

Description:

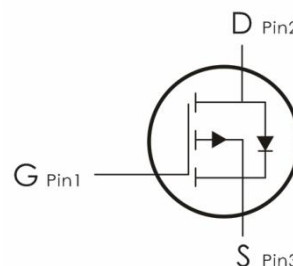
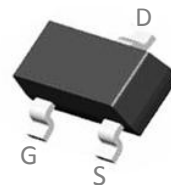
This P-Channel MOSFET uses advanced trench technology and

design to provide excellent $R_{DS(on)}$ with low gate charge.

It can be used in a wide variety of applications.

Features:

- 1) $V_{DS}=-20V, I_D=-3.8A, R_{DS(on)}<45m\Omega @V_{GS}=-4.5V$ (Typ : $35m\Omega$)
- 2) Low gate charge.
- 3) Green device available.
- 4) Advanced high cell density trench technology for ultra low $R_{DS(on)}$.
- 5) Excellent package for good heat dissipation.



Package Marking and Ordering Information:

Part NO.	Marking	Package	Packing
DO2305D	2305D	SOT-23	3000 pcs/Reel

Absolute Maximum Ratings: ($T_A=25^{\circ}C$ unless otherwise noted)

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	-20	V
V_{GS}	Gate-Source Voltage	± 12	V
I_D	Continuous Drain Current- $T_A=25^{\circ}C$	-3.8	A
	Continuous Drain Current- $T_A=70^{\circ}C$	-3	
I_{DM}	Pulsed Drain Current ¹	-16.4	
P_D	Power Dissipation	1.56	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55-+150	$^{\circ}C$

Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	80	$^{\circ}C/W$

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

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250 μ A	-20	---	---	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{GS} =0V, V _{DS} =-20V	---	---	-1	μ A
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	-0.4	-0.6	-0.8	V
R _{DS(ON)}	Drain-Source On Resistance	V _{GS} =-4.5V, I _D =-3A	---	35	45	m Ω
		V _{GS} =-2.5V, I _D =-2A	---	45	65	m Ω
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =-10V, V _{GS} =0V, f=1MHz	---	514	744	pF
C _{oss}	Output Capacitance		---	54	79	
C _{rss}	Reverse Transfer Capacitance		---	19	29	
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time ^{2,3}	V _{DS} =-10V, I _D =-1A, R _{ENG} =25 Ω ,V _{GS} =-4.5V	---	4	8	ns
t _r	Rise Time ^{2,3}		---	17.3	32	ns
t _{d(off)}	Turn-Off Delay Time ^{2,3}		---	40.6	79	ns
t _f	Fall Time ^{2,3}		---	11.3	22	ns
Q _g	Total Gate Charge ^{2,3}	V _{GS} =-4.5V, V _{DS} =-10V, I _D =-3A	---	6.3	8	nc
Q _{gs}	Gate-Source Charge ^{2,3}		---	0.8	0.9	nc
Q _{gd}	Gate-Drain “Miller” Charge ^{2,3}		---	1.5	2	nc
Drain-Source Diode Characteristics						
V _{SD}	Diode Forward Voltage ¹	V _{GS} =0V, I _{SD} =-1A	---	---	-1	V
I _S	Continuous Drain Curren ³	VD=VG=0V	---	---	-3.8	A
I _{SM}	Pulsed Drain Current		---	---	-16.4	A

Notes:

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.

