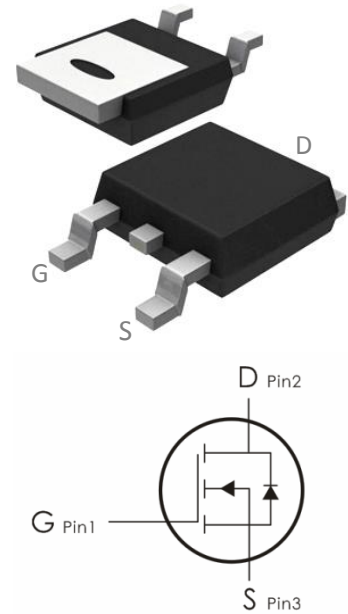


## Description:

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)  $V_{DS}=30V, I_D=100A, R_{DS(ON)}<4.2m\ \Omega @V_{GS}=10V$
- 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- $T_C=25^\circ\text{C}^1$	100	A
	Continuous Drain Current- $T_C=100^\circ\text{C}^1$	59	
	Pulsed Drain Current <sup>2</sup>	360	
$E_{AS}$	Single Pulse Avalanche Energy <sup>3</sup>	250	mJ
$P_D$	Power Dissipation, $T_C=25^\circ\text{C}^4$	90	W
$T_J, T_{STG}$	Operating and Storage Junction Temperature Range	-55 to +175	$^\circ\text{C}$

## Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance, Junction to Case	2.5	$^\circ\text{C}/\text{W}$
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient <sup>3</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	$V_{GS}=0V, I_D=250\ \mu\text{A}$	30	---	---	V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{GS}=0V, V_{DS}=24V$	---	---	1	$\mu\text{A}$
$I_{GSS}$	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	$V_{GS}=V_{DS}, I_D=250\ \mu\text{A}$	1	---	3	V
$R_{DS(on)}$	Drain-Source On Resistance <sup>2</sup>	$V_{GS}=10V, I_D=40A$	---	3.6	4.2	m $\Omega$
		$V_{GS}=4.5V, I_D=30A$	---	---	7	
$G_{FS}$	Forward Transconductance	$V_{DS}=10V, I_D=15A$	---	28	---	S
<b>Dynamic Characteristics</b>						
$C_{iss}$	Input Capacitance	$V_{DS}=15V, V_{GS}=0V, f=1\text{MHz}$	---	1950	2350	pF
$C_{oss}$	Output Capacitance		---	320	---	
$C_{rss}$	Reverse Transfer Capacitance		---	240	---	
<b>Switching Characteristics</b>						
$t_{d(on)}$	Turn-On Delay Time	$V_{DD}=15V, I_D=15A,$ $V_{GS}=10V, R_{GEN}=3.3\Omega$	---	13	---	ns
$t_r$	Rise Time		---	36	---	ns
$t_{d(off)}$	Turn-Off Delay Time		---	43	---	ns
$t_f$	Fall Time		---	16	---	ns
$Q_g$	Total Gate Charge	$V_{GS}=10V, V_{DS}=24V,$ $I_D=20A$	---	42	84	nC
$Q_{gs}$	Gate-Source Charge		---	3.9	---	nC
$Q_{gd}$	Gate-Drain "Miller" Charge		---	14	---	nC
<b>Drain-Source Diode Characteristics</b>						
$V_{SD}$	Source-Drain Diode Forward Voltage <sup>2</sup>	$V_{GS}=0V, I_S=30A$	---	---	1.2	V

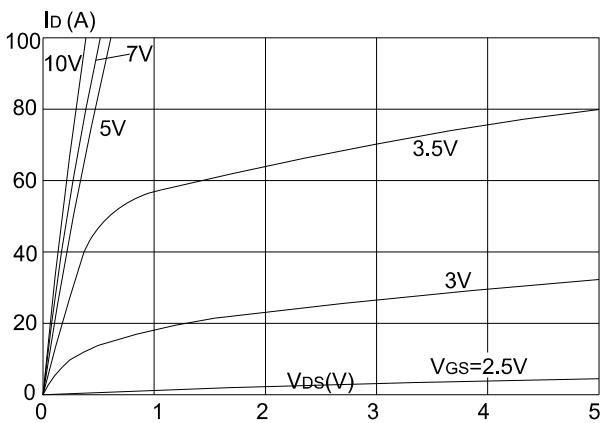
<b>trr</b>	Reverse Recovery Time	$I_S=10A, V_{GS}=0V,$ $dI/dt=100A$	16	---	Ns
<b>qrr</b>	Reverse Recovery Charge		5	---	nc

