

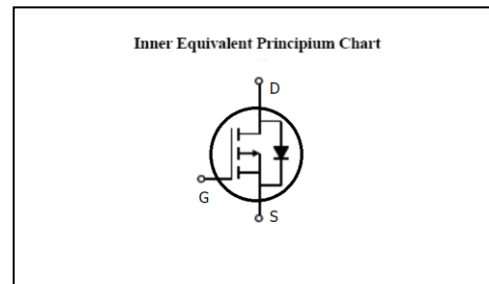
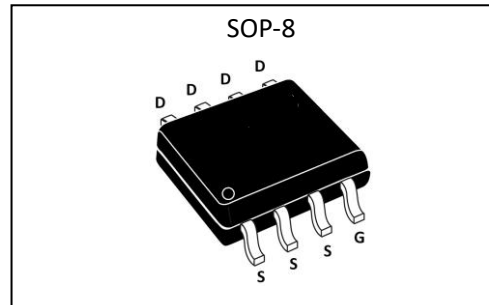
Features:

- $R_{DS(ON)} < 55m\Omega$ @ $V_{GS} = -10V$ (Typ43m Ω)
- High density cell design for ultra low R_{dson}
- Fully characterized avalanche voltage and current
- Excellent package for good heat dissipation

V_{DSS}	-30	V
I_D	-5.1	A
P_D	2.5	W
$R_{DS(ON)type}$	43	m Ω

Applications:

- Power switching application
- Hard switched and high frequency circuits
- Uninterruptible power supply



Absolute ($T_c = 25^\circ C$ unless otherwise specified) :

Symbol	Parameter	Rating	Units
V_{DSS}	Drain-to-Source Voltage	-30	V
I_D	Continuous Drain Current	-5.1	A
I_{DM}	Pulsed Drain Current	-20	A
V_{GS}	Gate-to-Source Voltage	± 20	V
P_D	Power Dissipation	2.5	W
T_J, T_{stg}	Operating Junction and Storage Temperature Range	155, -55 to 155	$^\circ C$

Electrical Characteristics ($T_c = 25^\circ\text{C}$ unless otherwise specified) :

OFF Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
V_{DSS}	Drain to Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	-30	--	--	V
I_{DSS}	Drain to Source Leakage Current	$V_{DS}=-24V, V_{GS}=0V, T_a=25^\circ\text{C}$	--	--	-1.0	μA
$I_{GSS(F)}$	Gate to Source Forward Leakage	$V_{GS}=+20V$	--	--	0.1	μA
$I_{GSS(R)}$	Gate to Source Reverse Leakage	$V_{GS}=-20V$	--	--	-0.1	μA

ON Characteristics ^{a3}						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
$R_{DS(ON)}$	Drain-to-Source On-Resistance	$V_{GS}=-10V, I_D=-5.1A$	--	43	55	$m\Omega$
		$V_{GS}=-4.5V, I_D=-4.2A$	--	62	90	$m\Omega$
$V_{GS(TH)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1.0	--	-3.0	V
Pulse width $t_p \leq 380\mu s, \delta \leq 2\%$						

Dynamic Characteristics ^{a4}						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
g_{fs}	Forward Transconductance	$V_{DS}=-15V, I_D=-5.1A$	--	7	--	S
C_{iss}	Input Capacitance	$V_{GS}=0V, V_{DS}=-15V$ $f=1.0\text{MHz}$	--	980	--	pF
C_{oss}	Output Capacitance		--	390	--	
C_{rss}	Reverse Transfer Capacitance		--	135	--	

Resistive Switching Characteristics ^{a4}						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
$t_{d(ON)}$	Turn-on Delay Time	$V_{DD}=-15V, I_D=-1A$ $V_{GS}=-10V, R_G=6\Omega$	--	14	--	ns
t_r	Rise Time		--	12	--	
$t_{d(OFF)}$	Turn-Off Delay Time		--	56	--	
t_f	Fall Time		--	20	--	
Q_g	Total Gate Charge	$V_{DD}=-15V, I_D=-5.1A$ $V_{GS}=-10V$	--	11	--	nC
Q_{gs}	Gate to Source Charge		--	2.0	--	
Q_{gd}	Gate to Drain ("Miller")Charge		--	2.8	--	

