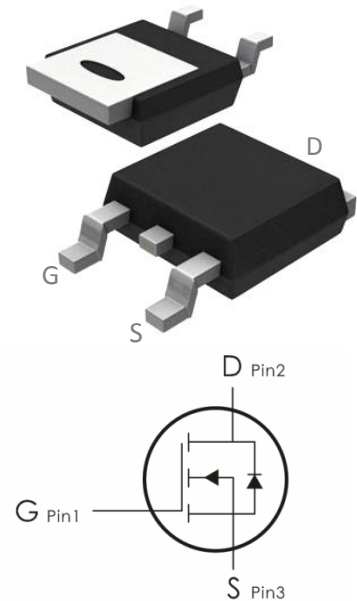


Description:

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) $V_{DS}=200V, I_D=9A, R_{DS(ON)} \leq 0.4 \Omega @ V_{GS}=10V$
- 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: ($T_C=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	200	V
V_{GS}	Gate-Source Voltage	± 30	V
I_D	Continuous Drain Current- $T_C=25^\circ\text{C}$	9	A
	Continuous Drain Current- $T_C=100^\circ\text{C}$	5.7	
	Pulsed Drain Current	---	
E_{AS}	Single Pulse Avalanche Energy ¹	160	mJ
P_D	Power Dissipation($T_C=25^\circ\text{C}$)	38	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +150	$^\circ\text{C}$

Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance, Junction to Case	2.27	$^\circ\text{C}/\text{W}$
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	110	

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

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\ \mu\text{A}$	200	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{GS}=0V, V_{DS}=200V$	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 30V, V_{DS}=0A$	---	---	± 100	nA
On Characteristics						
$V_{GS(th)}$	GATE-Source Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\ \mu\text{A}$	2	---	4	V
$R_{DS(ON)}$	Drain-Source On Resistance	$V_{GS}=10V, I_D=5A$	---	---	0.4	Ω
Dynamic Characteristics						
C_{iss}	Input Capacitance	$V_{DS}=25V, V_{GS}=0V, f=1\text{MHz}$	---	550	720	pF
C_{oss}	Output Capacitance		---	85	110	
C_{rss}	Reverse Transfer Capacitance		---	22	29	
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time ^{3,4}	$V_{DD}=250V, I_D=9A,$ $R_{GEN}=25\ \Omega$	---	11	25	ns
t_r	Rise Time ^{3,4}		---	70	140	ns
$t_{d(off)}$	Turn-Off Delay Time ^{3,4}		---	60	120	ns
t_f	Fall Time ^{3,4}		---	65	130	ns
Q_g	Total Gate Charge ^{3,4}	$V_{GS}=10V, V_{DS}=400V,$ $I_D=9A$	---	22	30	nC
Q_{gs}	Gate-Source Charge ^{3,4}		---	4.0	---	nC
Q_{gd}	Gate-Drain "Miller" Charge ^{3,4}		---	11	---	nC
Drain-Source Diode Characteristics						
V_{SD}	Source-Drain Diode Forward Voltage	$V_{GS}=0V, I_D=9A$	---	---	1.5	V

Notes:

- 1, L=3.0mH, IAS=9A, VDD=50V, RG=25Ω, Starting TJ =25°C
- 2, Repetitive Rating : Pulse width limited by maximum junction temperature
- 3, Pulse Test : Pulse Width ≤ 300 μ s, Duty Cycle ≤ 2%
- 4, Essentially Independent of Operating Temperature.

Typical Characteristics: (T_c=25°C unless otherwise noted)

