

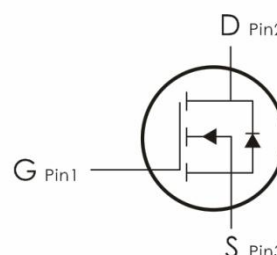
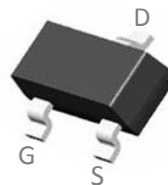
Description:

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) $V_{DS}=100V, I_D=5A, R_{DS(on)} < 120m\ \Omega$ @ $V_{GS}=10V$
- 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
DO5N10BA	5N10B	SOT-23-3	3000pcs/Reel

Absolute Maximum Ratings: ($T_C=25^\circ\text{C}$ 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- $T_C=25^\circ\text{C}^1$	5	A
I_{DM}	Pulse Drain Current Tested ²	11	A
P_D	Power Dissipation- $T_A=25^\circ\text{C}^3$	3.5	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	35.7	$^\circ\text{C}/\text{W}$

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

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV _{DSS}	Drain-Sourctce Breakdown Voltage	V _{GS} =0V,I _D =250 μ A	100	---	---	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{GS} =0V, V _{DS} =80V,T _A =25 °C	---	---	10	μ A
		V _{GS} =0V, V _{DS} =80V,T _A =55 °C	---	---	100	nA
I _{GSS}	Gate-Source Leakage Current	V _{GS} =± 12V, V _{DS} =0A	---	---	±100	nA
On Characteristics						
V _{GS(th)}	Gate -Source Threshold Voltage	V _{GS} =V _{DS} , I _D =250 μ A	1	1.5	2.5	V
R _{DS(on)}	Drain-Source on-Resistance	V _{GS} =10V,I _D =2A	---	99	120	m Ω
		V _{GS} =4.5V,I _D =1A	---	104	130	
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =15V, V _{GS} =0V, f=1MHz	---	840	---	pF
C _{oss}	Output Capacitance		---	45	---	
C _{rss}	Reverse Transfer Capacitance		---	31	---	
R _G	Gate Resistance	f=1MHz	---	2.3	4.6	Ω
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time	V _{DD} =50V, V _{GS} =10V, I _D =1A, R _G =3.3 Ω	---	17.2	---	ns
t _r	Rise Time		---	2.8	---	ns
t _{d(off)}	Turn-Off Delay Time		---	49	---	ns
t _f	Fall Time		---	2.7	---	ns
Q _g	Total Gate Charge	V _{GS} =10V, V _{DS} =50V, I _D =2A	---	25	---	nC
Q _{gs}	Gate-Source Charge		---	4.1	---	nC
Q _{gd}	Gate-Drain “Miller” Charge		---	4.2	---	nC
Drain-Source Diode Characteristics						
I _S	Source drain current(Body Diode)	V _D =V _G =0V	---	---	5	A
V _{SD}	Forward Voltage	V _{GS} =0V , I _S =1A,T _J =25 °C	---	---	1.2	V

Notes:

1. The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
2. The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
3. The power dissipation is limited by 150°C junction temperature
4. The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

