

N-Channel Enhancement Mode MOSFET

1. Product Information

1.1 Features

- ☑ Surface-mounted package
- ☑ Low Thermal Resistance

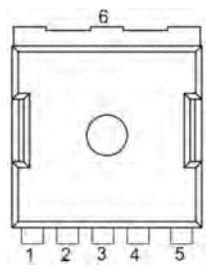
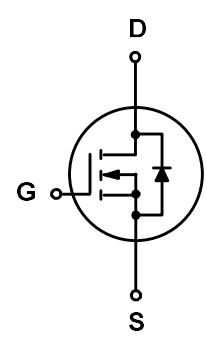
1.2 Applications

- ☑ Motor drivers
- ☑ DC - DC Converter

1.3 Quick reference

- ☑ $BV \geq 150\text{ V}$
- ☑ $R_{DS(ON)} \leq 7.5\text{ m}\Omega @ V_{GS} = 10\text{ V}$
- ☑ $P_{tot} \leq 215\text{ W}$
- ☑ $R_{DS(ON)} \leq 9.5\text{ m}\Omega @ V_{GS} = 6\text{ V}$
- ☑ $I_D \leq 103\text{ A}$

2. Pin Description

Pin	Description	Simplified Outline	Symbol
1,2,3,4	Source(S)	 Top View STOLL	
5	Gate(G)		
6	Drain(D)		

3. Limiting Values

Symbol	Parameter	Conditions	Min	Max	Unit
V _{DS}	Drain-Source Voltage	T _C = 25 °C	-	150	V
V _{GS}	Gate-Source Voltage	T _C = 25 °C	-	± 20	V
I _D *	Drain Current (DC)	T _C = 25 °C, V _{GS} = 10 V	-	103	A
		T _C = 100 °C, V _{GS} = 10 V	-	73	A
I _{DM} *,**	Drain Current (Pulsed)	T _C = 25 °C, V _{GS} = 10 V	-	225	A
P _{tot}	Drain power dissipation	T _C = 25 °C	-	215	W
T _{stg}	Storage Temperature		-55	175	°C
T _J	Junction Temperature		-	175	°C
I _S	Continuous-Source Current	T _C = 25 °C	-	103	A
E _{AS}	Single Pulsed Avalanche Energy	V _{DD} = 50 V , L= 1.0 mH	-	612	mJ
R _{θJA} *	Thermal Resistance- Junction to Ambient		-	65	°C/W
R _{θJC} *	Thermal Resistance- Junction to Case		-	0.7	

Notes :

- * Surface Mounted on 1 in² pad area, t ≤ 10 sec
- ** Pulse width ≤ 300 μs, duty cycle ≤ 2 %
- *** Limited by bonding wire