Source-Drain Diode Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
I_S	Continuous Source Current ^{a2} (Body Diode)		--	--	-5.1	A
V_{SD}	Diode Forward Voltage ^{a3}	$I_S = -2.1A, V_{GS} = 0V$	--	--	-1.2	V

Symbol	Parameter	Typ.	Units
$R_{\theta JC}$	Junction-to-Case ^{a2}	50	°C/W

^{a1}: Repetitive Rating: Pulse width limited by maximum junction temperature.

^{a2}: Surface Mounted on FR4 Board, $t \leq 10\text{sec}$.

^{a3}: Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$.

^{a4}: Guaranteed by design, not subject to production

Test circuit & Thermal Characteristics

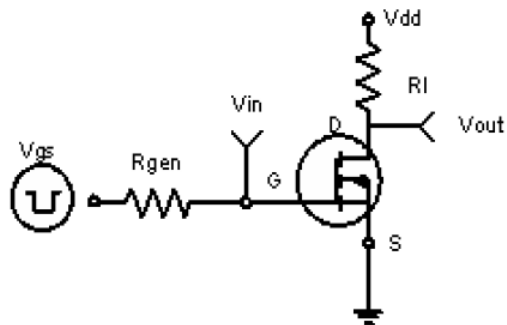


Figure 1: Switching Test Circuit

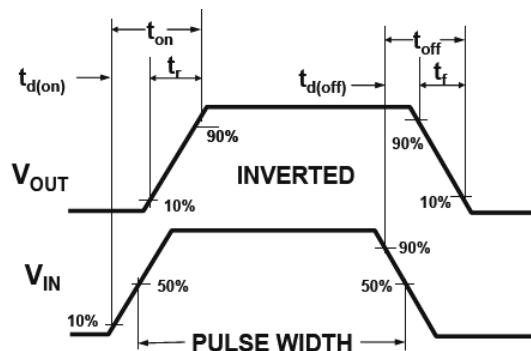


Figure 2: Switching Waveforms

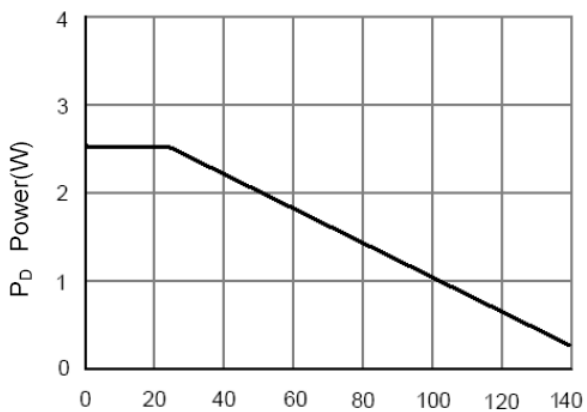


Figure 3 Power Dissipation

