NCE Dual N-Channel Enhancement Mode Power MOSFET

Description

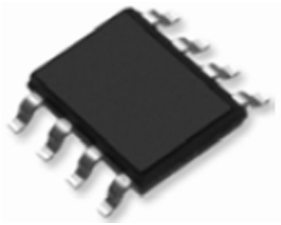
The NCE01ND02S uses advanced trench technology and design to provide excellent $R_{DS(ON)}$ with low gate charge. It can be used in a wide variety of applications.

Application

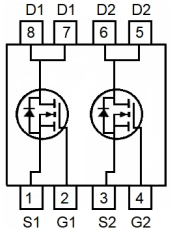
- DC/DC Converter
- Motor drive
- Power switching

General Features

- V_{DS} = 100 V,I_D = 2 A
  $R_{DS(ON)}$< 220 mΩ @V_{GS}=10V (typical: 190 mΩ)
  $R_{DS(ON)}$< 240 mΩ @V_{GS}=4.5V (typical: 200 mΩ)
- High density cell design for ultra low Rdson
- 150°C operating temperature
- Pb-free lead plating
- 100% Rg tested
- 100% ΔVds tested



SOP-8L Top View



Schematic Diagram

Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
NCE01ND02S	NCE01ND02S	SOP-8L	Ø330mm	12mm	4000units

Absolute Maximum Ratings (T_A=25℃unless otherwise noted)

Parameter		Symbol	Limit	Unit
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	±20	V
Drain Current-Continuous	(T_A=25℃)	I_D	2	A
	(T_A=100℃)	I_D (100℃)	1.29	A
Pulsed Drain Current		I_{DM}	8	A
Maximum Power Dissipation		P_D	2	W
De-rating factor			0.016	W/℃
Operating Junction and Storage Temperature Range		T_J,T_{STG}	-55 To 150	℃

Thermal Characteristic

Thermal Resistance,Junction-to-Ambient (Note 1)	$R_{\theta JA}$	62.5	℃/W

Electrical Characteristics (T_A=25℃unless otherwise noted)

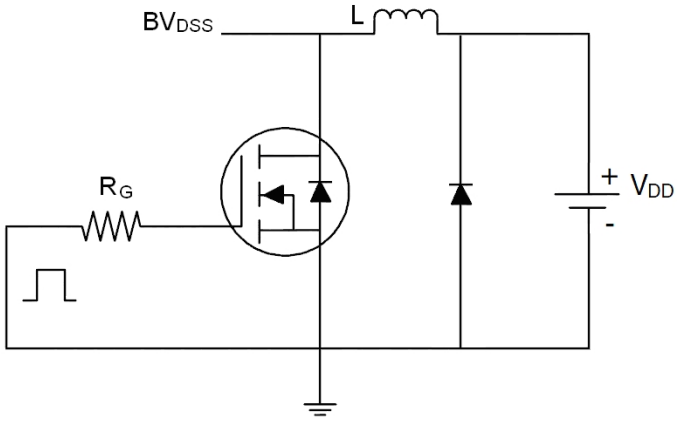
Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V I_D=250μA	100	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=100V,V_{GS}=0V	-	-	1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±20V,V_{DS}=0V	-	-	±100	nA
On Characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250μA	1.2	1.8	2.5	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=2A	-	190	220	mΩ
		V_{GS}=4.5V, I_D=2A	-	200	240	
Forward Transconductance	g_{FS}	V_{DS}=10V,I_D=1.8A	-	7	-	S
Dynamic Characteristics						
Input Capacitance	C_{lss}	V_{DS}=50V,V_{GS}=0V, F=1.0MHz	-	366	-	pF
Output Capacitance	C_{oss}		-	17.4	-	pF
Reverse Transfer Capacitance	C_{rss}		-	11.1	-	pF
Switching Characteristics (Note 2)						
Turn-on Delay Time	$t_{d(on)}$	V_{DD}=50V,R_L=25Ω, V_{GS}=10V,R_{GEN}=1Ω	-	6	-	nS
Turn-on Rise Time	t_r		-	10	-	nS
Turn-Off Delay Time	$t_{d(off)}$		-	12	-	nS
Turn-Off Fall Time	t_f		-	8	-	nS
Total Gate Charge	Q_g	V_{DS}=50V,I_D=2A, V_{GS}=10V	-	8.4	-	nC
Gate-Source Charge	Q_{gs}		-	1.1	-	nC
Gate-Drain Charge	Q_{gd}		-	1.9	-	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage	V_{SD}	V_{GS}=0V,I_S=2A	-	-	1.2	V
Diode Forward Current	I_S		-	-	2	A

