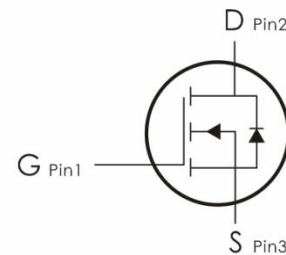
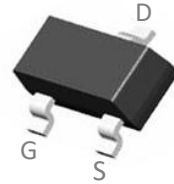


## Description:

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)  $V_{DS}=60V, I_D=3A, R_{DS(ON)} < 100m\ \Omega @ V_{GS}=10V$
- 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: ( $T_a=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Ratings	Units
$V_{DS}$	Drain-Source Voltage	60	V
$V_{GS}$	Gate-Source Voltage	$\pm 20$	V
$I_D$	Continuous Drain Current- $T_A=25^\circ\text{C}$	3	A
	Continuous Drain Current- $T_A=100^\circ\text{C}$	2	
$I_{DM}$	Pulse Drain Current Tested <sup>note1</sup>	12	A
$P_D$	Power Dissipation- $T_A=25^\circ\text{C}$	1.5	W
$T_J, T_{STG}$	Operating and Storage Junction Temperature Range	-55 to +150	$^\circ\text{C}$

## Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	83.3	$^\circ\text{C}/\text{W}$

## Package Marking and Ordering Information:

Part NO.	Marking	Package
DO2310D	.2310D	SOT-23

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

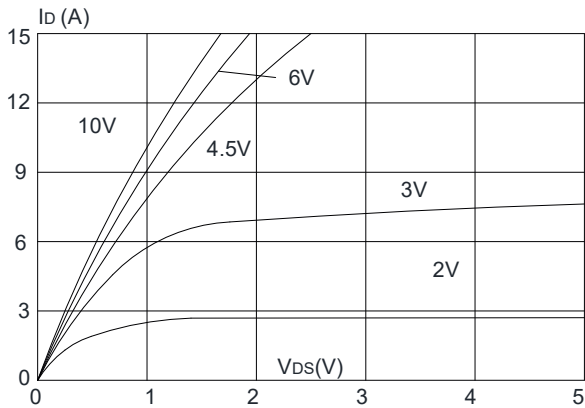
Symbol	Parameter	Conditions	Min	Typ	Max	Units
<b>Off Characteristics</b>						
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\ \mu\text{A}$	60	---	---	V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{GS}=0V, V_{DS}=60V$	---	---	1	$\mu\text{A}$
$I_{GSS}$	Gate-Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0A$	---	---	$\pm 100$	nA
<b>On Characteristics</b>						
$V_{GS(th)}$	GATE-Source Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\ \mu\text{A}$	1	1.5	2.5	V
$R_{DS(on)}$	Drain-Source on-Resistance <sup>note2</sup>	$V_{GS}=10V, I_D=3A$	---	86	100	m $\Omega$
		$V_{GS}=4.5V, I_D=2A$	---	94	110	
<b>Dynamic Characteristics</b>						
$C_{iss}$	Input Capacitance	$V_{DS}=25V, V_{GS}=0V, f=1\text{MHz}$	---	325	---	pF
$C_{oss}$	Output Capacitance		---	85	---	
$C_{rss}$	Reverse Transfer Capacitance		---	15	---	
<b>Switching Characteristics</b>						
$t_{d(on)}$	Turn-On Delay Time	$V_{DS}=30V, V_{GS}=10V,$ $I_D=2A, R_{GEN}=3\ \Omega$	---	13	---	ns
$t_r$	Rise Time		---	51	---	ns
$t_{d(off)}$	Turn-Off Delay Time		---	19	---	ns
$t_f$	Fall Time		---	12	---	ns
$Q_g$	Total Gate Charge	$V_{GS}=10V, V_{DS}=30V,$ $I_D=3A$	---	5.1	---	nC
$Q_{gs}$	Gate-Source Charge		---	1.3	---	nC
$Q_{gd}$	Gate-Drain "Miller" Charge		---	1.7	---	nC
<b>Drain-Source Diode Characteristics</b>						
$I_S$	Continuous Source Current	---	---	---	3	A
$I_{SM}$	Pulsed Source Current	---	---	---	12	A

