NCE N-Channel Super Trench II Power MOSFET

Description

The series of devices uses **Super Trench II** technology that is uniquely optimized to provide the most efficient high frequency switching performance. Both conduction and switching power losses are minimized due to an extremely low combination of $R_{DS(ON)}$ and Q_g. This device is ideal for high-frequency switching and synchronous rectification.

Application

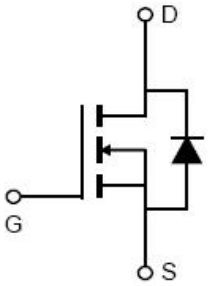
- DC/DC Converter
- Ideal for high-frequency switching and synchronous rectification

General Features

- V_{DS} =100V,I_D =230A
  $R_{DS(ON)}$=2.15mΩ , typical@ V_{GS}=10V
- Excellent gate charge x $R_{DS(on)}$ product(FOM)
- Very low on-resistance $R_{DS(on)}$
- 175 °C operating temperature
- Pb-free lead plating
- Built-in ceramic insulator

100% UIS TESTED!
100% ΔVds TESTED!

TO-247-3L



Schematic Diagram

Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
NCEP026N10JT	NCEP026N10JT	TO-247-3L	-	-	-

Absolute Maximum Ratings (T_C=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	I_D	230	A
Drain Current-Continuous(T_C=100℃)	I_D (100℃)	165	A
Pulsed Drain Current	I_{DM}	920	A
Maximum Power Dissipation	P_D	300	W
Derating factor		2	W/℃
Single pulse avalanche energy (Note 1)	E_{AS}	2300	mJ
Operating Junction and Storage Temperature Range	T_J,T_{STG}	-55 To 175	℃

Thermal Characteristic

Thermal Resistance,Junction-to-Case	$R_{\theta JC}$	0.5	℃/W

Electrical Characteristics (T_C=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	2.0	3.0	4.0	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=20A	-	2.15	2.6	mΩ
Forward Transconductance	g_{FS}	V_{DS}=10V,I_D=20A		80	-	S
Dynamic Characteristics						
Input Capacitance	C_{lss}	V_{DS}=50V,V_{GS}=0V, F=1.0MHz	-	17500	-	PF
Output Capacitance	C_{oss}		-	1100	-	PF
Reverse Transfer Capacitance	C_{rss}		-	50	-	PF
Switching Characteristics (Note 2)						
Turn-on Delay Time	$t_{d(on)}$	V_{DD}=50V,I_D=20A V_{GS}=10V,R_G=1.6Ω	-	34	-	nS
Turn-on Rise Time	t_r		-	27	-	nS
Turn-Off Delay Time	$t_{d(off)}$		-	78	-	nS
Turn-Off Fall Time	t_f		-	30	-	nS
Total Gate Charge	Q_g	V_{DS}=50V,I_D=20A, V_{GS}=10V	-	240	-	nC
Gate-Source Charge	Q_{gs}		-	75		nC
Gate-Drain Charge	Q_{gd}		-	60		nC
Drain-Source Diode Characteristics						
Diode Forward Voltage	V_{SD}	V_{GS}=0V,I_S=20A	-		1.2	V
Diode Forward Current	I_S		-	-	230	A
Reverse Recovery Time	t_{rr}	T_J = 25°C, I_F = 20A di/dt = 100A/μs	-	101	-	nS
Reverse Recovery Charge	Qrr		-	280	-	nC

Notes:

1. EAS condition : Tj=25℃,V_{DD}=50V,V_G=10V,L=0.5mH,Rg=25Ω
2. Guaranteed by design, not subject to production
3. These curves are based on the junction-to-case thermal impedance which is measured with the device mounted to a large heatsin k, assuming a maximum junction temperature of TJ(MAX)=175° C. The SOA curve provides a single pulse rating.

