N-channel Enhancement Mode Power MOSFET

Features

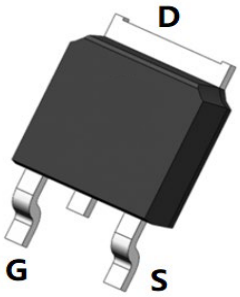
- V_{DS}= 150V, I_D= 20 A
  $R_{DS(ON)}$ < 70 mΩ @ V_{GS} = 10V
  $R_{DS(ON)}$ < 80 mΩ @ V_{GS} =4.5V

General Features

- Advanced Trench Technology
- Provide Excellent RDS(ON) and Low Gate Charge
- Lead Free and Green Available

100% UIS TESTED!
100% ΔVds TESTED!

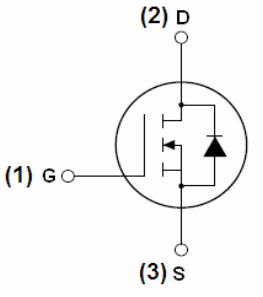
RoHS



TO-252-2L Top View



Pin Assignment



Schematic Diagram

Absolute Maximum Ratings (T_C=25℃unless otherwise noted)

Symbol	Parameter	Limit	Unit
V_{DS}	Drain-Source Voltage	150	V
V_{GS}	Gate-Source Voltage	±20	V
I_D	Drain Current-Continuous	20	A
I_D (100℃)	Drain Current-Continuous(TC=100℃)	14	A
I_{DM}	Pulsed Drain Current	40	A
P_D	Maximum Power Dissipation	90	W
	Derating factor	0.6	W/℃
E_{AS}	Single pulse avalanche energy (Note 5)	80	mJ
T_J,T_{STG}	Operating Junction and Storage Temperature Range	-55 To 175	℃

Thermal Characteristic

$R_{\theta JC}$	Thermal Resistance, Junction-to-Case (Note 2)	1.7	℃/W

Electrical Characteristics (T_C=25℃unless otherwise noted)

Symbol	Parameter	Condition	Min	Typ	Max	Unit
Off Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V I_D=250μA	150	165	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=150V,V_{GS}=0V	-	-	1	μA
I_{GSS}	Gate-Body Leakage Current	V_{GS}=±20V,V_{DS}=0V	-	-	±100	nA
On Characteristics (Note 3)						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=250μA	2		4	V
$R_{DS(ON)}$	Drain-Source On-State Resistance	V_{GS}=10V, I_D=10A	-		70	mΩ
		V_{GS}=7V, I_D=10A			80	
g_{FS}	Forward Transconductance	V_{DS}=5V,I_D=10A	-	20	-	S
Dynamic Characteristics (Note4)						
C_{lss}	Input Capacitance	V_{DS}=75V,V_{GS}=0V, F=1.0MHz	-	1810	-	PF
C_{oss}	Output Capacitance		-	61	-	PF
C_{rss}	Reverse Transfer Capacitance		-	45	-	PF
Switching Characteristics (Note 4)						
$t_{d(on)}$	Turn-on Delay Time	V_{DD}=75V,R_L=5Ω V_{GS}=10V,R_{GEN}=3Ω	-	15.5	-	nS
t_r	Turn-on Rise Time		-	8.5	-	nS
$t_{d(off)}$	Turn-Off Delay Time		-	19.5	-	nS
t_f	Turn-Off Fall Time		-	7	-	nS
Q_g	Total Gate Charge	V_{DS}=75V,I_D=10A, V_{GS}=10V	-	45	-	nC
Q_{gs}	Gate-Source Charge		-	9	-	nC
Q_{gd}	Gate-Drain Charge		-	12	-	nC
Drain-Source Diode Characteristics						
V_{SD}	Diode Forward Voltage (Note 3)	V_{GS}=0V,I_S=20A	-	-	1.2	V
I_S	Diode Forward Current (Note 2)	-	-	-	20	A
t_{rr}	Reverse Recovery Time	TJ = 25°C, IF = 10A di/dt = 100A/μs (Note3)	-	32	-	nS
Qrr	Reverse Recovery Charge		-	53	-	nC
t_{on}	Forward Turn-On Time	Intrinsic turn-on time is negligible (turn-on is dominated by LS+LD)				

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t ≤ 10 sec.
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production
5. EAS condition:Tj=25℃,V_{DD}=50V,V_G=10V,L=0.5mH,Rg=25Ω

