

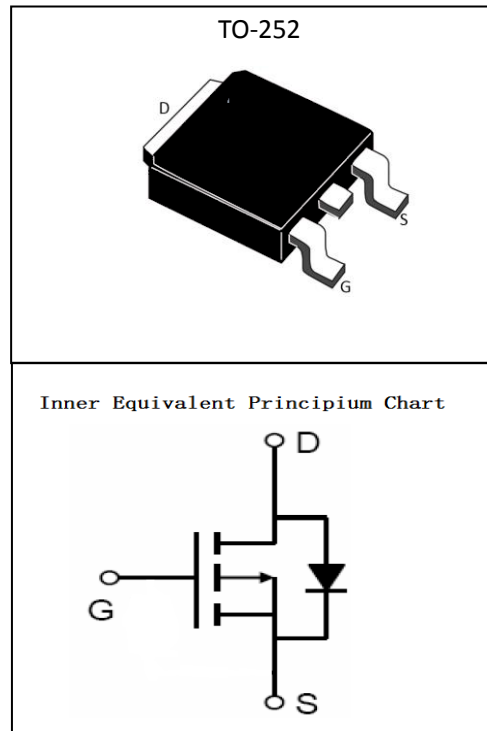
Features :

- $R_{DS(ON)} < 1.5\Omega$ @ $V_{GS}=10V$ (Typ0.8 Ω)
- High density cell design for ultra low R_{dson}
- Fully characterized avalanche voltage and current
- Excellent package for good heat dissipation

Applications :

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

V_{DSS}	-200	V
I_D	-5	A
P_D	35	W
$R_{DS(ON)type}$	0.8	Ω



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

Symbol	Parameter	Rating	Units
V_{DSS}	Drain-to-Source Voltage	-200	V
I_D	Continuous Drain Current	-5	A
I_{DM}	Pulsed Drain Current	-20	A
V_{GS}	Gate-to-Source Voltage	± 20	V
P_D	Power Dissipation	35	W
E_{AS}	Single pulse avalanche energy ^{a5}	160	mJ
T_J , T_{stg}	Operating Junction and Storage Temperature Range	150 , -55 to 150	$^\circ C$

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	$V_{GS}=0V, I_D=-250\mu A$	-200	--	--	V
I_{DSS}	Drain to Source Leakage Current	$V_{DS}=-200V, V_{GS}=0V, T_a=25^\circ\text{C}$	--	--	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	$V_{GS}=-10V, I_D=-5A$	--	0.8	1.5	Ω
$V_{GS(TH)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=-250\mu A$	-2	--	-4	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	$V_{DS}=-15V, I_D=-2.5A$	1.5	--	--	S
C_{iss}	Input Capacitance	$V_{GS}=0V, V_{DS}=-25V$ $f=1.0\text{MHz}$	--	480	--	pF
C_{oss}	Output Capacitance		--	100	--	
C_{rss}	Reverse Transfer Capacitance		--	30	--	

Resistive Switching Characteristics^{a4}						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
$t_{d(ON)}$	Turn-on Delay Time	$V_{DD}=-160V, I_D=-4A$ $V_{GS}=-10V, R_G=9.1\Omega$	--	15	--	ns
t_r	Rise Time		--	25	--	
$t_{d(OFF)}$	Turn-Off Delay Time		--	20	--	
t_f	Fall Time		--	15	--	
Q_g	Total Gate Charge	$V_{DD}=-100V, I_D=-10A$ $V_{GS}=-10V$	--	18	--	nC
Q_{gs}	Gate to Source Charge		--	9	--	
Q_{gd}	Gate to Drain ("Miller") Charge		--	8	--	

Source-Drain Diode Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
I_S	Continuous Source Current ^{a2} (Body Diode)		--	--	-5	A
V_{SD}	Diode Forward Voltage ^{a3}	$I_S = -5A, V_{GS} = 0V$	--	--	-1.2	V

Symbol	Parameter	Typ.	Units
$R_{\theta JC}$	Junction-to-Case ^{a2}	3.57	°C/W

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

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

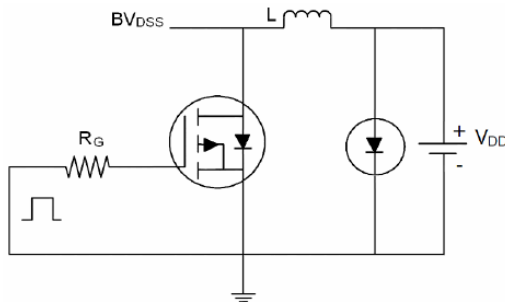
^{a3} : Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$.

