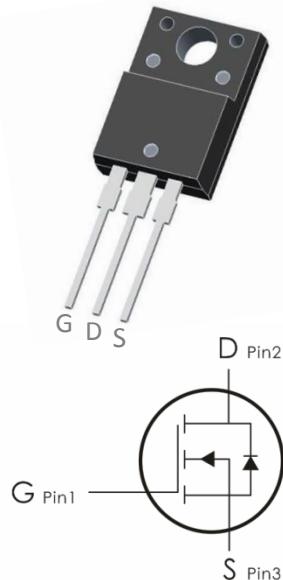


## Description:

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
$R_{eJC}$	Thermal Resistance,Junction to Case	1.24	$^\circ C/W$
$R_{eJA}$	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>						
$\text{BV}_{\text{DSS}}$	Drain-Source Breakdown Voltage	$V_{\text{GS}}=0\text{V}, I_{\text{D}}=250 \mu\text{A}$	60	---	---	V
$I_{\text{DSS}}$	Zero Gate Voltage Drain Current	$V_{\text{GS}}=0\text{V}, V_{\text{DS}}=60\text{V}$	---	---	1	$\mu\text{A}$
$I_{\text{GSS}}$	Gate-Source Leakage Current	$V_{\text{GS}}=\pm 25\text{V}, V_{\text{DS}}=0\text{A}$	---	---	$\pm 100$	nA
<b>On Characteristics</b>						
$V_{\text{GS}(\text{th})}$	GATE-Source Threshold Voltage	$V_{\text{GS}}=V_{\text{DS}}, I_{\text{D}}=250 \mu\text{A}$	2	---	4	V
$R_{\text{DS}(\text{ON})}$	Drain-Source On Resistance	$V_{\text{GS}}=10\text{V}, I_{\text{D}}=25\text{A}$	---	---	0.018	$\Omega$
$G_{\text{FS}}$	Forward Transconductance	---	---	---	---	S
<b>Dynamic Characteristics</b>						
$C_{\text{iss}}$	Input Capacitance	$V_{\text{DS}}=25\text{V}, V_{\text{GS}}=0\text{V}, f=1\text{MHz}$	---	1180	1540	pF
$C_{\text{oss}}$	Output Capacitance		---	440	580	
$C_{\text{rss}}$	Reverse Transfer Capacitance		---	65	90	
<b>Switching Characteristics</b>						
$t_{\text{d(on)}}$	Turn-On Delay Time <sup>3,4</sup>	$V_{\text{DD}}=250\text{V}, I_{\text{D}}=25\text{A}, R_{\text{GEN}}=25 \Omega$	---	15	40	ns
$t_r$	Rise Time <sup>3,4</sup>		---	105	220	ns
$t_{\text{d(off)}}$	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>	$V_{\text{GS}}=10\text{V}, V_{\text{DS}}=400\text{V}, I_{\text{D}}=25\text{A}$	---	31	41	nC
$Q_{\text{gs}}$	Gate-Source Charge <sup>3,4</sup>		---	8	---	nC
$Q_{\text{gd}}$	Gate-Drain "Miller" Charge <sup>3,4</sup>		---	13	---	nC
<b>Drain-Source Diode Characteristics</b>						
$V_{\text{SD}}$	Source-Drain Diode Forward Voltage <sup>3</sup>	$V_{\text{GS}}=0\text{V}, I_{\text{D}}=25\text{A}$	---	---	1.5	V