4. Marking Information

Product Name	Marking
US075N15ST	075N15 YWWXXX AAAAAA AAAAAA: Date Code

5. Ordering Code

Product Name	Package	Reel Size	Tape width	Quantity	Note
US075N15ST	STOLL			2000	

6. Electrical Characteristics (T_A = 25 °C Unless Otherwise Noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} = 0 V, I _{DS} = 250 μA	150	-	-	V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _{DS} = 250 μA	2	-	4	V
I _{DSS}	Drain Leakage Current	V _{DS} = 120 V, V _{GS} = 0 V	-	-	1	μA
I _{GSS}	Gate Leakage Current	V _{GS} = 0 V, V _{GS} = ± 20 V	-	-	±100	nA
R _{DS(ON)} ^a	On-State Resistance	V _{GS} = 10 V, I _{DS} = 30 A	-	6.8	7.5	mΩ
		V _{GS} = 6 V, I _{DS} = 20 A	-	8.8	9.5	
Diode Characteristics						
V _{SD} ^a	Diode Forward Voltage	I _{SD} = 30 A, V _{GS} = 0 V	-	-	1.3	V
t _{rr}	Reverse Recovery Time	I _{DS} = 30 A, V _{GS} = 0 V dI _{SD} /dt = 100 A/μs	-	92	-	nS
Q _{rr}	Reverse Recovery Charge		-	258	-	nC
Dynamic Characteristics ^b						
C _{iss}	Input Capacitance	V _{GS} = 0 V, V _{DS} = 75 V Frequency = 1 MHz	-	4393	-	pF
C _{oss}	Output Capacitance		-	364	-	
C _{rss}	Reverse Transfer Capacitance		-	7	-	
t _{d(on)}	Turn-on Delay Time	V _{DS} = 75 V, V _{GEN} = 10 V, R _G = 3.9 Ω, R _L = 2.5 Ω, I _{DS} = 30 A	-	16	-	nS
t _r	Turn-on Rise Time		-	34	-	
t _{d(off)}	Turn-off Delay Time		-	40	-	
t _f	Turn-off Fall Time		-	29	-	
Gate Charge Characteristics ^b						
Q _g	Total Gate Charge	V _{DS} = 75 V, V _{GS} = 10 V, I _{DS} = 30 A	-	73	-	nC
Q _{gs}	Gate-Source Charge		-	25	-	
Q _{gd}	Gate-Drain Charge		-	18	-	

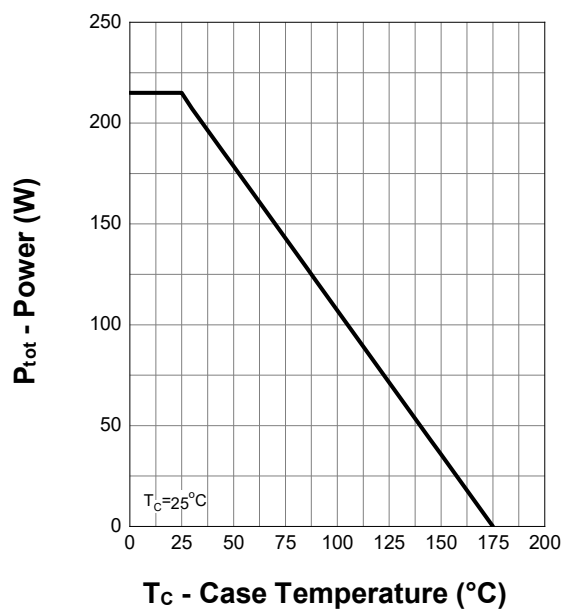
Notes :

a : Pulse test ; pulse width ≤ 300 μs, duty cycle ≤ 2%

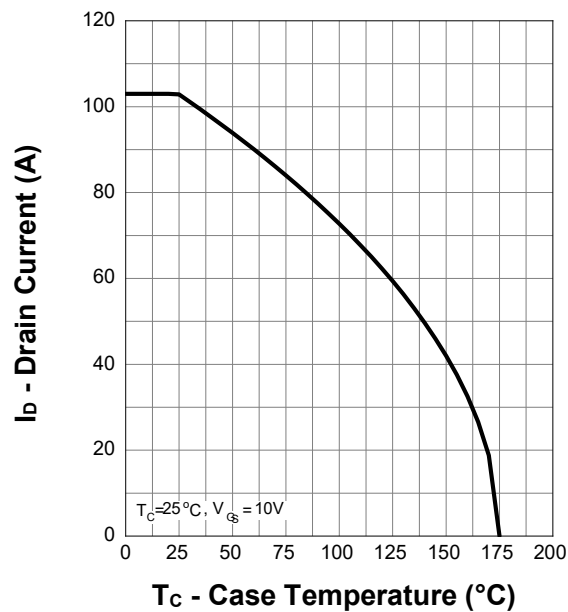
b : Guaranteed by design, not subject to production testing

