

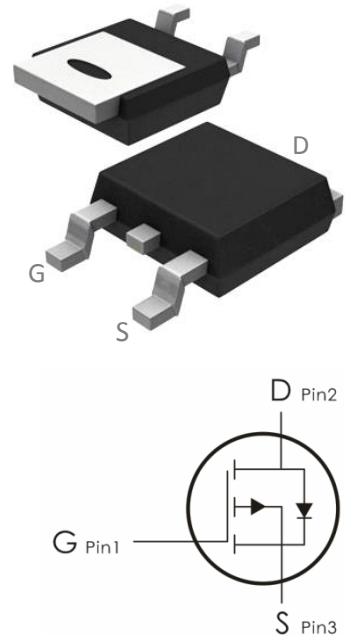
Description:

This P-Channel MOSFET uses advanced trench technology and design to provide excellent $R_{DS(on)}$ with low gate charge.

It can be used in a wide variety of applications.

Features:

- 1) $V_{DS}=-100V, I_D=-40A, R_{DS(on)}<52m\Omega @V_{GS}=-10V$
- 2) Low gate charge.
- 3) Green device available.
- 4) Advanced high cell density trench technology for ultra $R_{DS(on)}$.
- 5) Excellent package for good heat dissipation.



Absolute Maximum Ratings: ($T_C=25^{\circ}C$ unless otherwise noted)

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	-100	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current	-40	A
	Continuous Drain Current- $T_C=75^{\circ}C$	-32	
	Pulsed Drain Current ¹	-110	
E_{AS}	Single Pulse Avalanche Energy ²	225	mJ
P_D	Power Dissipation	100	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +150	$^{\circ}C$

Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance, Junction to Case	1.5	$^{\circ}C/W$

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

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV _{DSS}	Drain-Sourctce Breakdown Voltage	V _{GS} =0V, I _D =250 μ A	-100	---	---	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{GS} =0V, V _{DS} =-100V	---	---	1	μ A
I _{GSS}	Gate-Source Leakage Current	V _{GS} =± 20V, V _{DS} =0A	---	---	± 100	nA
On Characteristics						
V _{GS(th)}	GATE-Source Threshold Voltage	V _{GS} =V _{DS} , I _D =250 μ A	-1	-2	-3	V
R _{DS(ON)}	Drain-Source On Resistance 3	V _{GS} =-10V, I _D =-20A	---	40	52	m Ω
		V _{GS} =-4.5V, I _D =-10A	---	44	60	
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =-50V, V _{GS} =0V, f=1MHz	---	7920	---	pF
C _{oss}	Output Capacitance		---	177	---	
C _{rss}	Reverse Transfer Capacitance		---	168	---	
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time ^{2,3}	V _{DS} =-50V, I _D =-10A, R _{GEN} =3.3 Ω , V _{GS} =-10V	---	15	---	ns
t _r	Rise Time ^{2,3}		---	30	---	ns
t _{d(off)}	Turn-Off Delay Time ^{2,3}		---	125	---	ns
t _f	Fall Time ^{2,3}		---	110	---	ns
Q _g	Total Gate Charge ^{2,3}	V _{GS} =-10V, V _{DS} =-50V, I _D =-20A	---	145	---	nC
Q _{gs}	Gate-Source Charge ^{2,3}		---	16	---	nC
Q _{gd}	Gate-Drain “Miller” Charge ^{2,3}		---	34	---	nC
Drain-Source Diode Characteristics						
V _{SD}	Source-Drain Diode Forward Voltage ²	V _{GS} =0V, I _S =-20A, T _J =25 °C	---	-0.87	-1.2	V
t _{rr}	Reverse Recovery Time	I _S =-10A, V _{GS} =0V	---	55	---	ns
Q _{rr}	Reverse Recovery Charge	.dI/dt=-100A/μs	---	170	---	nc

Notes: ① Pulse width limited by maximum allowable junction temperature

② Limited by T_{Jmax} , starting $T_J = 25^{\circ}\text{C}$, $L = 0.5mH, R_G = 25\Omega$, $I_{AS} = -30A$, $V_{GS} = -10V$. Part not recommended for use above this value

③ Pulse width $\leq 300\mu s$; duty cycles $\leq 2\%$.

