

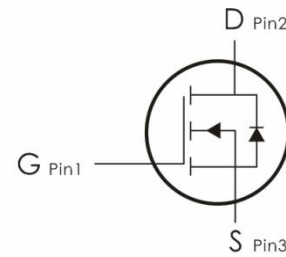
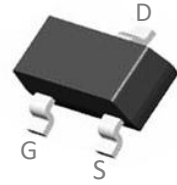
## Description:

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)  $V_{DS}=60V, I_D=3.2A, R_{DS(ON)} < 100m\Omega @ V_{GS}=10V$
- 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.



## Package Marking and Ordering Information:

Part NO.	Marking	Package	Packing
DO2310DA	2310D	SOT-23-3	3000pcs/Reel

## 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- $T_A=25^\circ\text{C}$	3.2	A
	Continuous Drain Current- $T_A=100^\circ\text{C}$	2.2	
$I_{DM}$	Pulse Drain Current Tested <sup>1</sup>	14	A
$P_D$	Power Dissipation- $T_A=25^\circ\text{C}$	1.7	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	73.5	$^\circ\text{C}/\text{W}$

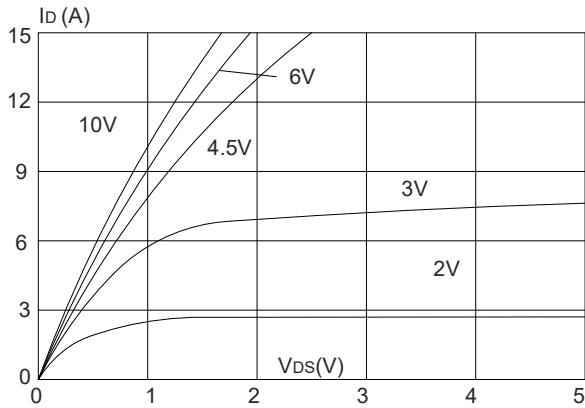
**Electrical Characteristics:** ( $T_A=25^{\circ}\text{C}$  unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
<b>Off Characteristics</b>						
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\ \mu A$	60	---	---	V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{GS}=0V, V_{DS}=60V$	---	---	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	1.5	2.5	V
$R_{DS(on)}$	Drain-Source on-Resistance <sup>2</sup>	$V_{GS}=10V, I_D=3A$	---	86	100	m $\Omega$
		$V_{GS}=4.5V, I_D=2A$	---	94	120	
<b>Dynamic Characteristics</b>						
$C_{iss}$	Input Capacitance	$V_{DS}=25V, V_{GS}=0V, f=1MHz$	---	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	$V_D=V_G=0V$	---	---	3.2	A
$I_{SM}$	Pulsed Source Current	$V_D=V_G=0V$	---	---	14	A
$V_{SD}$	Forward Voltage	$V_{GS}=0V, I_S=3A$	---	---	1.2	V

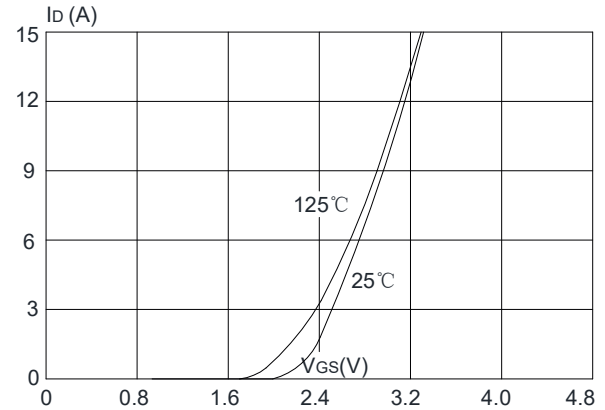
## Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
2. Pulse Test: Pulse Width $\leq 300\mu\text{s}$ , Duty Cycle $\leq 0.5\%$

