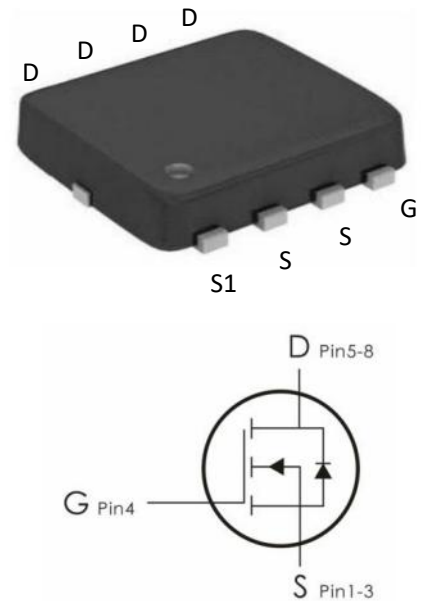


## Description:

This N-Channel MOSFET uses advanced trench technology to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode. These devices are well suited for high efficiency fast switching applications.

## Features:

- 1)  $V_{DS}=30V, I_D=30A, R_{DS(ON)} < 13m\ \Omega @ V_{GS}=10V$
- 2) Improved  $dv/dt$  capability
- 3) Fast switching
- 4) 100% EAS Guaranteed
- 5) Green Device Available.



## Absolute Maximum Ratings: ( $T_J=25^\circ\text{C}$ 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-Continuous- $T_c=25^\circ\text{C}$	30	A
	Continuous Drain Current-Continuous- $T_c=100^\circ\text{C}$	22	
$I_{DM}$	Drain Current – Pulsed <sup>note1</sup>	110	A
EAS	Single Pulse Avalanche Energy <sup>note2</sup>	12	mJ
$P_D$	Power Dissipation - $T_c=25^\circ\text{C}$	24	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	5.2	$^\circ\text{C}/\text{W}$

## Package Marking and Ordering Information:

Part NO.	Marking	Package
DOZ30N03	30N03	DFN3*3-8

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

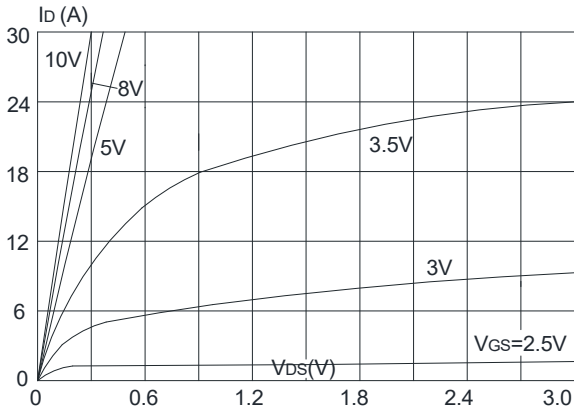
Symbol	Parameter	Conditions	Min	Typ	Max	Units
<b>Off Characteristics</b>						
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\ \mu\text{A}$	30	---	---	V
$I_{DSS}$	Drain-Source Leakage Current	$V_{GS}=0V, V_{DS}=30V, T_J=25^{\circ}\text{C}$	---	---	1.0	$\mu\text{A}$
$I_{GSS}$	Gate-Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	---	---	$\pm 100$	nA
<b>On Characteristics</b>						
$V_{GS(th)}$	GATE-Source Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\ \mu\text{A}$	1.0	1.5	2.5	V
$R_{DS(on)}$	Drain-Source On Resistance <sup>note3</sup>	$V_{GS}=10V, I_D=10A$	---	10	13	m $\Omega$
		$V_{GS}=4.5V, I_D=5A$	---	16	22.5	
<b>Dynamic Characteristics</b>						
$C_{iss}$	Input Capacitance	$V_{DS}=15V, V_{GS}=0V, f=1\text{MHz}$	---	550	---	pF
$C_{oss}$	Output Capacitance		---	105	---	
$C_{rss}$	Reverse Transfer Capacitance		---	95	---	
<b>Switching Characteristics</b>						
$t_{d(on)}$	Turn-On Delay Time	$V_{DS}=30V, V_{GS}=10V, R_G=3.0\ \Omega, I_D=18A$	---	5	---	ns
$t_r$	Rise Time		---	8	---	ns
$t_{d(off)}$	Turn-Off Delay Time		---	21	---	ns
$t_f$	Fall Time		---	7	---	ns
$Q_g$	Total Gate Charge	$V_{DS}=15V, V_{GS}=10V, I_D=10A$	---	15	---	nC
$Q_{gs}$	Gate-Source Charge		---	4.7	---	nC
$Q_{gd}$	Gate-Drain "Miller" Charge		---	3.6	---	nC
<b>Drain-Source Diode Characteristics</b>						
$I_S$	Continuous Source Current <sup>1,5</sup>	$V_G=V_D=0V,$	---	---	18	A
$I_{SM}$	Pulsed Source Current <sup>2,5</sup>	Force Current	---	---	72	A