Typical Characteristics: ($T_C=25^{\circ}\text{C}$ unless otherwise noted)

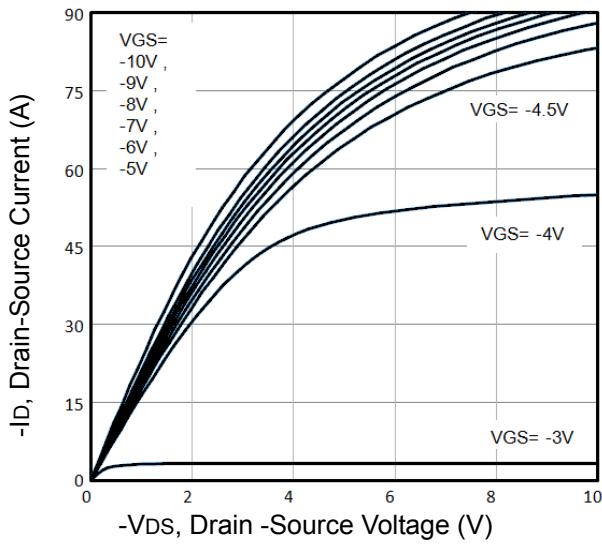


Fig1. Typical Output Characteristics

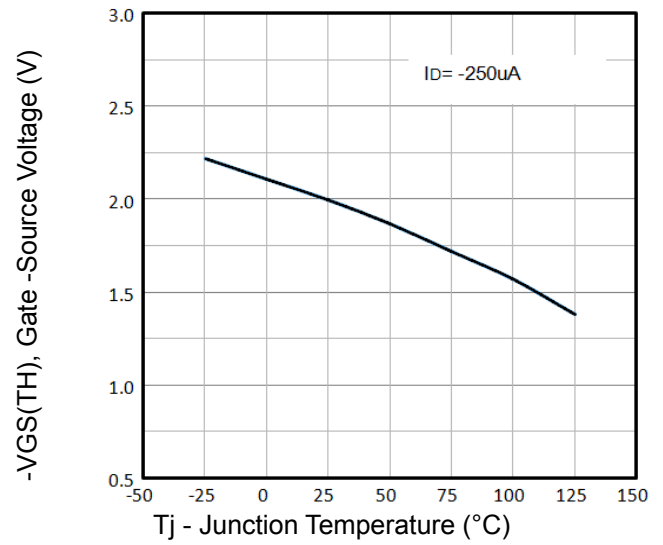


Fig2. VGS(TH) Voltage Vs. Temperature

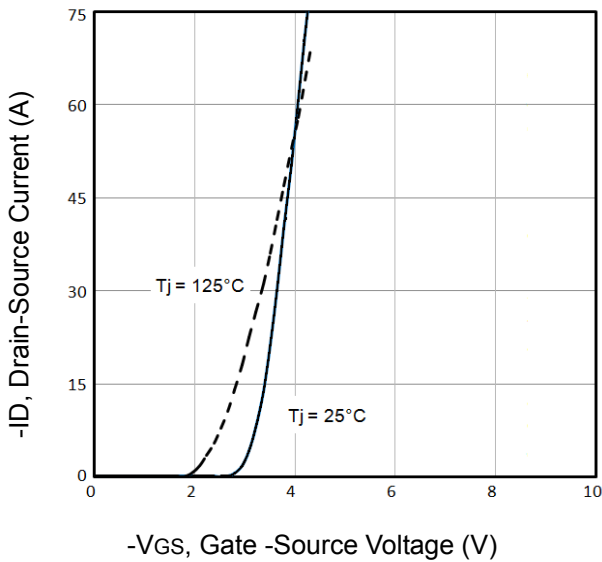


Fig3. Typical Transfer Characteristics

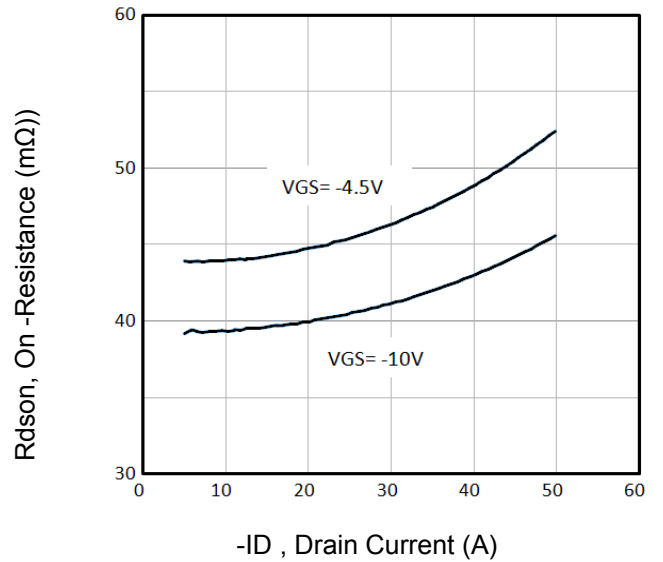


