

Description:

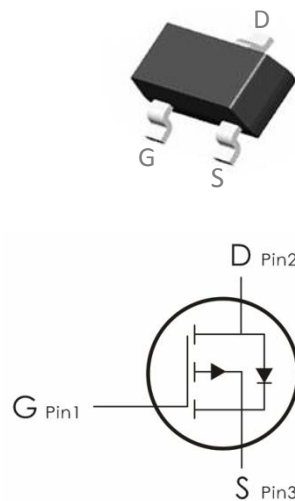
This P-Channel MOSFET uses advanced trench technology and

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

It can be used in a wide variety of applications.

Features:

- 1) $V_{DS}=-15V, I_D=-5.8A, R_{DS(on)}=26m\Omega @ V_{GS}=-10V$
- 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
DO2305AA-C	2305A-C	SOT-23-3	3000 pcs/Reel

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

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	-15	V
V_{GS}	Gate-Source Voltage	± 12	V
I_D	Continuous Drain Current- $T_A=25^\circ\text{C}$	-5.8	A
	Continuous Drain Current- $T_A=70^\circ\text{C}$	-3	
I_{DM}	Pulsed Drain Current ¹	-16	
P_D	Power Dissipation	1.92	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55-+150	$^\circ\text{C}$

Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient ²	65	$^\circ\text{C}/\text{W}$

Electrical Characteristics: ($T_A=25^{\circ}\text{C}$ 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	-15	---	---	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{GS} =0V, V _{DS} =-15V	---	---	-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	-0.65	-1	V
R _{DS(ON)}	Drain-Source On Resistance ³	V _{GS} =-4.5V, I _D =-4 A	---	20	26	m Ω
		V _{GS} =-2.5V, I _D =-3A	---	25	33	m Ω
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =-4V, V _{GS} =0V, f=1MHz	---	860	---	pF
C _{oss}	Output Capacitance		---	120	---	
C _{rss}	Reverse Transfer Capacitance		---	200	---	
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time	V _{DS} =-4V, I _D =-3.3A, R _{ENG} =1 Ω ,V _{GS} =-4.5V	---	13.5	---	ns
t _r	Rise Time		---	34	---	ns
t _{d(off)}	Turn-Off Delay Time		---	33	---	ns
t _f	Fall Time		---	9	---	ns
Q _g	Total Gate Charge	V _{GS} =-4.5V, V _{DS} =-4V, I _D =-4.1A	---	8.2	---	nc
Q _{gs}	Gate-Source Charge		---	1.1	---	nc
Q _{gd}	Gate-Drain “Miller” Charge		---	1.5	---	nc
Drain-Source Diode Characteristics						
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _{SD} =-4.1A	---	---	-1.2	V
I _S	Continuous Drain Curren	VD=VG=0V	---	---	-4.1	A
I _{SM}	Pulsed Drain Current		---	---	-16.4	A
Trr	Reverse Recovery Time	I _F =-4.1A, T _J =25 °C	---	20	---	ns
Qrr	Reverse Recovery Charge	di/dt=100A/us	---	9	---	nc

Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
2. $R_{\theta JA}$ is measured with the device mounted on a 1inch² pad of 2oz copper FR4 PCB
3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 0.5\%$.

Test Circuit :

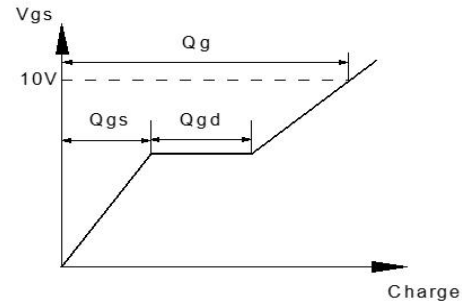
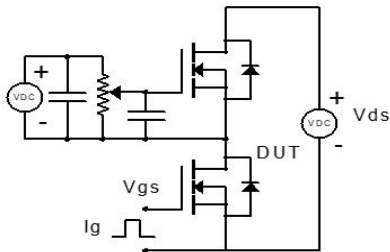