### Notes:

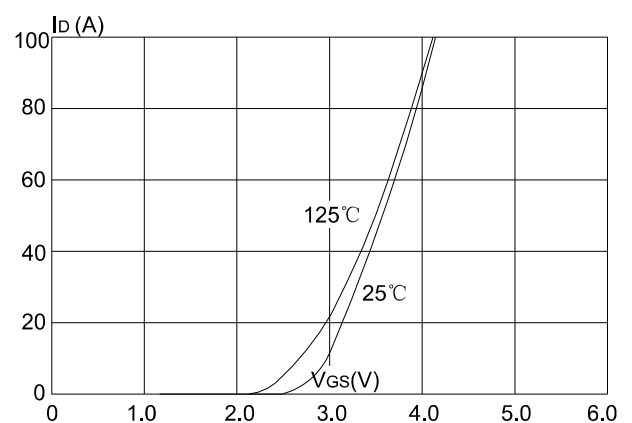
1. Pulse width limited by max. junction temperature
2. Pulse test
3. Surface mounted on 1 in<sup>2</sup> copper pad of FR4 board

### Typical Characteristics: ( $T_C=25^\circ C$ unless otherwise noted)

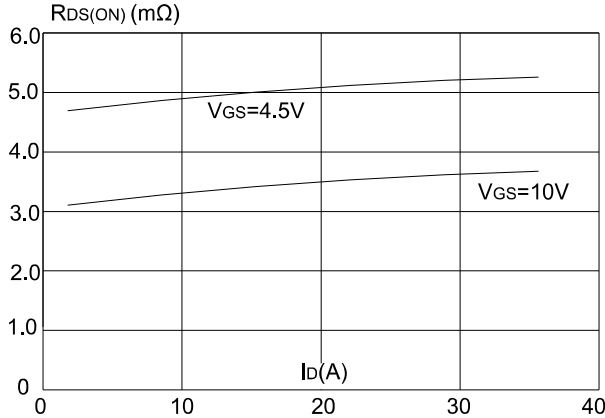
**Figure 1: Output Characteristics**



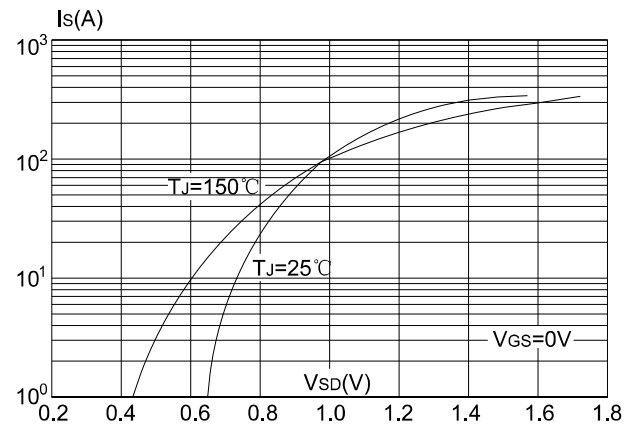
**Figure 2: Typical Transfer Characteristics**



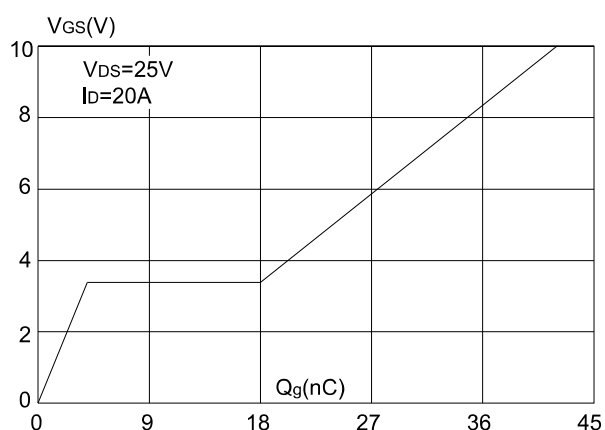
**Figure 3: On-resistance vs. Drain Current**



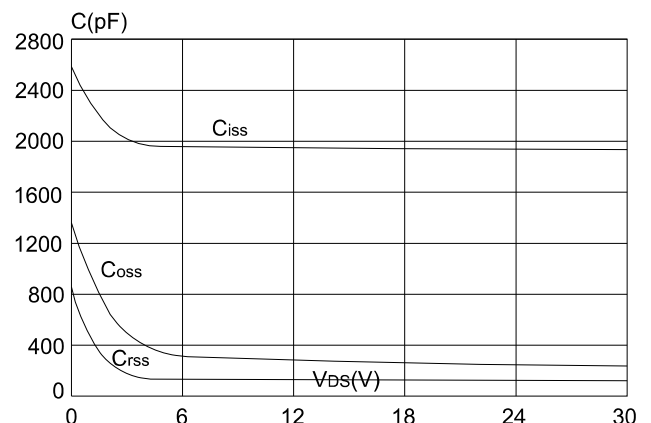
**Figure 4: Body Diode Characteristics**