7. Typical Characteristics

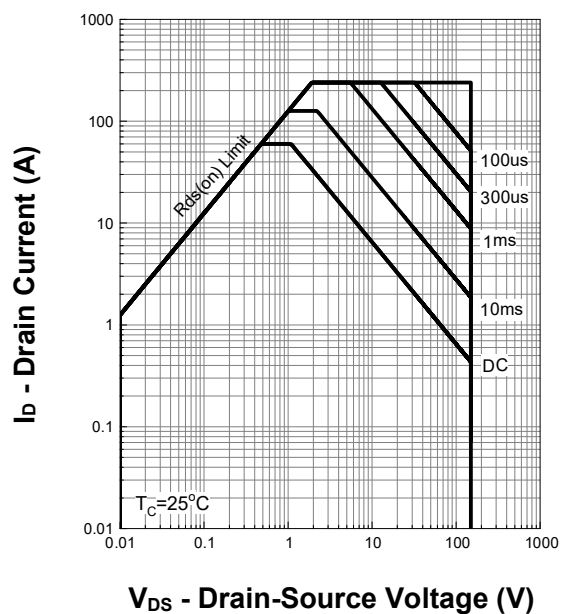
Power Capability



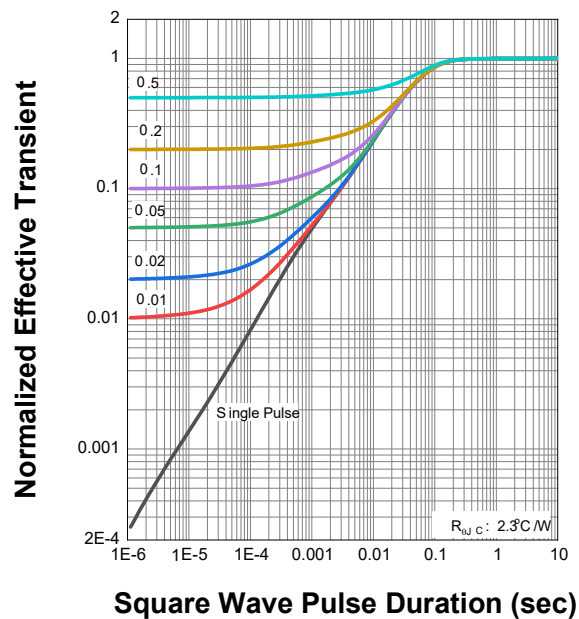
Current Capability



Safe Operating Area

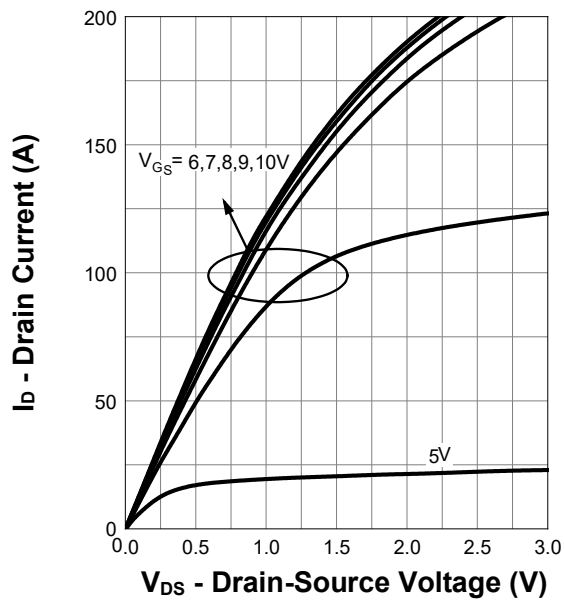