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

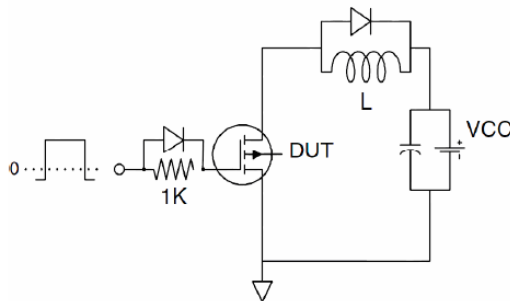
^{a5} : EAS condition : $T_j = 25^\circ\text{C}, V_{DD} = -50\text{V}, V_G = -10\text{V}, L = 0.5\text{mH}, R_g = 25\Omega$

Test circuit

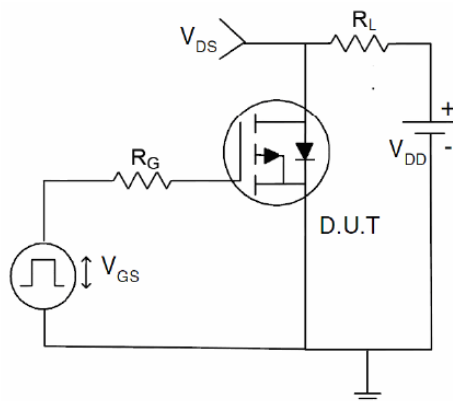
1) EAS Test Circuit



2) Gate Charge Test Circuit



3) Switch Time Test Circuit



TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)

