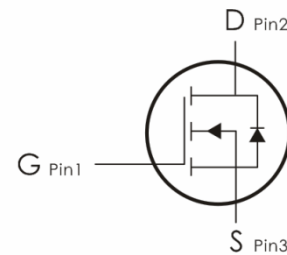
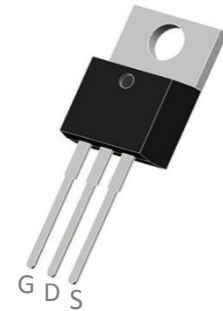


## Description:

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)  $V_{DS}=30V, I_D=180A, R_{DS(ON)} \leq 3m\Omega @ V_{GS}=10V$
- 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	30	V
$V_{GS}$	Gate-Source Voltage	$\pm 20$	V
$I_D$	Continuous Drain Current <sup>1</sup>	180	A
	Continuous Drain Current-TC=100°C	127	
	Pulsed Drain Current <sup>1</sup>	720	
$E_{AS}$	Single Pulse Avalanche Energy <sup>3</sup>	439	mJ
$P_D$	Power Dissipation <sup>4</sup>	115	W
$T_J, T_{STG}$	Operating and Storage Junction Temperature Range	-55 to +175	°C

## Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance, Junction to Case <sup>1</sup>	1.3	°C/W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient <sup>1</sup>	62.5	

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

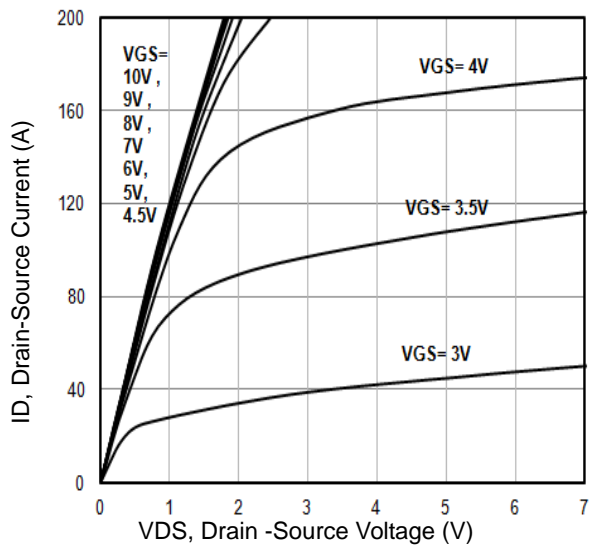
Symbol	Parameter	Conditions	Min	Typ	Max	Units
<b>Off Characteristics</b>						
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\ \mu A$	30	---	---	V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{GS}=0V, V_{DS}=30V$	---	---	1	$\mu A$
$I_{GSS}$	Gate-Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0A$	---	---	$\pm 100$	nA
<b>On Characteristics</b>						
$V_{GS(th)}$	GATE-Source Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\ \mu A$	1.3	1.8	2.4	V
$R_{DS(on)}$	Drain-Source On Resistance <sup>2</sup>	$V_{GS}=10V, I_D=40A$	---	2.1	3	m $\Omega$
		$V_{GS}=4.5V, I_D=20A$	---	2.8	4	
$G_{FS}$	Forward Transconductance	$V_{DS}=0V, I_D=0A$	---	---	---	S
<b>Dynamic Characteristics</b>						
$C_{iss}$	Input Capacitance	$V_{DS}=15V, V_{GS}=0V, f=1MHz$	3500	4565	5500	pF
$C_{oss}$	Output Capacitance		570	785	1000	
$C_{rss}$	Reverse Transfer Capacitance		500	710	900	
<b>Switching Characteristics</b>						
$t_{d(on)}$	Turn-On Delay Time	$V_{DD}=15V, I_D=40A,$ $R_{GEN}=3\ \Omega, V_{GS}=10V$	---	12	---	ns
$t_r$	Rise Time		---	8.5	---	ns
$t_{d(off)}$	Turn-Off Delay Time		---	77.5	---	ns
$t_f$	Fall Time		---	19.5	---	ns
$Q_g$	Total Gate Charge	$V_{GS}=10V, V_{DS}=15V,$ $I_D=40A$	---	73	---	nC
$Q_{gs}$	Gate-Source Charge		---	12	---	nC
$Q_{gd}$	Gate-Drain "Miller" Charge		---	18	---	nC
<b>Drain-Source Diode Characteristics</b>						
$V_{SD}$	Source-Drain Diode Forward Voltage <sup>2</sup>	$V_{GS}=0V, I_S=40A$	---	0.8	-1.2	V