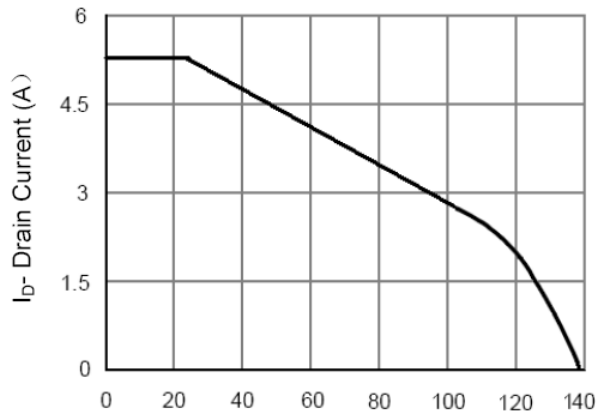


Figure 4 Drain Current

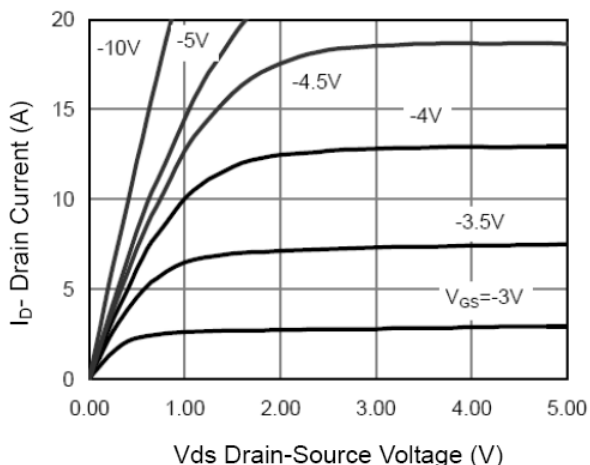


Figure 5 Output Characteristics

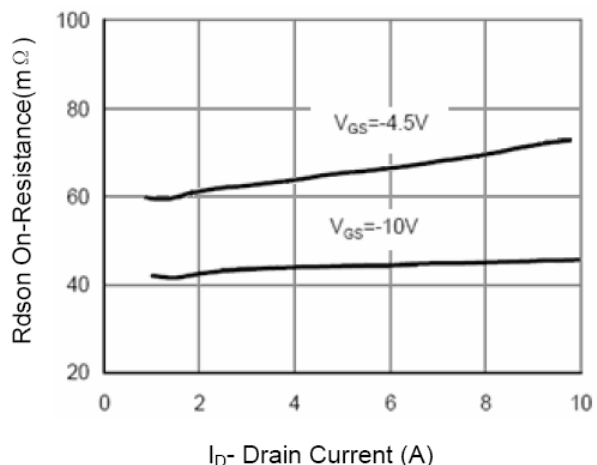


Figure 6 Drain-Source On-Resistance

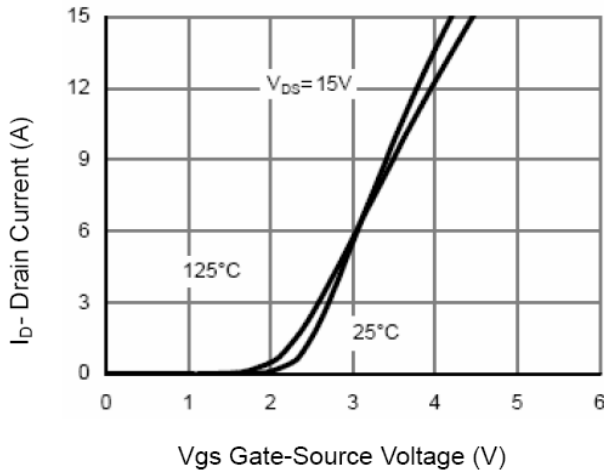


Figure 7 Transfer Characteristics

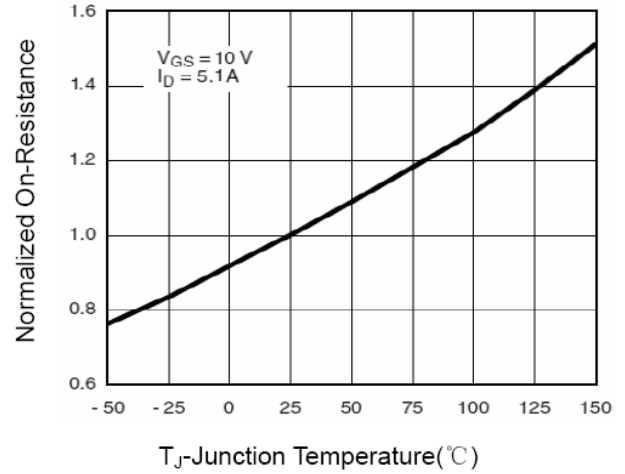


Figure 8 Drain-Source On-Resistance

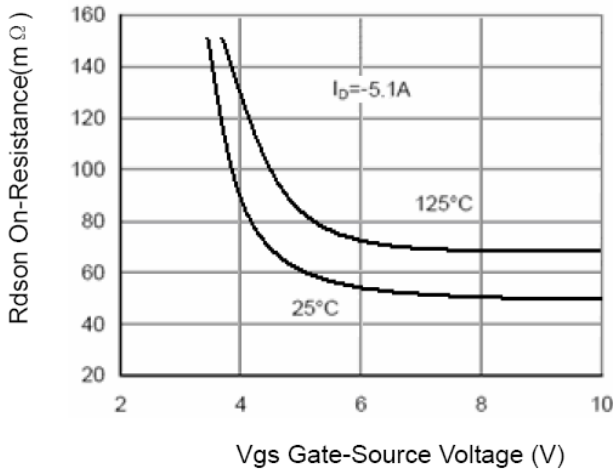