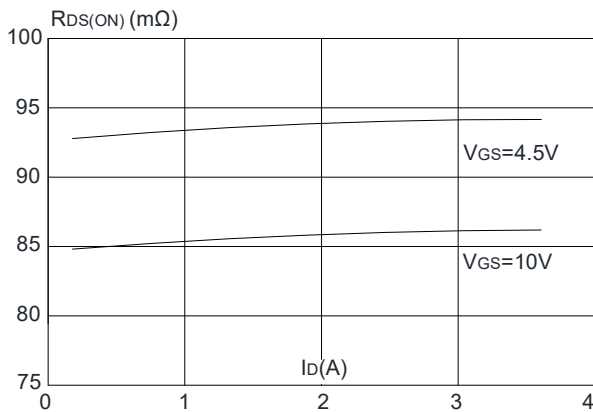
## Typical Characteristics: ( $T_A=25^\circ\text{C}$ unless otherwise noted)



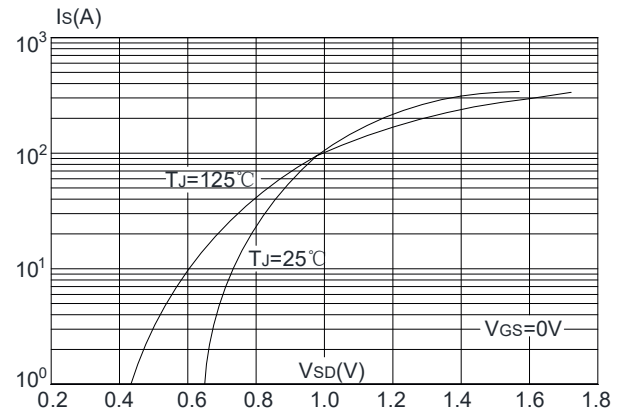
**Figure 1:** Output Characteristics



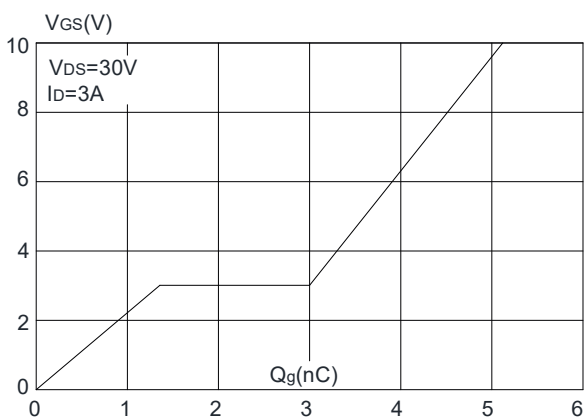
**Figure 2:** Typical Transfer Characteristics



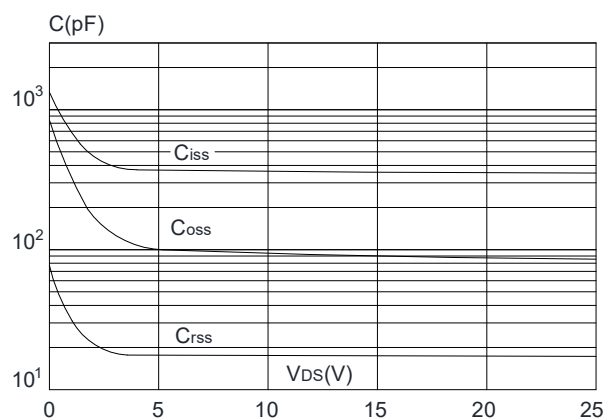
**Figure 3:** On-resistance vs. Drain Current



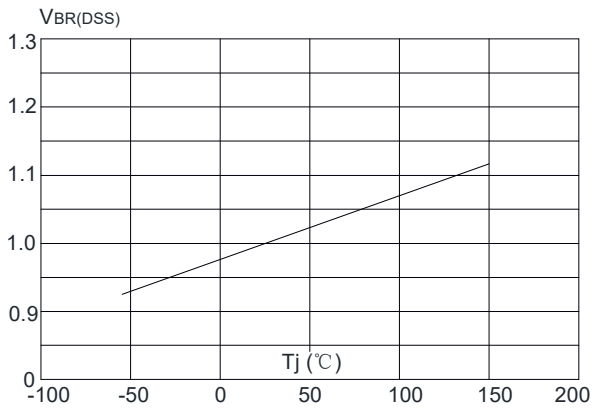
**Figure 4:** Body Diode Characteristics



