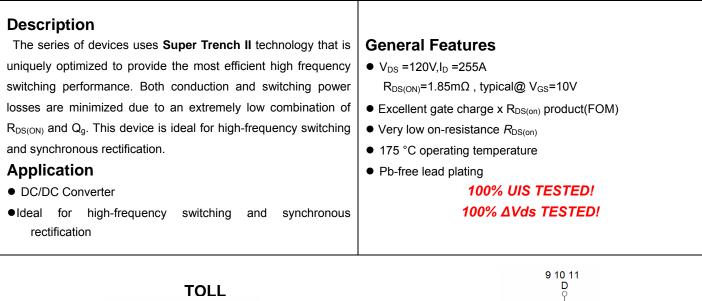
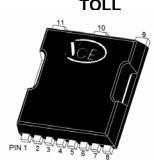
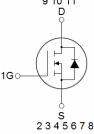




## NCE N-Channel Super Trench II Power MOSFET







Schematic Diagram

### Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
NCEP025N12LL	NCEP025N12LL	TOLL	-	-	-

### Absolute Maximum Ratings (Tc=25°C unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	Vds	120	V
Gate-Source Voltage	V <sub>GS</sub>	±20	V
Drain Current-Continuous	Ι <sub>D</sub>	255	А
Drain Current-Continuous(T <sub>C</sub> =100 °C)	I <sub>D</sub> (100℃)	185	A
Pulsed Drain Current	I <sub>DM</sub>	1020	A
Maximum Power Dissipation	PD	400	W
Derating factor		2.67	W/°C
Single pulse avalanche energy (Note 4)	E <sub>AS</sub>	2800	mJ
Operating Junction and Storage Temperature Range	T <sub>J</sub> ,T <sub>STG</sub>	-55 To 175	°C

### **Thermal Characteristic**

Thermal Resistance, Junction-to-Case	R <sub>θJC</sub>	0.38	°C/W
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Parameter	Symbol	Condition	Min	Тур	Max	Unit
Off Characteristics				•		
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	V <sub>GS</sub> =0V I <sub>D</sub> =250µA	120		-	V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =120V,V <sub>GS</sub> =0V	-	-	1	μA
Gate-Body Leakage Current	I <sub>GSS</sub>	$V_{GS}$ =±20V, $V_{DS}$ =0V	-	-	±100	nA
On Characteristics (Note 2)						
Gate Threshold Voltage	V <sub>GS(th)</sub>	$V_{DS}=V_{GS}$ , $I_{D}=250\mu A$	2.0	3.0	4.0	V
Drain-Source On-State Resistance	R <sub>DS(ON)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =127.5A	-	1.85	2.5	mΩ
Forward Transconductance	<b>g</b> <sub>FS</sub>	V <sub>DS</sub> =5V,I <sub>D</sub> =127.5A		200	-	S
Dynamic Characteristics (Note3)			•			
Input Capacitance	C <sub>lss</sub>	V <sub>DS</sub> =60V,V <sub>GS</sub> =0V,	-	15500	-	PF
Output Capacitance	C <sub>oss</sub>		-	1020	-	PF
Reverse Transfer Capacitance	Crss	F=1.0MHz	-	23	-	PF
Switching Characteristics (Note 3)	· · ·					
Turn-on Delay Time	t <sub>d(on)</sub>		-	37	-	nS
Turn-on Rise Time	tr	$V_{DD}$ =60V,I <sub>D</sub> =127.5A $V_{GS}$ =10V,R <sub>G</sub> =1.6Ω	-	29	-	nS
Turn-Off Delay Time	t <sub>d(off)</sub>		-	82	-	nS
Turn-Off Fall Time	t <sub>f</sub>		-	34	-	nS
Total Gate Charge	Qg		-	225	-	nC
Gate-Source Charge	Q <sub>gs</sub>	V <sub>DS</sub> =60V,I <sub>D</sub> =127.5A, V <sub>GS</sub> =10V	-	73		nC
Gate-Drain Charge	Q <sub>gd</sub>	VGS-10V	-	50		nC
Drain-Source Diode Characteristics						
Diode Forward Voltage (Note 3)	V <sub>SD</sub>	V <sub>GS</sub> =0V,I <sub>S</sub> =127.5A	-		1.2	V
Diode Forward Current (Note 2)	Is		-	-	255	Α
Reverse Recovery Time	trr	$T_J$ = 25°C, $I_F$ = 127.5A	-	105	-	nS
Reverse Recovery Charge	Qrr	di/dt = 100A/µs <sup>(Note2)</sup>	-	290	-	nC

### Electrical Characteristics (T<sub>c</sub>=25°C unless otherwise noted)

#### Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.

