## 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}=100V,I_D=3 A,$R_{DS(ON)}$<286mΩ @V_{GS}=10V

2) Low gate charge.

3) Green device available.

4) Advanced high cell denity trench technology for ultra $R_{DS(ON)}$.

5) Excellent package for good heat dissipation.
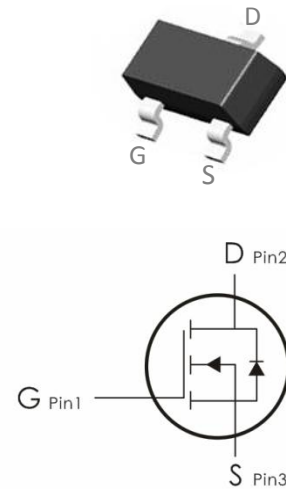
Package Marking and Ordering Information：

Part NO.	Marking	Package	Packing
DO3N10SA	03N10	SOT-23-3	3000pcs/Reel

Absolute Maximum Ratings： (T$_A$=25℃ unless otherwise noted)

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	100	V
V_{GS}	Gate-Source Voltage	±20	V
I_D	Continuous Drain Current-T$_A$=25℃	3	A
	Continuous Drain Current-T$_A$=70℃	1.8	
I_{DM}	Pulse Drain Current Tested [1]	11	A
P_D	Power Dissipation-T$_A$=25℃	2.5	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +150	℃

Thermal Characteristics：

Symbol	Parameter	Max	Units
$R_{\theta JA}$	Thermal Resistance,Junction to Ambient[2]	50	℃/W

Electrical Characteristics： (T$_A$=25℃ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV$_{DSS}$	Drain-Sourtce Breakdown Voltage	V$_{GS}$=0V,I$_D$=250μA	100	---	---	V
I$_{DSS}$	Zero Gate Voltage Drain Current	V$_{GS}$=0V, V$_{DS}$=100V	---	---	1	μA
I$_{GSS}$	Gate-Source Leakage Current	V$_{GS}$=0V, V$_{DS}$=20V	---	---	±100	μA
On Characteristics						
V$_{GS(th)}$	Gate-Source Threshold Voltage	V$_{GS}$=V$_{DS}$, I$_D$=250μA	1.0	1.5	2.2	V
R$_{DS(on)}$	Drain-Source on-Resistance	V$_{GS}$=10V,I$_D$=2A	---	220	286	mΩ
		V$_{GS}$=4.5V,I$_D$=1A	---	223	312	
Dynamic Characteristics						
C$_{iss}$	Input Capacitance	V$_{DS}$=25V, V$_{GS}$=0V, f=1MHz	---	320	---	pF
C$_{oss}$	Output Capacitance		---	20	---	
C$_{rss}$	Reverse Transfer Capacitance		---	14	---	
Switching Characteristics						
t$_{d(on)}$	Turn-On Delay Time	V$_{DD}$=30V, V$_{GS}$=10V, I$_D$=1A, R$_G$=3Ω	---	13	---	ns
t$_r$	Rise Time		---	53	---	ns
t$_{d(off)}$	Turn-Off Delay Time		---	17	---	ns
t$_f$	Fall Time		---	10	---	ns
Q$_g$	Total Gate Charge	V$_{GS}$=10V, V$_{DS}$=30V, I$_D$=2A	---	5.2	---	nC
Q$_{gs}$	Gate-Source Charge		---	1.2	---	nC
Q$_{gd}$	Gate-Drain "Miller" Charge		---	1.6		nC
Drain-Source Diode Characteristics						
I$_S$	Source drain current	V$_D$=V$_G$=0V	---	---	3	A
I$_{SM}$	Source drain current	V$_D$=V$_G$=0V	---	---	11	A
V$_{SD}$	Forward Voltage	V$_{GS}$=0V , I$_{SD}$=2A,T$_J$=25℃	---	---	1.2	V

