3400(文件编号：S&CIC1722) N-Channel Trench Power MOSFET

Description

N-channel MOSFET

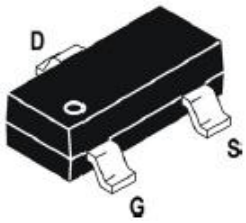
Features

- V_{DS}=30V, I_D=5.8A
- $R_{DS(ON)}$ <50 mΩ @ V_{GS} = 2.5V
  $R_{DS(ON}$ <40mΩ @ V_{GS} = 4.5V
  $R_{DS(ON}$ <35mΩ @ V_{GS} = 10V
- High Power and Current Handing Capability
- Lead Free Product is Acquired
- Surface Mount Package

Application

- PWM Applications
- Load Switch
- Power Management

Package



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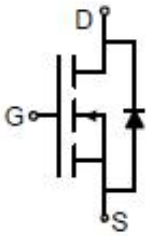

Schematic Diagram

Absolute Maximum Ratings (T_C=25℃ unless otherwise specified)

Symbol	Parameter		Max.	Units
V_{DSS}	Drain-Source Voltage		30	V
V_{GSS}	Gate-Source Voltage		±12	V
I_D	Continuous Drain Current	T_C = 25℃	5.8	A
		T_C = 100℃	4	
P_D	Power Dissipation	T_C = 25℃	1.4	W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient		1.0	℃/W
T_J, T_{STG}	Operating and Storage Temperature Range		-55 to +150	℃

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Electrical Characteristics (T_C=25℃ unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V,I_D= 250μA	30	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} =30V, V_{GS} = 0V	-	-	1	μA
I_{GSS}	Gate to Body Leakage Current	V_{DS} =0V, V_{GS} = ±12V	-	-	±100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}= V_{GS}, I_D= 250μA	0.7	1.0	1.4	V
$R_{DS(on)}$	Static Drain-Source on-Resistance note2	V_{GS} =2.5V, I_D =2A	-	40	50	mΩ
		V_{GS} =4.5V, I_D =2A	-	28	40	
		V_{GS} =10V, I_D =2.9A		26	35	
g_{FS}	Forward Transconductance	V_{DS} =5V, I_D =2.9A	10	-	-	S
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS} = 15V, V_{GS} = 0V, f = 1.0MHz	-	625	-	pF
C_{oss}	Output Capacitance		-	101	-	pF
C_{rss}	Reverse Transfer Capacitance		-	79	-	pF
Q_g	Total Gate Charge	V_{DS} = 15V, I_D =5.8A, V_{GS} = 4.5V	-	9.8	-	nC
Q_{gs}	Gate-Source Charge		-	1.6	-	nC
Q_{gd}	Gate-Drain(“Miller”) Charge		-	3.2	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-on Delay Time	V_{DD} = 15V, I_D =2.9A, R_{GEN} = 3Ω, V_{GS}=10V	-	3.5	-	ns
t_r	Turn-on Rise Time		-	4.9	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	25	-	ns
t_f	Turn-off Fall Time		-	4.1	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	5.8	A
V_{SD}	Drain to Source Diode Forward Voltage	V_{GS} = 0V, I_S =2.9A	-	0.75	1.2	V

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

2. Pulse Test: Pulse Width≤300μs, Duty Cycle≤2%

Typical Performance Characteristics

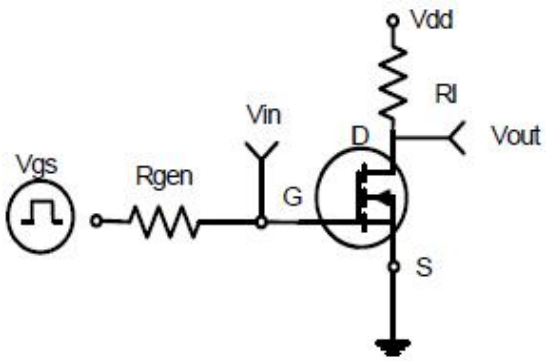

Figure1:Switching Test Circuit

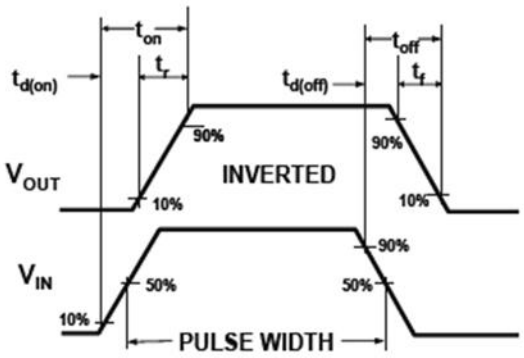

Figure2:Switching Waveforms

Package Information.

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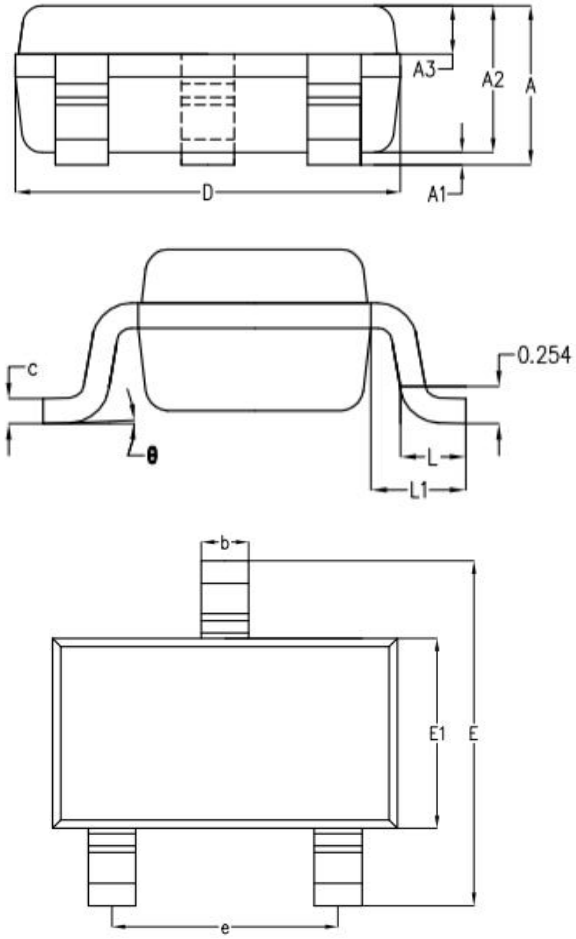

SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	-	1.19	1.24
A1	-	0.05	0.09
A2	1.05	1.10	1.15
A3	0.31	0.36	0.41
b	0.35	0.40	0.45
c	0.12	0.17	0.22
D	2.85	2.90	2.95
E	2.80	2.90	3.00
E1	1.55	1.60	1.65
e	1.90BSC		
L	0.37	0.45	0.53
L1	0.65BSC		
θ	0°	2°	8°