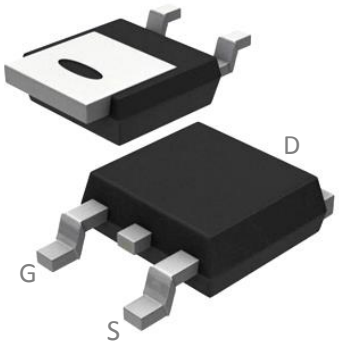
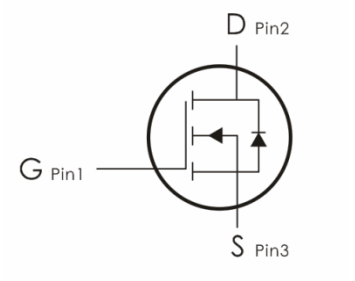
Description：

This N-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}=500V,I_D=4A,$R_{DS(ON)}$<1.4Ω @V_{GS}=10V
2) Low gate charge.
3) Green device available.
4) Advanced high cell denity trench technology for ultra $R_{DS(ON)}$.
5) Excellent package for good heat dissipation.

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

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	500	V
V_{GS}	Gate-Source Voltage	±30	V
I_D	Continuous Drain Current-T_C=25℃	4	A
	Continuous Drain Current-T_C=100℃	2.4	
	Pulsed Drain Current[1]	16	
E_{AS}	Single Pulse Avalanche Energy[1]	300	mJ
P_D	Power Dissipation,T_C=25℃	2.5	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +150	℃

Thermal Characteristics：

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance,Junction to Case	2.6	℃/W
$R_{\theta JA}$	Thermal Resistance,Junction to Ambient	50*	

* When mounted on the minimum pad size recommended (PCB Mount)

Electrical Characteristics: (T_C=25℃ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV_{DSS}	Drain-Sourtce Breakdown Voltage	V_{GS}=0V,I_D=250μA	500	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{GS}=0V, V_{DS}=500V	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±30V, V_{DS}=0A	---	---	±100	nA
On Characteristics						
$V_{GS(th)}$	GATE-Source Threshold Voltage	V_{GS}=V_{DS}, I_D=250μA	2	---	4	V
$R_{DS(ON)}$	Drain-Source On Resistance	V_{GS}=10V,I_D=2A	---	1.14	1.4	mΩ
		V_{GS}=4.5V,I_D=0A	---	---	---	
G_{FS}	Forward Transconductance[4]	V_{DS}=40V, I_D=2A	---	5.2	---	S
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=25V, V_{GS}=0V, f=1MHz	---	480	625	pF
C_{oss}	Output Capacitance		---	80	105	
C_{rss}	Reverse Transfer Capacitance		---	15	20	
Switching Characteristics[4.5]						
$t_{d(on)}$	Turn-On Delay Time	V_{DD}=250V, I_D=5A, V_{GS}=10V,R_{GEN}=25Ω	---	12	35	ns
t_r	Rise Time		---	46	100	ns
$t_{d(off)}$	Turn-Off Delay Time		---	50	110	ns
t_f	Fall Time		---	48	105	ns
Q_g	Total Gate Charge	V_{GS}=10V, V_{DS}=400V, I_D=5A	---	18	24	nC
Q_{gs}	Gate-Source Charge		---	2.2	---	nC
Q_{gd}	Gate-Drain “Miller” Charge		---	9.7	---	nC
Drain-Source Diode Characteristics						
V_{SD}	Source-Drain Diode Forward Voltage	V_{GS}=0V,I_S=1A	---	---	1.4	V

Ls	Continuous Source Current		---	4	A
lsm	Pulsed Source Current		---	6	A
trr	Reverse Recovery Time[4]	V_{GS} = 0 V, I_S = 5 A, dI_F / dt = 100 A/μs	263	---	Ns
qrr	Reverse Recovery Charge[4]		1.9	---	nc

Notes:

1. Repetitive Rating : Pulse width limited by maximum junction temperature
2. L = 21.5 mH, I_{AS} = 5A, V_{DD} = 50V, R_G = 25 Ω, Starting T_J = 25°C
3. I_{SD} ≤ 5A, di/dt ≤ 200A/μs, V_{DD} ≤ BV_{DSS}, Starting T_J = 25°C
4. Pulse Test : Pulse width ≤ 300μs, Duty cycle ≤ 2%
5. Essentially independent of operating temperature

Typical Characteristics: (T_C=25℃ unless otherwise noted)