Typical Electrical and Thermal Characteristics (Curves)

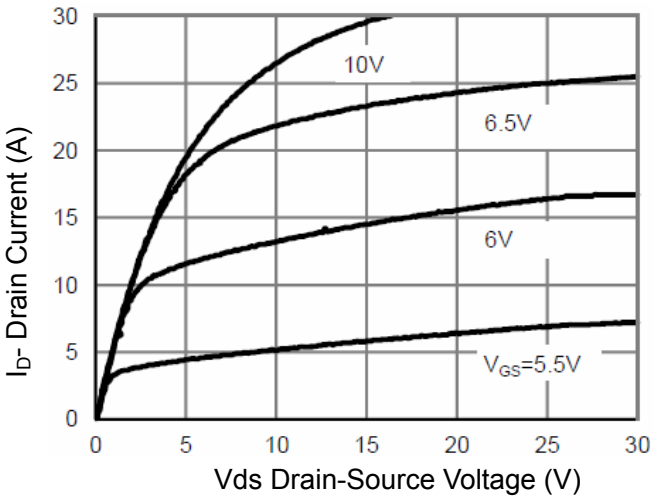


Figure 1 Output Characteristics

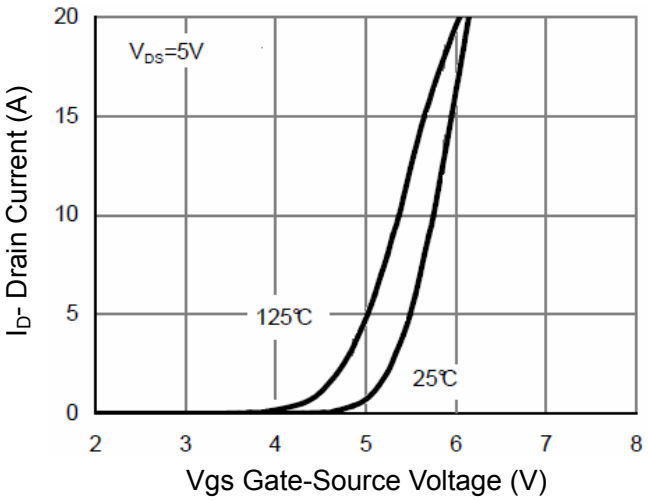


Figure 2 Transfer Characteristics

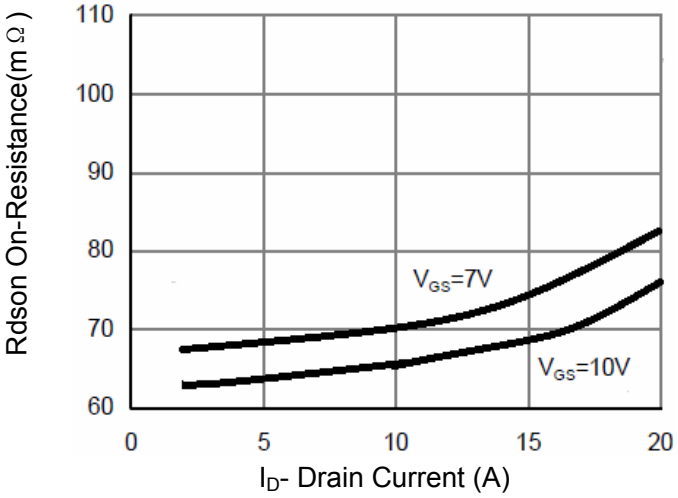


Figure 3 Rdson- Drain Current