Typical Electrical and Thermal Characteristics

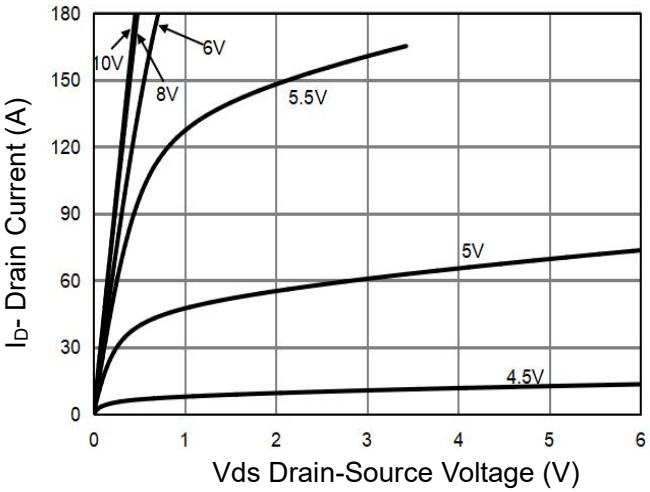


Figure 1 Output Characteristics

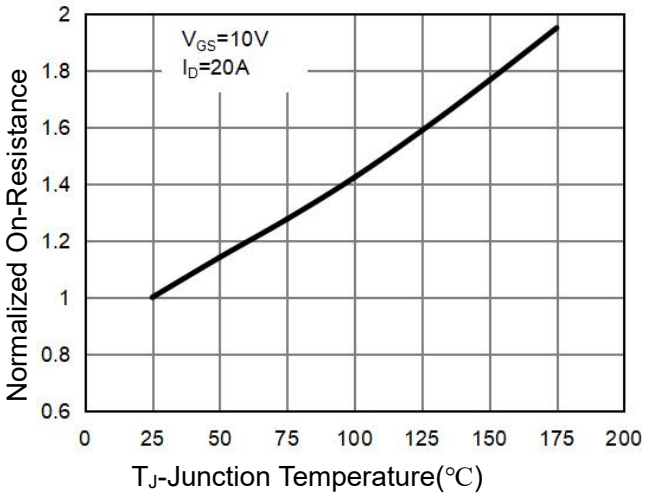


Figure 4 Rdson-Junction Temperature

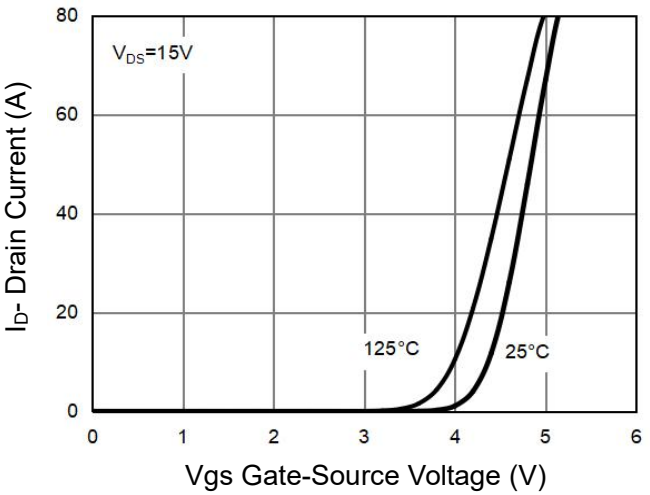


Figure 2 Transfer Characteristics

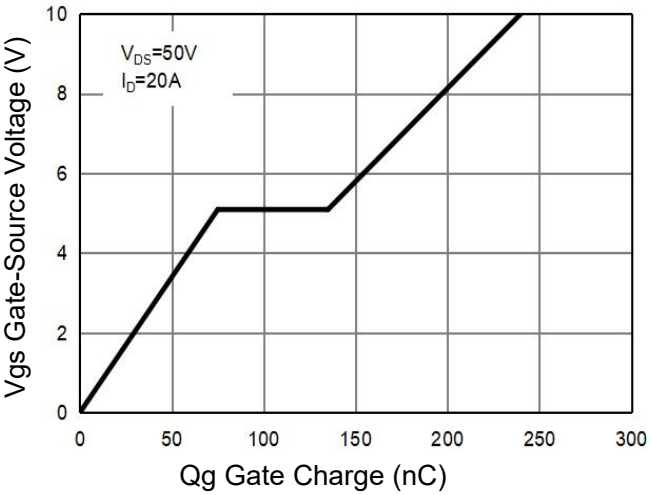


Figure 5 Gate Charge

