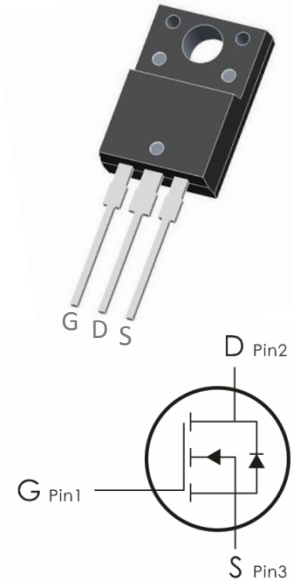


## Description:

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)  $V_{DS}=60V, I_D=50A, R_{DS(on)} \leq 0.018 \Omega @ V_{GS}=10V$
- 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	60	V
$V_{GS}$	Gate-Source Voltage	$\pm 25$	V
$I_D$	Continuous Drain Current- $T_C=25^\circ C$	50	A
	Continuous Drain Current- $T_C=100^\circ C$	35.4	
	Pulsed Drain Current	---	
$E_{AS}$	Single Pulse Avalanche Energy <sup>1</sup>	490	mJ
$P_D$	Power Dissipation	120	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	1.24	$^\circ C/W$
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	62.5	

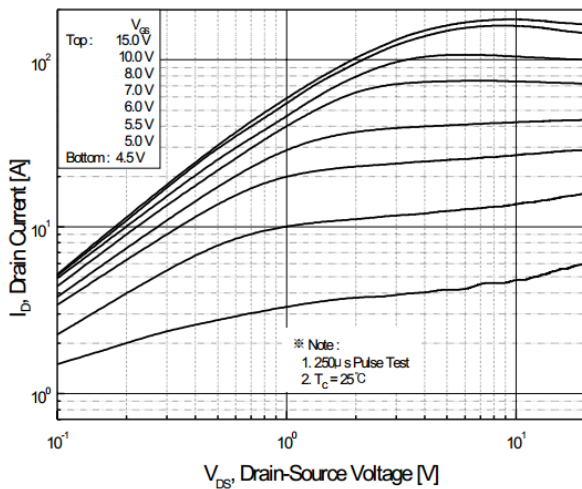
**Electrical Characteristics:** ( $T_c=25^\circ\text{C}$  unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
<b>Off Characteristics</b>						
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\ \mu\text{A}$	60	---	---	V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{GS}=0V, V_{DS}=60V$	---	---	1	$\mu\text{A}$
$I_{GSS}$	Gate-Source Leakage Current	$V_{GS}=\pm 25V, V_{DS}=0A$	---	---	$\pm 100$	nA
<b>On Characteristics</b>						
$V_{GS(th)}$	GATE-Source Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\ \mu\text{A}$	2	---	4	V
$R_{DS(ON)}$	Drain-Source On Resistance	$V_{GS}=10V, I_D=25A$	---	---	0.018	$\Omega$
$G_{FS}$	Forward Transconductance	---	---	---	---	S
<b>Dynamic Characteristics</b>						
$C_{iss}$	Input Capacitance	$V_{DS}=25V, V_{GS}=0V, f=1\text{MHz}$	---	1180	1540	pF
$C_{oss}$	Output Capacitance		---	440	580	
$C_{rss}$	Reverse Transfer Capacitance		---	65	90	
<b>Switching Characteristics</b>						
$t_{d(on)}$	Turn-On Delay Time <sup>3,4</sup>	$V_{DD}=250V, I_D=25A,$ $R_{GEN}=25\ \Omega$	---	15	40	ns
$t_r$	Rise Time <sup>3,4</sup>		---	105	220	ns
$t_{d(off)}$	Turn-Off Delay Time <sup>3,4</sup>		---	60	130	ns
$t_f$	Fall Time <sup>3,4</sup>		---	65	140	ns
$Q_g$	Total Gate Charge <sup>3,4</sup>	$V_{GS}=10V, V_{DS}=400V,$ $I_D=25A$	---	31	41	nC
$Q_{gs}$	Gate-Source Charge <sup>3,4</sup>		---	8	---	nC
$Q_{gd}$	Gate-Drain "Miller" Charge <sup>3,4</sup>		---	13	---	nC
<b>Drain-Source Diode Characteristics</b>						
$V_{SD}$	Source-Drain Diode Forward Voltage <sup>3</sup>	$V_{GS}=0V, I_D=25A$	---	---	1.5	V

