

N-Channel Enhancement Mode MOSFET

1. Product Information

1.1 Features

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

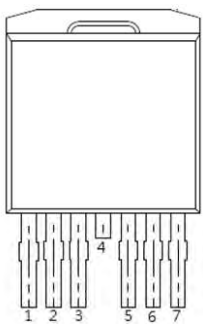
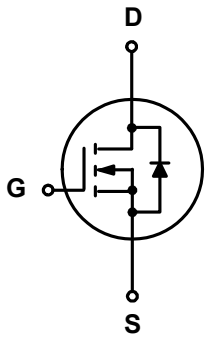
1.2 Applications

- ☒ LCD TV appliances
- ☒ LCDM appliances
- ☒ High power inverter system

1.3 Quick reference

- ☒ $BV \geq 60\text{ V}$
- ☒ $P_{tot} \leq 375\text{ W}$
- ☒ $I_D \leq 350\text{ A}$
- ☒ $R_{DS(ON)} \leq 0.65\text{ m}\Omega @ V_{GS} = 10\text{ V}$
- ☒ $R_{DS(ON)} \leq 1.20\text{ m}\Omega @ V_{GS} = 4.5\text{ V}$

2. Pin Description

Pin	Description	Simplified Outline	Symbol
1	Gate(G)	 Top View TO-263-7L	
2,3	Source (S)		
4	Drain(D)		
5,6,7	Source (S)		

3. Limiting Values

Symbol	Parameter	Conditions	Min	Max	Unit
V _{DS}	Drain-Source Voltage	T _C = 25 °C	-	60	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	-	350	A
		T _C = 100 °C, V _{GS} = 10 V	-	300	A
I _{DM} [*]	Drain Current (Pulsed)	T _C = 25 °C, V _{GS} = 10 V	-	1200	A
P _{tot}	Drain power dissipation	T _C = 25 °C	-	375	W
T _{stg}	Storage Temperature		-55	175	°C
T _J	Junction Temperature		-	175	°C
I _S	Continuous-Source Current	T _C = 25 °C	-	350	A
E _{AS}	Single Pulsed Avalanche Energy	V _{DD} =50V , L=1.0mH	-	3200	mJ
R _{θJA} ^{**}	Thermal Resistance- Junction to Ambient		-	42	°C/W
R _{θJC} ^{**}	Thermal Resistance- Junction to Case		-	0.4	

Notes :

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

4. Marking Information

Product Name	Marking
UP006N06D7M	006N06M AYWW01 XXXXXX

5. Ordering Code

Product Name	Package	Reel Size	Tape width	Quantity	Note
UP006N06D7M	TO263-7L(D2-PAK)			800	