<b>Ls</b>	Diode Forward Current (Note 2)	---	---	---	---	A
<b>Trr</b>	Reverse Recovery Time	T <sub>j</sub> =25°C, I <sub>sd</sub> =40A, V <sub>GS</sub> =0V di/dt=500A/μs	---	31	---	NS
<b>Qrr</b>	Reverse Recovery Charge		---	15.5	---	NC

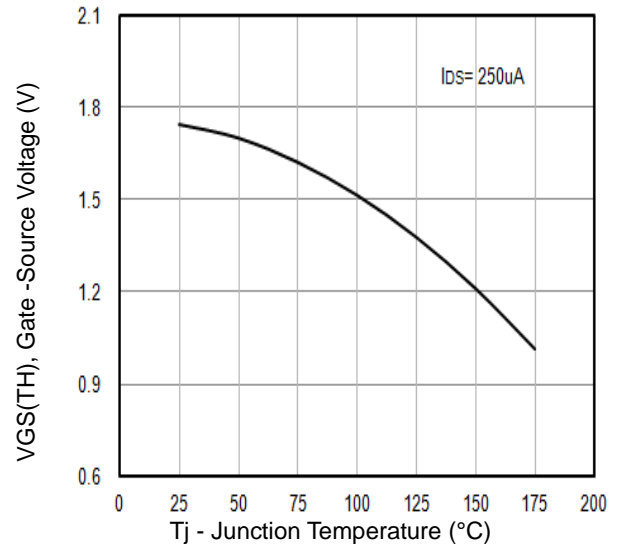
### Notes:

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.

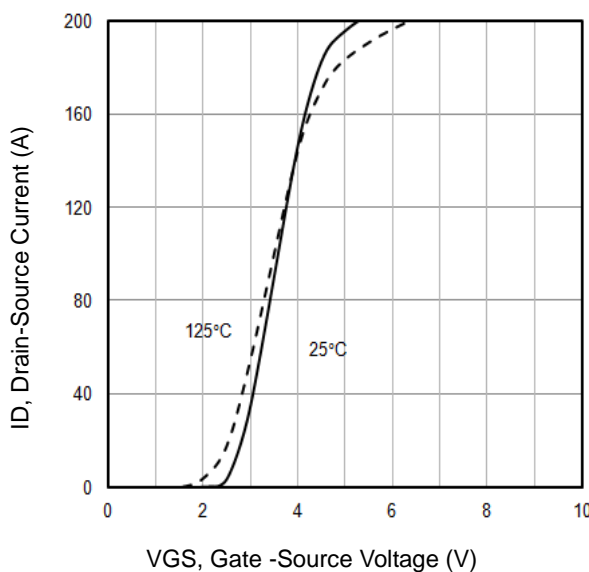
### Typical Characteristics: (T<sub>c</sub>=25°C unless otherwise noted)



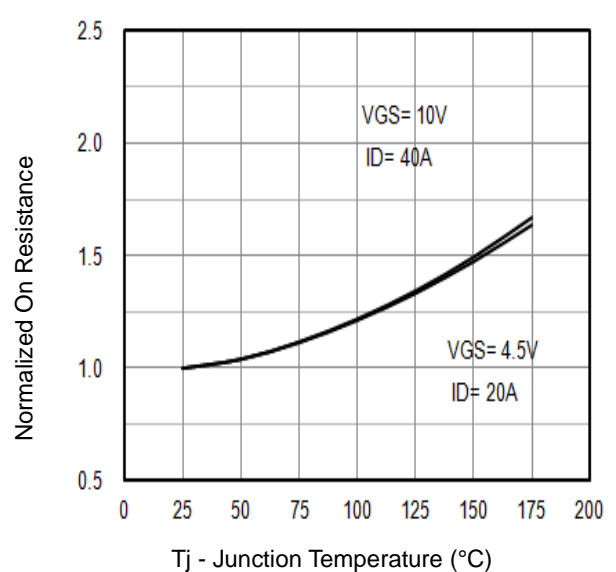
**Fig1.** Typical Output Characteristics