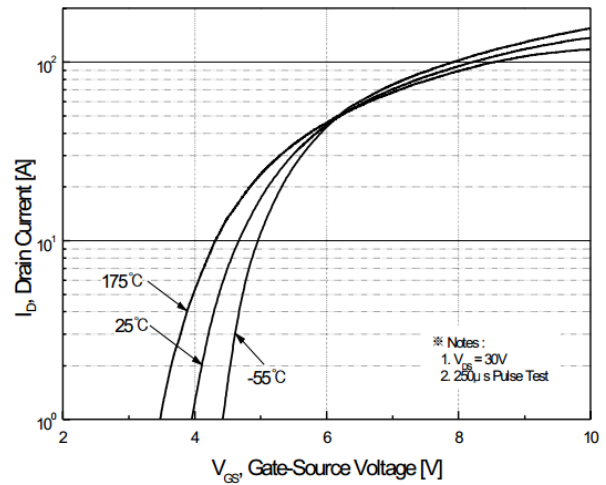
## Notes:

- 1, L=9.3mH, IAS=50A, 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.

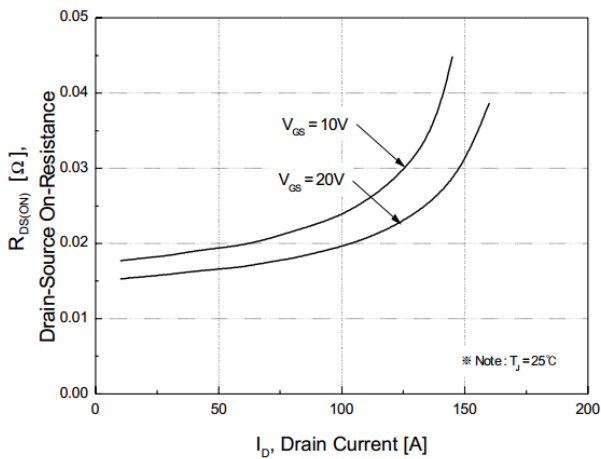
## Typical Characteristics: (T<sub>c</sub>=25°C unless otherwise noted)