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

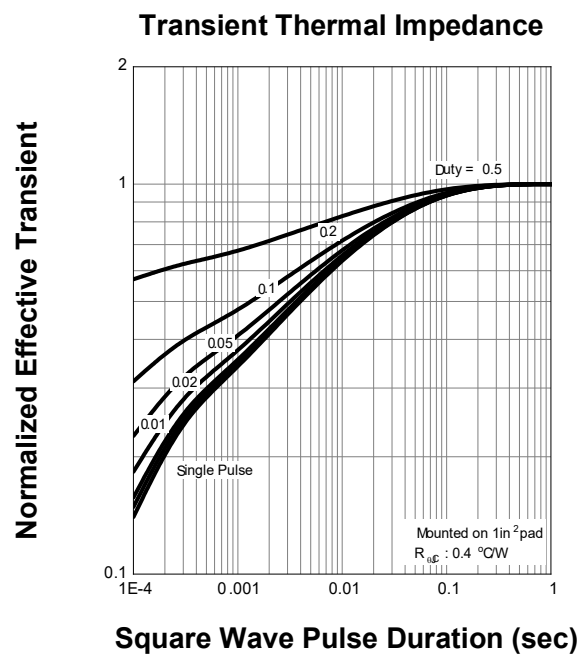
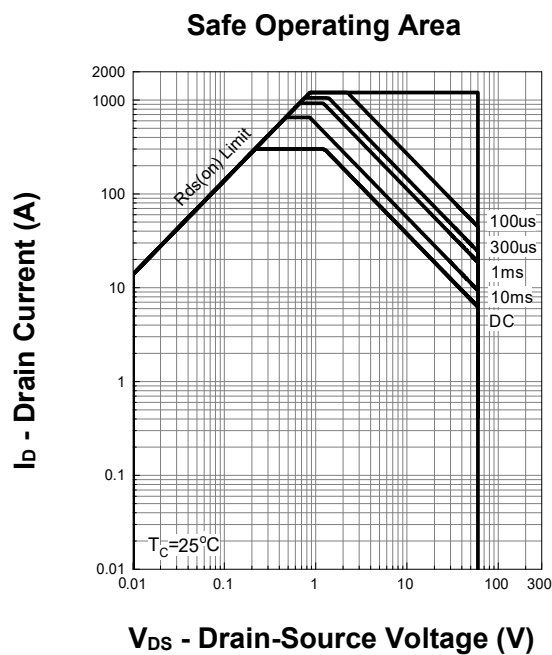
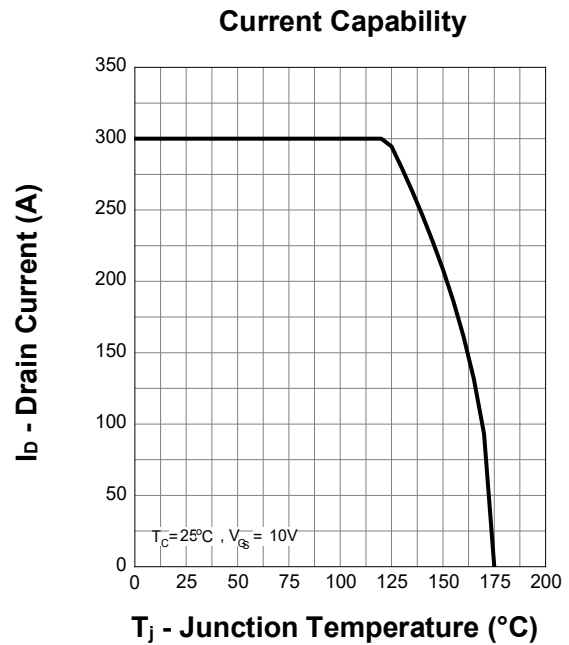
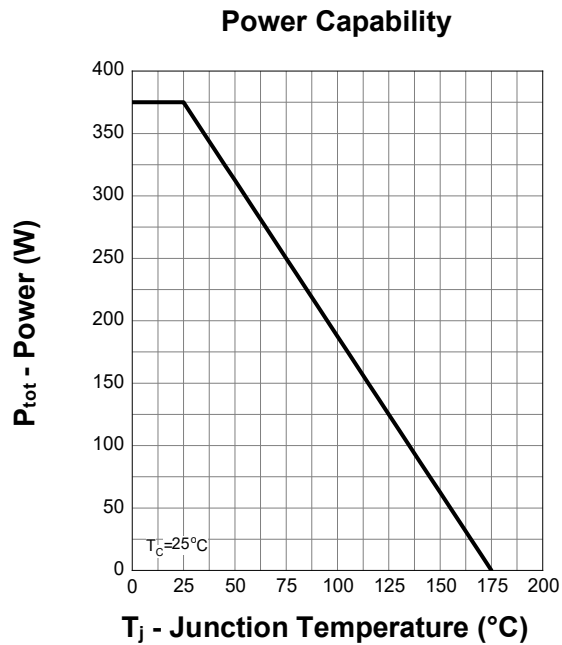
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} = 0 V, I _{DS} = 250 μA	60	-	-	V
ΔBV _{DSS} /ΔT _J	Breakdown Voltage Temp. Coefficient	Reference to 25°C , I _{DS} = 5 mA	-	0.018	-	V/°C
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _{DS} = 250 μA	1	-	3	V
I _{DSS}	Drain Leakage Current	V _{DS} = 48V, 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} = 50 A	-	0.6	0.65	m Ω
		V _{GS} = 4.5 V, I _{DS} = 30 A	-	1.0	1.20	
Diode Characteristics						
V _{SD} ^a	Diode Forward Voltage	I _{SD} = 50 A, V _{GS} = 0 V	-	-	1.3	V
t _{rr}	Reverse Recovery Time	I _{DS} = 50 A, V _{GS} = 0 V dI _{SD} /dt = 100 A/μs	-	141	-	nS
Q _{rr}	Reverse Recovery Charge		-	291	-	nC
Dynamic Characteristics ^b						
C _{iss}	Input Capacitance	V _{GS} = 0 V, V _{DS} = 30 V Frequency = 1 MHz	-	18306	-	pF
C _{OSS}	Output Capacitance		-	5623	-	
C _{rSS}	Reverse Transfer Capacitance		-	385	-	
t _{d(on)}	Turn-on Delay Time	V _{DS} =30 V, V _{GEN} = 10 V, R _G = 3.9 Ω, R _L = 0.6 Ω, I _{DS} = 50 A	-	32	-	nS
t _r	Turn-on Rise Time		-	111	-	
t _{d(off)}	Turn-off Delay Time		-	243	-	
t _f	Turn-off Fall Time		-	156	-	
Gate Charge Characteristics ^b						
Q _g	Total Gate Charge	V _{DS} = 30 V, V _{GS} = 10 V, I _{DS} = 50 A	-	315	-	nC
Q _{gs}	Gate-Source Charge		-	77	-	
Q _{gd}	Gate-Drain Charge		-	63	-	