Fig4. On-Resistance vs. Drain Current and Gate Voltage

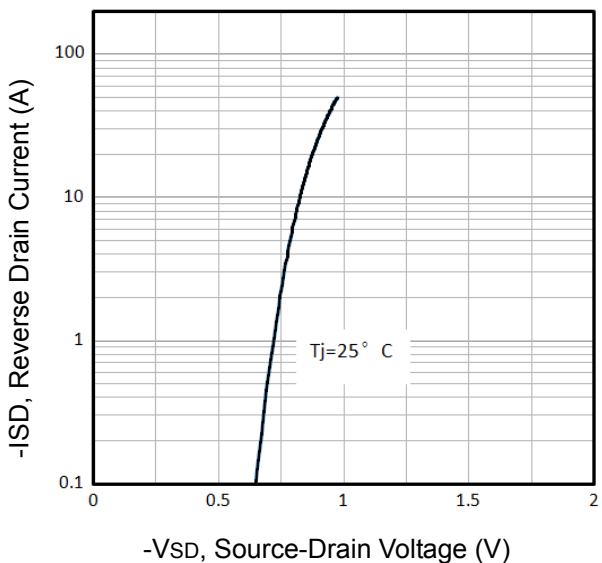


Fig5. Typical Source-Drain Diode Forward Voltage

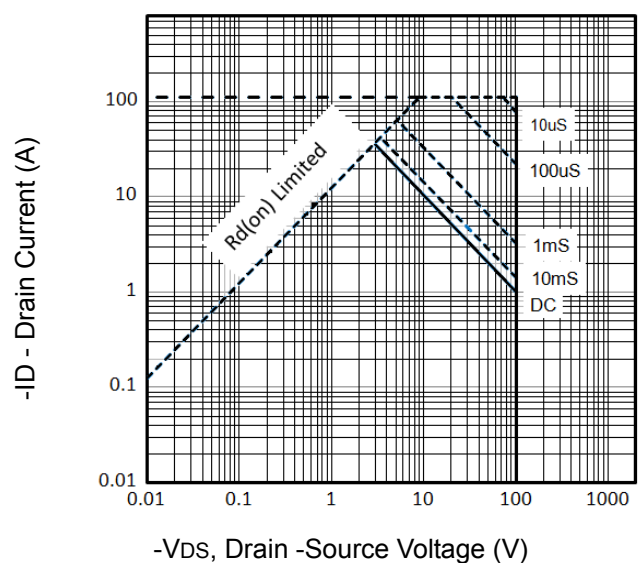


Fig6. Maximum Safe Operating Area

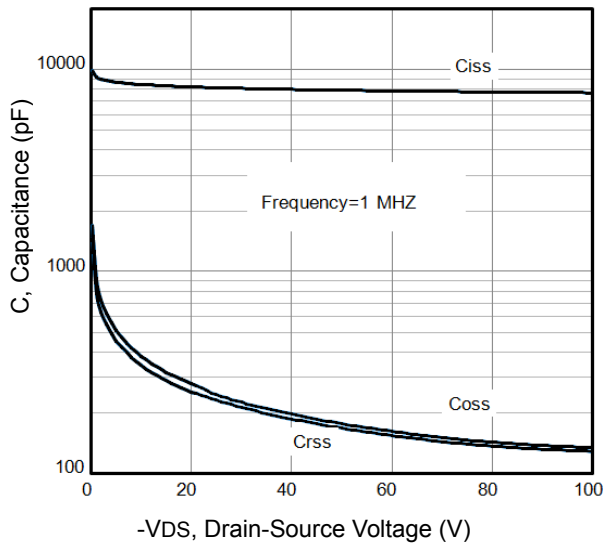


Fig7. Typical Capacitance Vs. Drain-Source Voltage

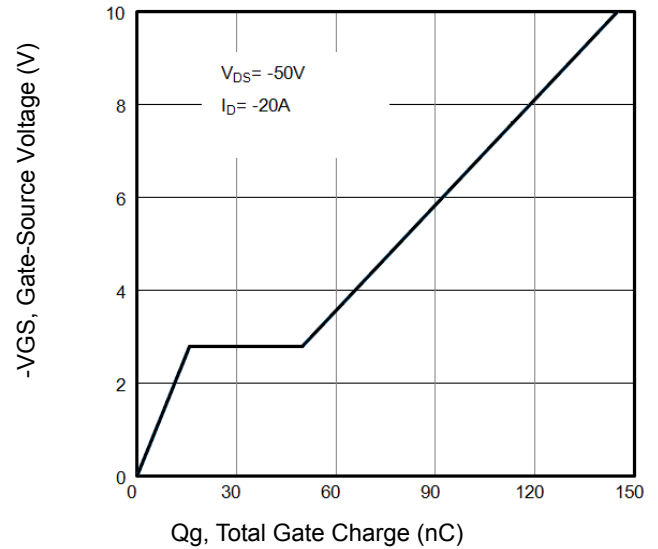