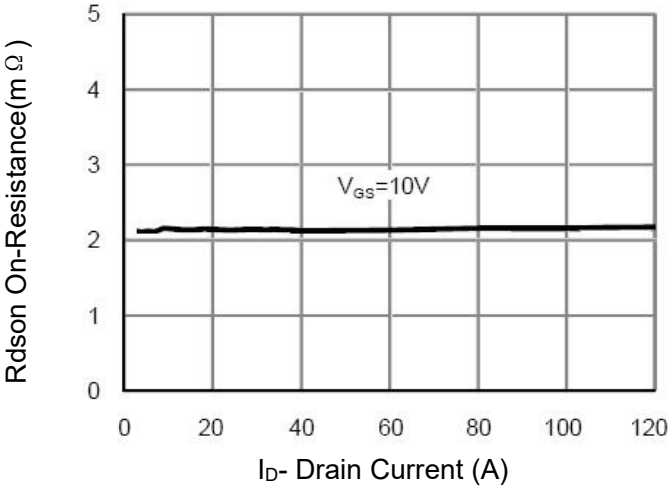


Figure 3 Rdson- Drain Current

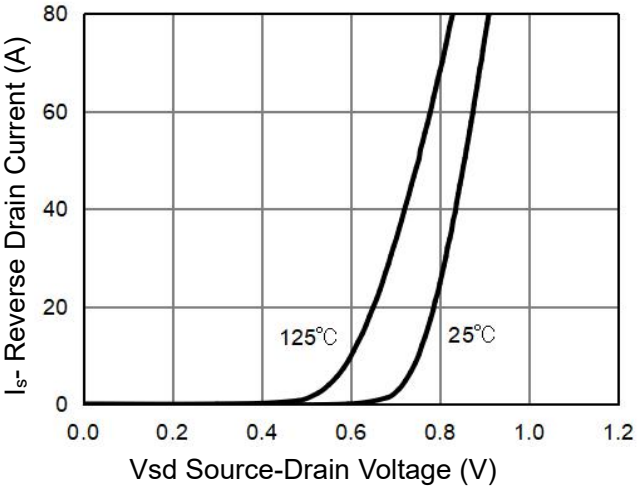


Figure 6 Source- Drain Diode Forward

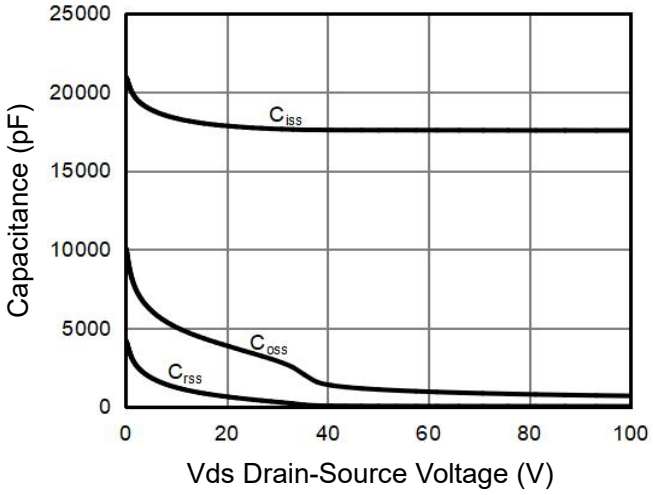


Figure 7 Capacitance vs Vds

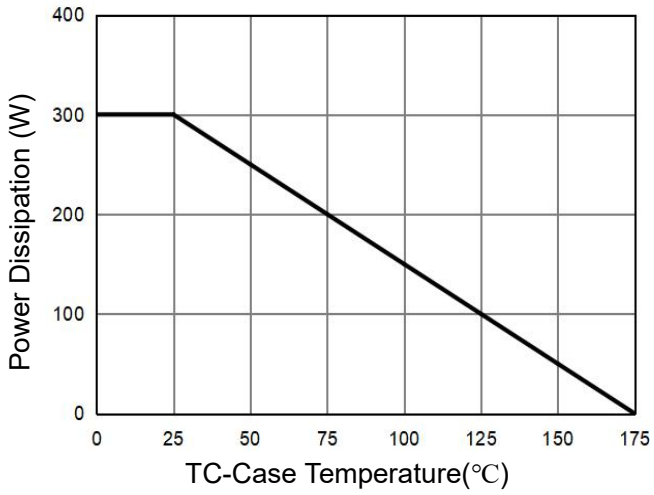


Figure 9 Power De-rating

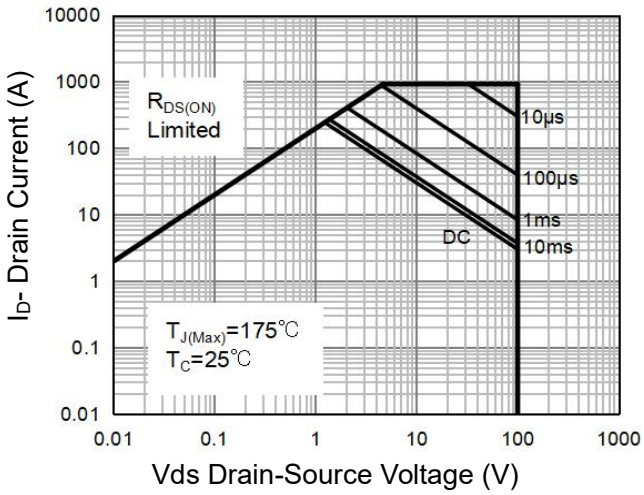


Figure 8 Safe Operation Area (Note 3)