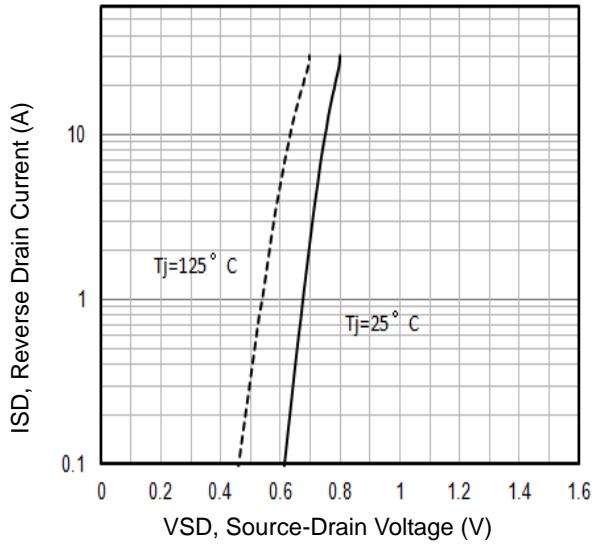
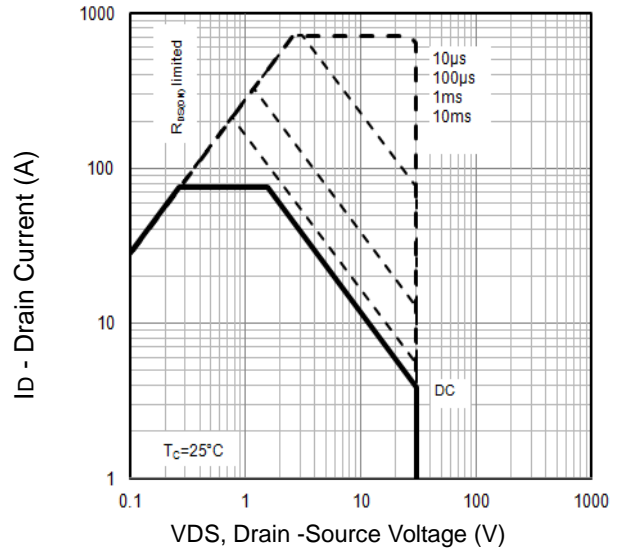
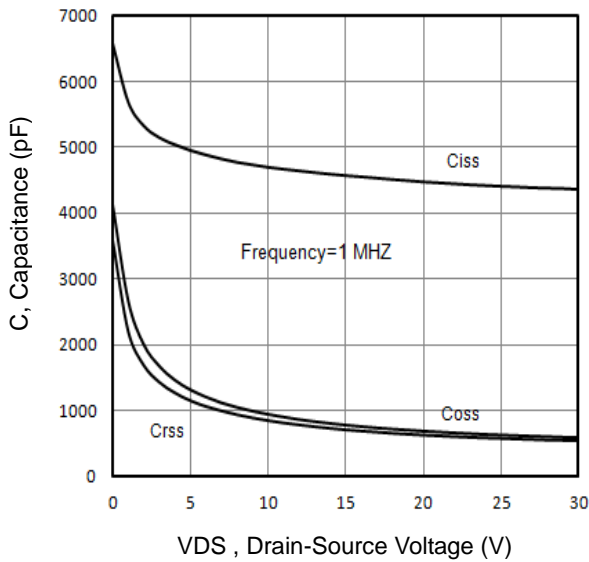
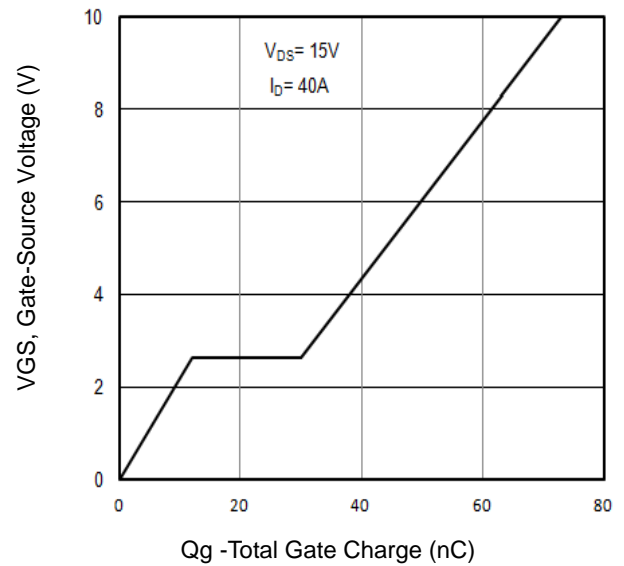
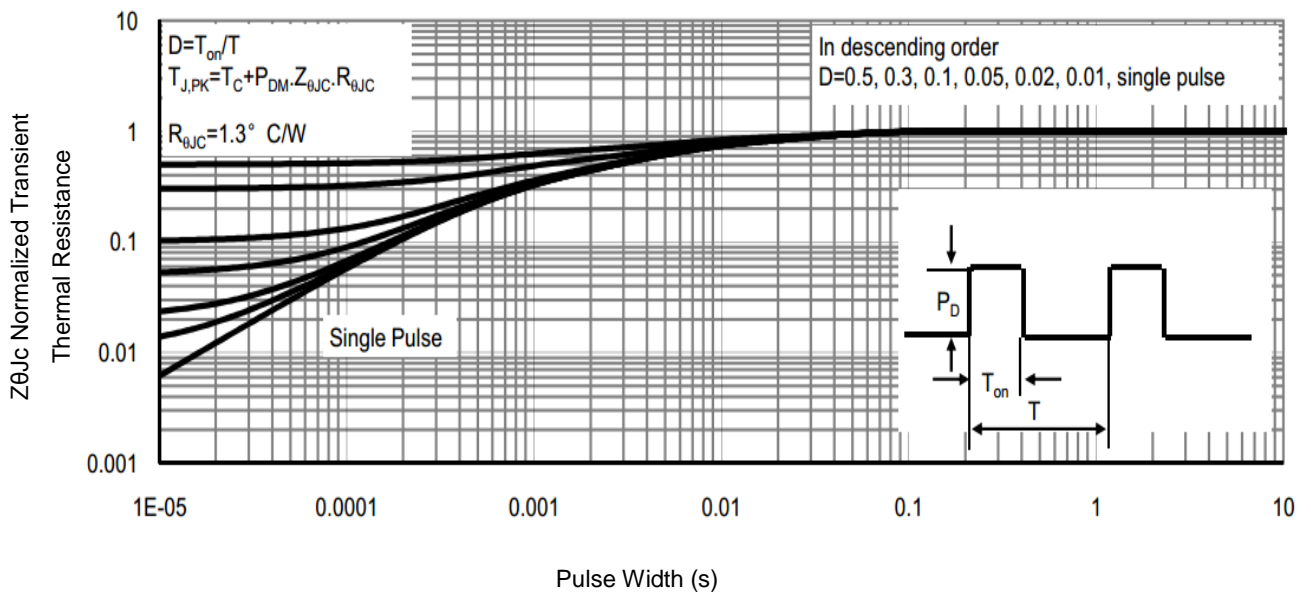
**Fig2.** V<sub>GS(TH)</sub> Gate -Source Voltage Vs. T<sub>j</sub>