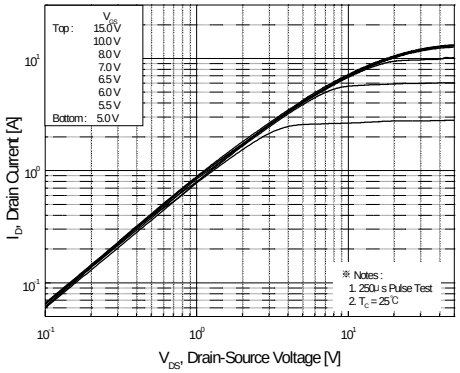


Figure 1. On-Region Characteristics

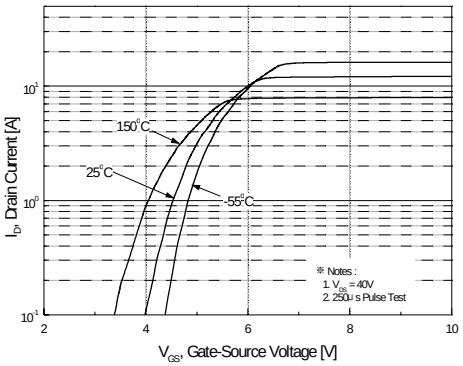


Figure 2. Transfer Characteristics

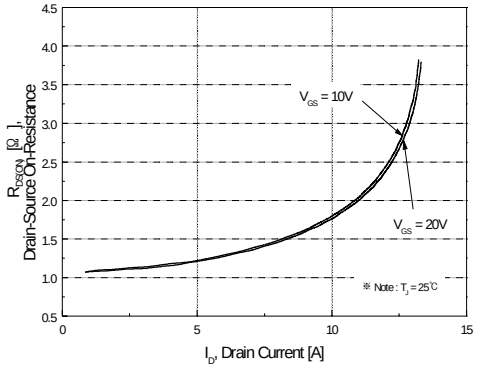


Figure 3. On-Resistance Variation vs Drain Current and Gate Voltage

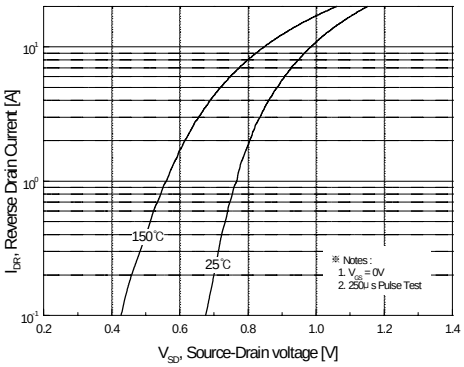


Figure 4. Body Diode Forward Voltage Variation with Source Current and Temperature

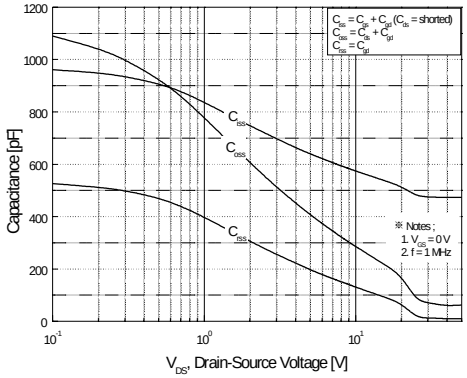


Figure 5. Capacitance Characteristics

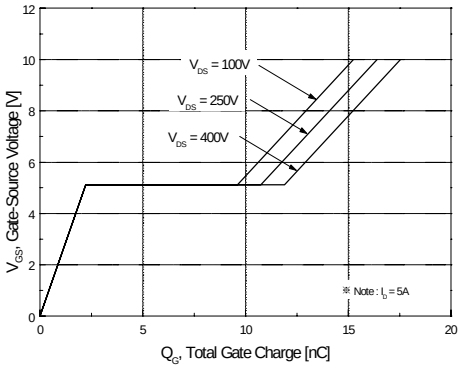


Figure 6. Gate Charge Characteristics

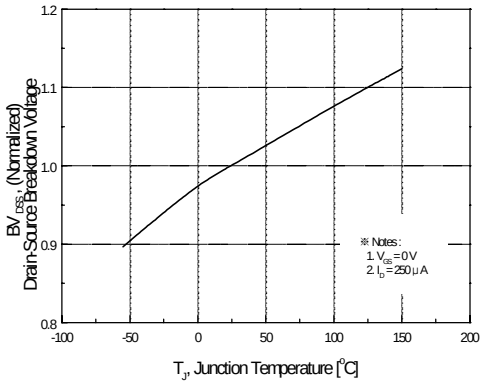


Figure 7. Breakdown Voltage Variation vs Temperature

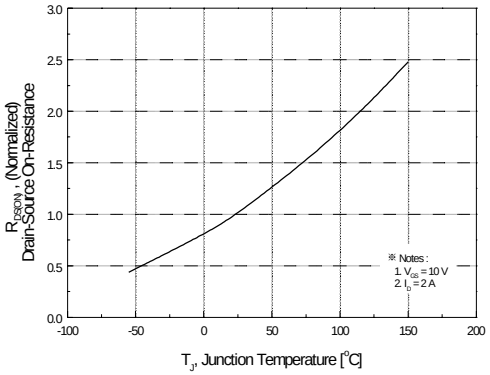


Figure 8. On-Resistance Variation vs Temperature

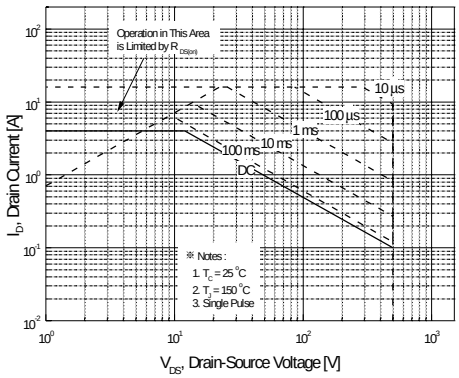


Figure 9. Maximum Safe Operating Area

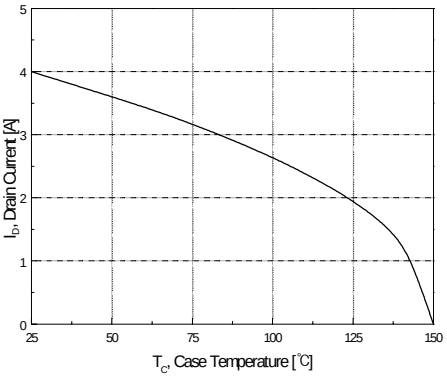


Figure 10. Maximum Drain Current vs Case Temperature