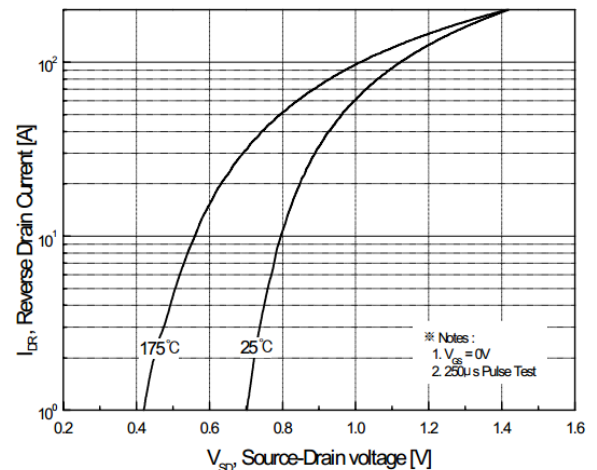
**Figure 1. On-Region Characteristics**



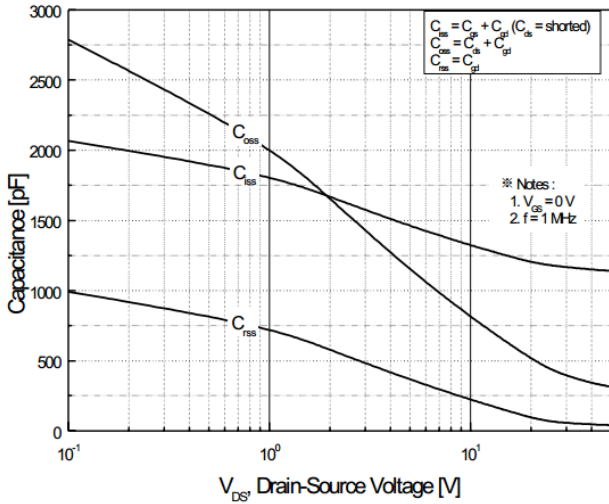
**Figure 2. Transfer Characteristics**



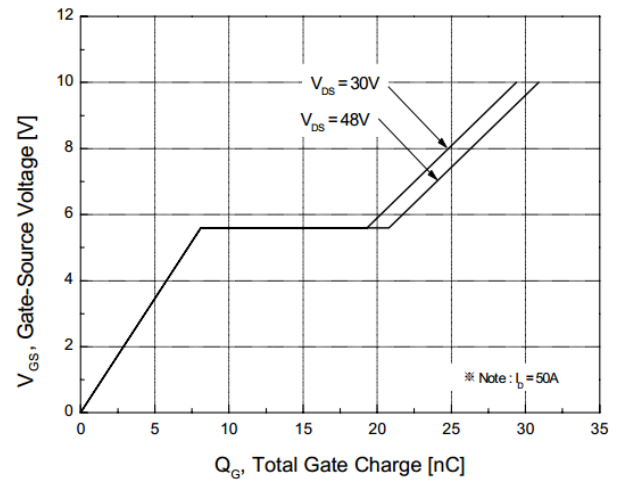
**Figure 3. On-Resistance Variation vs. Drain Current and Gate Voltage**



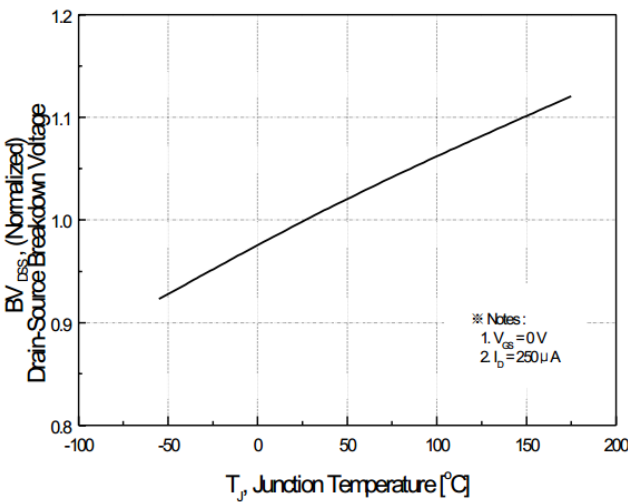
**Figure 4. Body Diode Forward Voltage Variation vs. Source Current and Temperature**



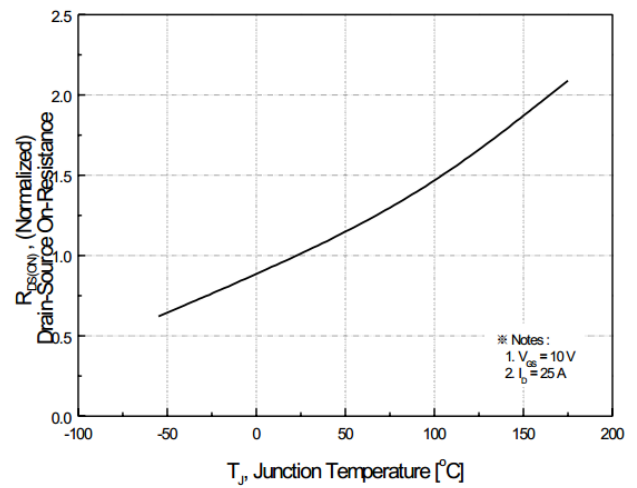
**Figure 5. Capacitance Characteristics**