<b>V<sub>SD</sub></b>	Forward Voltage	V <sub>GS</sub> =0V, I <sub>S</sub> =3A	---	---	1.2	V
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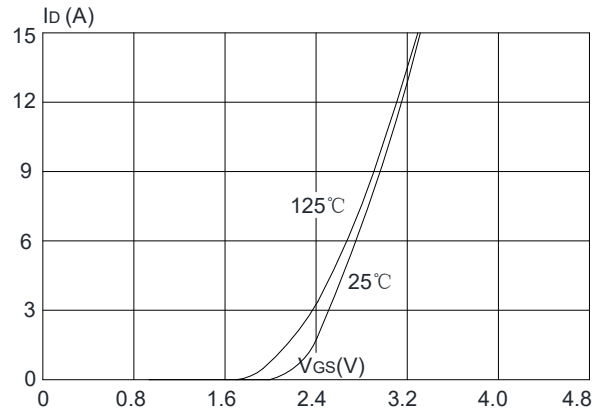
### Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
2. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 0.5%

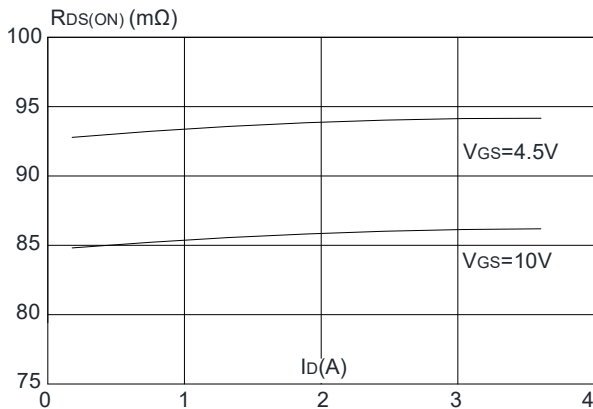
### Typical Characteristics: (T<sub>c</sub>=25°C unless otherwise noted)



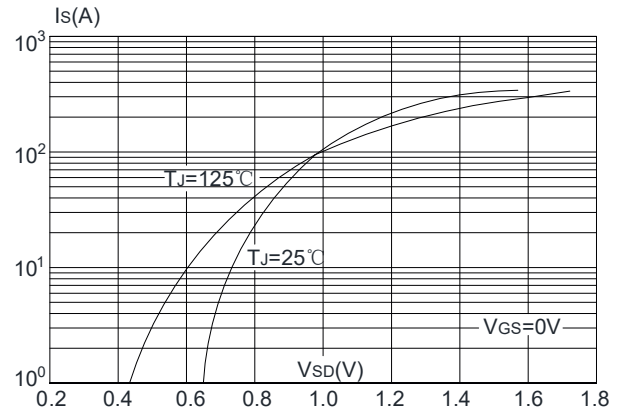
**Figure 1:** Output Characteristics



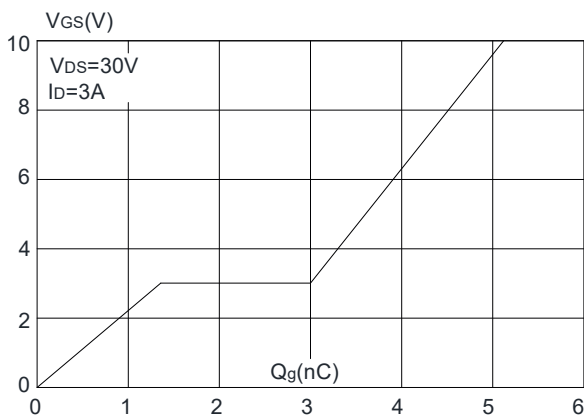
**Figure 2:** Typical Transfer Characteristics



