

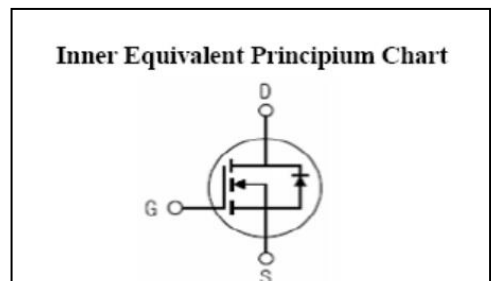
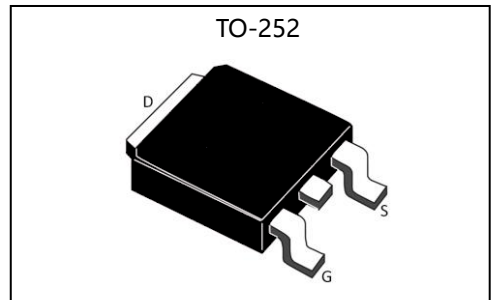
**Features:**

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

**Applications:**

- Power switch circuit of adaptor and charger.

$V_{DSS}$	1000	V
$I_D$	2	A
$P_D (T_C=25^\circ C)$	85	W
$R_{DS(ON).TYPE.}$	7.8	$\Omega$



**Absolute** (Tc= 25°C unless otherwise specified):

Symbol	Parameter	Rating	Units
$V_{DSS}$	Drain-to-Source Voltage	1000	V
$I_D$	Continuous Drain Current	2	A
	Continuous Drain Current $T_C = 100^\circ C$	1.2	A
$I_{DM}^{a1}$	Pulsed Drain Current	8	A
$V_{GS}$	Gate-to-Source Voltage	$\pm 30$	V
$E_{AS}^{a2}$	Single Pulse Avalanche Energy	160	mJ
$E_{AR}^{a1}$	Avalanche Energy ,Repetitive	10	mJ
$I_{AR}^{a1}$	Avalanche Current	2.1	A
$dv/dt^{a3}$	Peak Diode Recovery $dv/dt$	5.0	V/ns
$P_D$	Power Dissipation	85	W
	Derating Factor above 25°C	0.68	W/°C
$T_J, T_{stg}$	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) :

<b>OFF Characteristics</b>						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
V <sub>DSS</sub>	Drain to Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> =250μA	1000	--	--	V
ΔBV <sub>DSS</sub> /ΔT <sub>J</sub>	Bvdss Temperature Coefficient	I <sub>D</sub> =250uA, Reference 25°C	--	1.5	--	V/°C
I <sub>DSS</sub>	Drain to Source Leakage Current	V <sub>DS</sub> =1000V, V <sub>GS</sub> = 0V, T <sub>a</sub> =25°C	--	--	1	μA
		V <sub>DS</sub> =800V, V <sub>GS</sub> =0V, T <sub>a</sub> =125°C	--	--	250	
I <sub>GSS(F)</sub>	Gate to Source Forward Leakage	V <sub>GS</sub> = +30V	--	--	100	nA
I <sub>GSS(R)</sub>	Gate to Source Reverse Leakage	V <sub>GS</sub> = -30V	--	--	100	nA

<b>ON Characteristics</b>						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
R <sub>DS(ON)</sub>	Drain-to-Source On-Resistance	V <sub>GS</sub> =10V, I <sub>D</sub> =1.0A	--	7.8	8.8	Ω
V <sub>GS(TH)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	2.0	3.0	4.0	V
Pulse width tp ≤ 380μs, δ ≤ 2%						

<b>Dynamic Characteristics</b>						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
g <sub>fs</sub>	Forward Transconductance	V <sub>DS</sub> =15V, I <sub>D</sub> =2.0A	--	2.1	--	S
C <sub>iss</sub>	Input Capacitance	V <sub>GS</sub> =0V, V <sub>DS</sub> =25V f=1.0MHz	--	380	--	pF
C <sub>oss</sub>	Output Capacitance		--	40	--	
C <sub>rss</sub>	Reverse Transfer Capacitance		--	4	--	

<b>Resistive Switching Characteristics</b>						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
t <sub>d(ON)</sub>	Turn-on Delay Time	I <sub>D</sub> =2.0A, V <sub>DD</sub> =500V V <sub>GS</sub> =10V, R <sub>G</sub> =12Ω	--	8	--	ns
t <sub>r</sub>	Rise Time		--	6	--	
t <sub>d(OFF)</sub>	Turn-Off Delay Time		--	36	--	
t <sub>f</sub>	Fall Time		--	15	--	
Q <sub>g</sub>	Total Gate Charge	I <sub>D</sub> =2.0A, V <sub>DD</sub> =500V V <sub>GS</sub> =10V	--	15	--	nC
Q <sub>gs</sub>	Gate to Source Charge		--	2.1	--	
Q <sub>gd</sub>	Gate to Drain ( "Miller" )Charge		--	6	--	