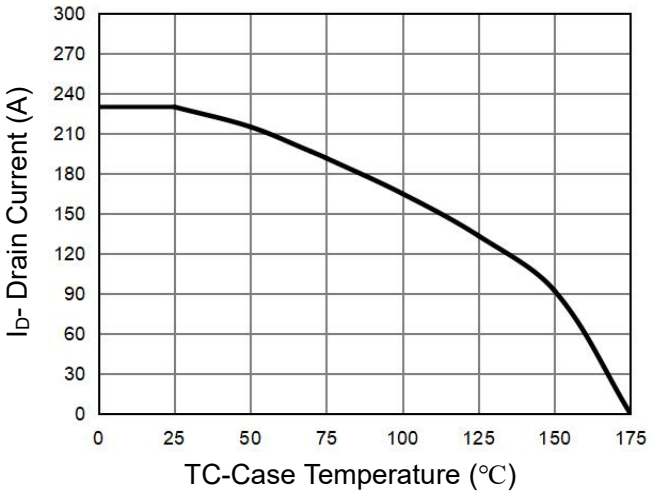


Figure 10 Current De-rating

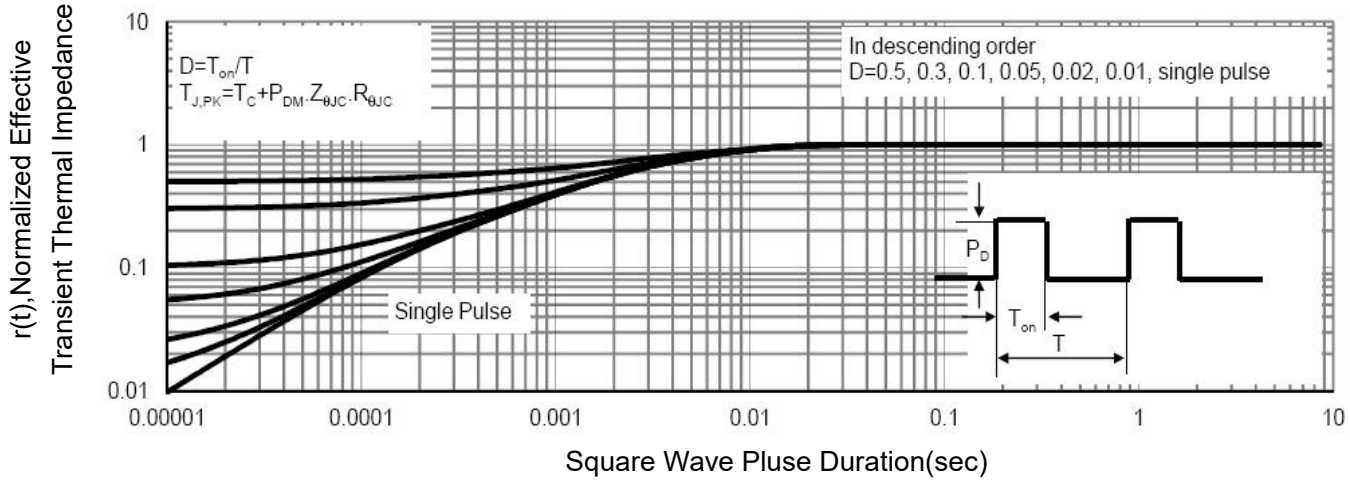
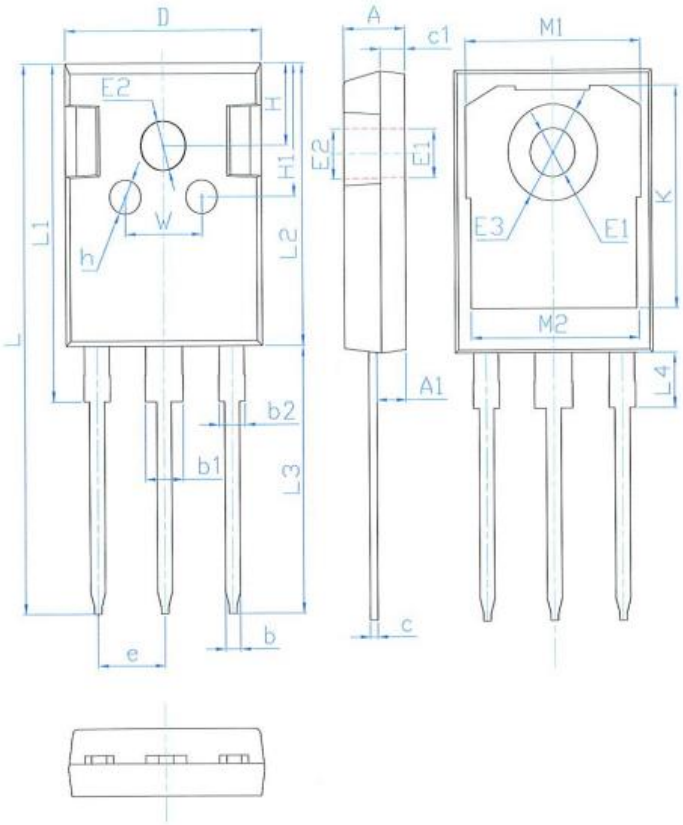


Figure 11 Normalized Maximum Transient Thermal Impedance

TO-247-3L Package Information



标注	尺寸(mm)	MD 测量	T&F 测量
A	5.00±0.20	★	
A1	2.41±0.15	★	
b	1.2±0.10		
b1	3.10±0.10		★
b2	2.10±0.10		★
c	0.60±0.10		
c1	2.00±0.15		
D	15.80±0.20	★	
E1	3.60±0.15	★	
E2	3.70±0.15	★	
E3	7.19±0.15		
L	40.92±0.25		★
L1	24.95±0.15	★	
L2	21.00±0.20	★	
L3	19.92±0.20		★
L4	4.10±0.15		
e	5.44±0.15		★
H	6.15±0.15		
H1	10±0.15		
h	2.50±0.15		
K	16.45±0.20		
M1	14.00±0.20		
M2	13.30±0.20		
W	6.2±0.15		

Revision History

Revision	Date	Subjects
V1.0	2025.07.23	Product data sheet

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