<b>V<sub>SD</sub></b>	Forward on voltage	I <sub>SD</sub> =18A, T <sub>J</sub> =25°C, V <sub>GS</sub> =0V	---	---	1.2	V
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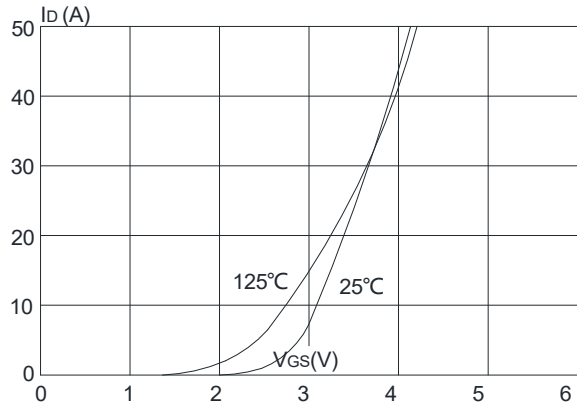
**Notes:**

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
2. EAS condition: T<sub>J</sub>=25°C, V<sub>GS</sub>=10V, R<sub>G</sub>=25Ω, L=0.5mH, I<sub>AS</sub>=8A
3. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%

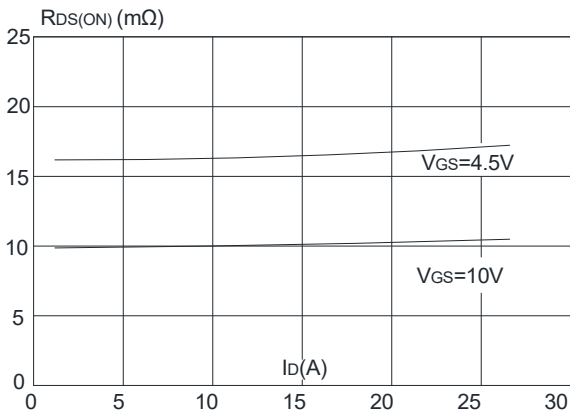
**Typical Characteristics:** (T<sub>C</sub>=25°C unless otherwise noted)



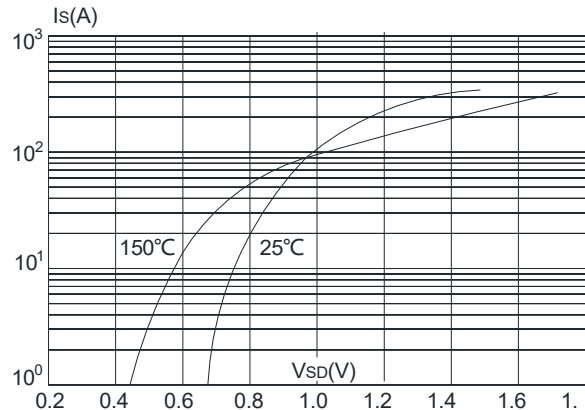
**Figure1:** Out put Characteristics



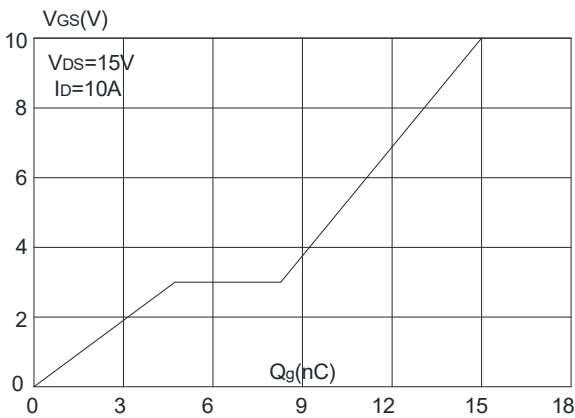
**Figure 2:** Typical Transfer Characteristics



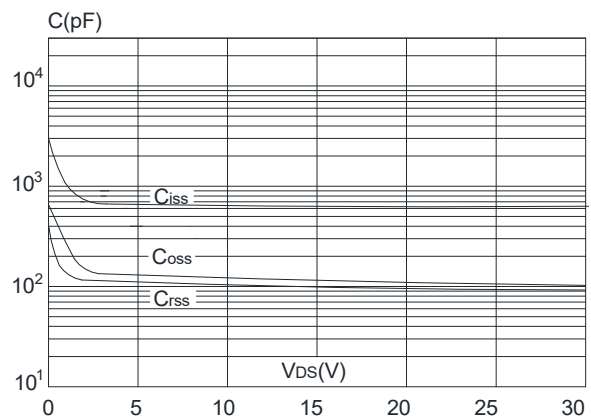
**Figure 3:** On-resistance vs. Drain Current