V1.0

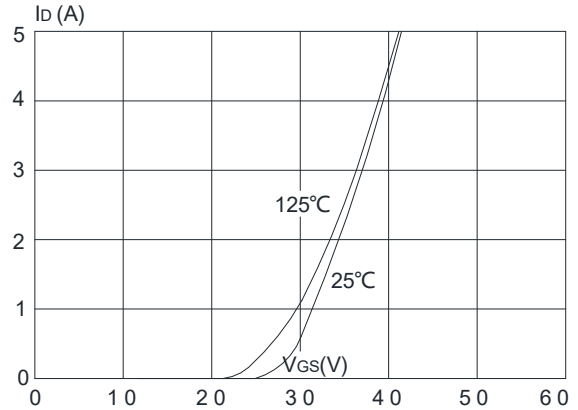**Notes:**

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

2. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%
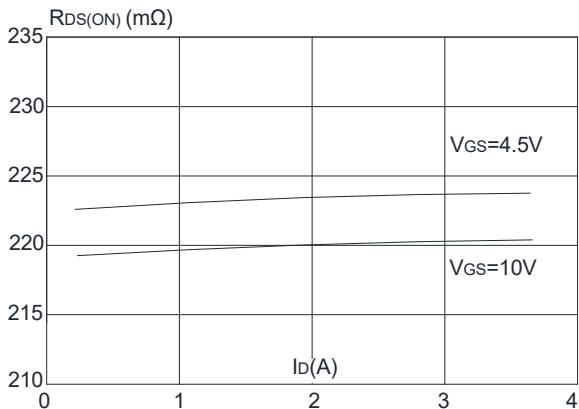
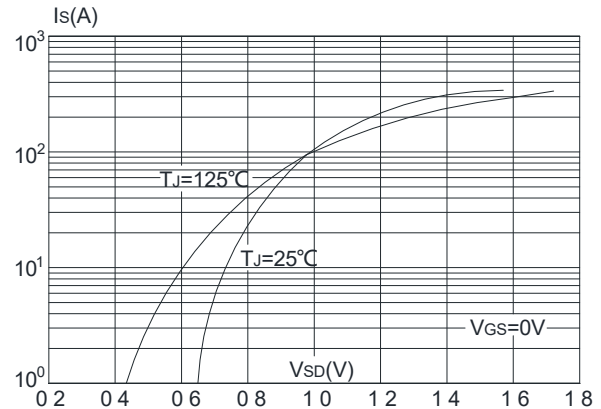## Typical Characteristics： (T_A=25℃ unless otherwise noted)
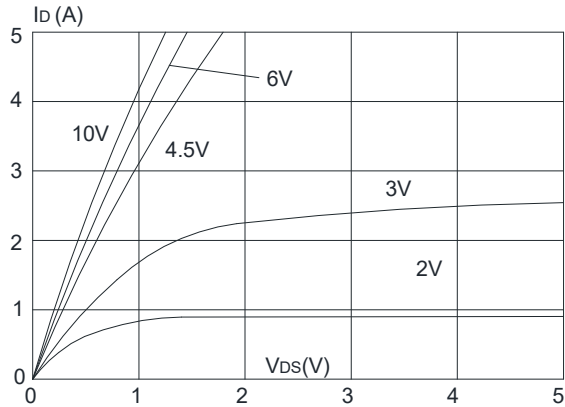
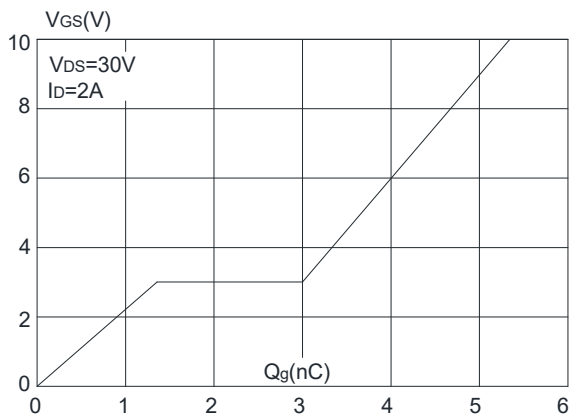**Figure1:** Output Characteristics
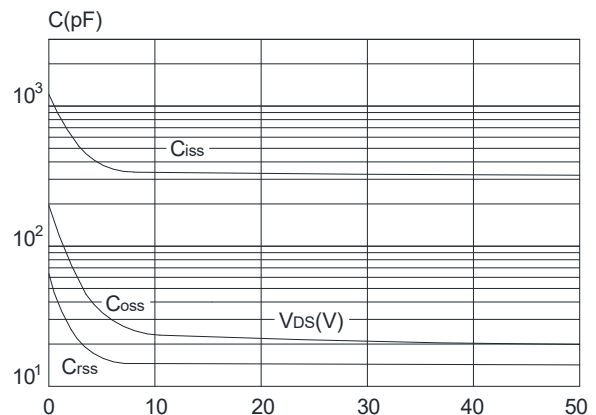
Figure 2: Typical Transfer Characteristics

