

N-Channel Enhancement Mode MOSFET

1. Product Information

1.1 Features

- ☒ Surface-mounted package
- ☒ Advanced trench cell design

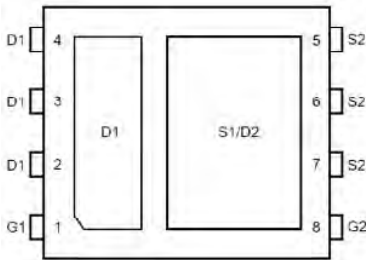
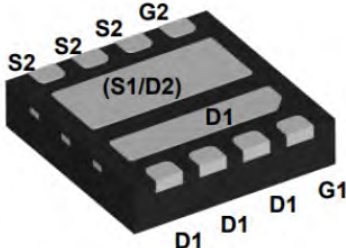
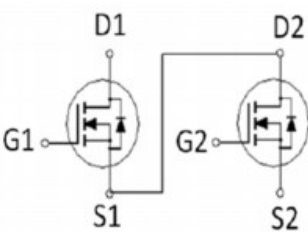
1.2 Applications

- ☒ Motor appliances
- ☒ High power inverter system

1.3 Quick reference

- ☒ $BV \geq 30\text{ V}$
- ☒ $P_{tot} \leq 35\text{ W}$
- ☒ $I_D \leq 50\text{ A}$
- ☒ $R_{DS(ON)} \leq 6.3\text{ m}\Omega @ V_{GS} = 10\text{ V}$
- ☒ $R_{DS(ON)} \leq 8.2\text{ m}\Omega @ V_{GS} = 4.5\text{ V}$

2. Pin Description

Pin	Description	Simplified Outline	Symbol
			

DFN3x3

3. Limiting Values

Symbol	Parameter	Conditions	Min	Max	Unit
V_{DS}	Drain-Source Voltage	$T_A = 25\text{ }^{\circ}\text{C}$	30	-	V
V_{GS}	Gate-Source Voltage	$T_A = 25\text{ }^{\circ}\text{C}$	-	± 20	V
I_D^*	Drain Current	$T_A = 25\text{ }^{\circ}\text{C}, V_{GS} = 10\text{ V}$	-	50	A
		$T_A = 100\text{ }^{\circ}\text{C}, V_{GS} = 10\text{ V}$	-	30	A
$I_{DM}^{*,**}$	Pulsed Drain Current	$T_A = 25\text{ }^{\circ}\text{C}, V_{GS} = 10\text{ V}$	-	50	A
P_{tot}	Total Power Dissipation	$T_A = 25\text{ }^{\circ}\text{C}$	-	35	W
T_{stg}	Storage Temperature		- 55	150	$^{\circ}\text{C}$
T_J	Junction Temperature		- 55	150	$^{\circ}\text{C}$
I_S	Diode Forward Current	$T_A = 25\text{ }^{\circ}\text{C}$	-	50	A
$R_{\theta JA}^*$	Thermal Resistance- Junction to Ambient		-	62.5	$^{\circ}\text{C} / \text{W}$

Notes :

* Surface Mounted on 1 in² pad area, $t \leq 10\text{ sec}$

** Pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$

4. Marking Information

Product Name	Marking
UD3060CQ	3060 YWWXXX YWWXXX : Date Code

5. Ordering Code

Product Name	Package	Reel Size	Tape width	Quantity	Note
UD3060CQ	DFN3*3			5000	

Note: UOE defines "Green" as lead-free (RoHS compliant) and halogen free (Br or Cl does not exceed 900 ppm by weight in homogeneous material and total of Br and Cl does not exceed 1500 ppm by weight; Follow IEC 61249-2-21 and IPC / JEDEC J-STD-020C)