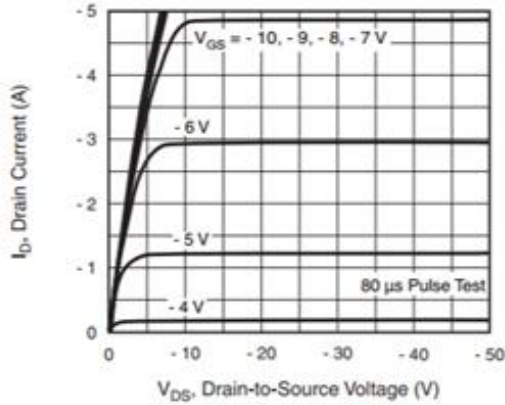


Fig. 1 - Typical Output Characteristics

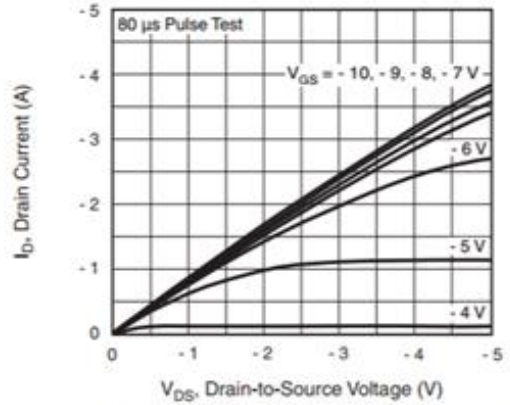


Fig. 3 - Typical Saturation Characteristics

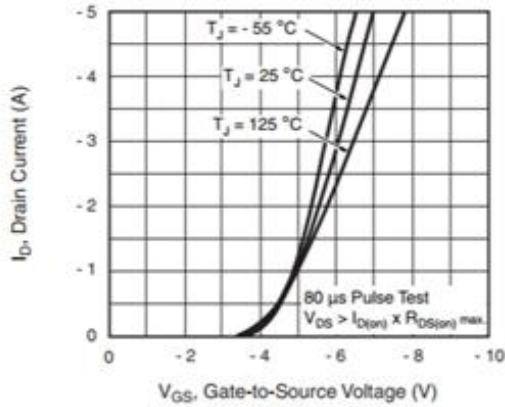


Fig. 2 - Typical Transfer Characteristics

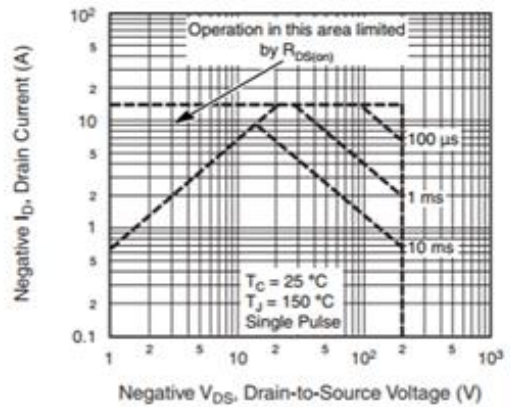


Fig. 4 - Maximum Safe Operating Area

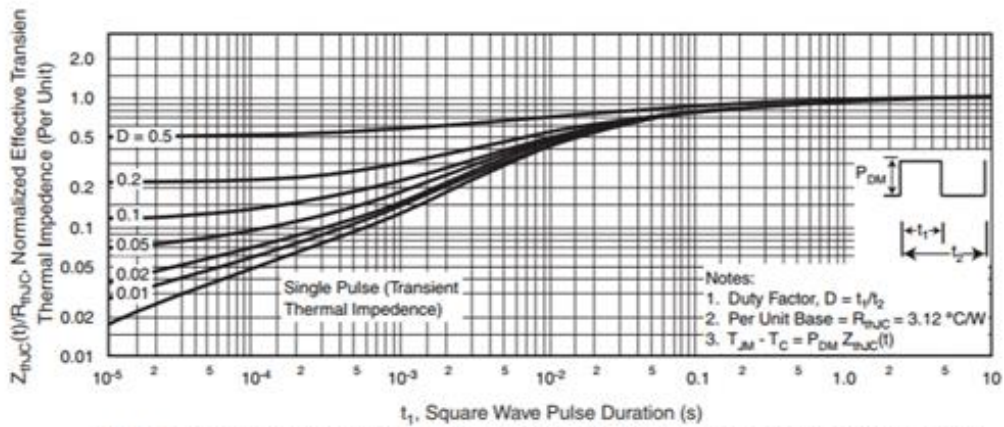


Fig. 5 - Maximum Effective Transient Thermal Impedance, Junction-to-Case vs. Pulse Duration