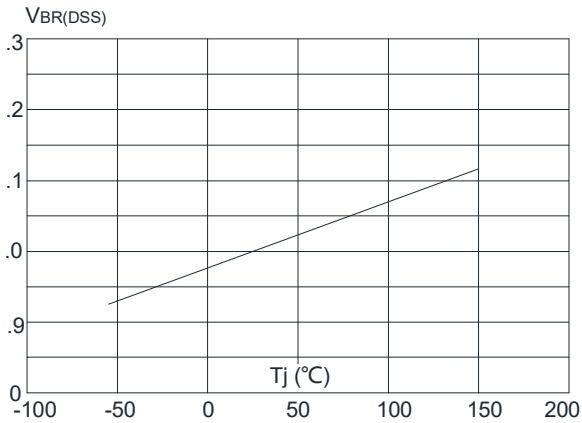**Figure 3:** On-resistance vs. Drain Current
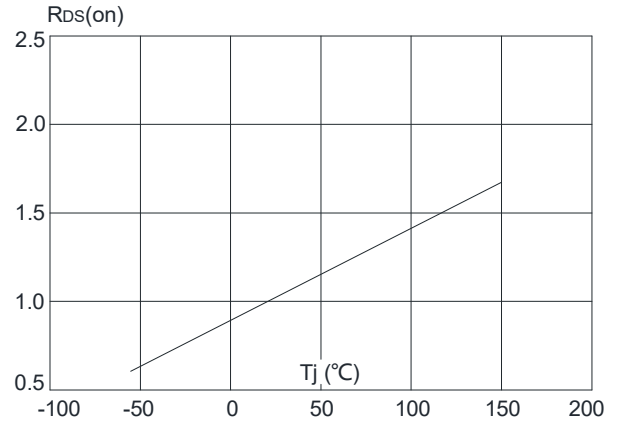
Figure 4: Body Diode Characteristics

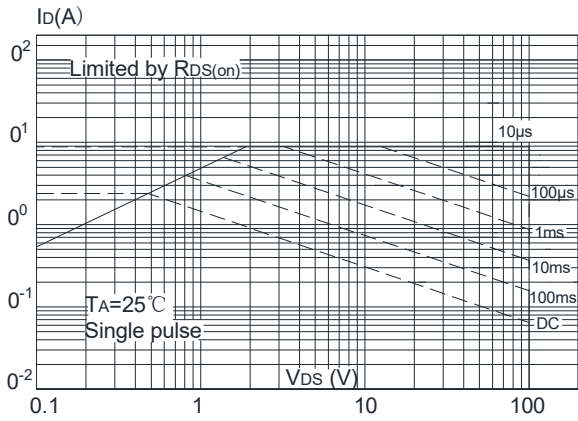**Figure 5:** Gate Charge Characteristics

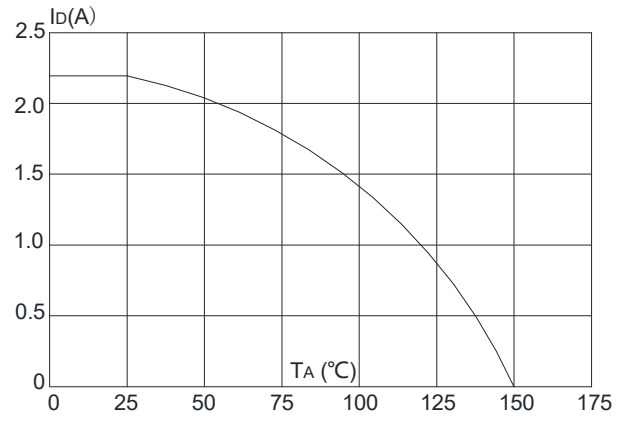**Figure 6:** Capacitance Characteristics

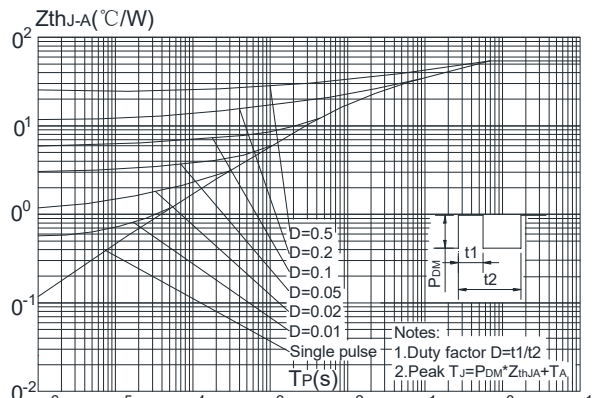**Figure 7:** Normalized Breakdown Voltage vs. Junction Temperature