Transient Thermal Impedance

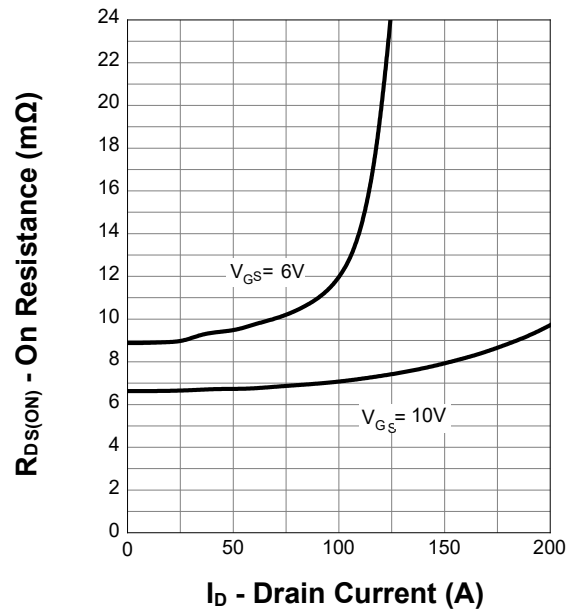


7. Typical Characteristics (cont.)

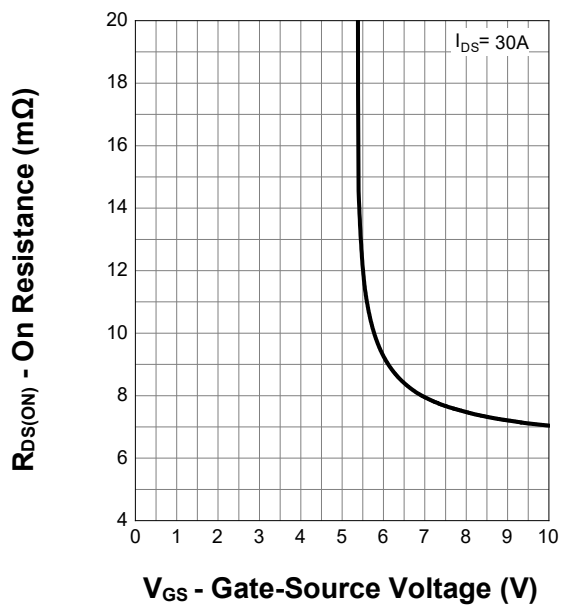
Output Characteristics



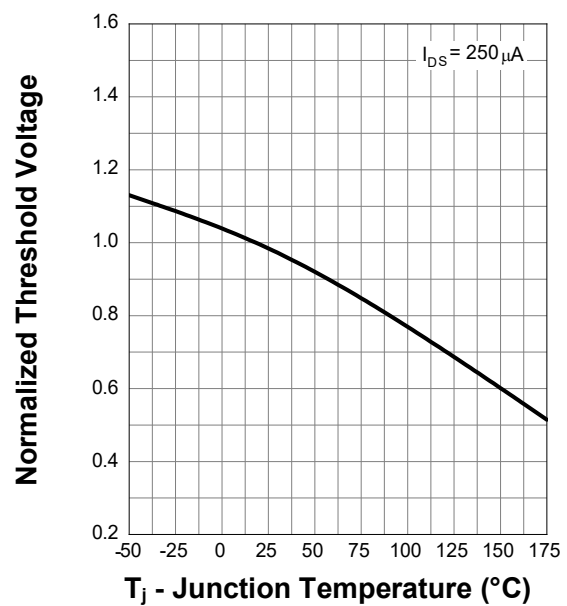