Figure 9 Rdson vs Vgs

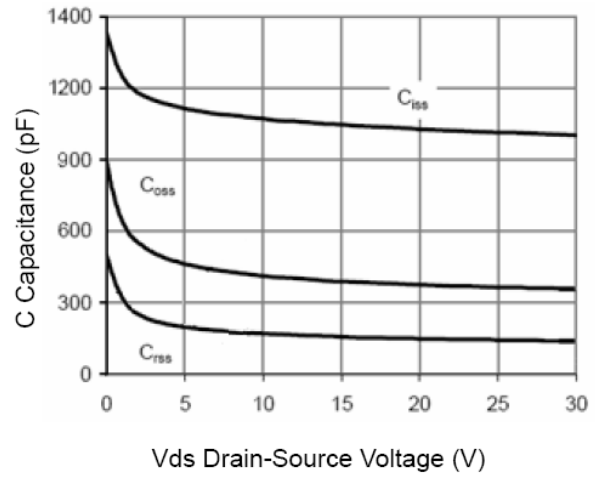


Figure 10 Capacitance vs Vds

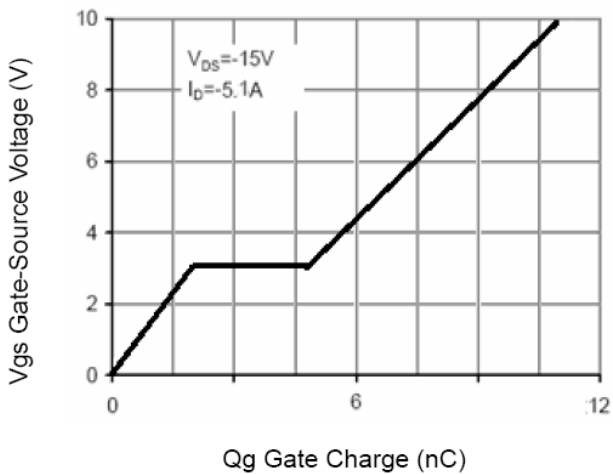


Figure 11 Gate Charge

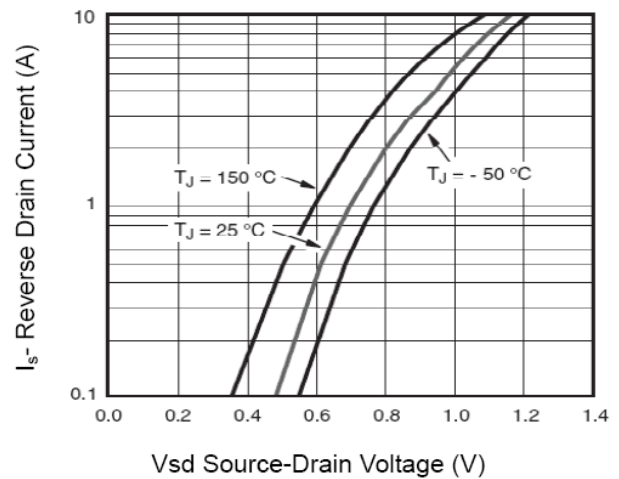


Figure 12 Source- Drain Diode Forward

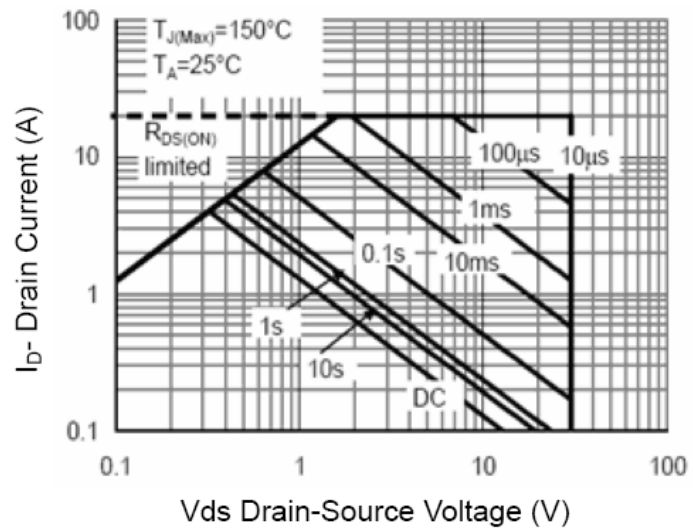


Figure 13 Safe Operation Area

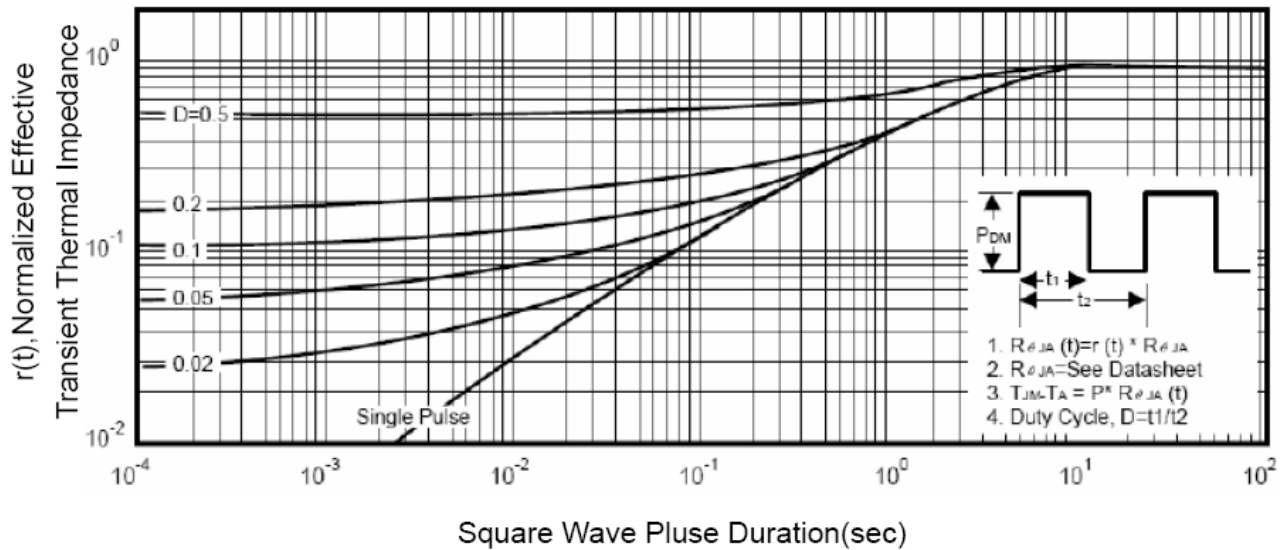


Figure 14 Normalized Maximum Transient Thermal Impedance