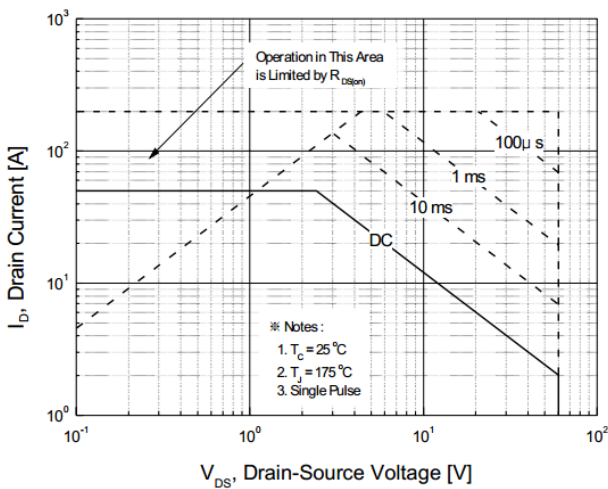
**Figure 6. Gate Charge Characteristics**



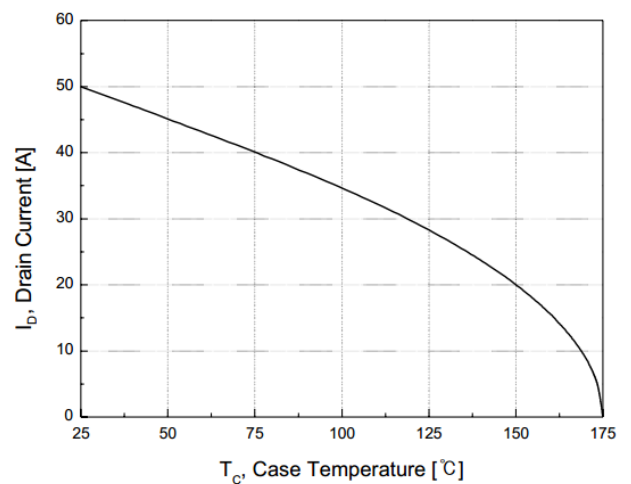
**Figure 7. Breakdown Voltage Variation vs. Temperature**



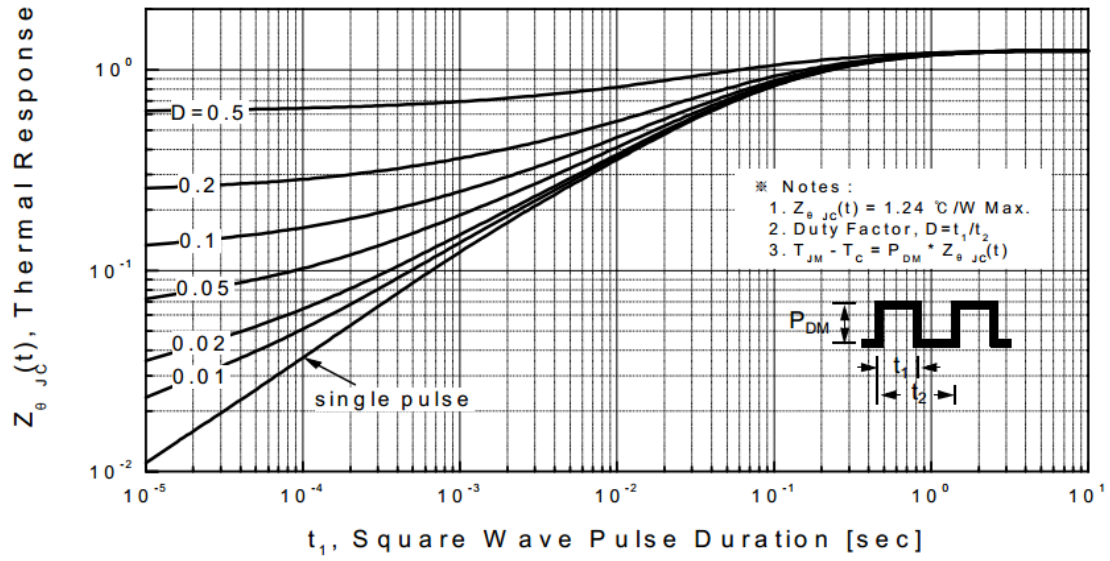
**Figure 8. On-Resistance Variation vs. Temperature**



**Figure 9. Maximum Safe Operating Area**



**Figure 10. Maximum Drain Current vs. Case Temperature**



**Figure 11. Transient Thermal Response Curve**



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