Source-Drain Diode Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
$I_S$	Continuous Source Current (Body Diode)		--	--	2	A
$I_{SM}$	Maximum Pulsed Current (Body Diode)		--	--	8	A
$V_{SD}$	Diode Forward Voltage	$I_S=2.0A, V_{GS}=0V$	--	--	1.5	V
$t_{rr}$	Reverse Recovery Time	$I_S=2.0A, T_j = 25^\circ C$	--	500	--	ns
$Q_{rr}$	Reverse Recovery Charge	$di_F/dt=100A/us, V_{GS}=0V$	--	1.2	--	uC

Pulse width  $t_p \leq 380\mu s, \delta \leq 2\%$

Symbol	Parameter	Typ.	Units
$R_{\theta JC}$	Junction-to-Case	1.47	$^\circ C/W$
$R_{\theta JA}$	Junction-to-Ambient	100	$^\circ C/W$

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

a2:  $L=10.0mH$ , Start  $T_j=25^\circ C$

a3:  $I_{SD} = 2.0A, di/dt \leq 100A/us, V_{DD} \leq BV_{DS}$ , Start  $T_j=25^\circ C$

**Test Circuit and Waveform**

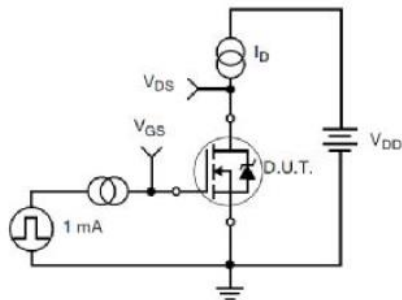


Figure 17. Gate Charge Test Circuit

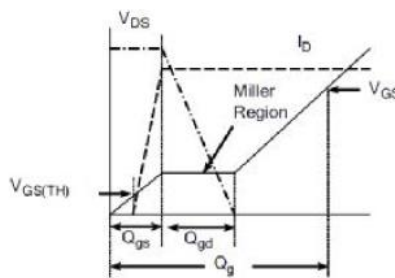


Figure 18. Gate Charge Waveform

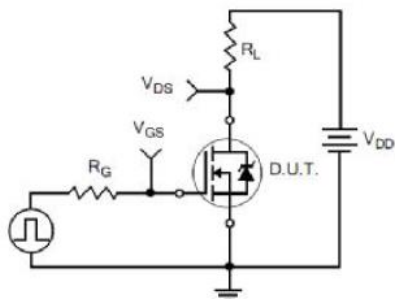


Figure 19. Resistive Switching Test Circuit

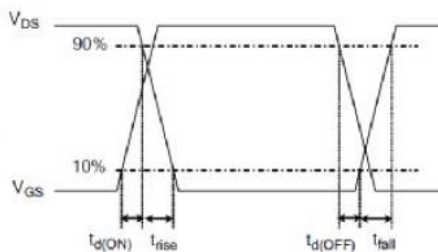


Figure 20. Resistive Switching Waveforms

Fig. 1. Output Characteristics @ 25°C

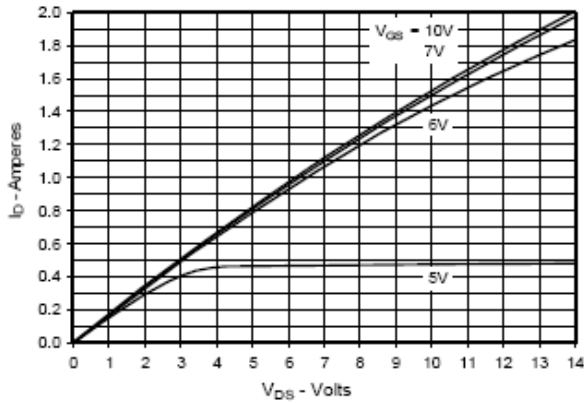


Fig. 2. Extended Output Characteristics @ 25°C

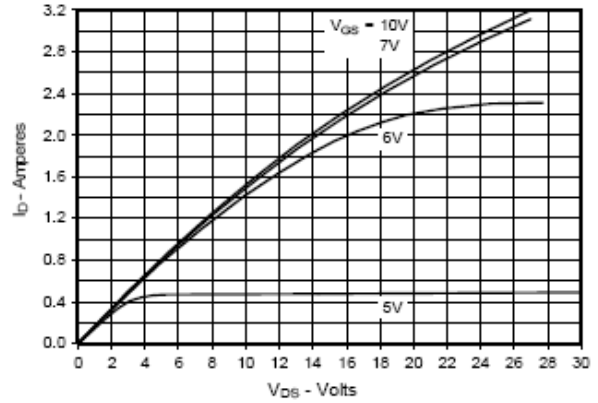


Fig. 3. Output Characteristics @ 125°C

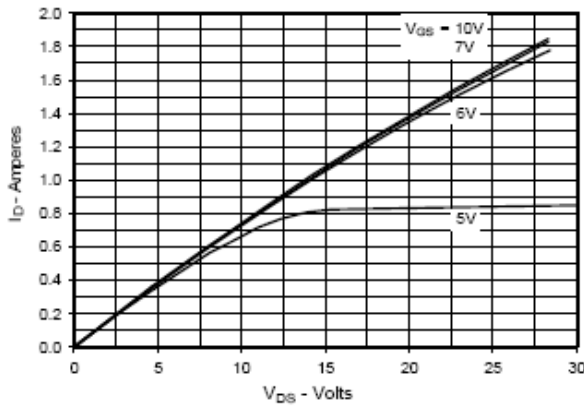


Fig. 4.  $R_{DS(on)}$  Normalized to  $I_D = 1A$  Value vs. Junction Temperature