Notes :

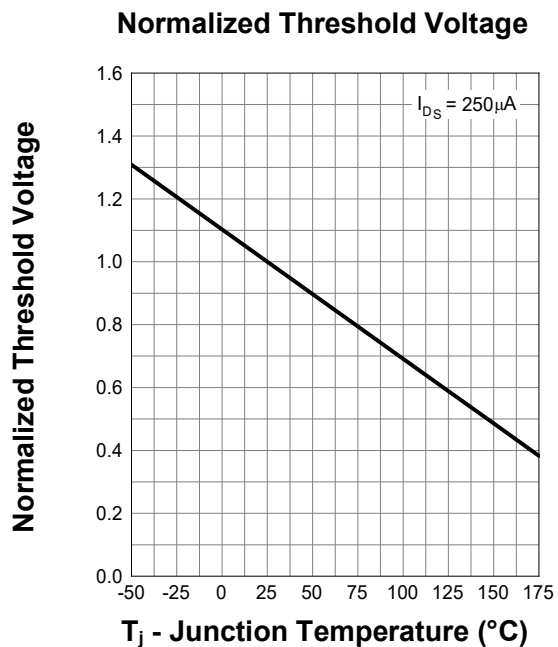
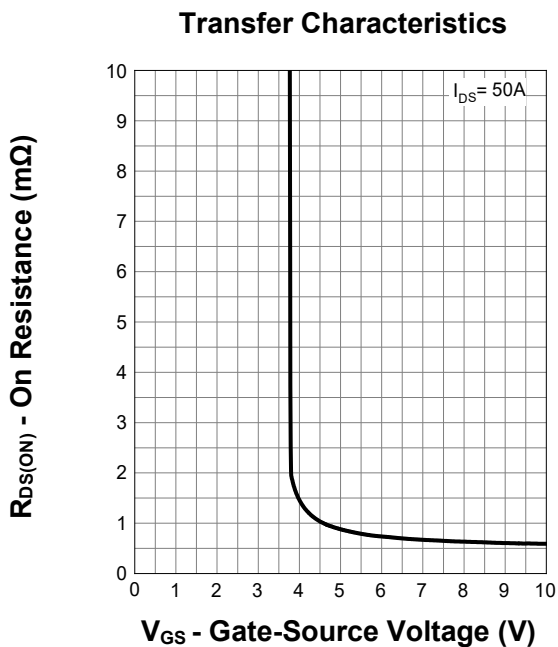
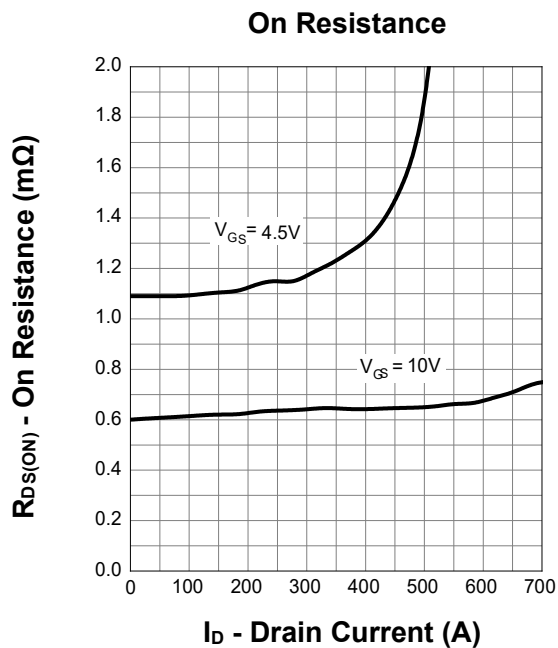
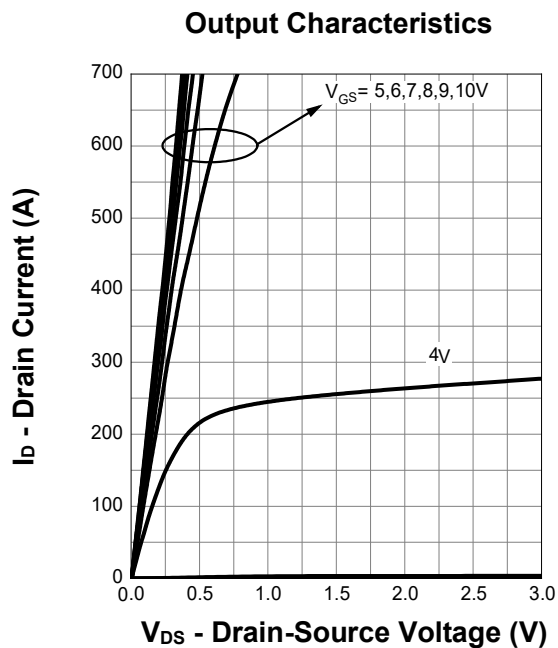
a : Pulse test ; pulse width ≤ 300 μs, duty cycle ≤ 2%