Notes:

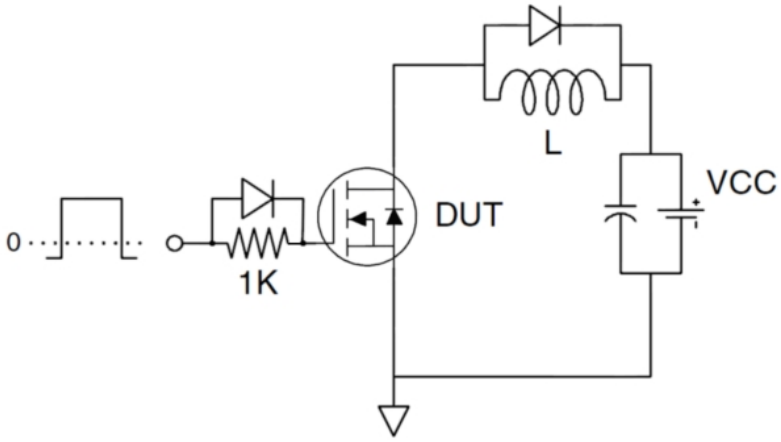
1. The value of $R_{\theta JA}$ is measured with the device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A =25°C. The maximum allowed junction temperature of 150°C. The value in any given application depends on the user's specific board design, and the maximum temperature of 150°C may be used if the PCB allows it.
2. Guaranteed by design, not subject to production.
3. These curves are based on the junction-to-ambient thermal impedance, assuming a maximum junction temperature of $T_{J(MAX)}$=150°C. The SOA curve provides a single pulse rating.

Test Circuit

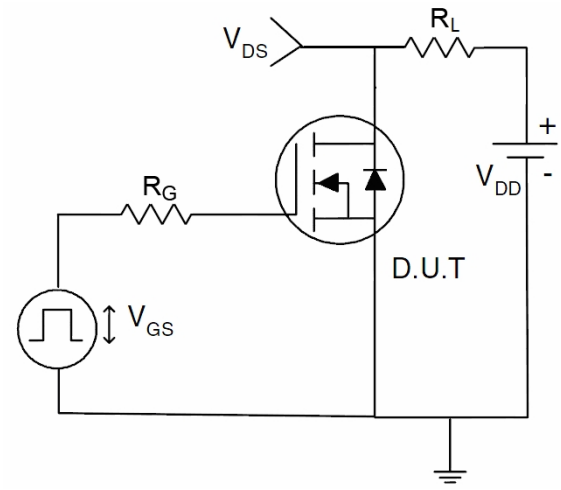
1) E_{AS} Test Circuits



2) Gate Charge Test Circuit



3) Switch Time Test Circuit



Typical Electrical and Thermal Characteristics (Curves)