Typical Characteristics

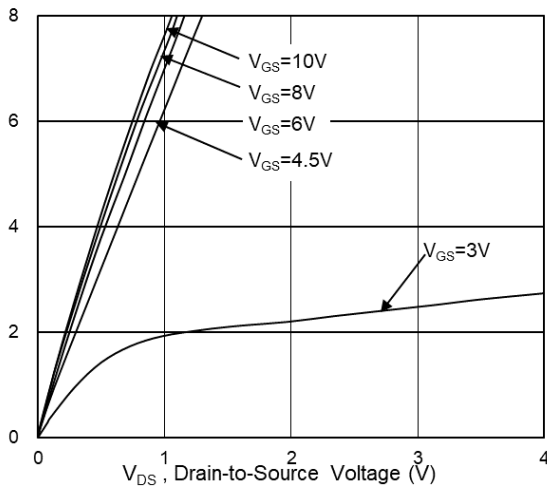


Fig.1 Typical Output Characteristics

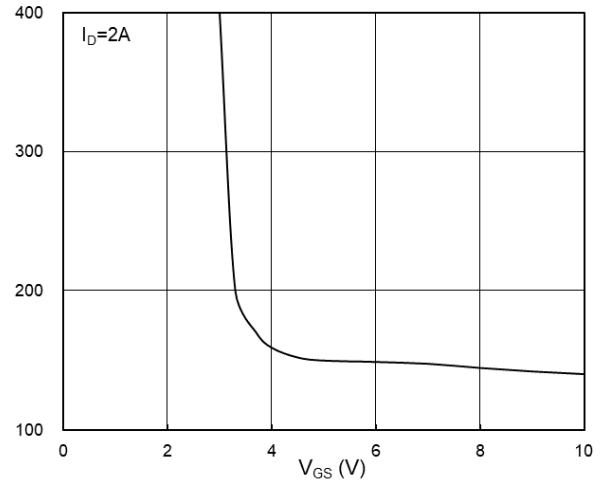


Fig.2 On-Resistance vs G-S Voltage

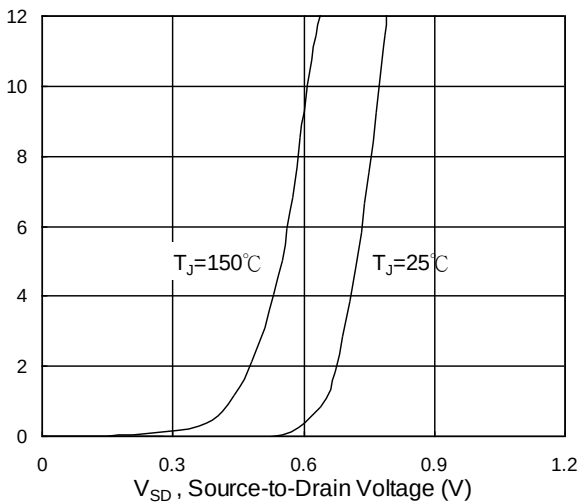


Fig.3 Source Drain Forward Characteristics

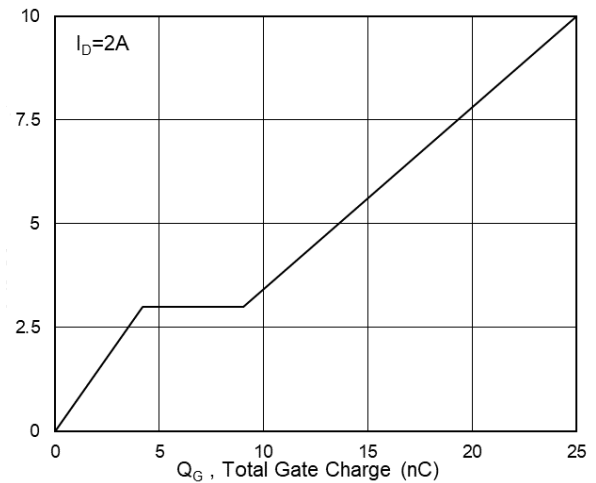