Figure 1: Gate Charge Test Circuit & Waveform

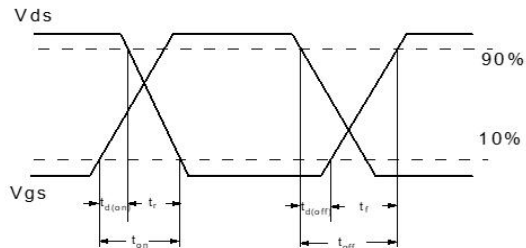
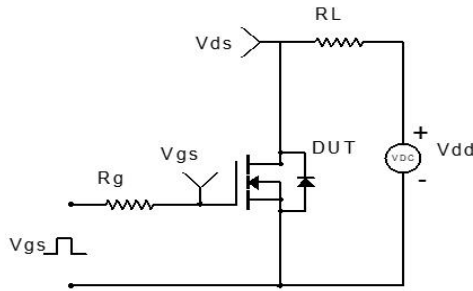


Figure 2: Resistive Switching Test Circuit & Waveform

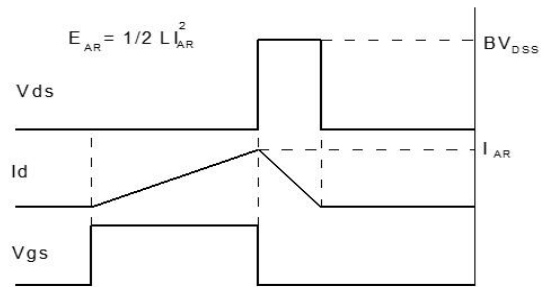
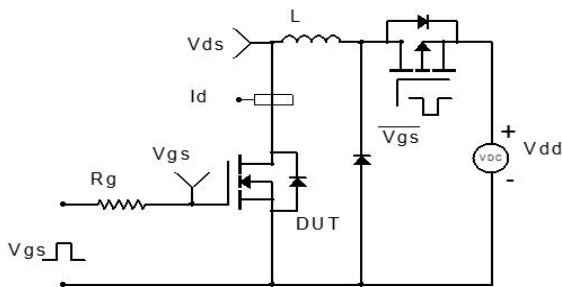