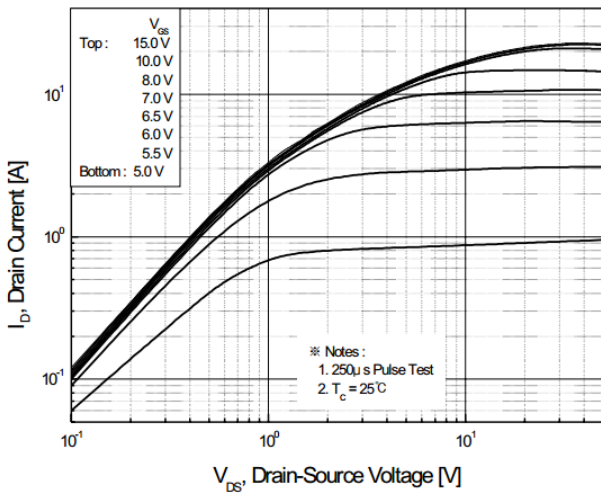


Figure 1. On-Region Characteristics

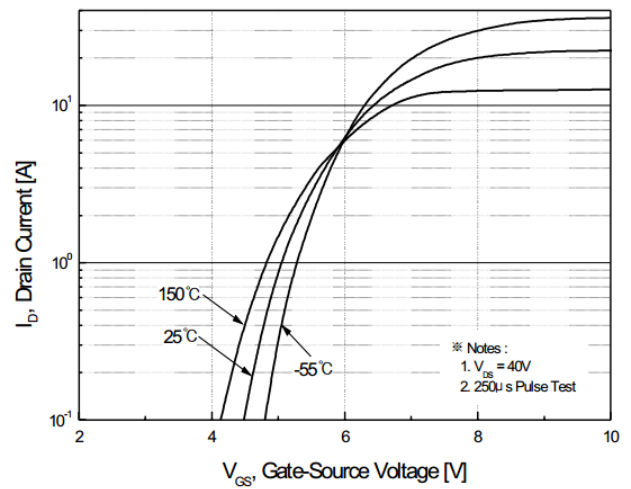


Figure 2. Transfer Characteristics

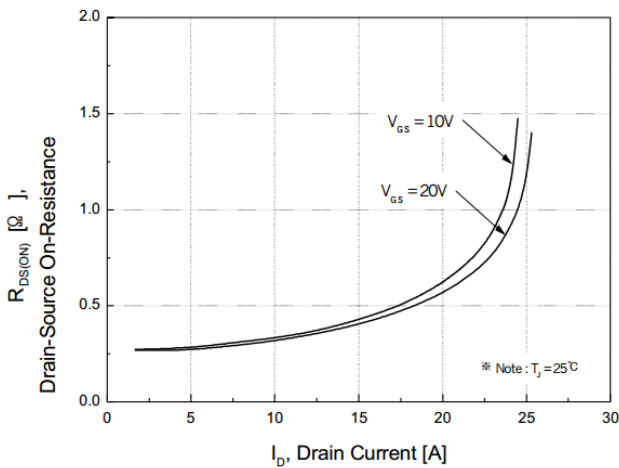


Figure 3. On-Resistance Variation vs. Drain Current and Gate Voltage

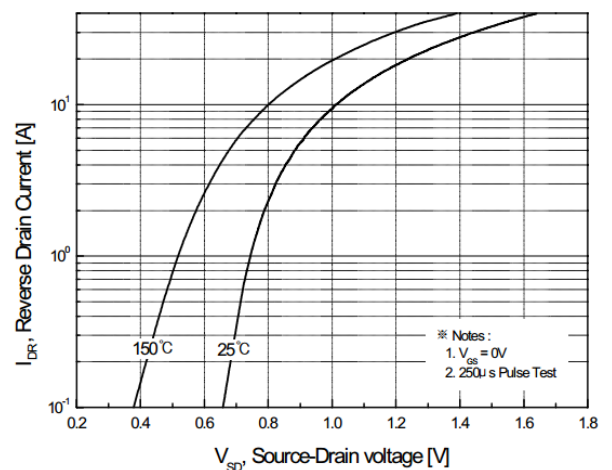


Figure 4. Body Diode Forward Voltage Variation vs. Source Current and Temperature