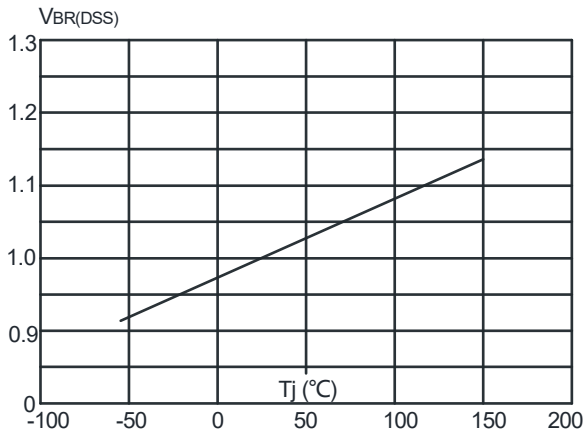
**Figure 4:** Body Diode Characteristics



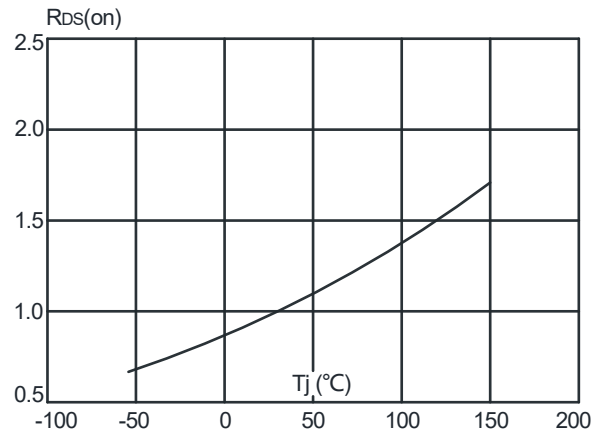
**Figure 5:** Gate Charge Characteristics



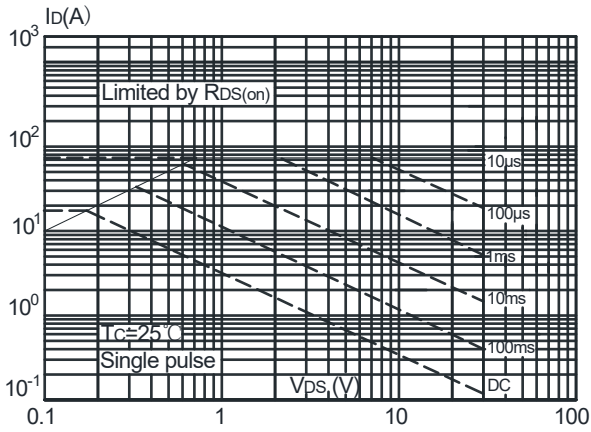
**Figure 6:** Capacitance Characteristics



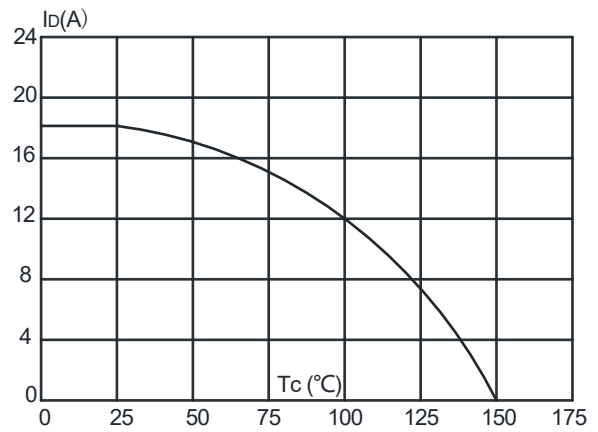
**Figure 7:** Normalized Breakdown Voltage vs. Junction Temperature



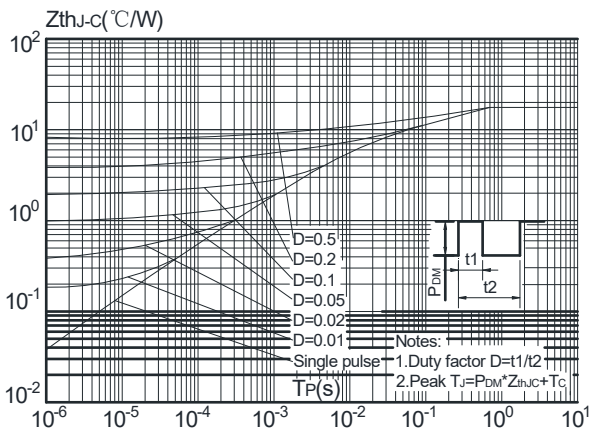
**Figure 8:** Normalized on Resistance vs. Junction Temperature



**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