6. Electrical Characteristics ($T_A=25\text{ }^{\circ}\text{C}$ Unless Otherwise Noted)

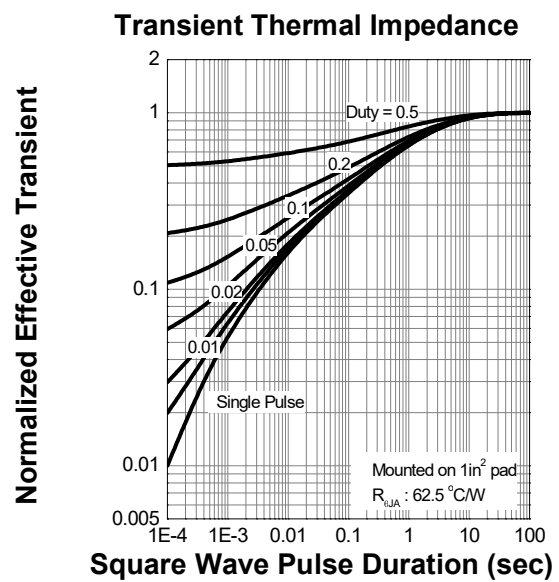
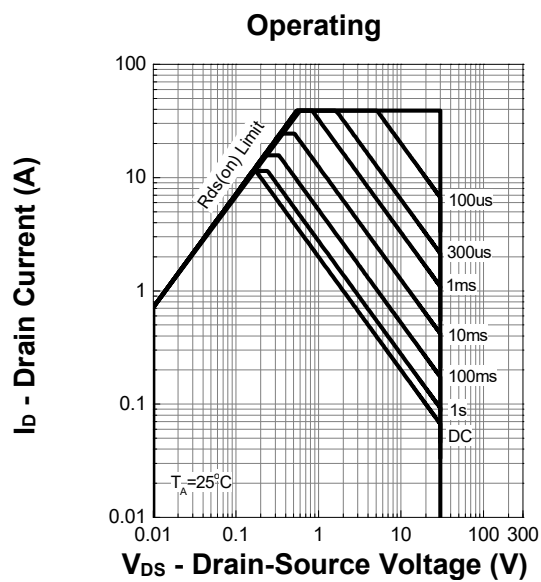
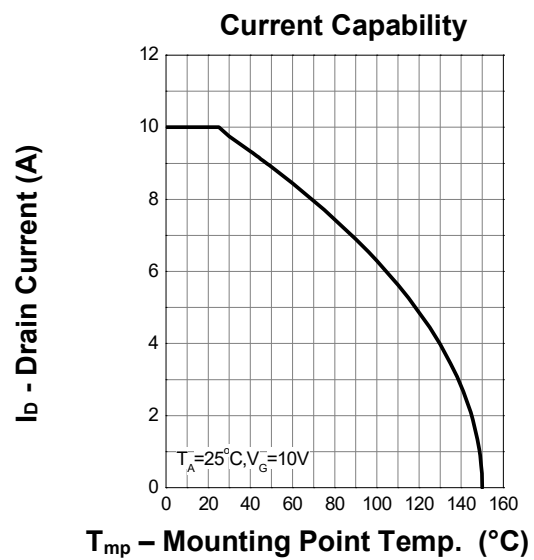
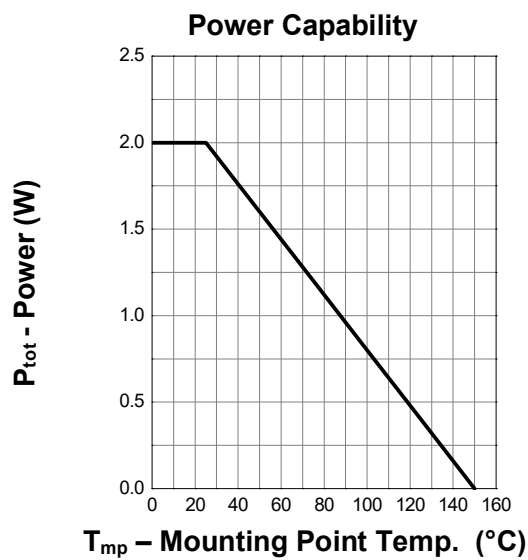
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} = 0 V, I _{DS} = 250 μA	30	-	-	V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _{DS} = 250 μA	1.0	-	2.0	V
I _{DSS}	Drain Leakage Current	V _{DS} = 24V, V _{GS} = 0 V	-	-	1	μA
		T _J = 85 °C	-	-	30	μA
I _{GSS}	Gate Leakage Current	V _{GS} = ±20 V, V _{DS} = 0 V	-	-	± 100	nA
R _{DS(ON)} ^a	On-State Resistance	V _{GS} = 10 V, I _{DS} = 10 A	-	5.7	6.3	m Ω
		V _{GS} = 4.5V, I _{DS} = 5 A	-	7.5	8.2	
Diode Characteristics						
V _{SD} ^a	Diode Forward Voltage	I _{SD} = 10 A, V _{GS} = 0V	-	-	1.3	V
t _{rr}	Reverse Recovery Time	I _{DS} = 10 A, V _{GS} = 0 V dI _{SD} /dt = 100 A/μs	-	34	-	ns
Q _{rr}	Reverse Recovery Charge		-	7.1	-	μC
Dynamic Characteristics ^b						
C _{iss}	Input Capacitance	V _{GS} = 0 V, V _{DS} = 15 V Frequency = 1 MHz	-	1145	-	pF
C _{oss}	Output Capacitance		-	106	-	
C _{rss}	Reverse Transfer Capacitance		-	87	-	
t _{d(on)}	Turn-on Delay Time	V _{DS} = 15V, V _{GEN} = 10 V, R _G = 4.5 Ω, R _L = 1.5 Ω, I _{DS} = 10 A	-	7	-	ns
t _r	Turn-on Rise Time		-	30	-	
t _{d(off)}	Turn-off Delay Time		-	19	-	
t _f	Turn-off Fall Time		-	18	-	
Gate Charge Characteristics ^b						
Q _g	Total Gate Charge	V _{GS} = 15 V, V _{DS} = 10 V, I _{DS} = 10 A	-	22	-	nC
Q _{gs}	Gate-Source Charge		-	5	-	
Q _{gd}	Gate-Drain Charge		-	3.3	-	