Fig.4 Gate-Charge Characteristics

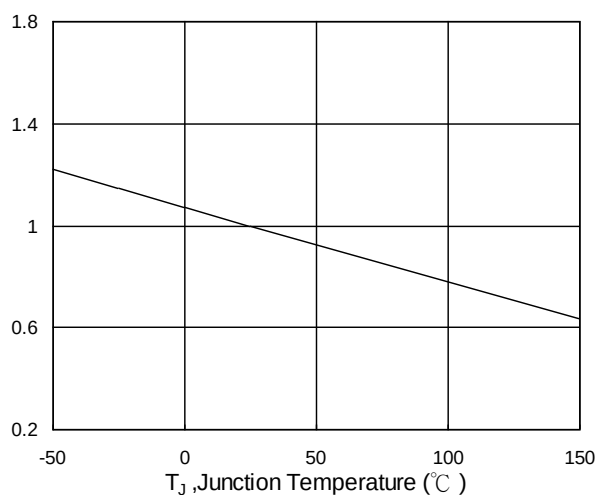


Fig.5 Normalized $V_{GS(th)}$ vs T_J

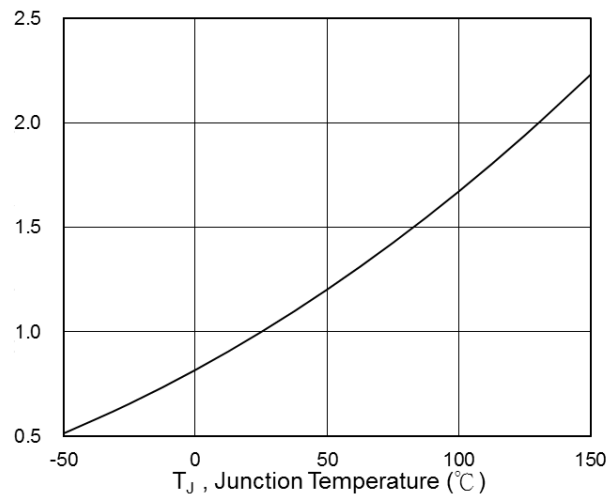


Fig.6 Normalized $R_{DS(on)}$ vs T_J

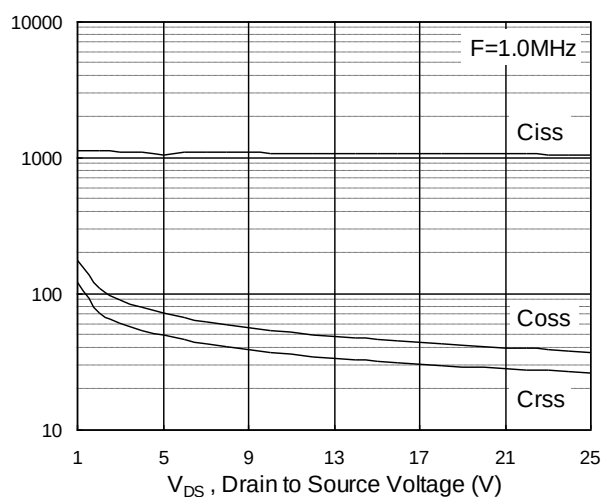


Fig.7 Capacitance

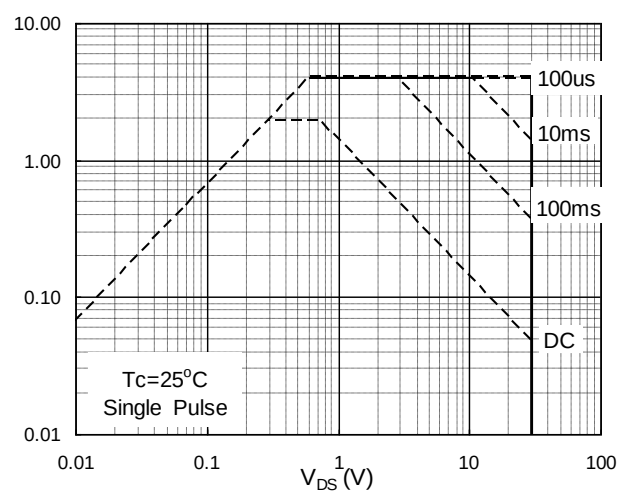