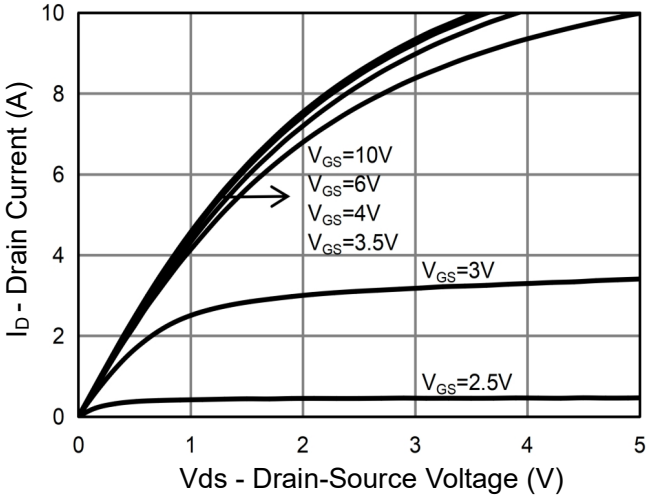


Figure 1 Output Characteristics

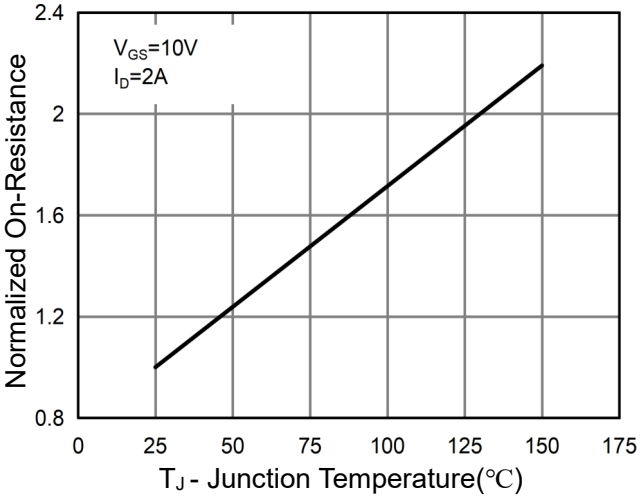


Figure 4 Rdson vs Junction Temperature

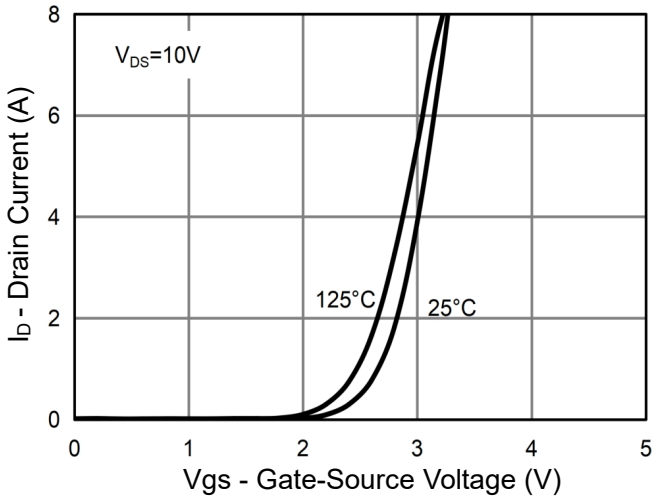


Figure 2 Transfer Characteristics

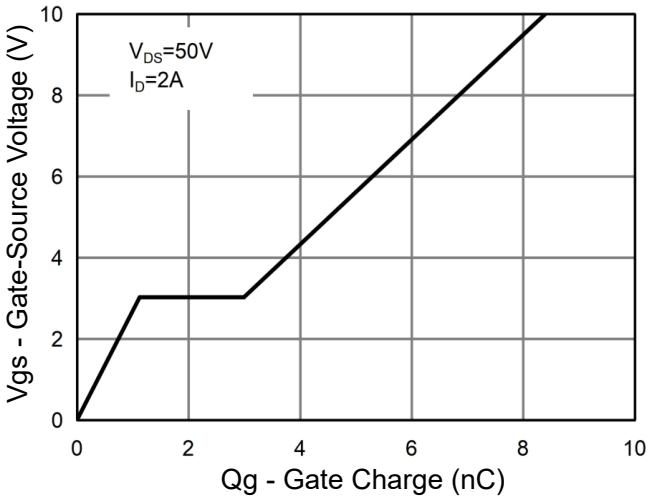


Figure 5 Gate Charge

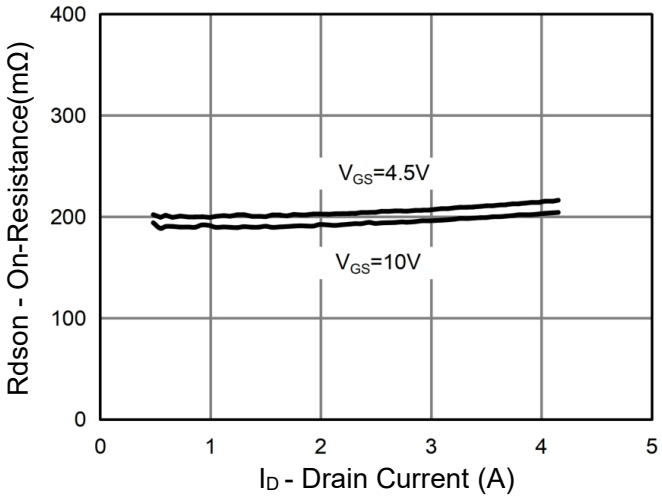