On Resistance



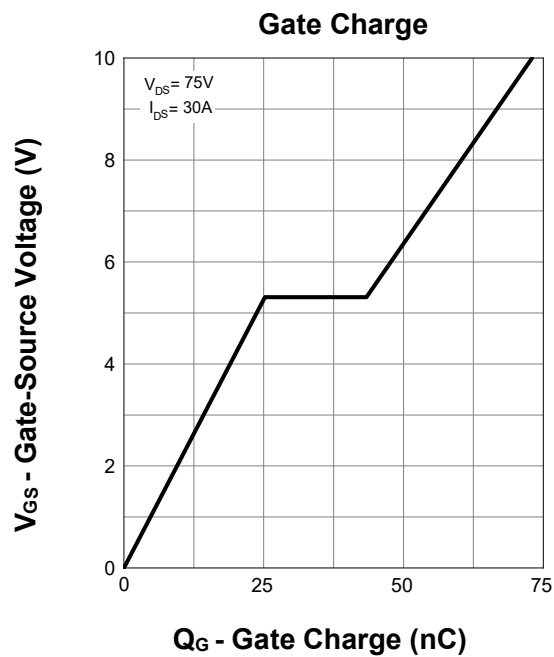
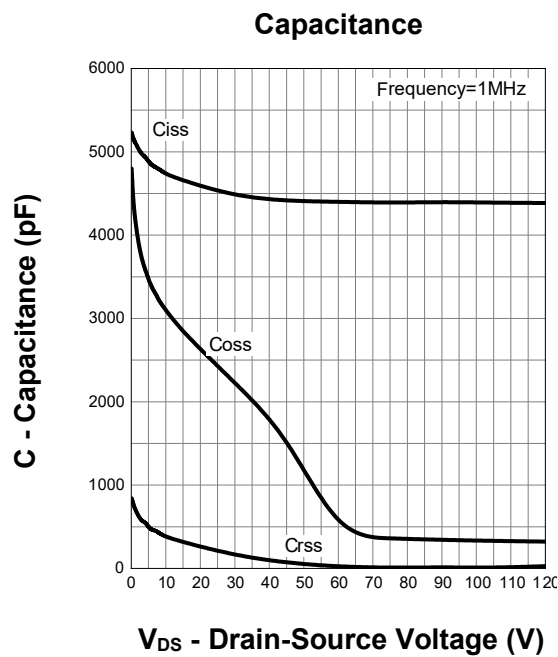
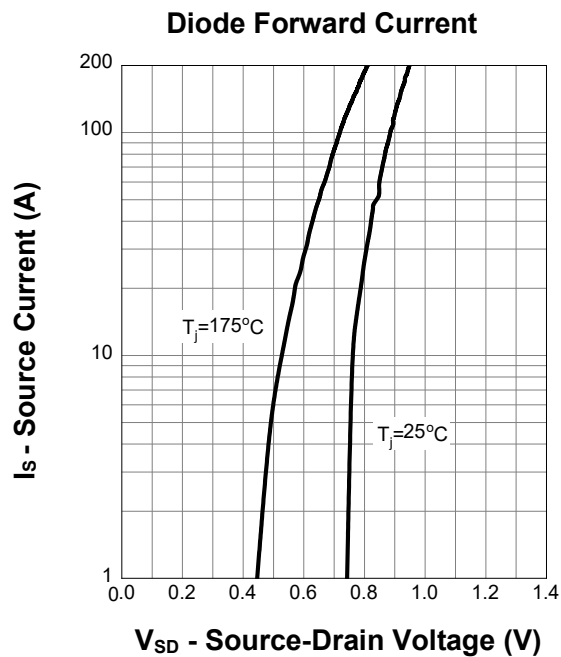
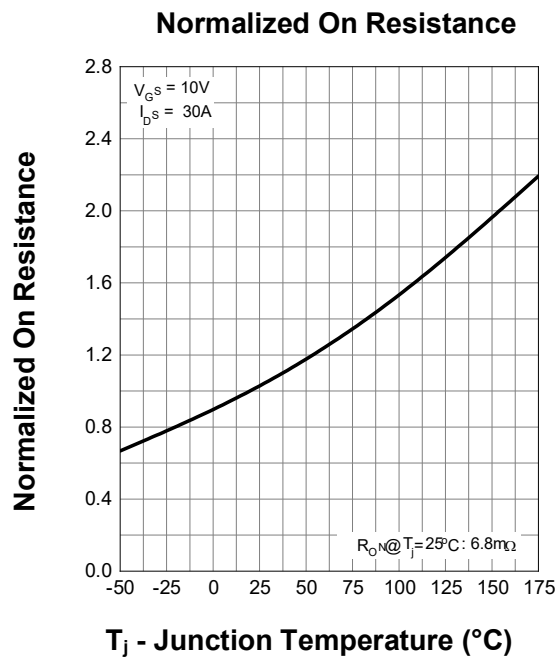
Transfer Characteristics