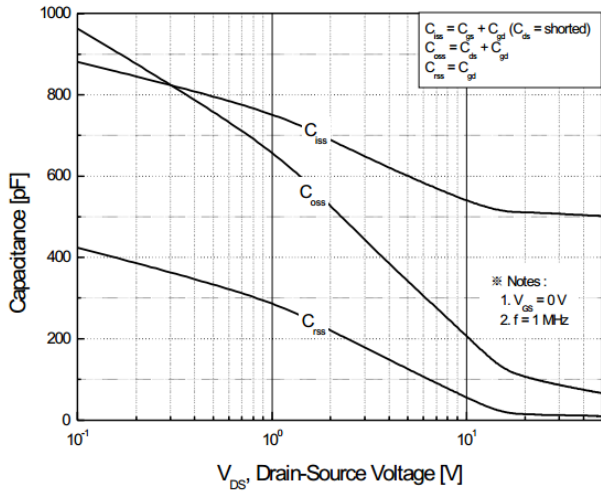


Figure 5. Capacitance Characteristics

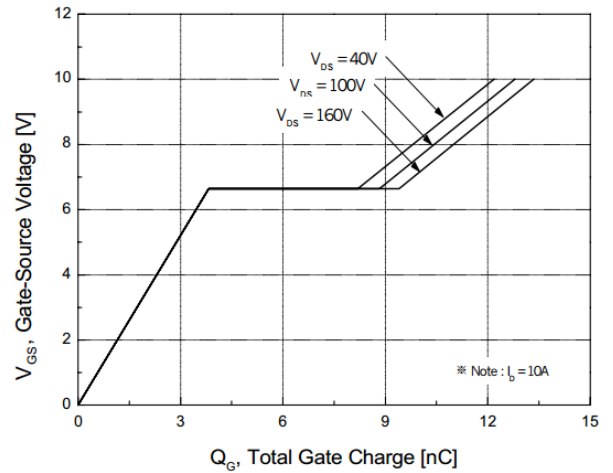


Figure 6. Gate Charge Characteristics

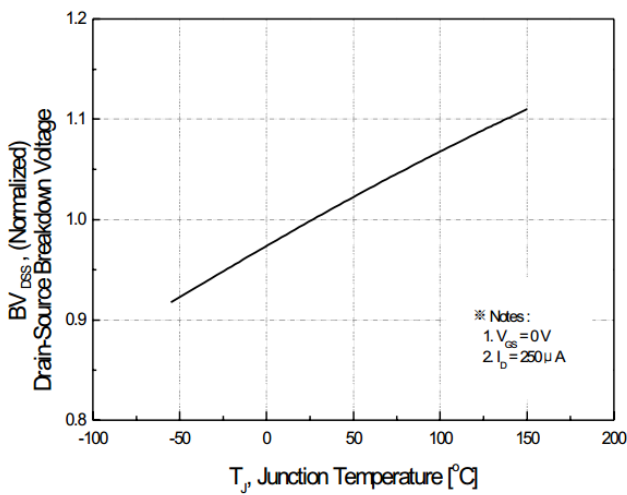


Figure 7. Breakdown Voltage Variation vs. Temperature

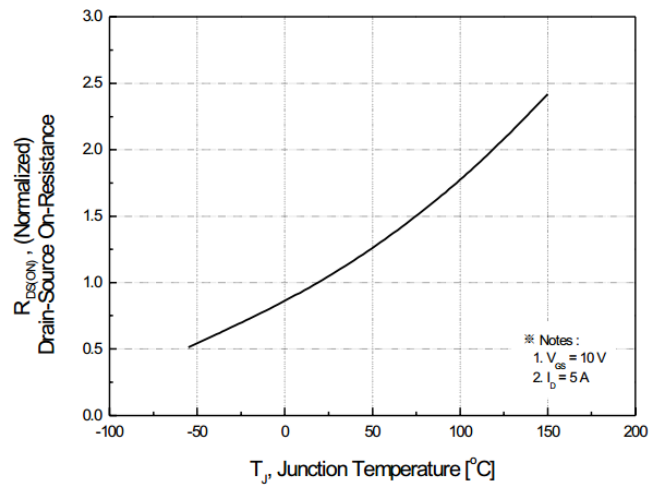


Figure 8. On-Resistance Variation vs. Temperature