Notes :

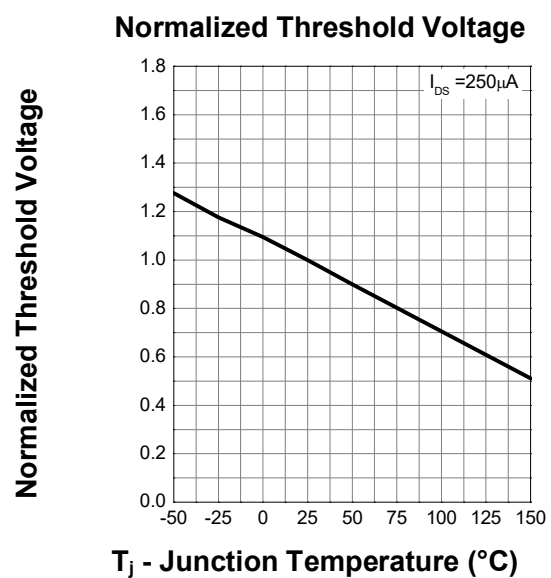
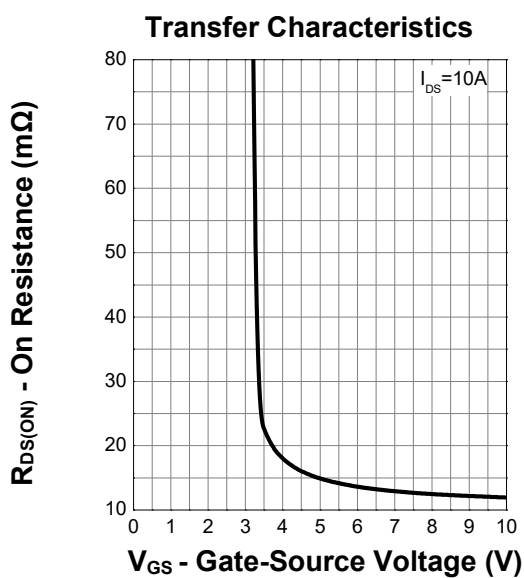
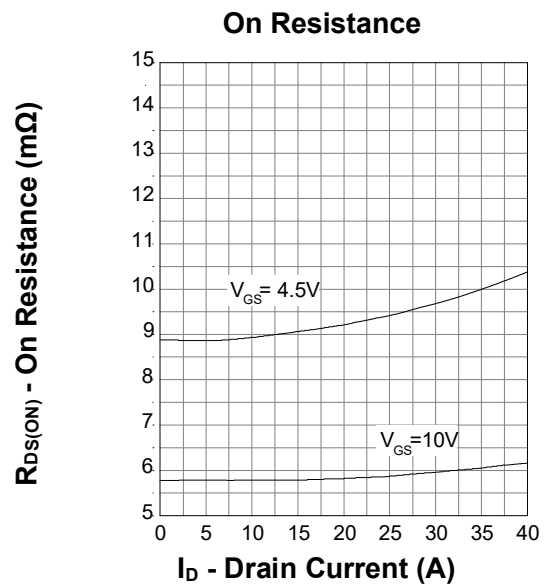
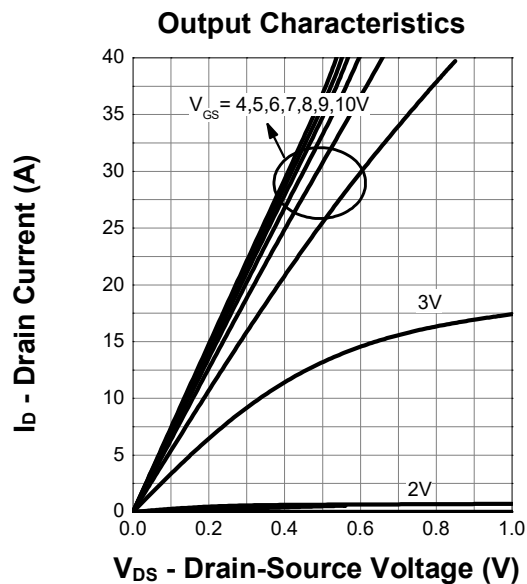
a : Pulse test ; pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$

