N3400

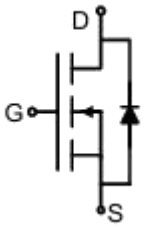
Datasheet

32mΩ, 30V, N-Channel Power MOSFET N3400

General Description

$V_{(BR)DSS}$	$R_{DS(ON)\_max}$	I_D
30V	32mΩ@10V	6A
	35mΩ@4.5V	

Symbol



Symbol of N3400

Features

- High power and current handing capability
- Lead free product is acquired
- Surface mount package

Application

- PWM Applications
- Load Switch
- Power management

Package Type

SOT-23

Package Type of N3400

Ordering Information

Product Name	Package
N3400	SOT-23

Absolute Maximum Ratings(T_A= 25 ºC, unless otherwise specified)

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	±12	V
Continuous Drain Current[Note 1]	T_C=25ºC	I_D	6	A
Pulsed Drain Current[Note 2]	T_C=25ºC	I_{DM}	24	A
Max Power Dissipation [Note 3]	T_C=25ºC	P_D	1.98	W
Operation and Storage junction temperature		T_J,T_{SGT}	-55 to 150	ºC

Thermal Resistance

Parameter	Symbol	Min	Typ	Max	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	-	62.83	-	ºC/W

Notes:

1) Calculated continuous current based on maximum allowable junction temperature.

2) Repetitive rating; pulse width limited by max. junction temperature.

3) P_D is based on max. junction temperature, using junction-case thermal resistance.

Electrical Characteristics(T_A= 25 ºC, unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Statistic Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=250uA	30	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=30V, V_{GS}=0V	-	-	1	uA
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±12V, V_{DS}=0V	-	-	±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250uA	0.6	0.9	1.2	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=5A	-	21	32	mΩ
		V_{GS}=4.5V, I_D=5A	-	23	35	
		V_{GS}=2.5V, I_D=3A	-	29	44	
Gate Resistance	R_G	f=1MHz, Open Drain	-	1.56	-	Ω
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{GS}=0V	-	894	-	pF
Output Capacitance	C_{oss}	V_{DS}=15V	-	48	-	pF
Reverse Transfer Capacitance	C_{rss}	f=1MHz	-	42	-	pF
Turn-on Delay Time	$t_{d(on)}$	V_{DD}=15V	-	2.8	-	ns
Rise Time	t_r	V_{GS}=10V	-	25.5	-	
Turn-off Delay Time	$t_{d(off)}$	I_D=5A	-	18.6	-	
Fall Time	t_f	R_G=3Ω	-	6.8	-	
Gate Charge Characteristics						
Total Gate Charge	Q_g	V_{GS}=4.5V	-	8.7	-	nC
Gate to Source Charge	Q_{gs}	V_{DS}=15V	-	3	-	
Gate to Drain Charge	Q_{gd}	I_D=5A	-	1.6	-	
Reverse Diode Characteristics						
Drain-Source Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_S=5A	-	0.85	1.2	V