3. Essentially independent of operating temperature.

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

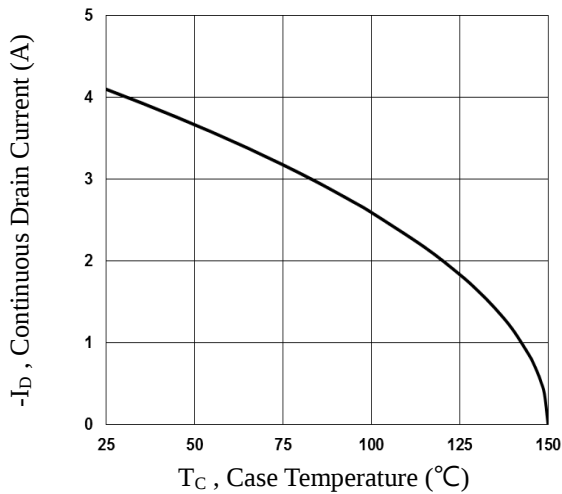


Fig.1 Continuous Drain Current vs. T_c

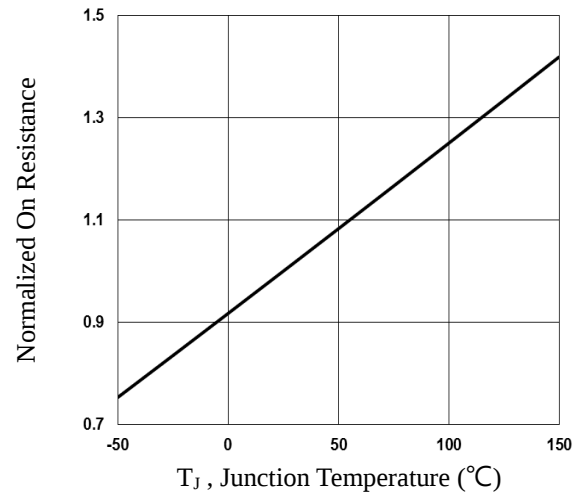


Fig.2 Normalized $R_{DS(on)}$ vs. T_J

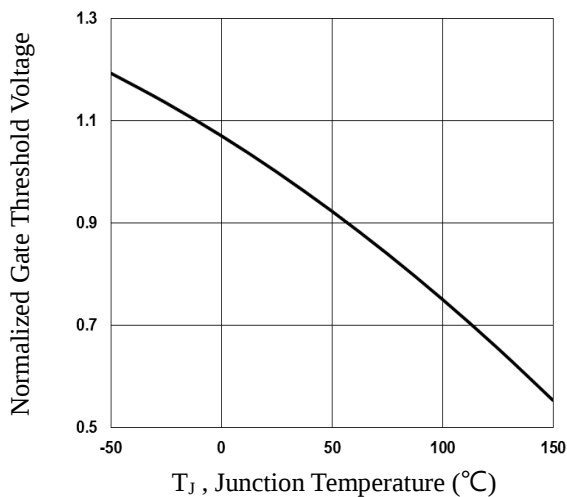


Fig.3 Normalized V_{th} vs. T_J

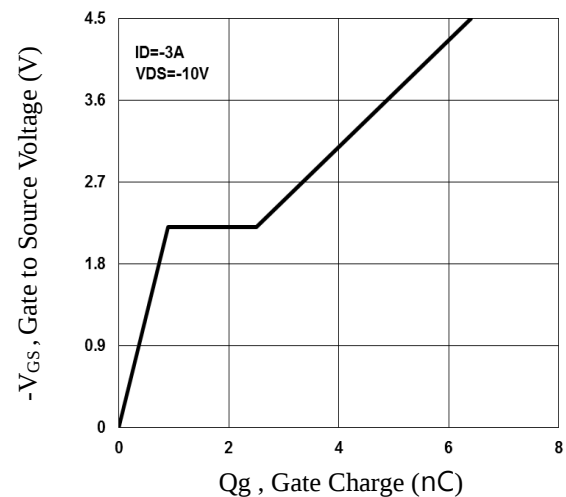


Fig.4 Gate Charge Waveform

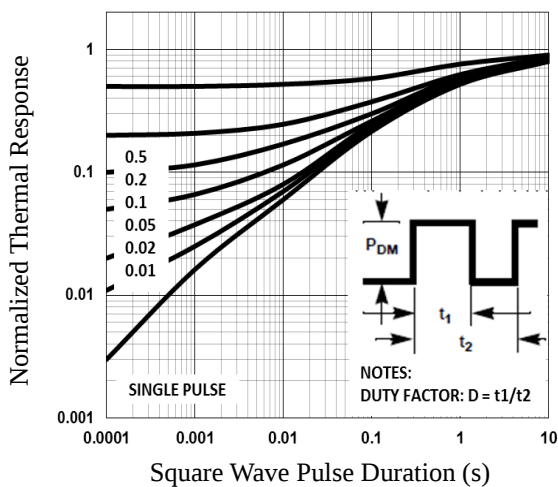


Fig.5 Normalized Transient Impedance

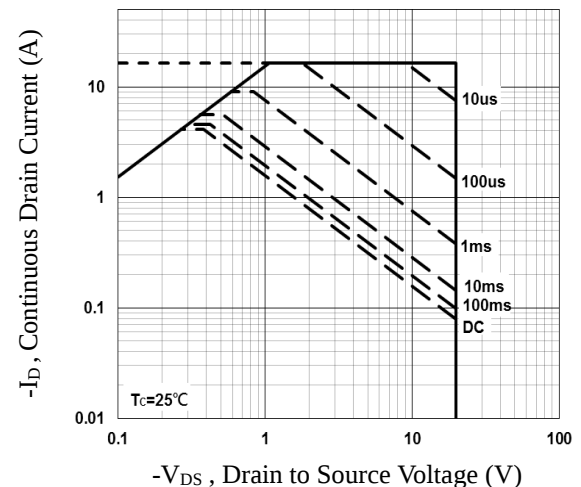


Fig.6 Maximum Safe Operation Area

