mu A, \text{Reference } 25^\circ C$	--	0.1	--	V/ $^\circ C$
$I_{DSS}$	Drain to Source Leakage Current	$V_{DS} = 30, V_{GS} = 0V, T_a = 25^\circ C$	--	--	1	$\mu A$
		$V_{DS} = 24V, V_{GS} = 0V, T_a = 125^\circ C$	--	--	250	
$I_{GSS(F)}$	Gate to Source Forward Leakage	$V_{GS} = +20V$	--	--	1	$\mu A$
$I_{GSS(R)}$	Gate to Source Reverse Leakage	$V_{GS} = -20V$	--	--	-1	$\mu A$

ON Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
$R_{DS(ON)}$	Drain-to-Source On-Resistance	$V_{GS}=10V, I_D=3.0A$	--	50	65	m $\Omega$
$R_{DS(ON)}$	Drain-to-Source On-Resistance	$V_{GS}=4.5V, I_D=3.0A$	--	65	75	m $\Omega$
$V_{GS(TH)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\mu A$	1.0	1.5	2.0	V
Pulse width $t_p \leq 380\mu s, \delta \leq 2\%$						

Dynamic Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
$g_{fs}$	Forward Transconductance	$V_{DS}=5V, I_D=3.0A$	--	18	--	S
$C_{iss}$	Input Capacitance	$V_{GS} = 0V, V_{DS} = 10V, f = 1.0MHz$	--	240	--	pF
$C_{oss}$	Output Capacitance		--	35	--	
$C_{rss}$	Reverse Transfer Capacitance		--	18	--	

Resistive Switching Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
$t_{d(ON)}$	Turn-on Delay Time	$I_D = 1.0A, V_{DD} = 15V, V_{GS} = 10V, R_G = 6.0\Omega$	--	3.5	--	ns
$t_r$	Rise Time		--	1.5	--	
$t_{d(OFF)}$	Turn-Off Delay Time		--	18	--	
$t_f$	Fall Time		--	2.5	--	
$Q_g$	Total Gate Charge	$I_D = 3.0A, V_{DD} = 15V, V_{GS} = 10V$	--	10	--	nC
$Q_{gs}$	Gate to Source Charge		--	1.0	--	
$Q_{gd}$	Gate to Drain ("Miller") Charge		--	1.6	--	

Source-Drain Diode Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
$I_S$	Continuous Source Current (Body Diode)		--	--	3.0	A
$I_{SM}$	Maximum Pulsed Current (Body Diode)		--	--	20	A
$V_{SD}$	Diode Forward Voltage	$I_S=3.0A, V_{GS}=0V$	--	--	1.5	V
$t_{rr}$	Reverse Recovery Time	$I_S=3.0A, T_j = 25^\circ C$ $di_F/dt=100A/us, V_{GS}=0V$	--	40	--	ns
$Q_{rr}$	Reverse Recovery Charge		--	100	--	nC
Pulse width $t_p \leq 380\mu s, \delta \leq 2\%$						

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

<sup>a1</sup>: Repetitive rating; pulse width limited by maximum junction temperature

<sup>a3</sup>:  $I_{SD}=3.0A, di/dt \leq 100A/us, V_{DD} \leq BV_{DS}$ , Start  $T_j=25^\circ C$

### Typical Electrical and Thermal Characteristics

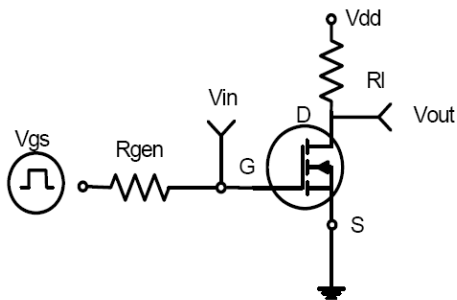


Figure 1: Switching Test Circuit

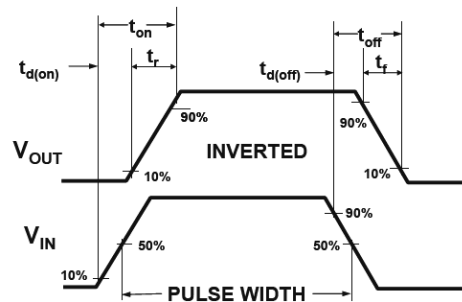
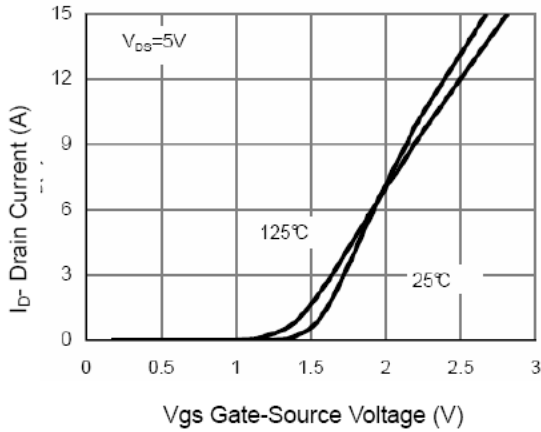
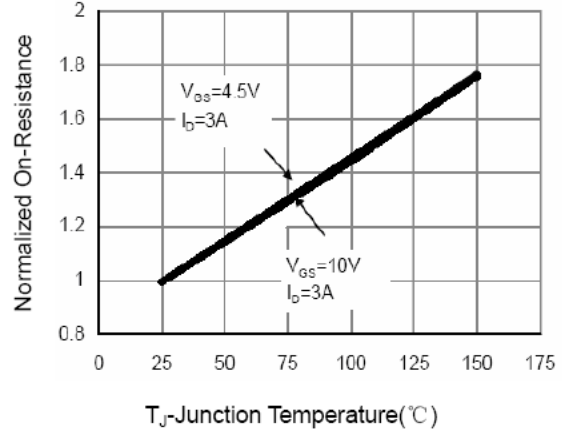