Typical Performance Characteristics

Figure 1: Typ. Output Characteristics

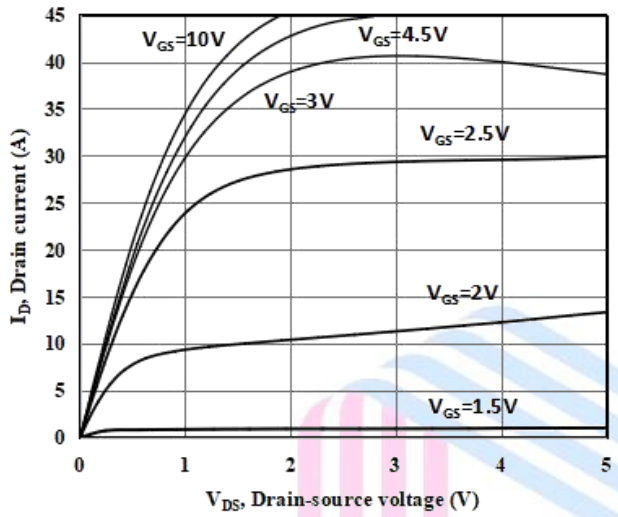


Figure 2: Typ. Transfer Characteristics

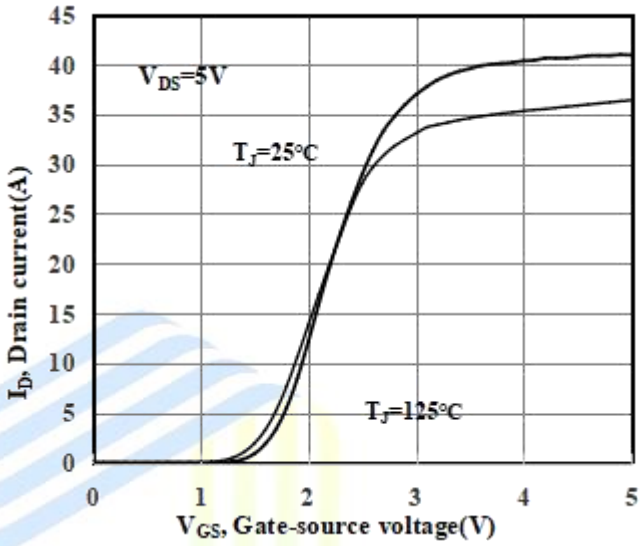


Figure 3: Typ. On-Resistance vs. Drain Current

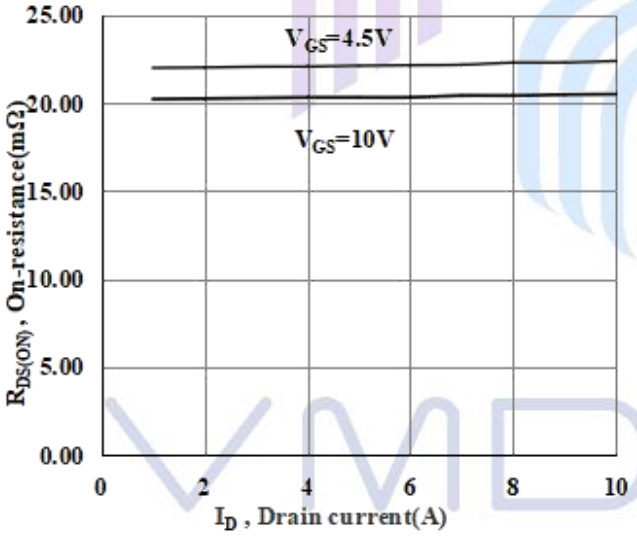


Figure 4: On-Resistance vs. Temperature

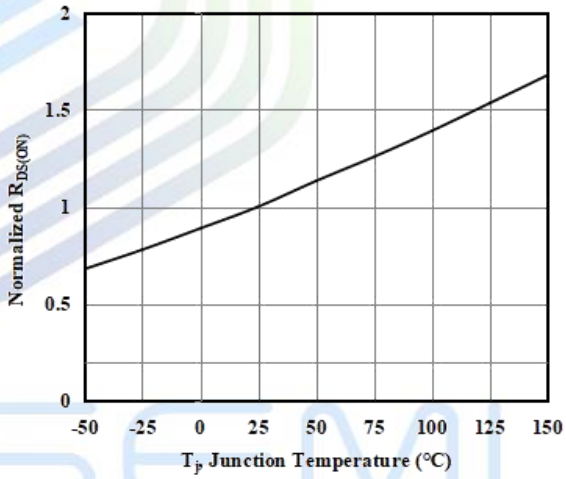


Figure 5: Is vs. Source to Drain Voltage