b : Guaranteed by design, not subject to production testing

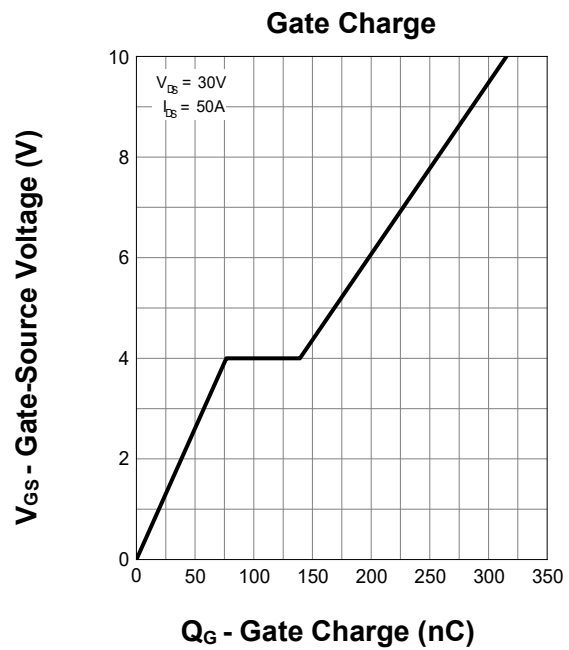
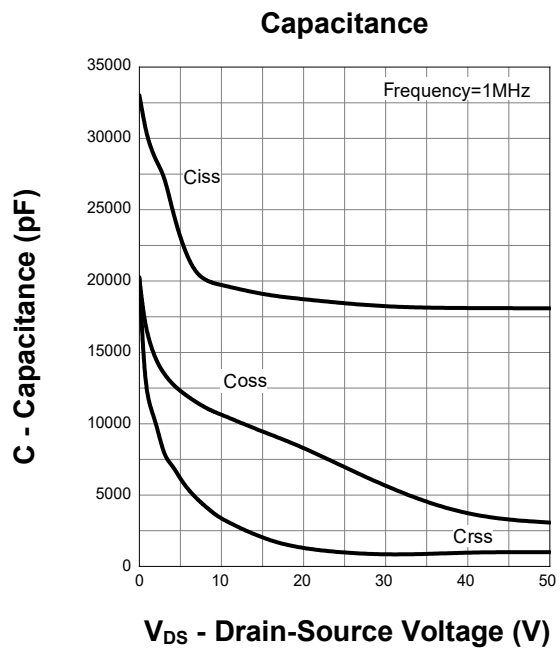
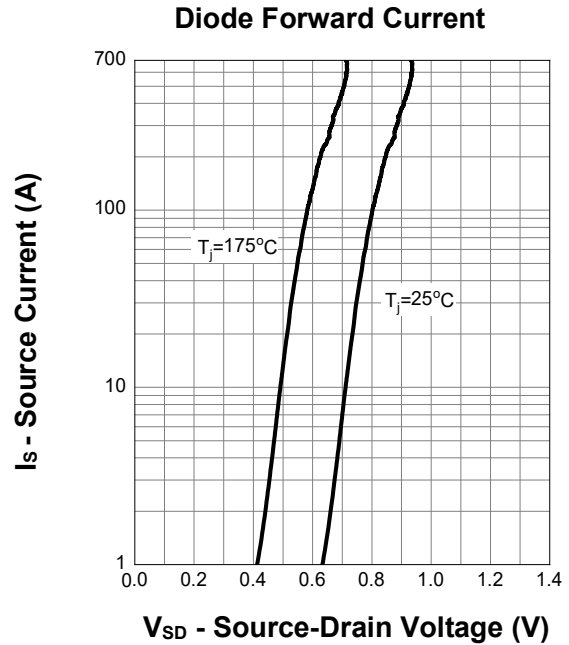
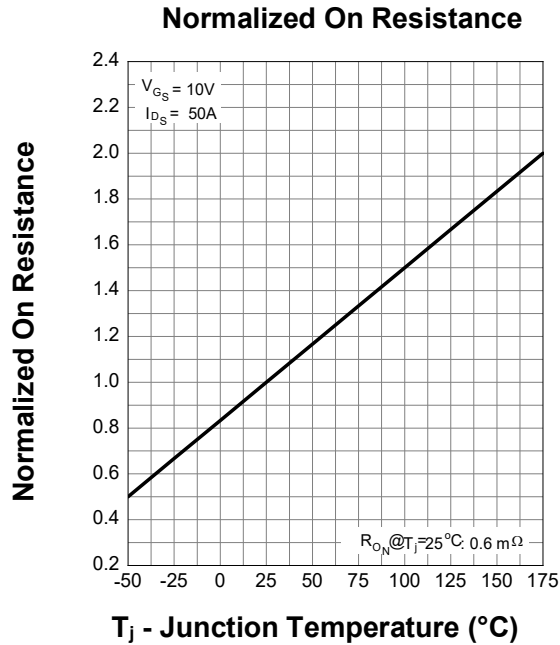
7. Typical Characteristics