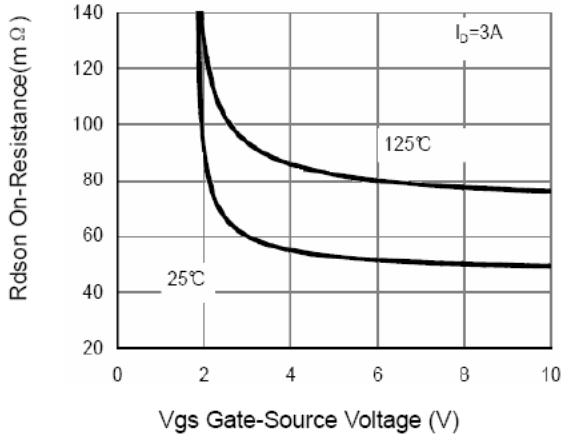
Figure 2: Switching Waveforms



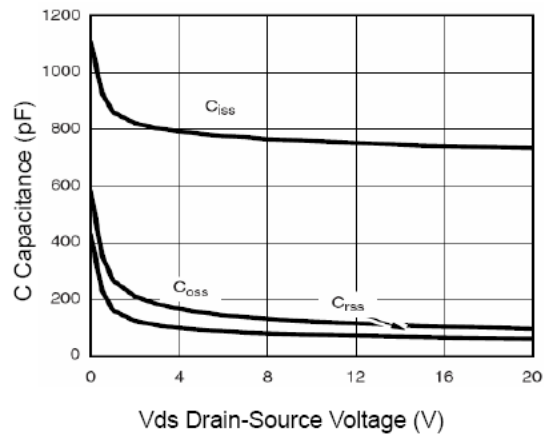
**Figure 7 Transfer Characteristics**



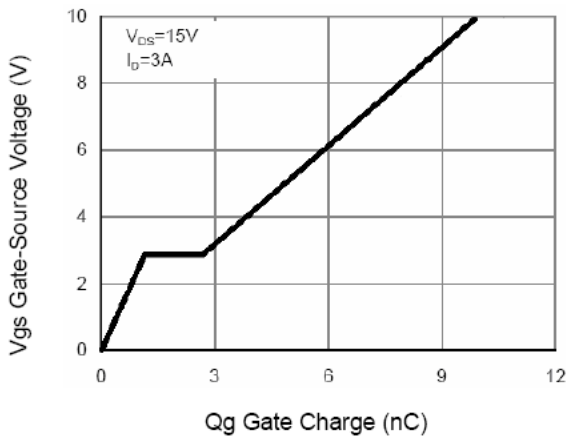
**Figure 8 Drain-Source On-Resistance**



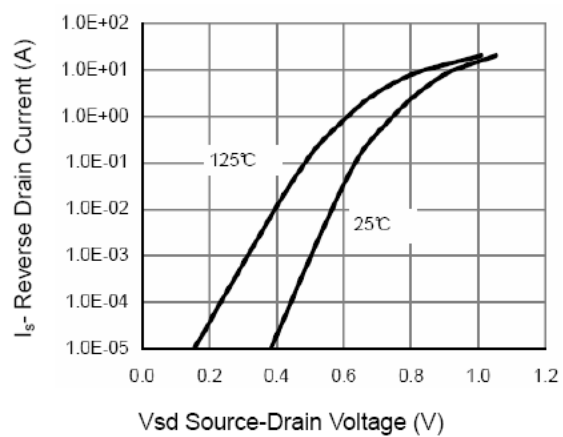
**Figure 9 Rdson vs Vgs**



**Figure 10 Capacitance vs Vds**



**Figure 11 Gate Charge**



**Figure 12 Source- Drain Diode Forward**

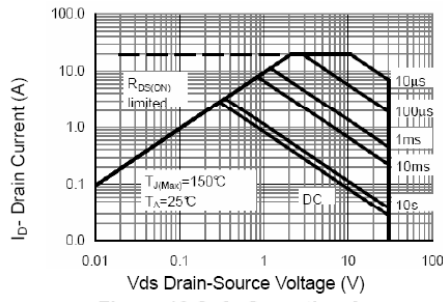


Figure 13 Safe Operation Area

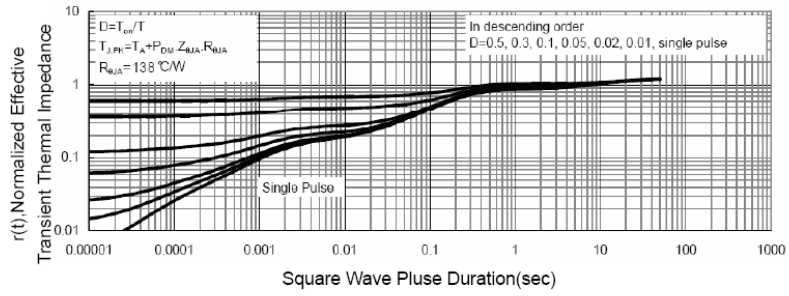


Figure 14 Normalized Maximum Transient Thermal Impedance