b : Guaranteed by design, not subject to production testing

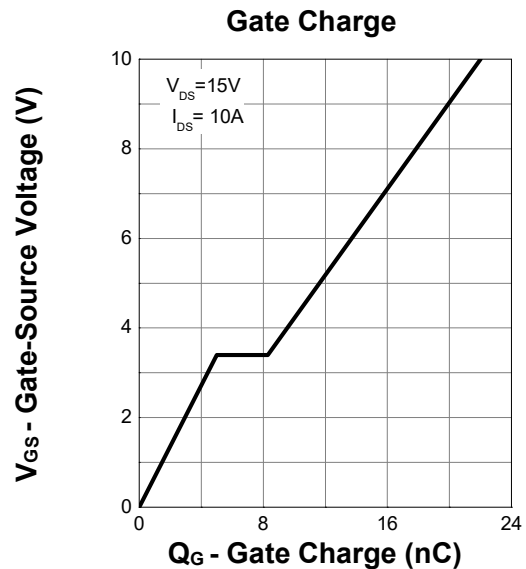
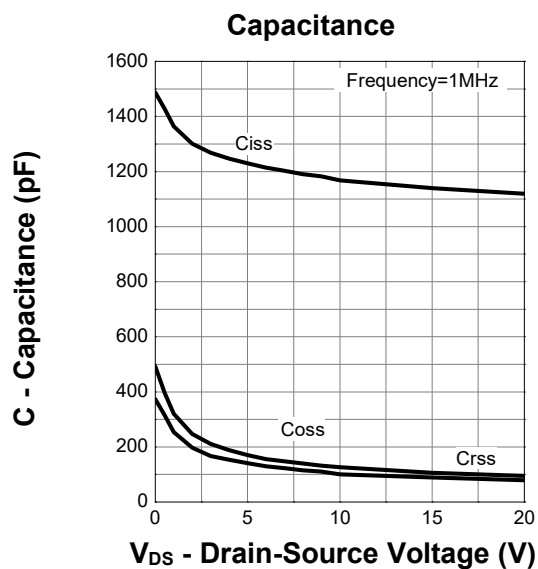
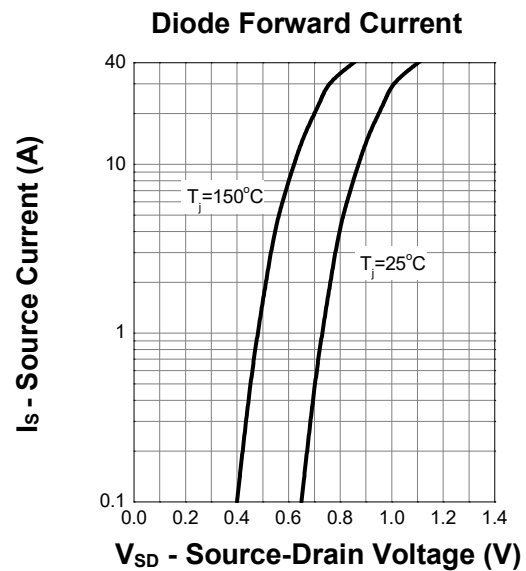
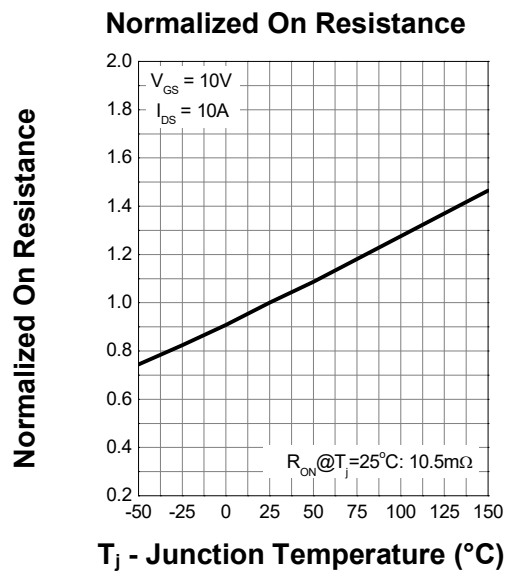
7. Typical Characteristics