2. Pulse Test: Pulse Width  $\leq$  300µs, Duty Cycle  $\leq$  2%.

3. Guaranteed by design, not subject to production

4. EAS condition : Tj=25  $^\circ \!\! C$  ,V\_DD=50V,V\_G=10V,L=0.5mH,Rg=25 $\Omega$ 



# NCEP025N12LL

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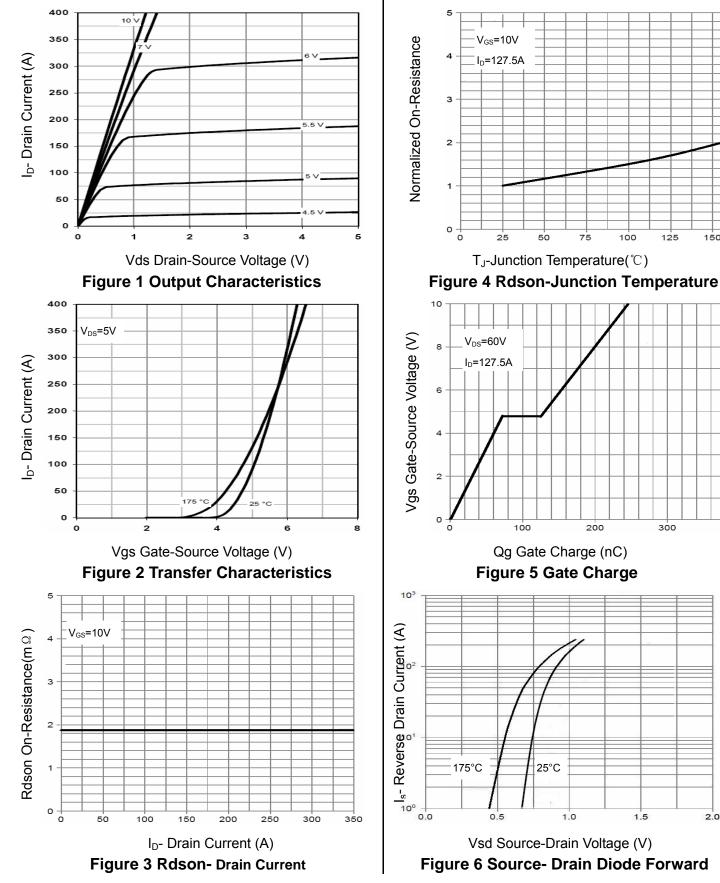
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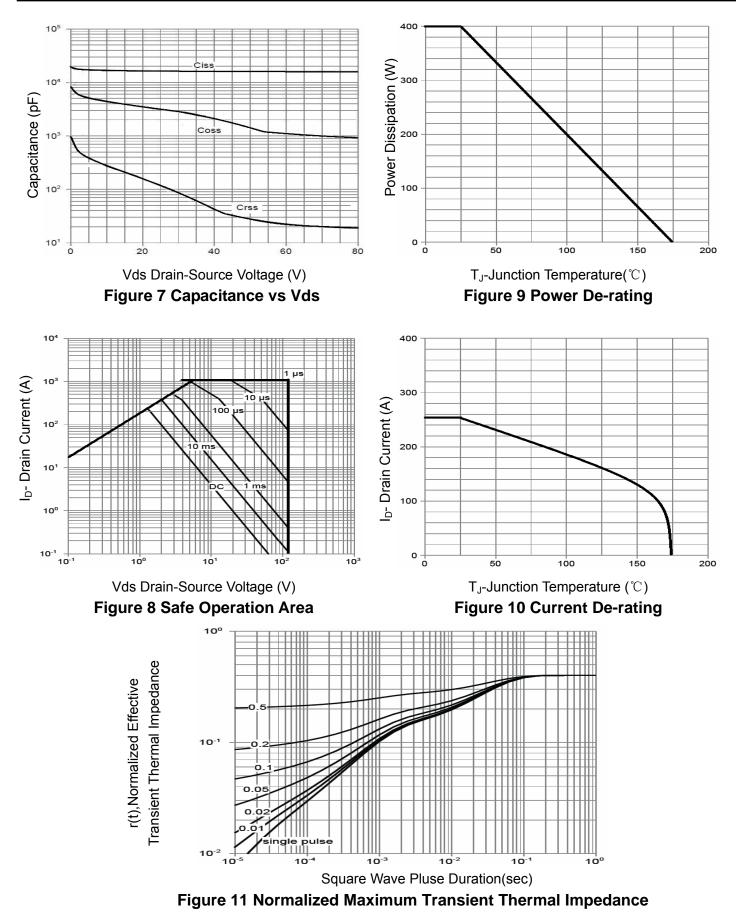
### **Typical Electrical and Thermal Characteristics**



2.0

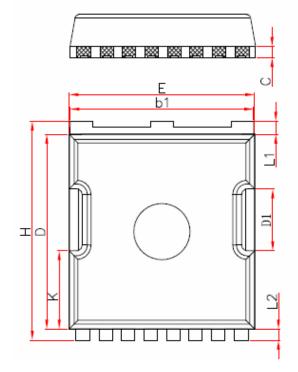


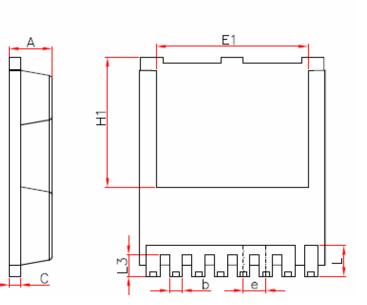
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## **TOLL Package Information**





Symbol	Millimeters			
	Min.	Nom.	Max.	
А	2.20	2.30	2.40	
b	0.65	0.75	0.85	
b1	9.70	9.80	9.90	
С	0.50	0.60	0.70	
D	10.30	10.40	10.50	
D1	3.15	3.3	3.45	
Е	9.70	9.90	10.10	
E1	8.00	8.10	8.20	
е	1.10	1.20	1.30	
Н	11.6	11.7	11.8	
H1	6.85	6.95	7.05	
K	4.08	4.18	4.28	
L	1.60	1.65	2.10	
L1	0.60	0.70	0.80	
L2	0.50	0.60	0.70	
L3	1.05	1.20	1.30	



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