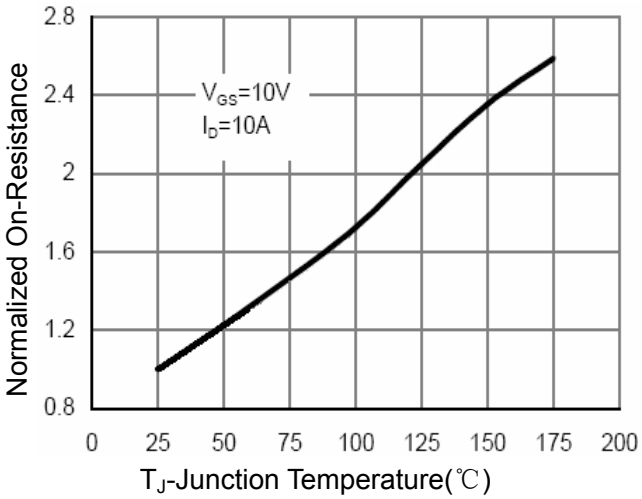


Figure 4 Rdson-JunctionTemperature

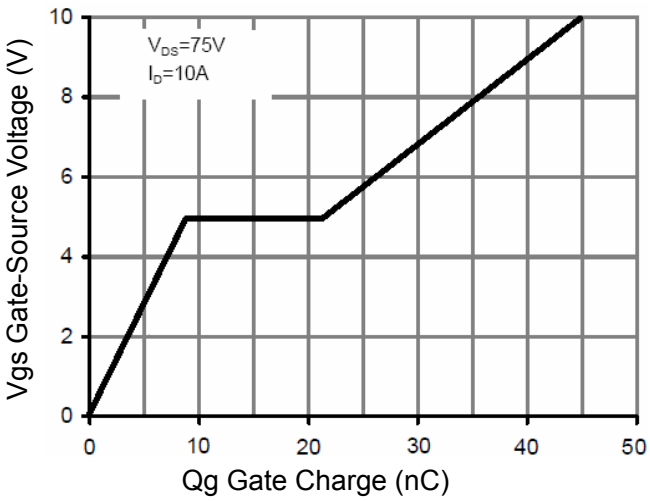


Figure 5 Gate Charge

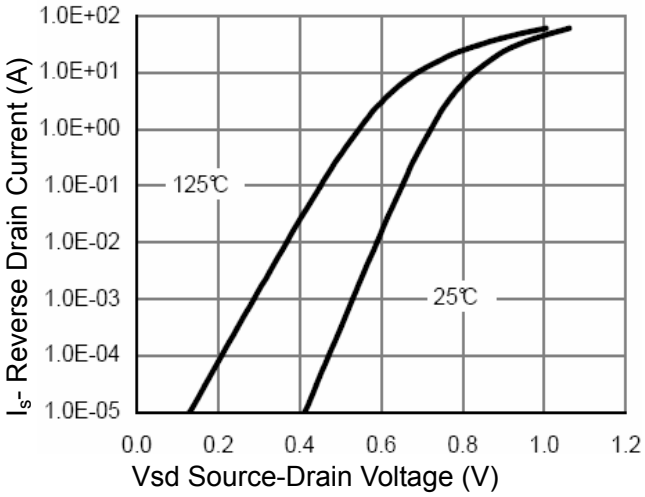


Figure 6 Source- Drain Diode Forward

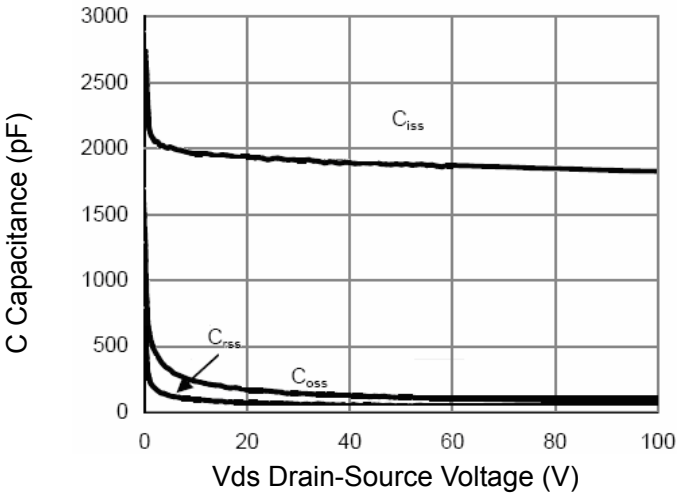


Figure 7 Capacitance vs Vds

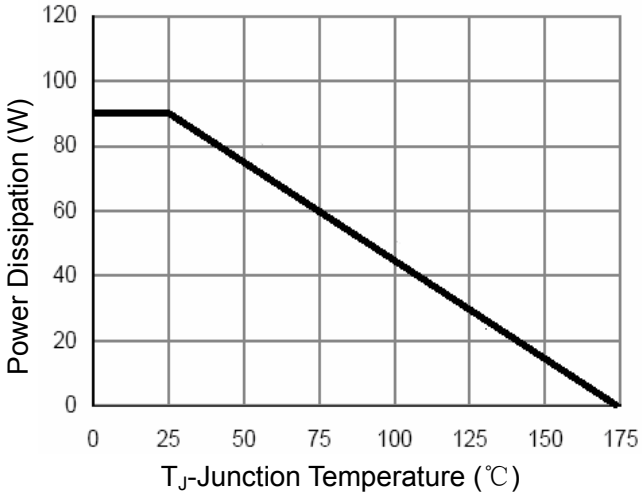