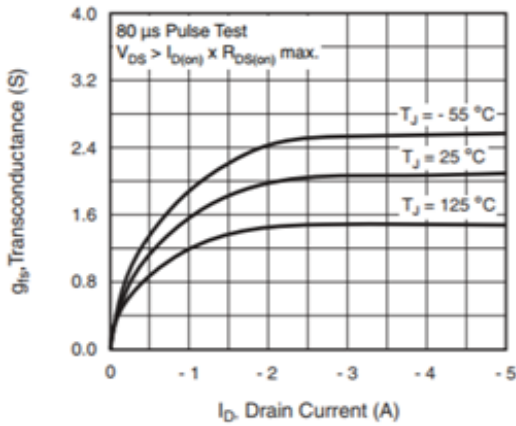


Fig. 6 - Typical Transconductance vs. Drain Current

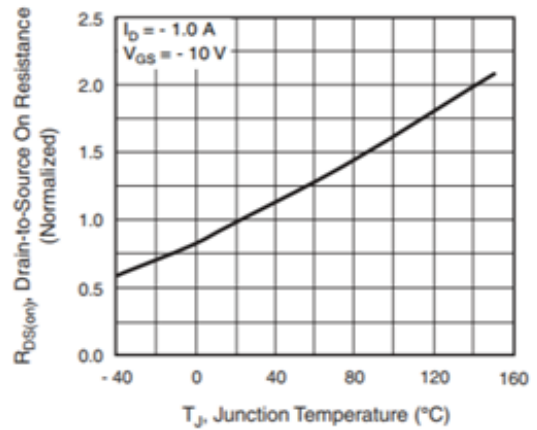


Fig. 9 - Normalized On-Resistance vs. Temperature

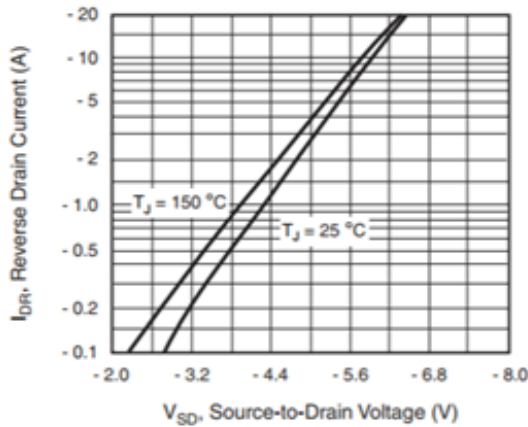


Fig. 7 - Typical Source-Drain Diode Forward Voltage

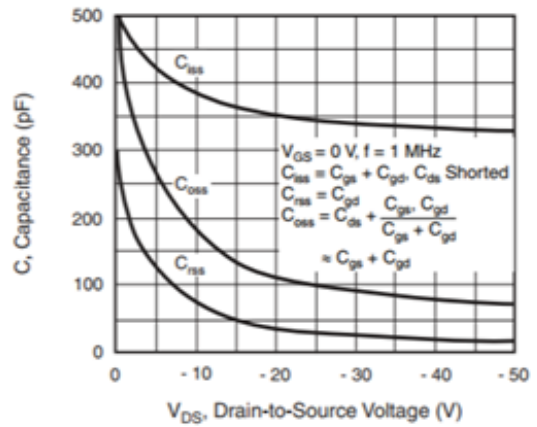


Fig. 10 - Typical Capacitance vs. Drain-to-Source Voltage

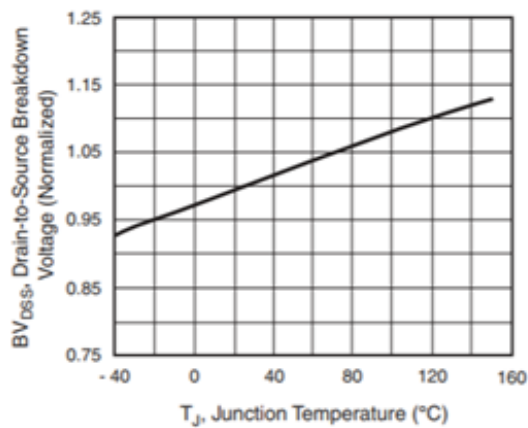


Fig. 8 - Breakdown Voltage vs. Temperature

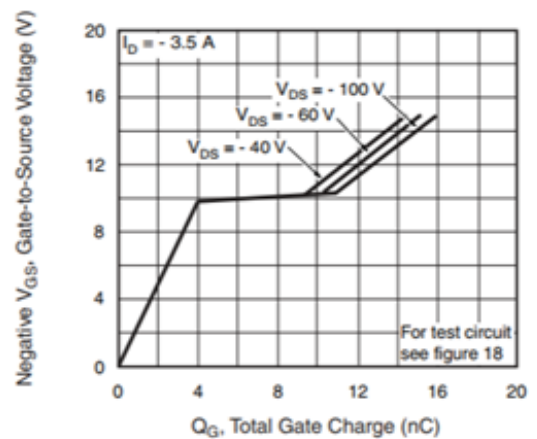


Fig. 11 - Typical Gate Charge vs. Gate-to-Source Voltage

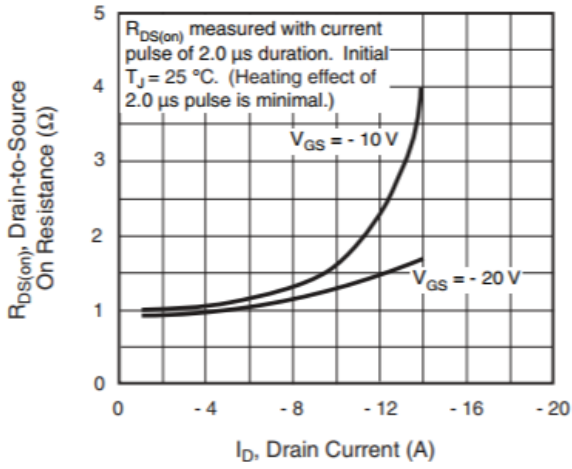


Fig. 12 - Typical On-Resistance vs. Drain Current

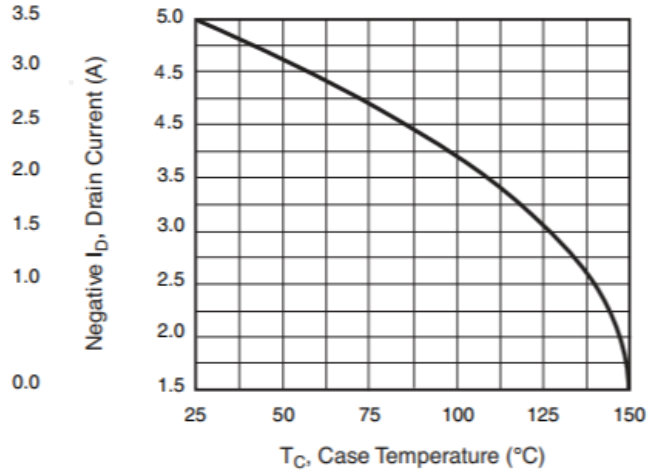


Fig. 13 - Maximum Drain Current vs. Case Temperature

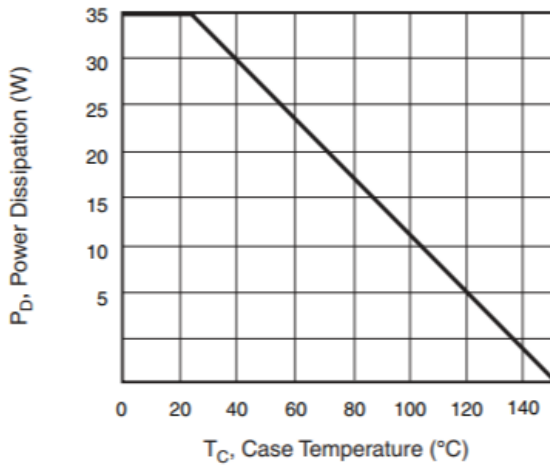


Fig. 14 - Power vs. Temperature Derating Curve