Figure 3 Rdson vs Drain Current

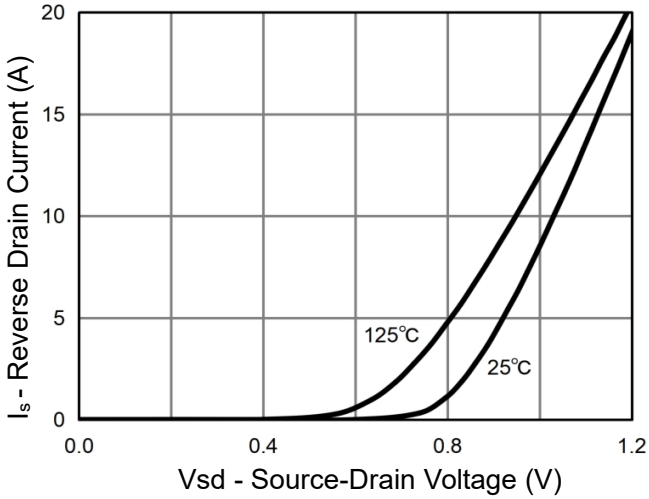


Figure 6 Source-Drain Diode Forward

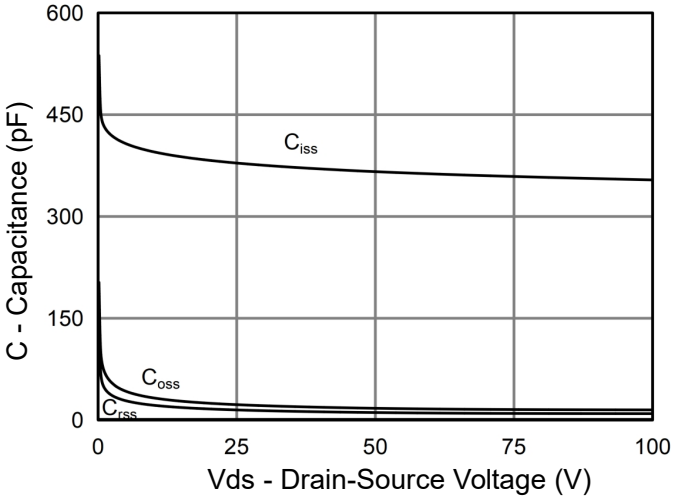


Figure 7 Capacitance vs Vds

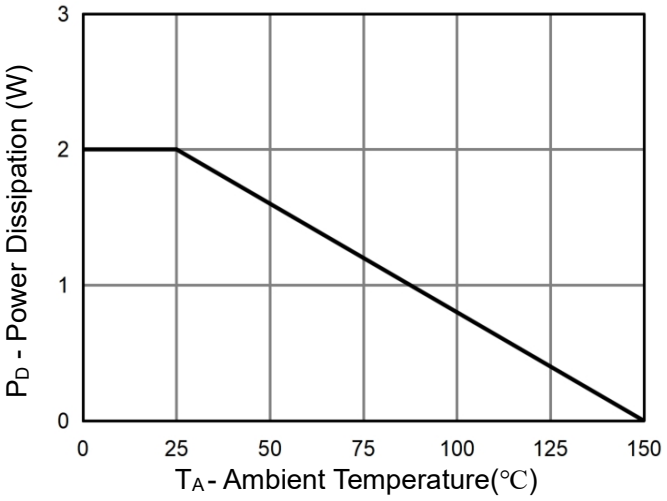


Figure 9 Power De-rating

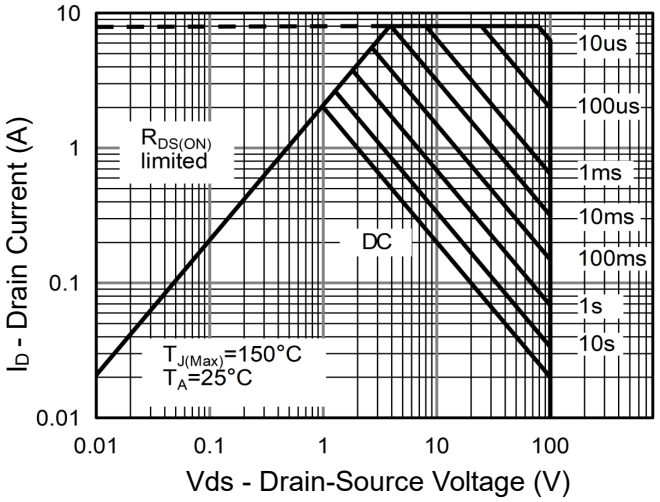


Figure 8 Safe Operation Area (Note 3)