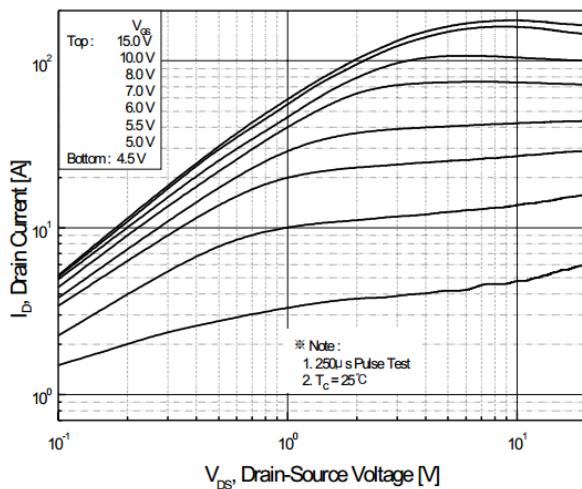
**Notes:**

1, L=9.3mH, IAS=50A, VDD=50V, RG=25Ω, Starting TJ =25°C

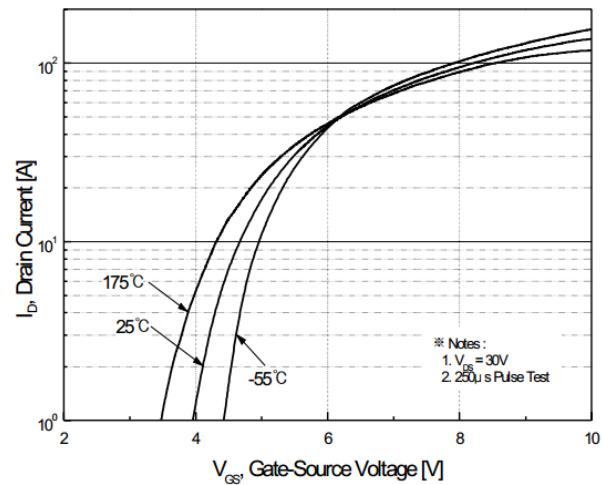
2, Repetitive Rating : Pulse width limited by maximum junction temperature

3, Pulse Test : Pulse Width  $\leq 300 \mu s$ , Duty Cycle  $\leq 2\%$

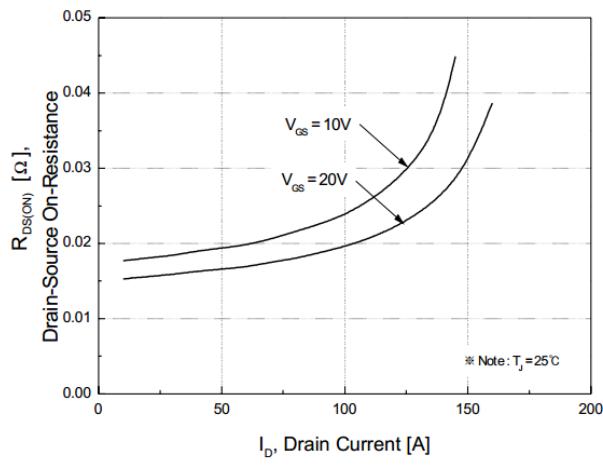
4, Essentially Independent of Operating Temperature.