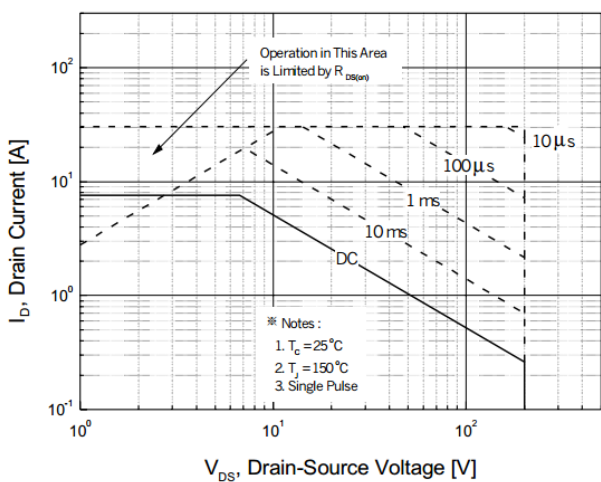


Figure 9. Maximum Safe Operating Area

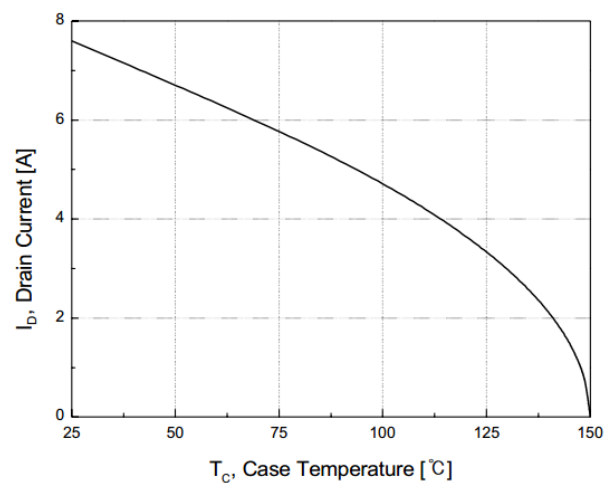


Figure 10. Maximum Drain Current vs. Case Temperature

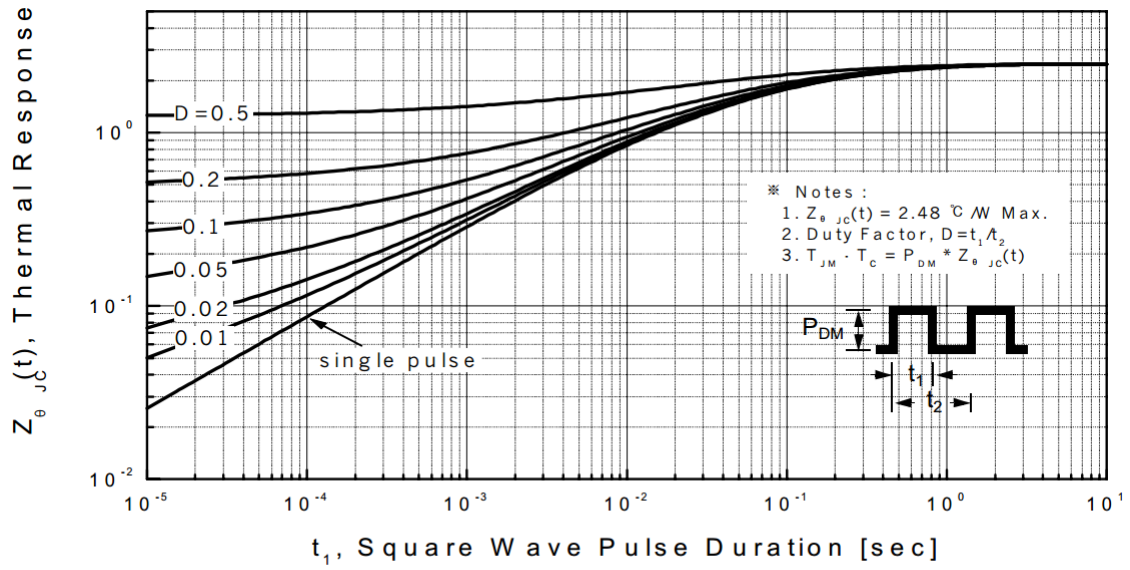


Figure 11. Transient Thermal Response Curve



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