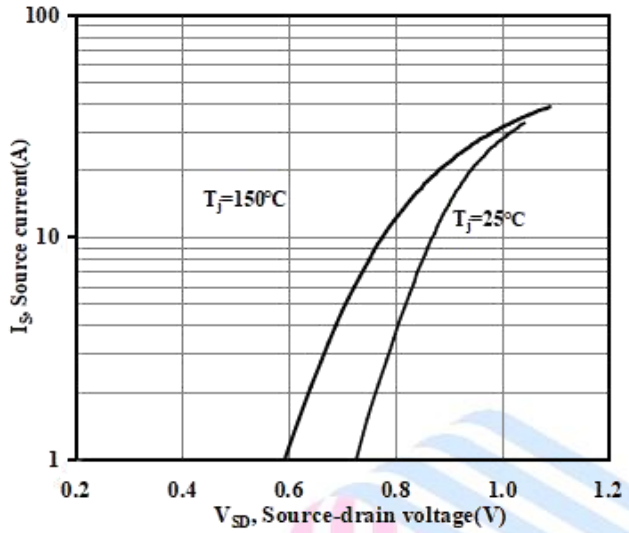


Figure 6: Gate Charge Characteristics

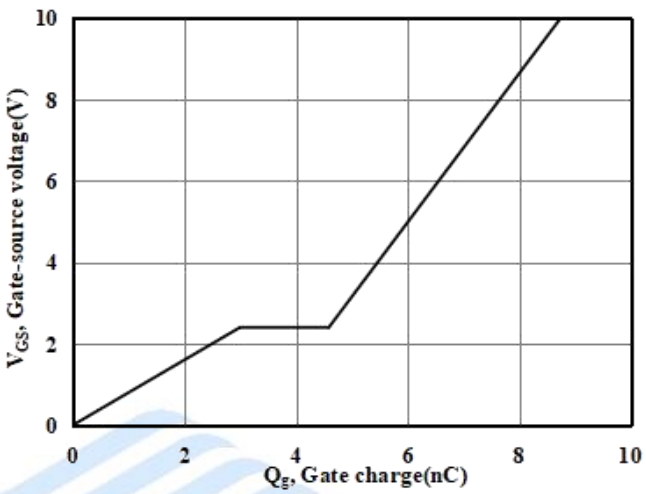


Figure 7: Capacitance Characteristics

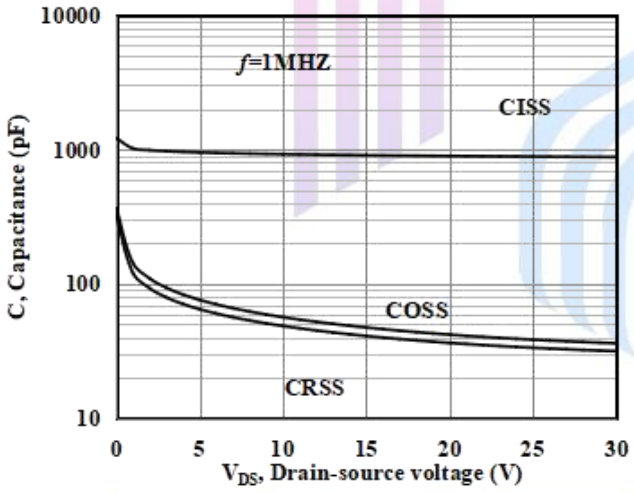


Figure 8: Power Dissipation

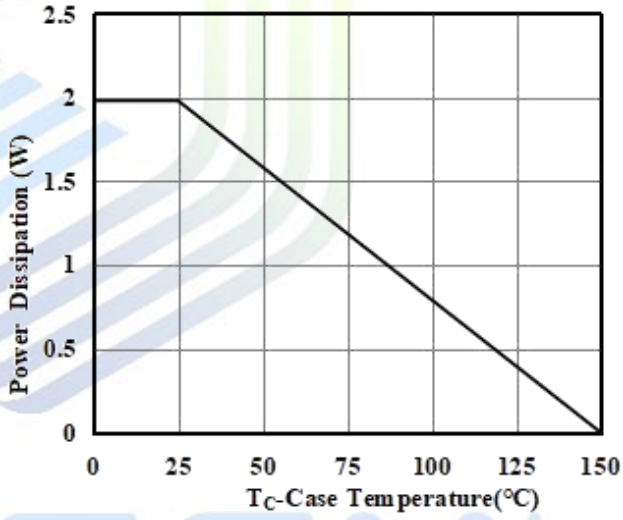


Figure 9: Safe Operating Area

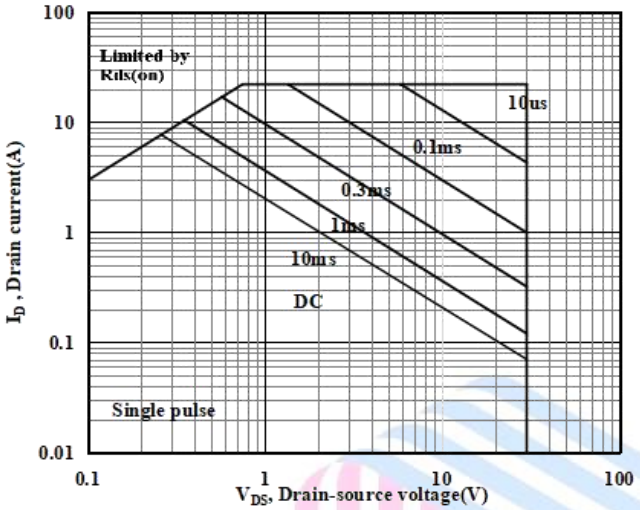
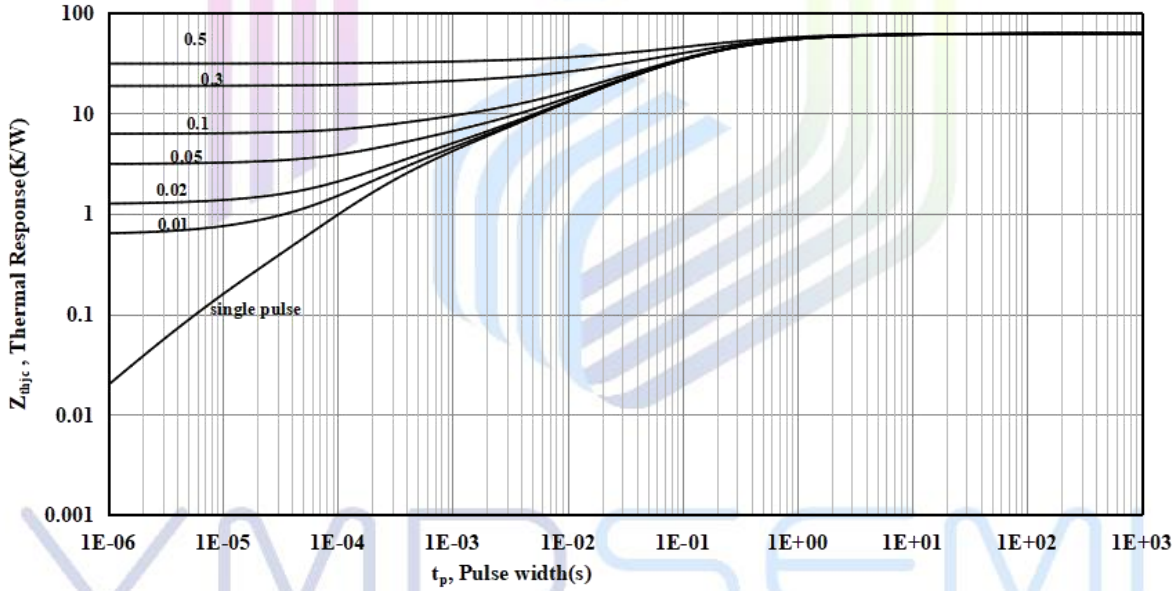