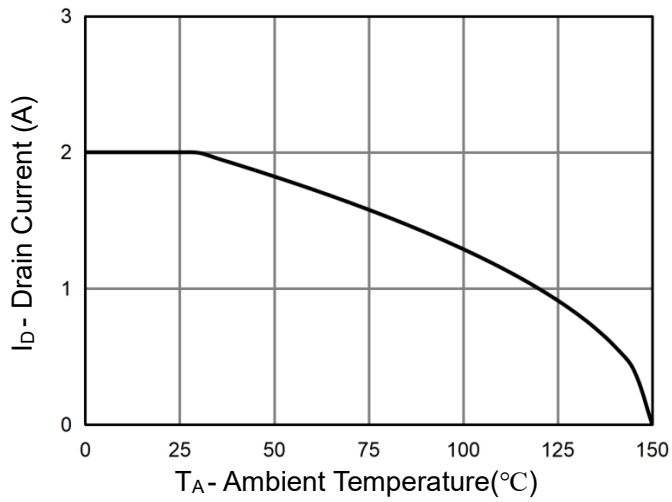


Figure10 Drain Current De-rating

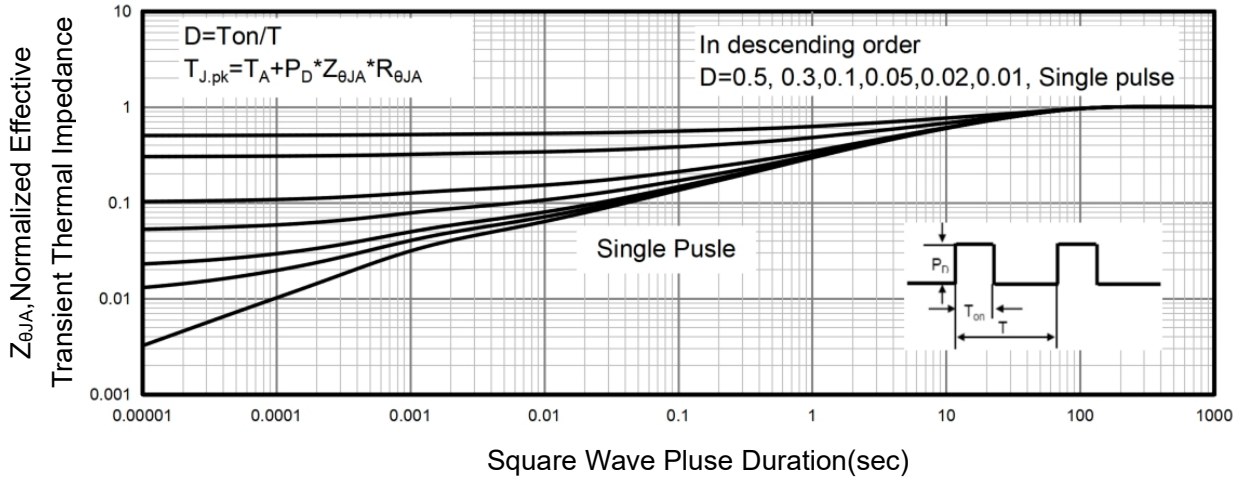
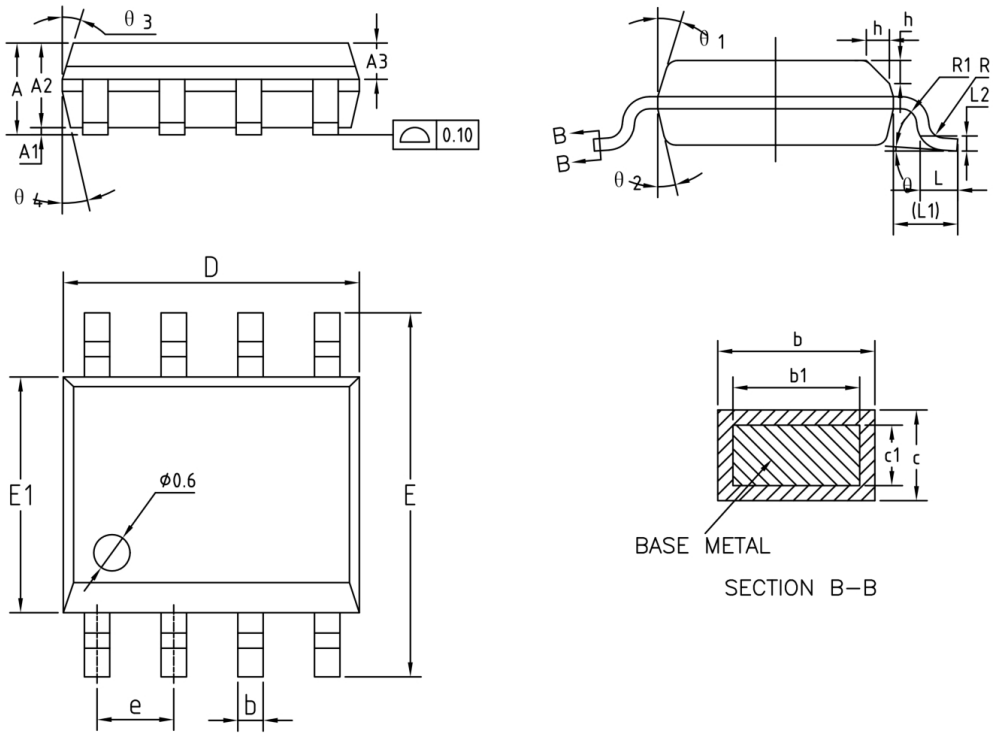


Figure 11 Normalized Maximum Transient Thermal Impedance

SOP-8L(X) Package Information



COMMON DIMENSIONS
(UNITS OF MEASURE=MILLIMETER)

SYMBOL	MIN	NOM	MAX
A	1.35	1.55	1.75
A1	0.10	0.15	0.25
A2	1.25	1.40	1.50
A3	0.50	0.60	0.70
b	0.38	–	0.51
b1	0.37	0.42	0.47
c	0.18	–	0.25
c1	0.17	0.20	0.23
D	4.80	4.90	5.00
E	5.80	6.00	6.20
E1	3.80	3.90	4.00
e	1.17	1.27	1.37
L	0.45	0.60	0.80
L1		1.04REF	
L2		0.25BSC	
R	0.07	–	–
R1	0.07	–	–
h	0.30	0.40	0.50
θ	0°	–	8°
θ 1	15°	17°	19°
θ 2	11°	13°	15°
θ 3	15°	17°	19°
θ 4	11°	13°	15°

NOTES:
ALL DIMENSIONS MEET JEDEC STANDARD MS–012 AA
DO NOT INCLUDE MOLD FLASH OR PROTRUSIONS.

Revision History

Revision	Date	Subjects
V1.0	2026.3	Product data sheet.

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