Figure 3: Unclamped Inductive Switching Test Circuit& Waveform

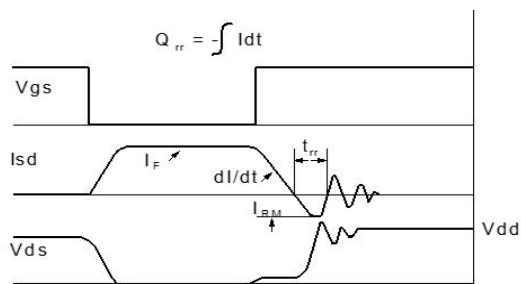
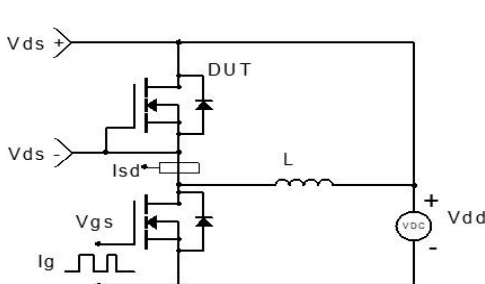
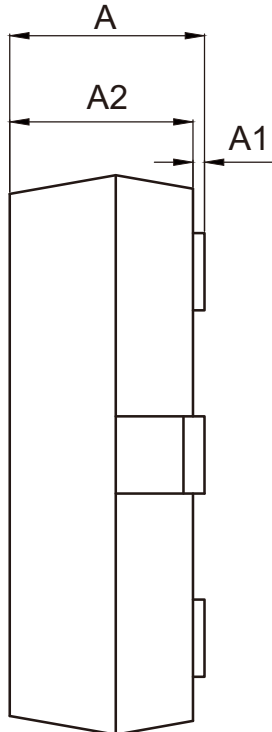
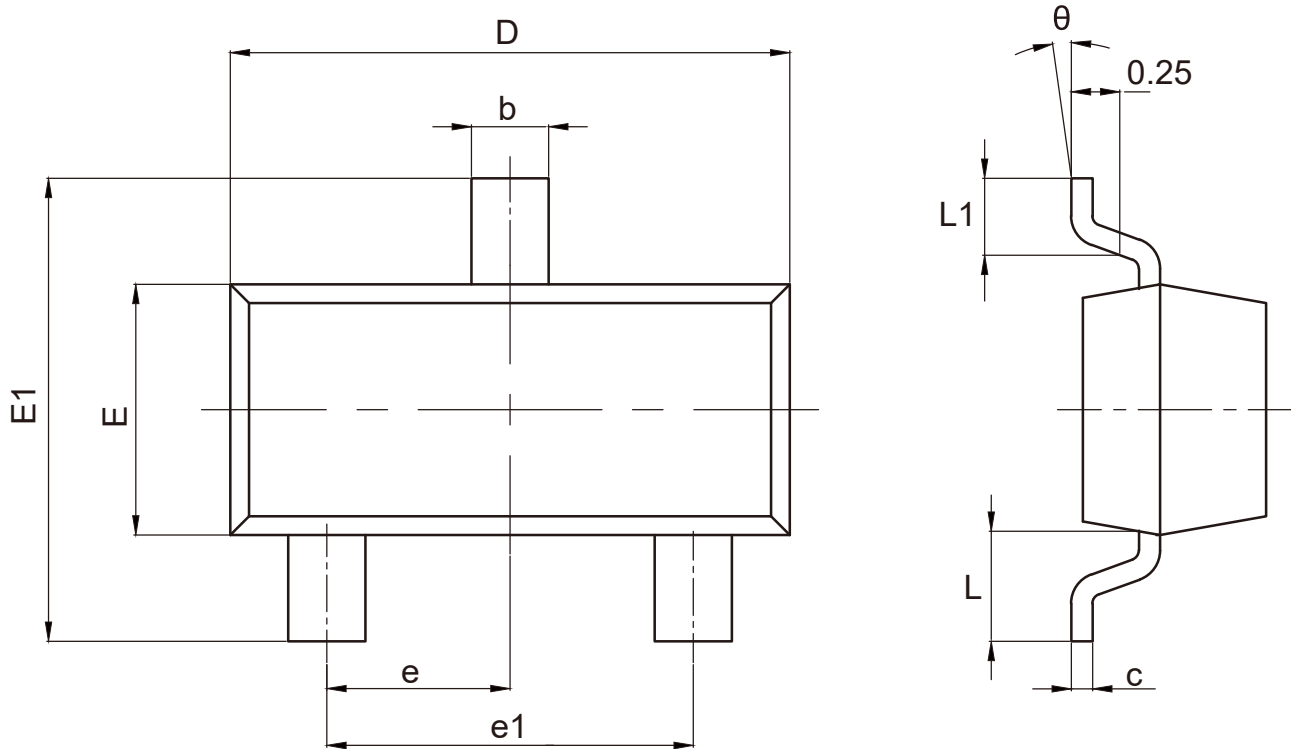


Figure 4: Diode Recovery Test Circuit & Waveform

V1.1

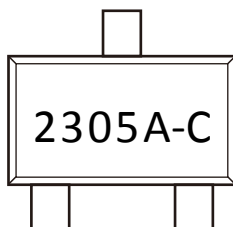
SOT-23-3 Package Outline Data



COMMON DIMENSIONS CUNITS MEASURE=MILLIMETER			
SYMBOL	MIN	NOM	MAX
A	0.900	--	1.150
A1	0.000	--	0.100
A2	0.900	--	1.050
c	0.100	--	0.200
b	0.300	0.400	0.500
D	2.800	2.900	3.000
E	1.200	--	1.400
E1	2.250	--	2.550
e	0.950TYP		
e1	1.800	1.900	2.000
L	0.550REF		
L1	0.300	0.400	0.500
θ	0°	--	8°

Unit:mm

Marking Information:



Previous Version

Version	Date	Subjects (major changes since last revision)
1.1	2024-04-02	Release of final version

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