7. Typical Characteristics (cont.)

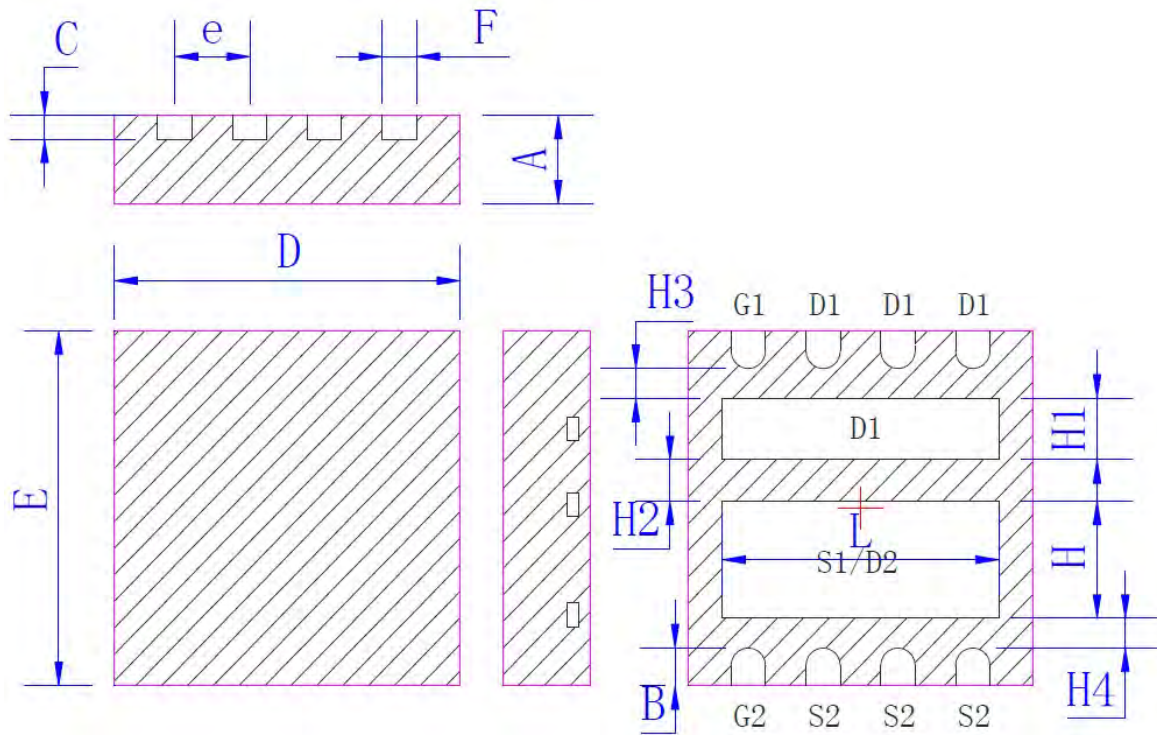


7. Typical Characteristics (cont.)



8. Package Dimensions

DFN3*3



Symbol	Min	Typ	Max
A	0.70	0.75	0.80
B	0.27	0.32	0.37
C	0.153	0.203	0.253
D	2.90	3.00	3.10
E	2.90	3.00	3.10
e	0.60	0.65	0.70
F	0.25	0.30	0.35
H	0.89	0.99	1.09
H1	0.42	0.52	0.62
H2	0.25	0.35	0.45
H3	0.15	0.25	0.35
H4	0.15	0.25	0.35
L	2.30	2.40	2.50