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


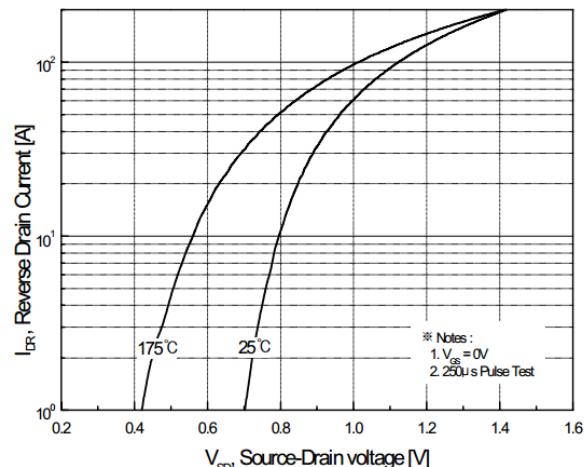
**Figure 1. On-Region Characteristics**



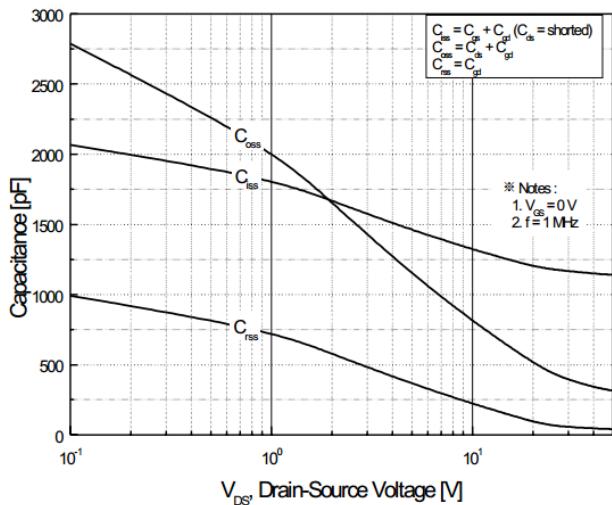
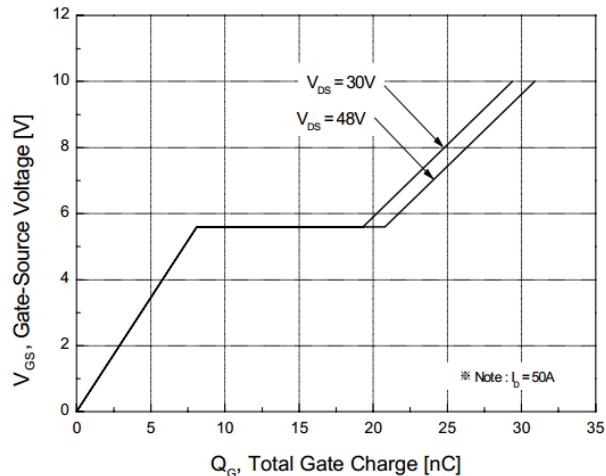
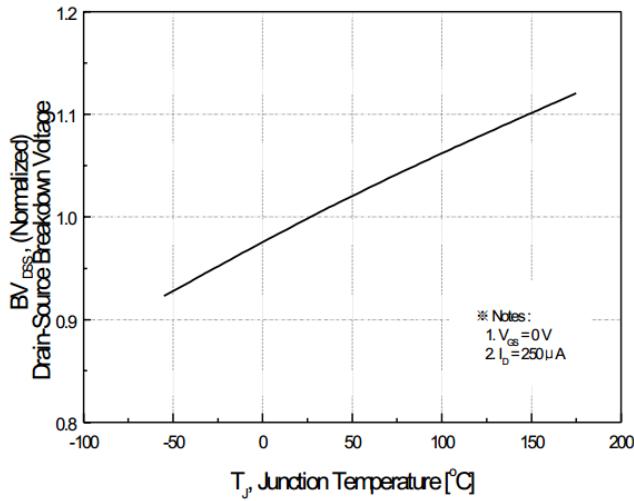
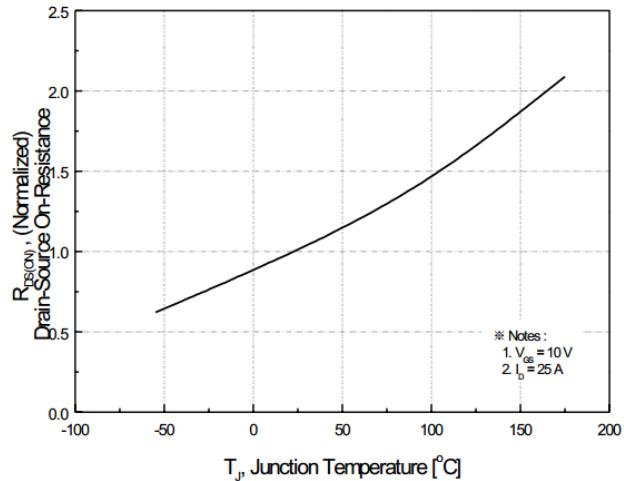
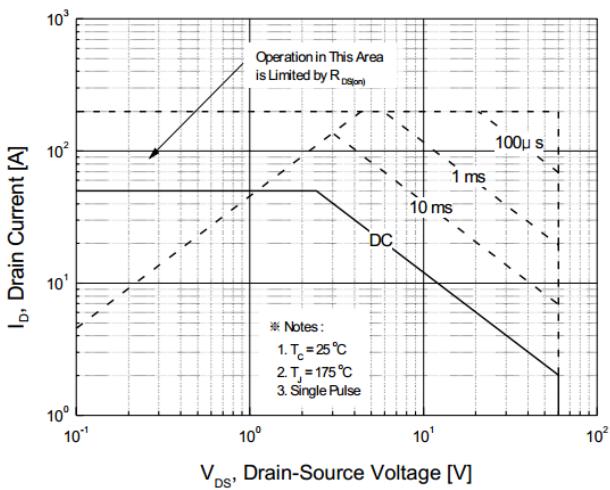
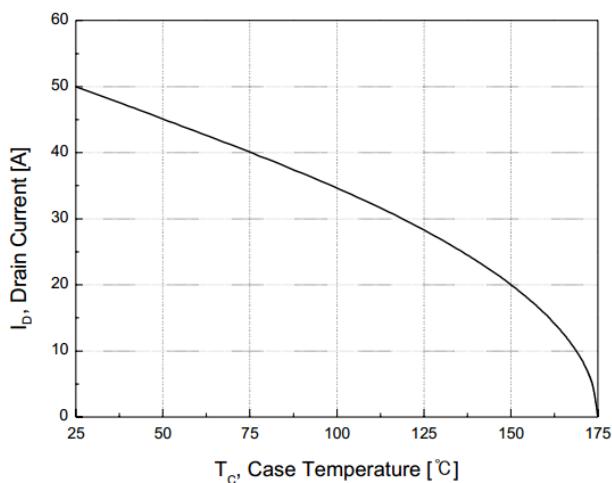
**Figure 2. Transfer Characteristics**