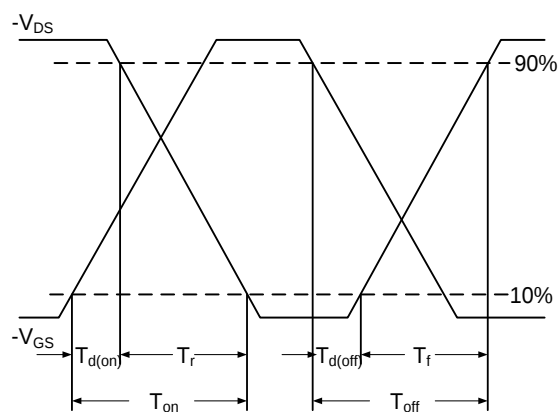


Fig.7 Switching Time Waveform

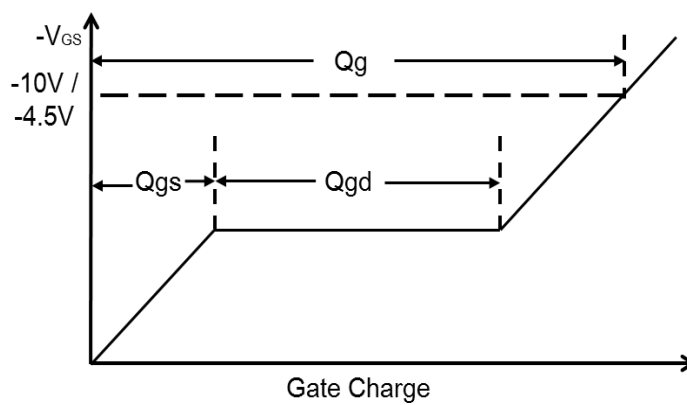
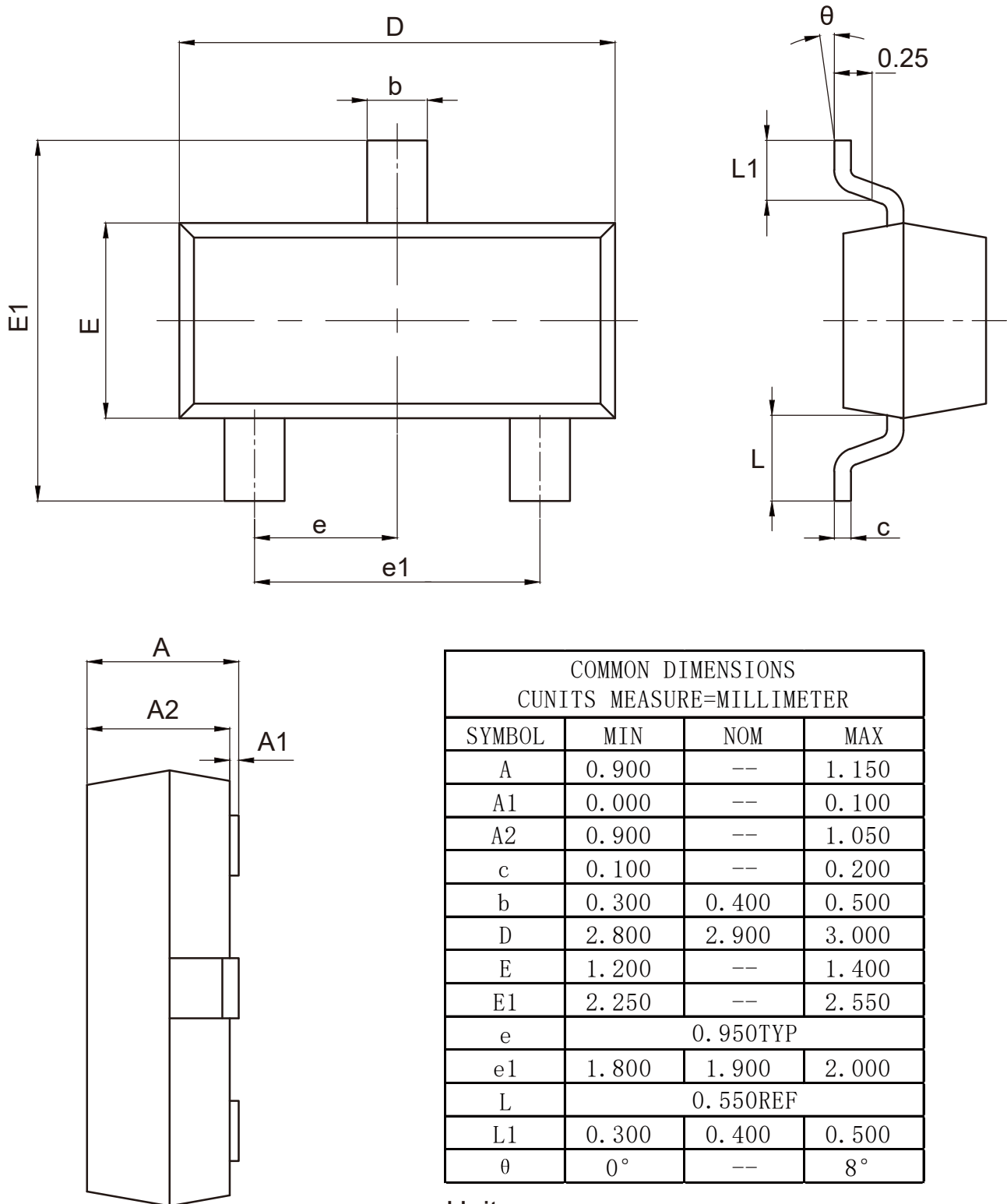


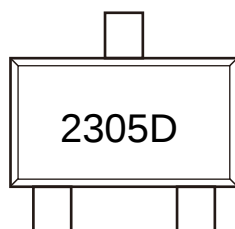
Fig.8 Gate Charge Waveform

SOT-23Package Outline Data



Unit:mm

Marking Information:



Attention :

- Information furnished in this document is believed to be accurate and reliable. However, Shenzhen Doingter Semiconductor Co.,Ltd. assumes no responsibility for the consequences of use without consideration for such information nor use beyond it.
 - Information mentioned in this document is subject to change without notice, apart from that when an agreement is signed, Shenzhen Doingter complies with the agreement. Products and information provided in this document have no infringement of patents.
 - Shenzhen Doingter assumes no responsibility for any infringement of other rights of third parties which may result from the use of such products and information. This document supersedes and replaces all information previously supplied.
-  Is a registered trademark of Shenzhen Doingter Semiconductor Co., Ltd. Copyright © 2013 Shenzhen Doingter Semiconductor Co.,Ltd. Printed All rights reserved.