Figure 9 Power De-rating

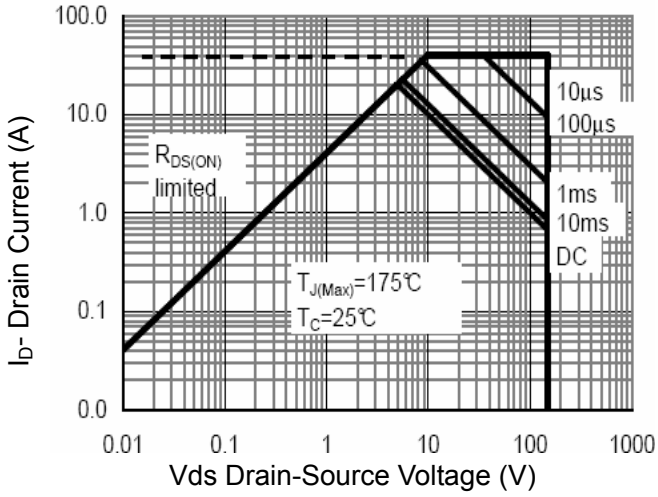


Figure 8 Safe Operation Area

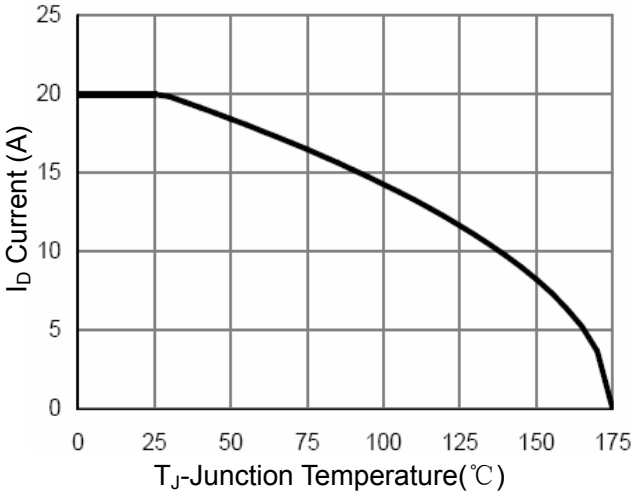


Figure 10ID Current- Junction Temperature

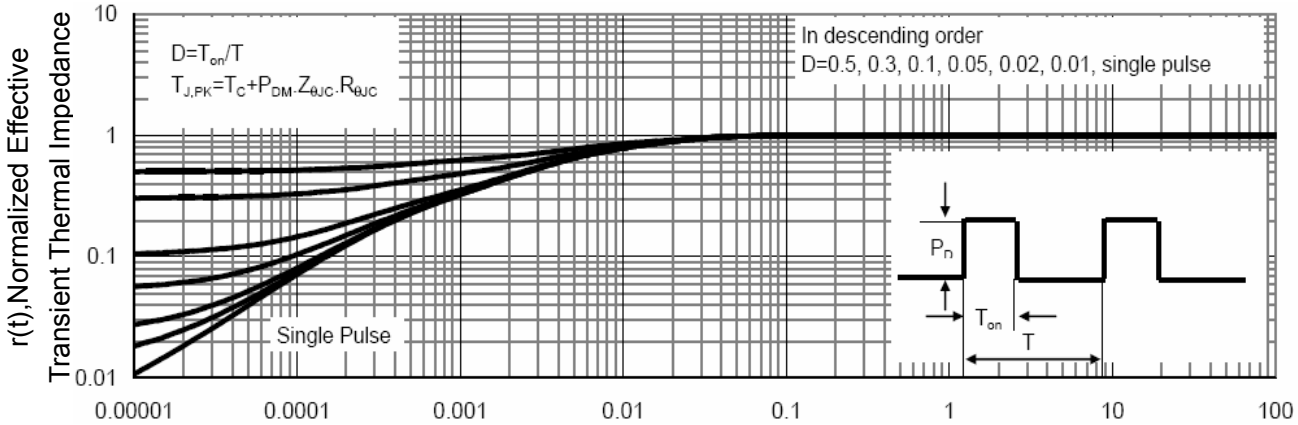


Figure 11 Normalized Maximum Transient Thermal Impedance