Figure 8: Normalized on Resistance vs. Junction Temperature

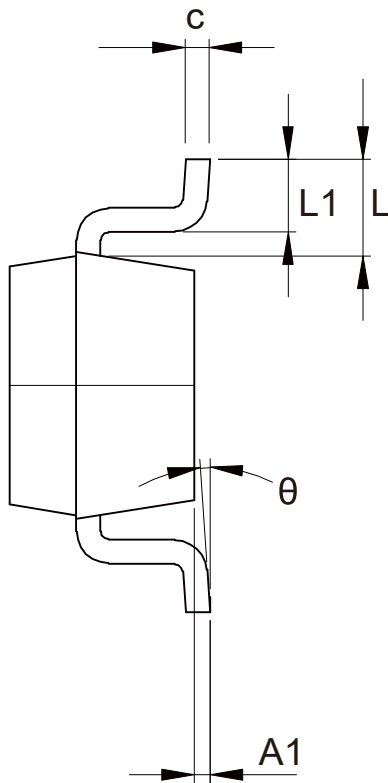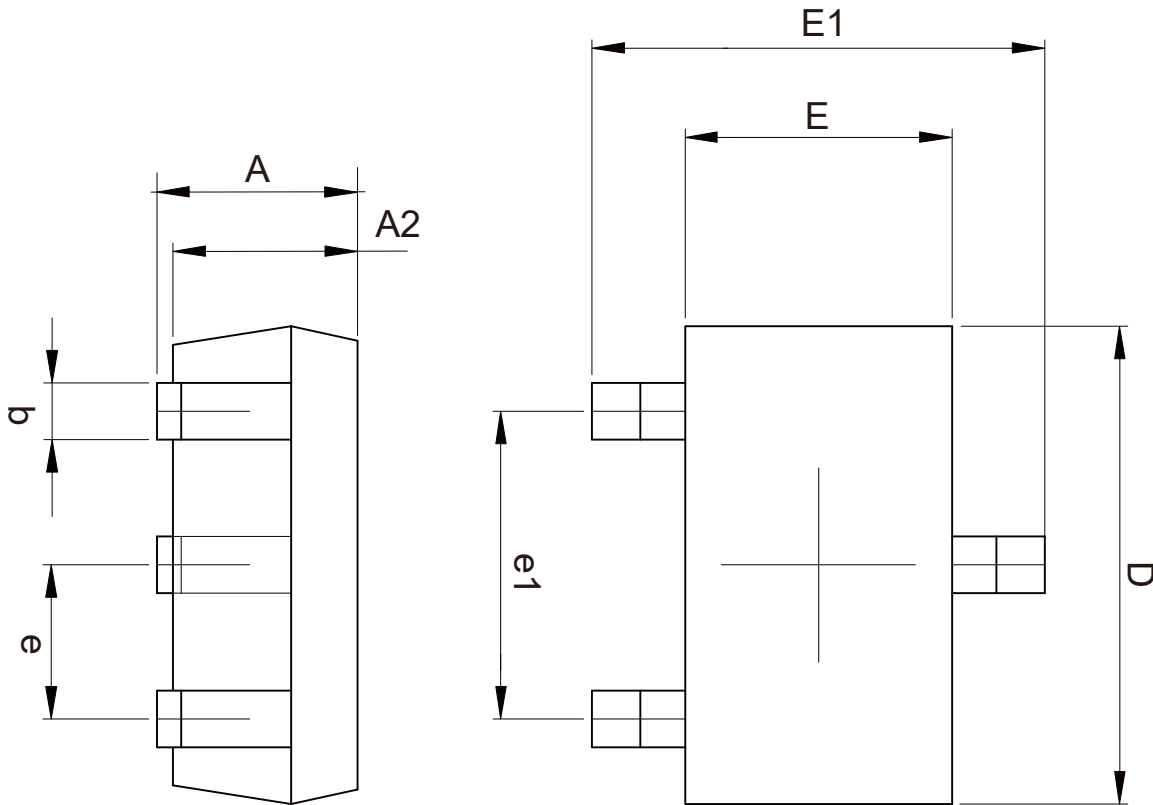**Figure 9:** Maximum Safe Operating Area

Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

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

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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：

03N10
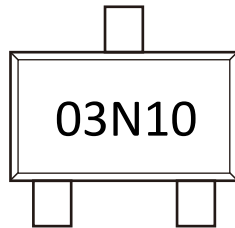
Previous Version

Version	Date	Subjects (major changes since last revision)
1.0	2024-07-01	Release of final version

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