**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**

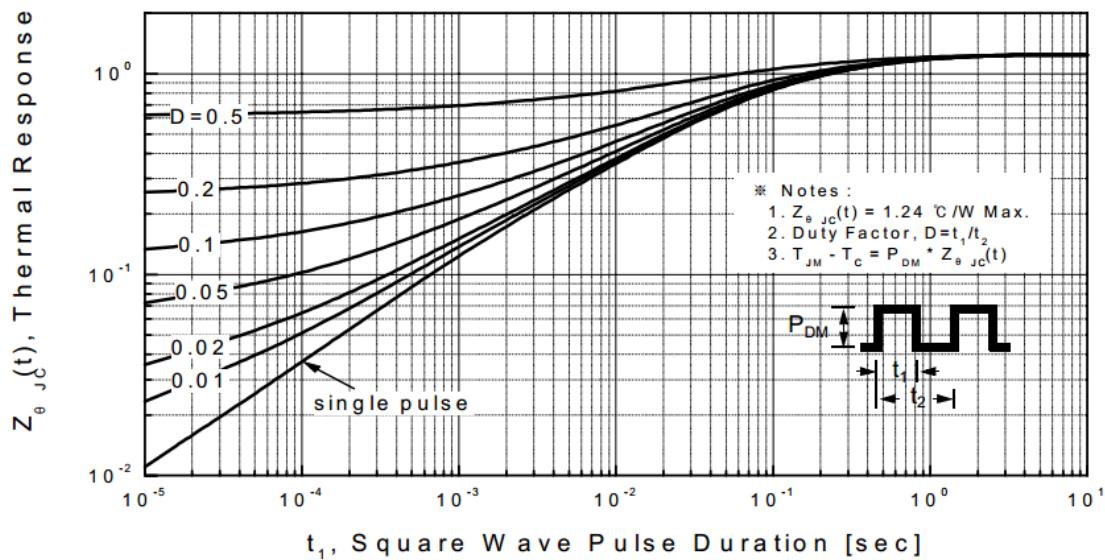


Figure 11. Transient Thermal Response Curve



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