Fig.8 Safe Operating Area

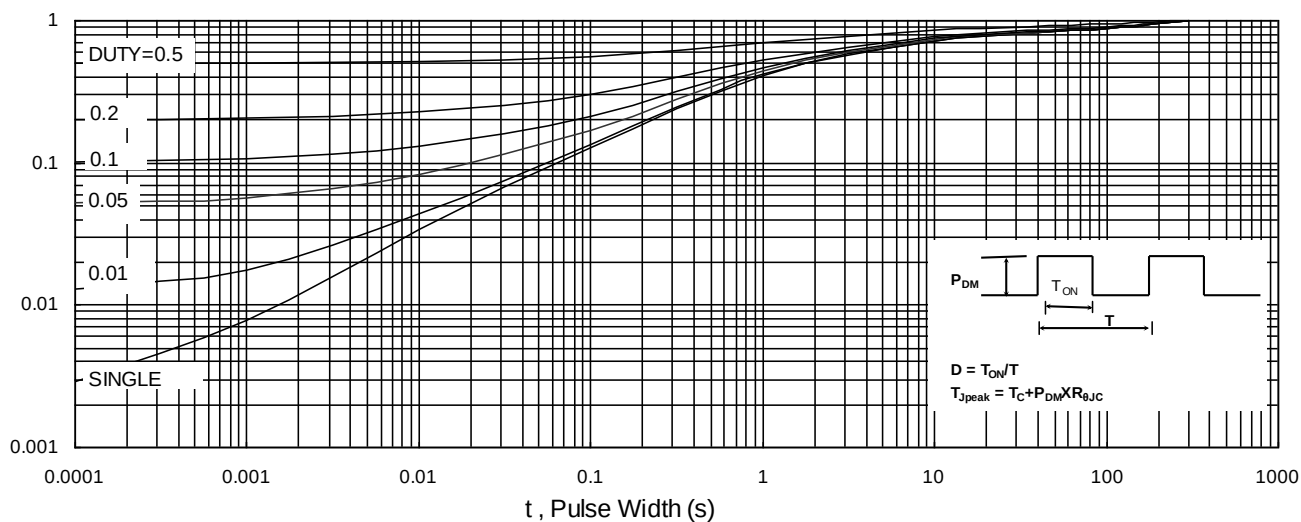


Fig.9 Normalized Maximum Transient Thermal Impedance

V1.0

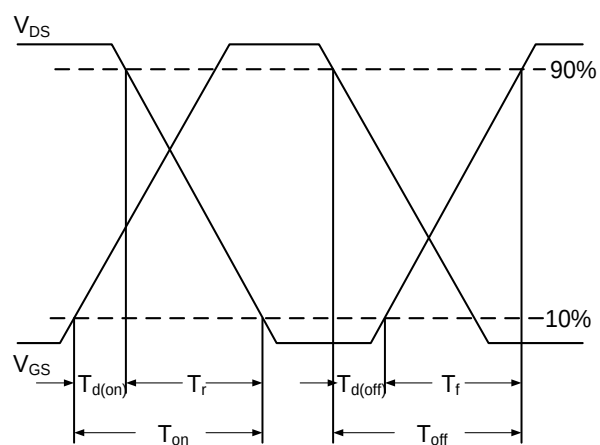


Fig.10 Switching Time Waveform

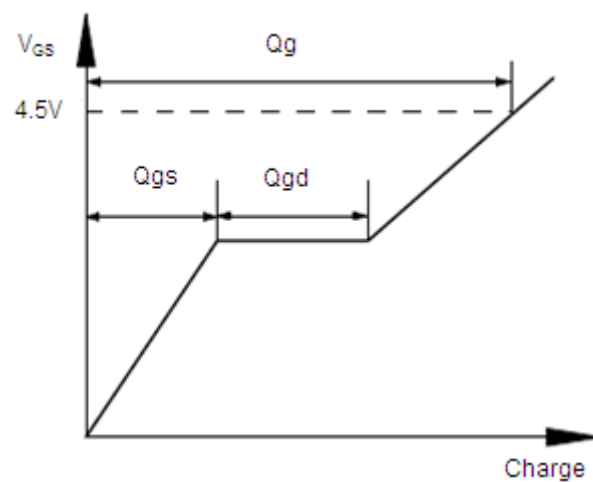
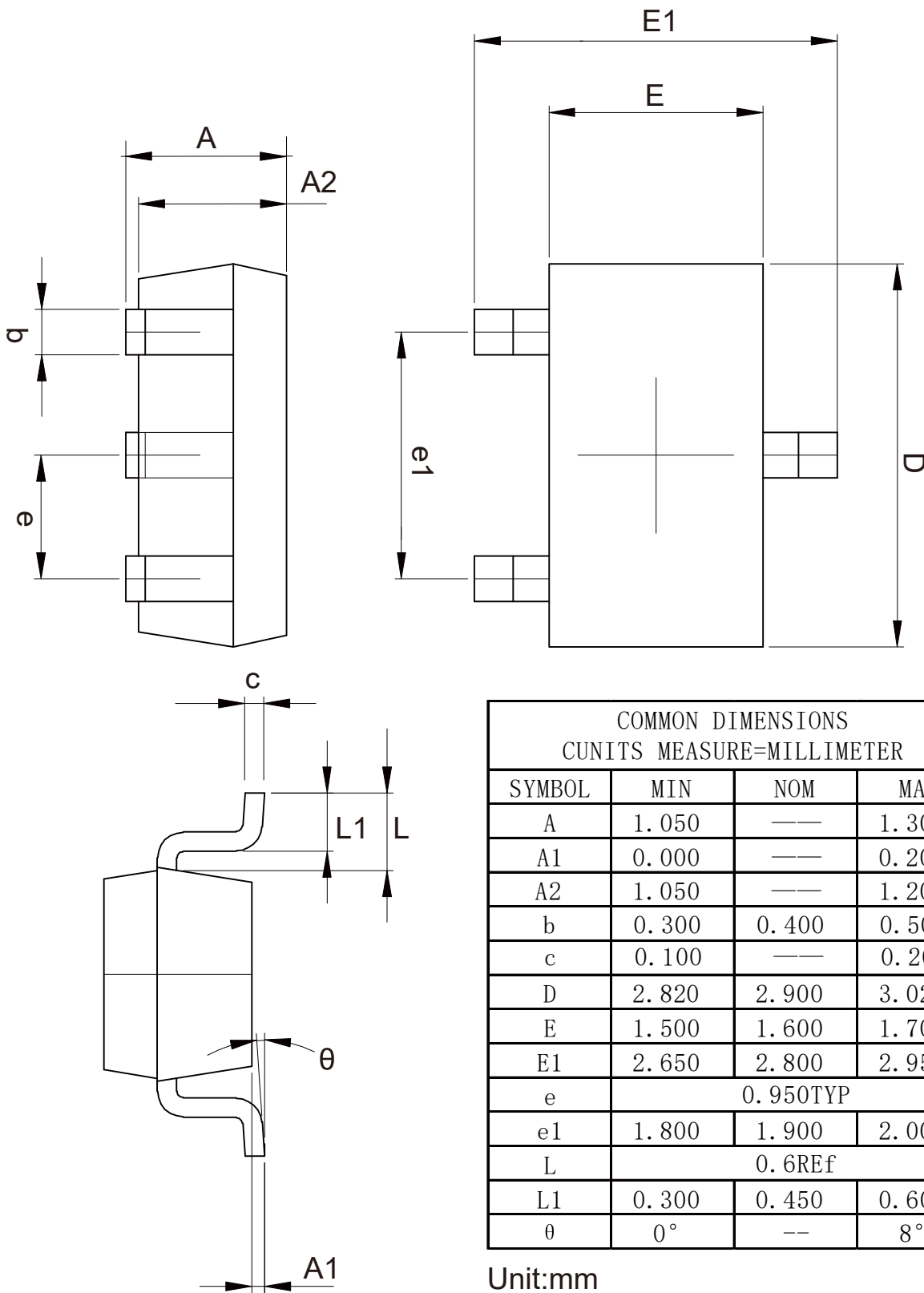
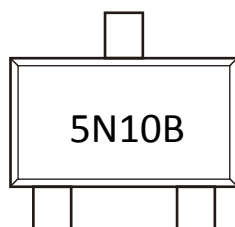


Fig.11 Gate Charge Waveform

SOT-23-3 Package Outline Data



Marking Information:



Previous Version

Version	Date	Subjects (major changes since last revision)
1.0	2024-05-06	Release of final version

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