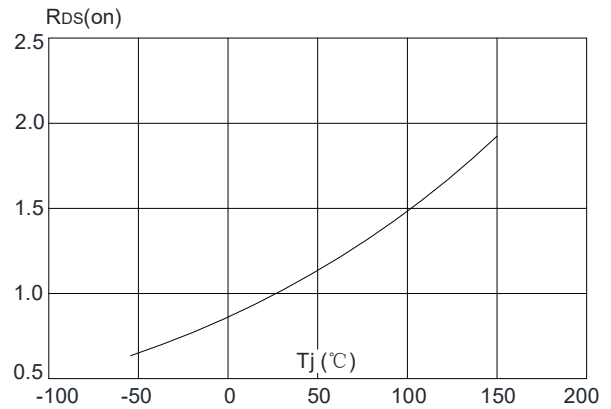
**Figure 5:** Gate Charge Characteristics



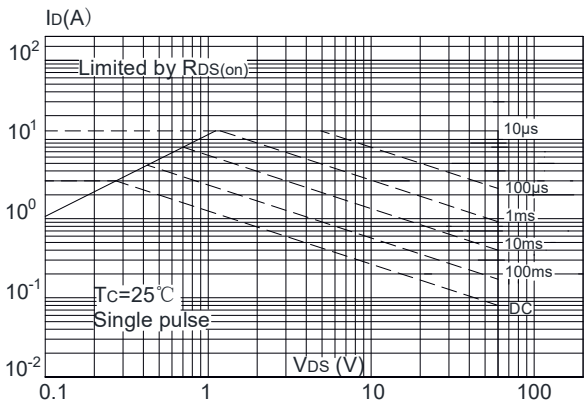
**Figure 6:** Capacitance Characteristics



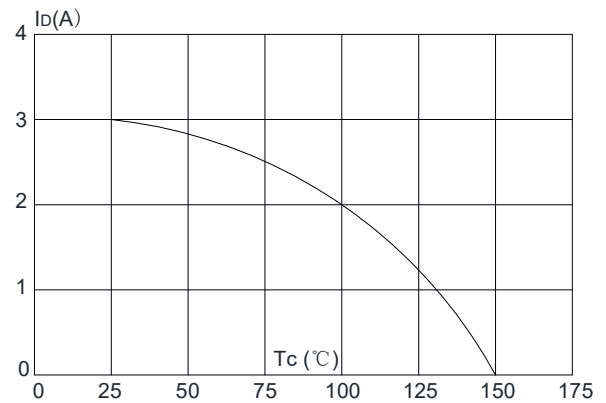
**Figure 7:** Normalized Breakdown Voltage vs. Junction Temperature



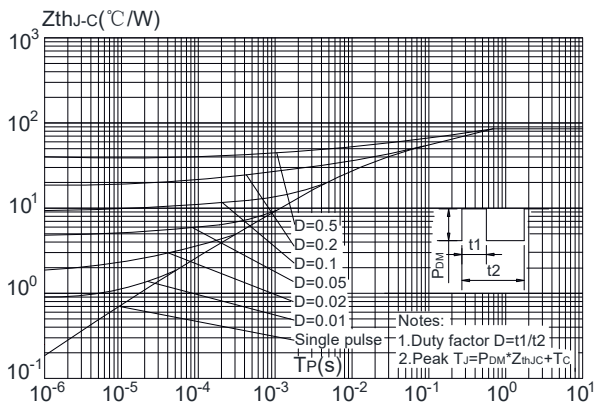
**Figure 8:** Normalized on Resistance vs. Junction Temperature