Normalized Threshold Voltage

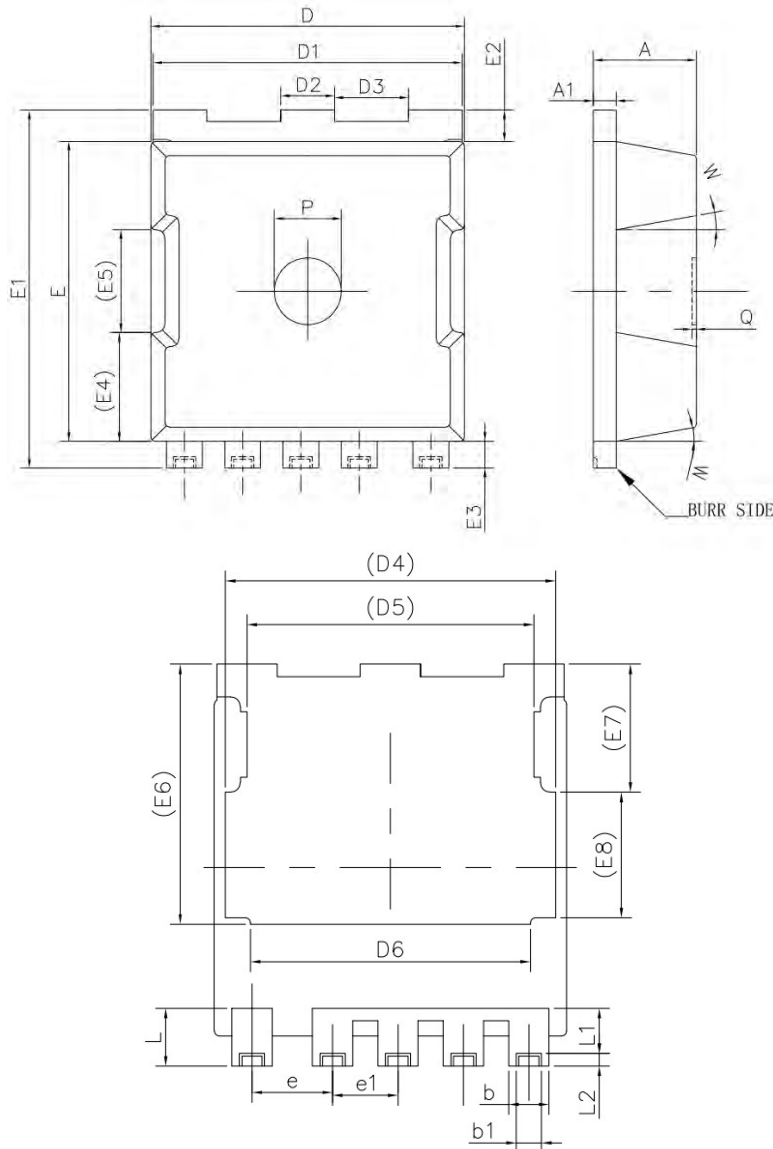


7. Typical Characteristics (cont.)



8. Package Dimensions

sTOLL Package



SYMBOLS	DIMENSION IN MM		
	MIN	NOM	MAX
A	2.200	2.300	2.400
A1	0.400	0.500	0.600
b	0.700	0.800	0.900
b1	0.400	0.500	0.600
D	6.800	7.000	7.200
D1	6.800	6.900	7.200
D2	1.100	1.200	1.300
D3	1.550	1.650	1.750
D4		6.560	
D5		5.700	
D6		5.560	
E	6.500	6.700	6.900
E1	7.800	8.000	8.200
E2	0.600	0.700	0.800
E3	0.500	0.600	0.700
E4		2.430	
E5		2.300	
E6		5.180	
E7		2.550	
E8		2.500	
e		1.600	
e1		1.300	
L	1.050	1.150	1.250
L1	0.800	0.900	1.000
L2	0.150	0.250	0.350
P	1.400	1.500	1.600
Q	0	0.080	0.100
W	8°	10°	11°