Fig8. Typical Gate Charge Vs. Gate-Source Voltage

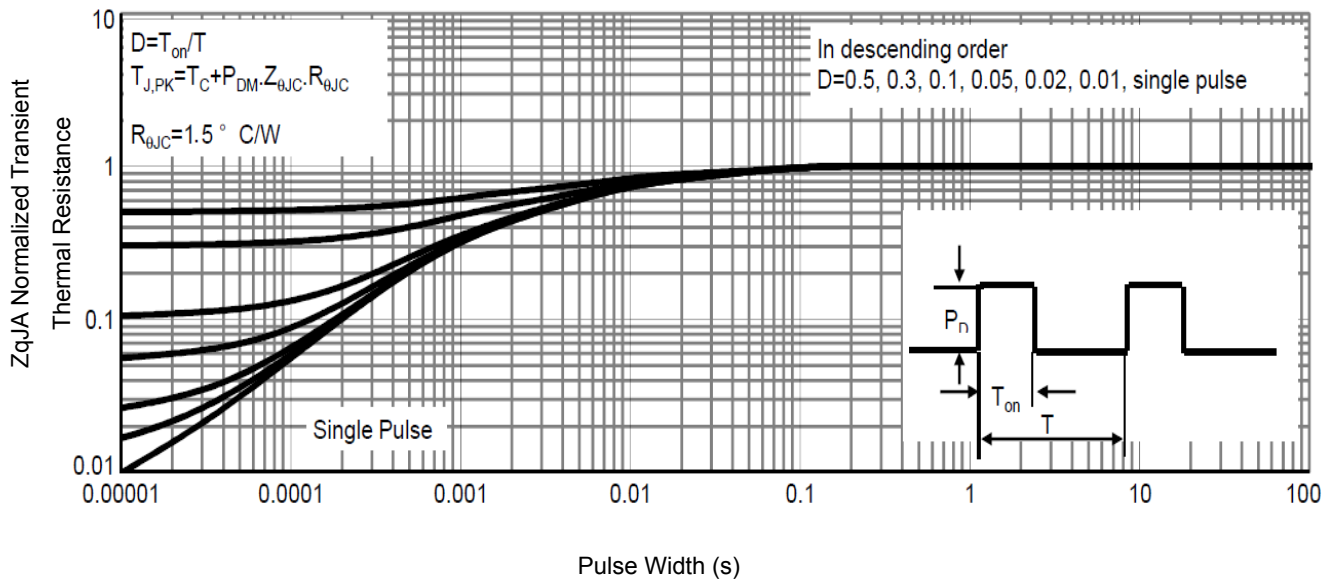


Fig9. Normalized Maximum Transient Thermal Impedance

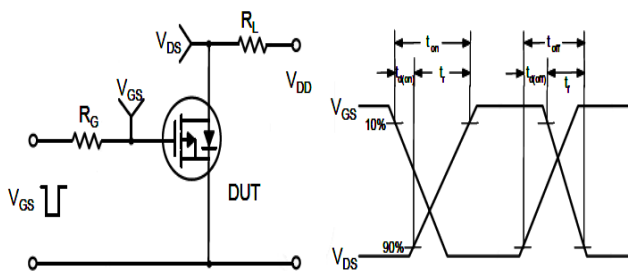


Fig10. Switching Time Test Circuit and waveforms

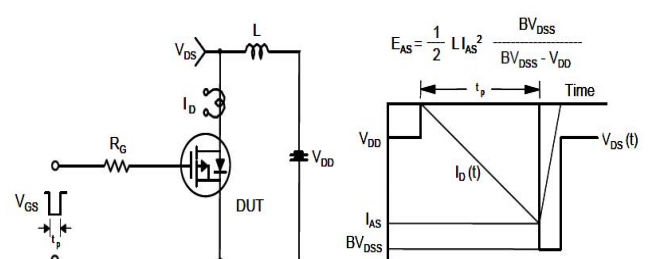


Fig11. Unclamped Inductive Test Circuit and waveforms