**Figure 9:** Maximum Safe Operating Area

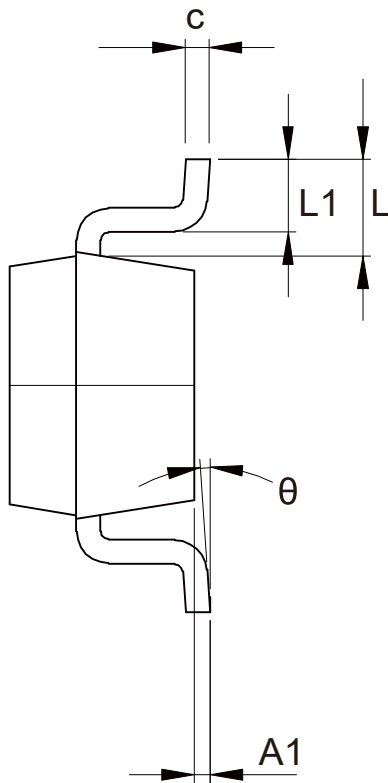
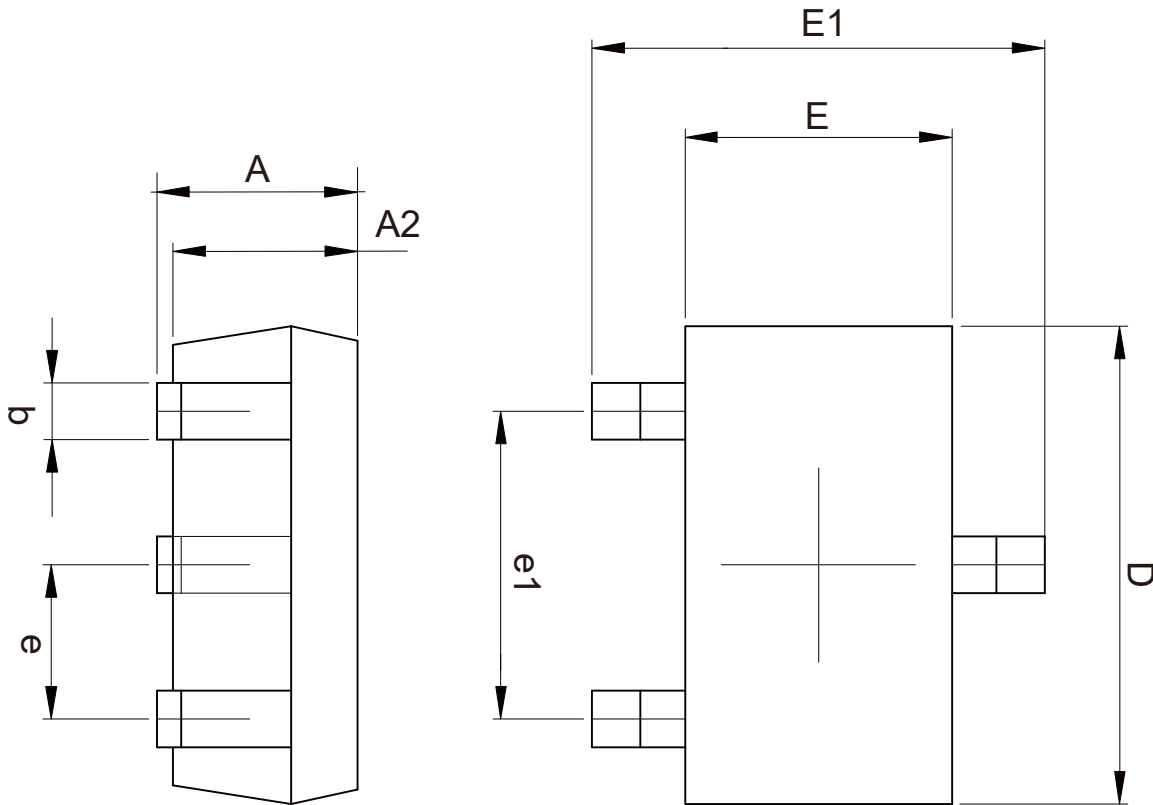


**Figure 10:** Maximum Continuous Drain Current vs. Case Temperature



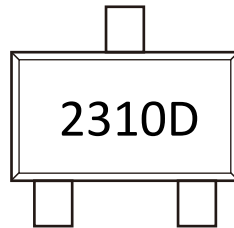
**Figure.11:** Maximum Effective Transient Thermal Impedance, Junction-to-Case

## SOT-23-3 Package Outline Data




COMMON DIMENSIONS			
CUNITS MEASURE=MILLIMETER			
SYMBOL	MIN	NOM	MAX
A	1.050	---	1.300
A1	0.000	---	0.200
A2	1.050	---	1.200
b	0.300	0.400	0.500
c	0.100	---	0.200
D	2.820	2.900	3.020
E	1.500	1.600	1.700
E1	2.650	2.800	2.950
e	0.950TYP		
e1	1.800	1.900	2.000
L	0.6REF		
L1	0.300	0.450	0.600
θ	0°	--	8°

Unit:mm

**Marking Information:****Previous Version**

Version	Date	Subjects (major changes since last revision)
1.0	2024-06-10	Release of final version

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