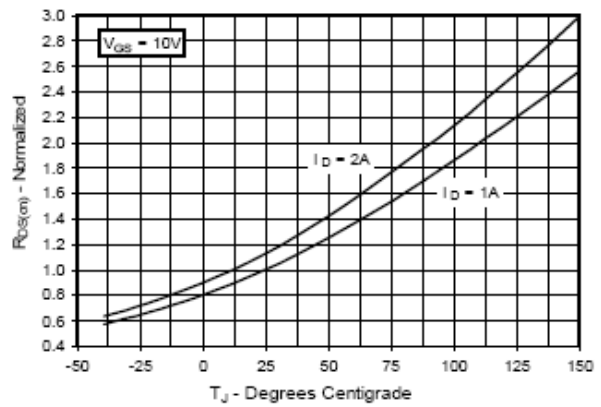


Fig. 5.  $R_{DS(on)}$  Normalized to  $I_D = 1A$  Value vs. Drain Current

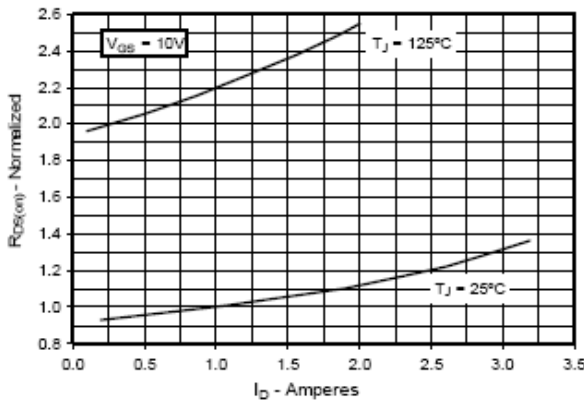


Fig. 6. Maximum Drain Current vs. Case Temperature

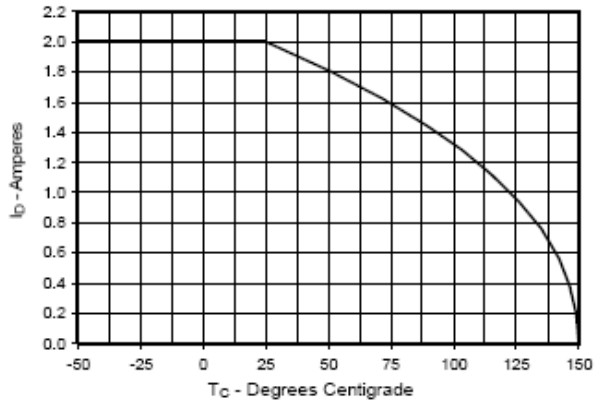


Fig. 7. Input Admittance

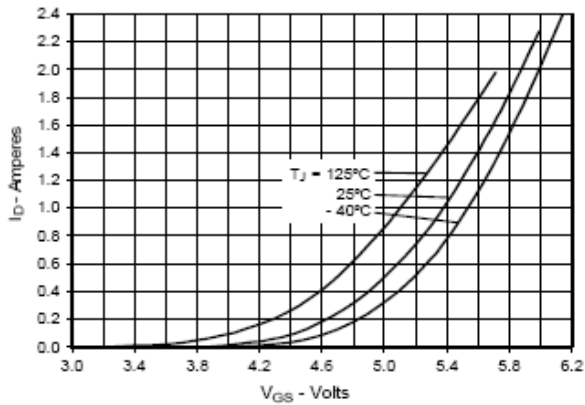


Fig. 8. Transconductance

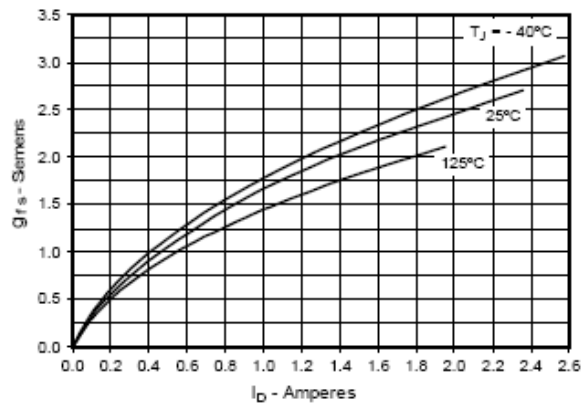


Fig. 9. Forward Voltage Drop of Intrinsic Diode

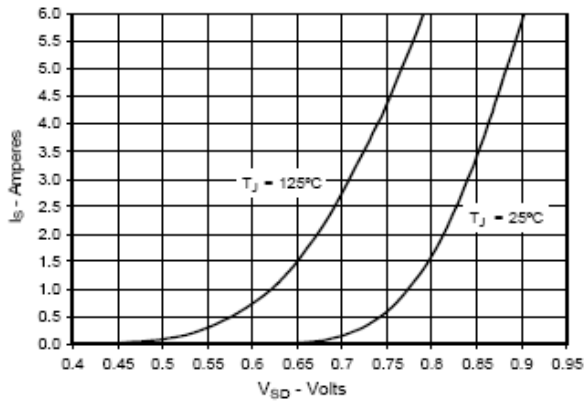


Fig. 10. Gate Charge

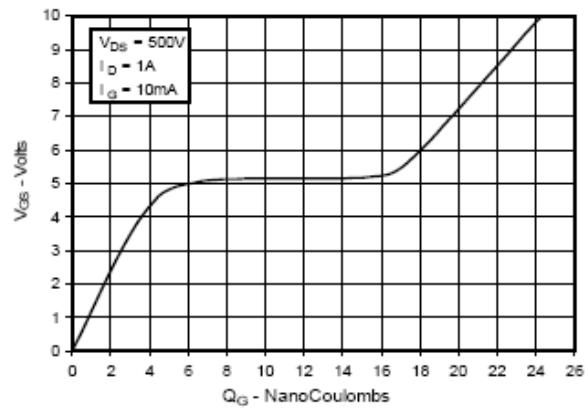


Fig. 11. Capacitance

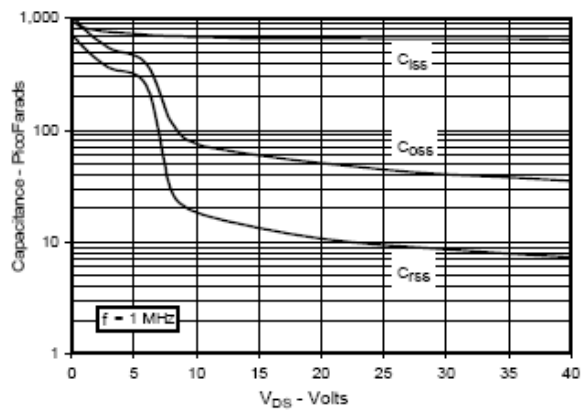
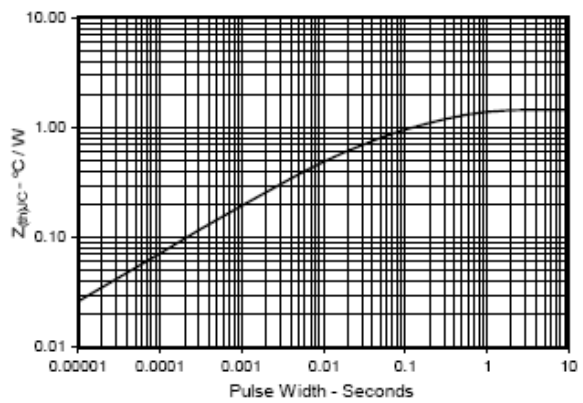


Fig. 12. Maximum Transient Thermal Impedance



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