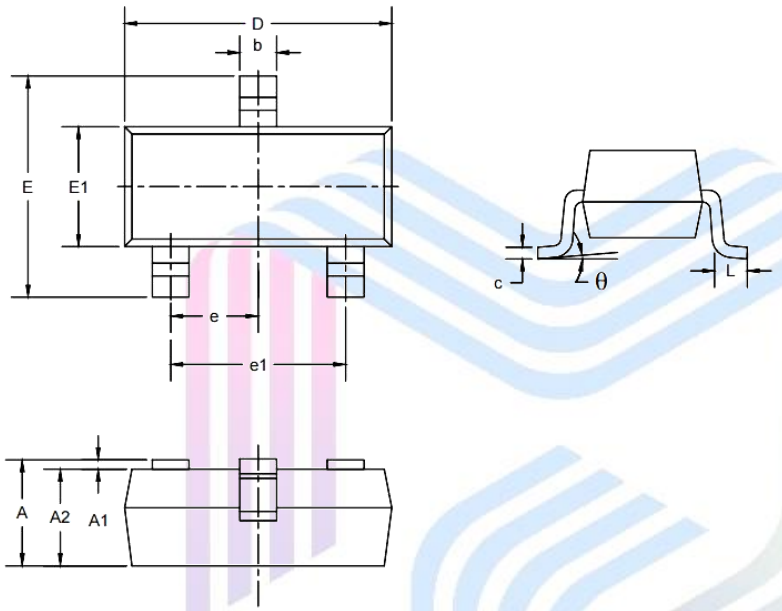


Figure 10: Normalized Max Transient Thermal Impedance



Mechanical Dimensions

SOT-23 Package Information



COMMON DIMENSIONS
(UNITS OF MEASURE=MILLIMETER)

SYMBOL	MIN	MAX
A	0.9	1.15
A1	0	0.1
A2	0.9	1.05
b	0.3	0.5
c	0.08	0.15
D	2.8	3
E	2.25	2.55
E1	1.2	1.4
e	0.95TYP	
e1	1.8	2
L	0.3	0.5
θ	0°	8°

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