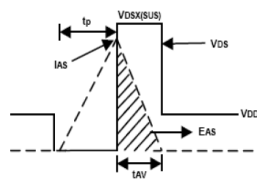
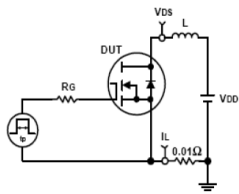


**Fig3.** Typical Transfer Characteristics

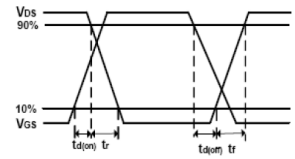
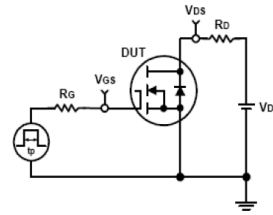


**Fig4.** Normalized On-Resistance Vs. Temperature


**Fig5.** Typical Source-Drain Diode Forward Voltage

**Fig6.** Maximum Safe Operating Area

**Fig7.** Typical Capacitance Vs. Drain-Source Voltage

**Fig8.** Typical Gate Charge Vs. Gate-Source Voltage

**Fig9 .** Normalized Maximum Transient Thermal Impedance



**Fig10.** Unclamped Inductive Test Circuit and waveforms



**Fig11.** Switching Time Test Circuit and waveforms



0086-0755-8278-9056

[www.doingter.cn](http://www.doingter.cn)