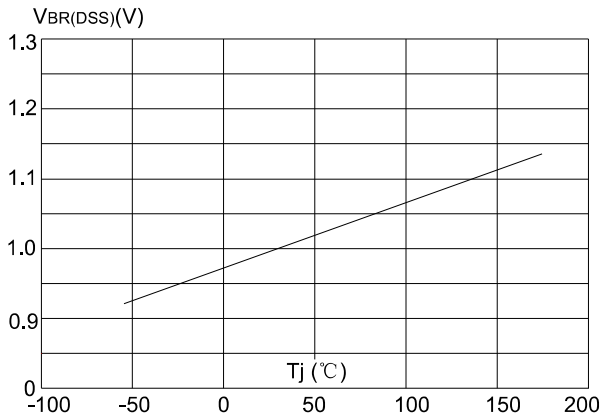
**Figure 5: Gate Charge Characteristics**



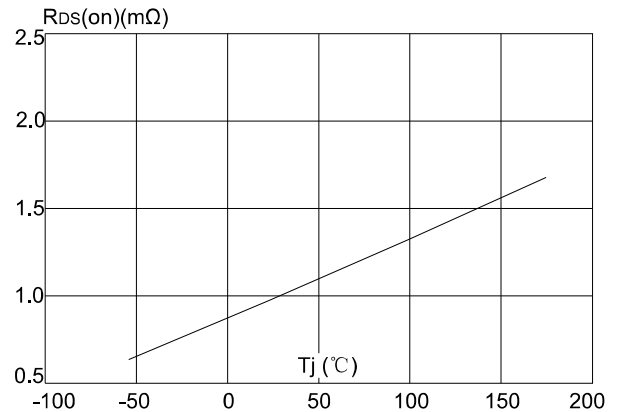
**Figure 6: Capacitance Characteristics**



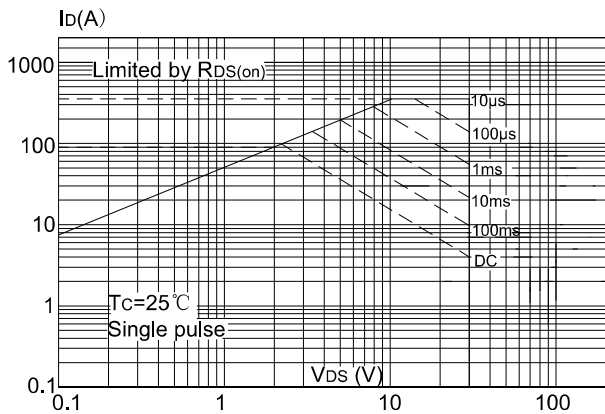
**Figure 7:** Normalized Breakdown Voltage vs. Junction Temperature



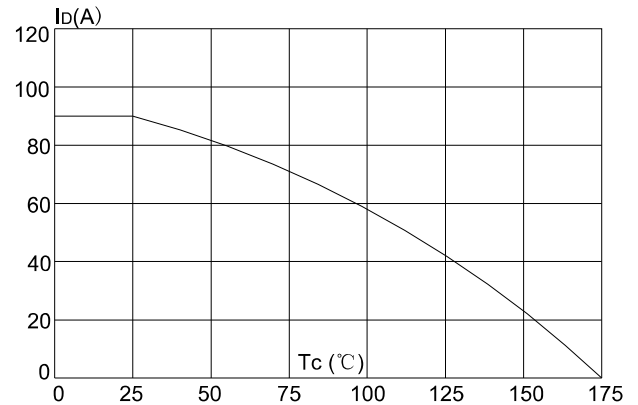
**Figure 8:** Normalized on Resistance vs. Junction Temperature



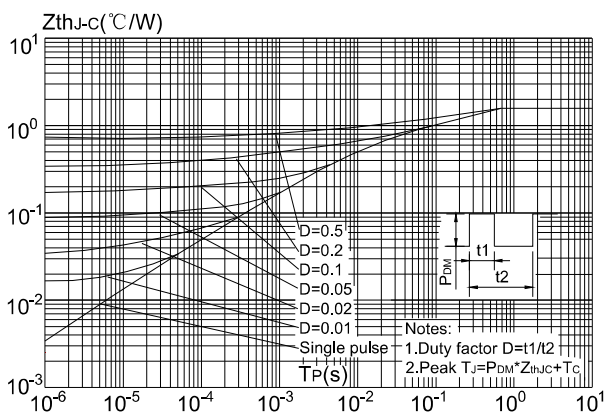
**Figure 9:** Maximum Safe Operating Area



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



**Figure.11:** Maximum Effective Transient Thermal Impedance, Junction-to-Case (TO-252)



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