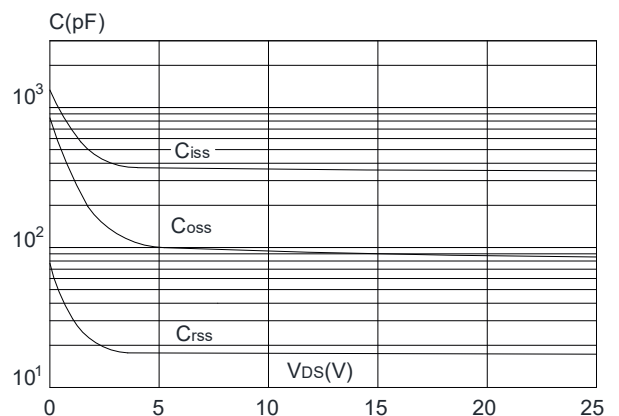
**Figure 3:** On-resistance vs. Drain Current



**Figure 4:** Body Diode Characteristics

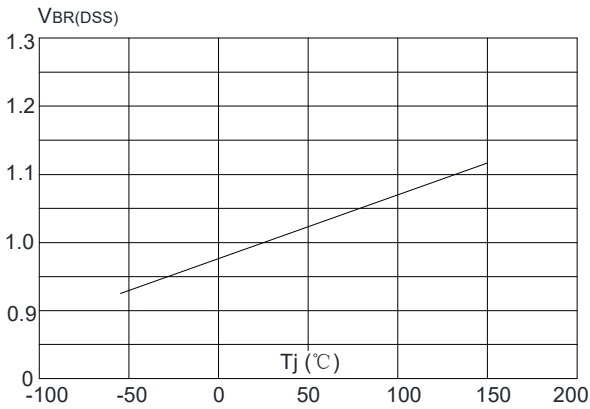


**Figure 5:** Gate Charge Characteristics

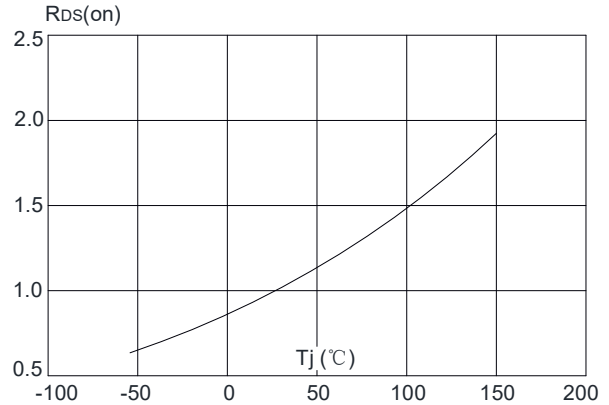


**Figure 6:** Capacitance Characteristics

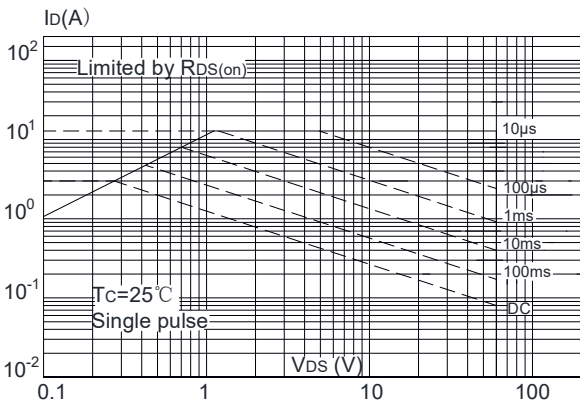
**Figure 7:** Normalized Breakdown Voltage vs. Junction Temperature



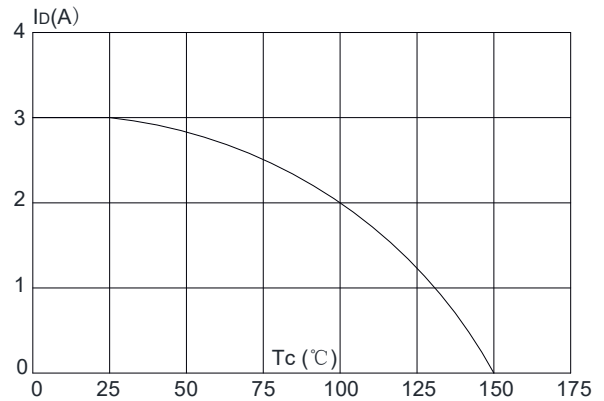
**Figure 8:** Normalized on Resistance vs. Junction Temperature



**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