7. Typical Characteristics (cont.)

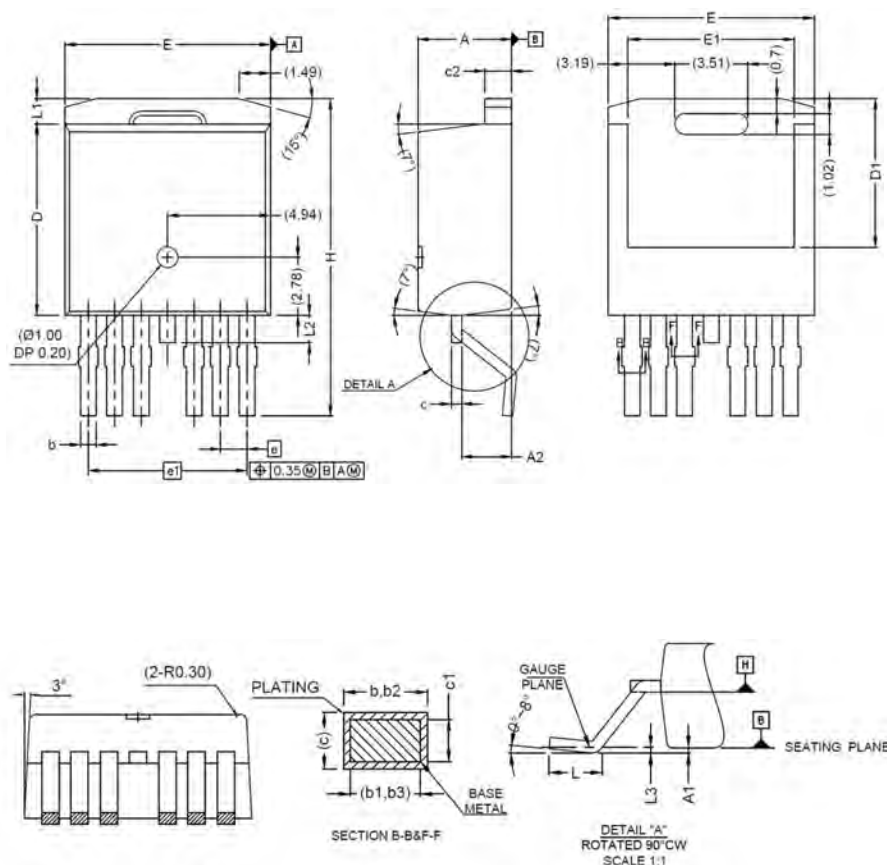


7. Typical Characteristics (cont.)



8. Package Dimensions

TO-263-7L Package



Symbol	Dimensions In Millimeters	
	MIN.	MAX.
A	4.30	4.70
A1	-	0.25
A2	2.20	2.60
b	0.65	0.85
b1	0.65	0.80
b2	0.80	1.00
b3	0.80	0.95
c	0.45	0.60
c1	0.45	0.55
c2	1.25	1.40
D	9.00	9.40
D1	6.86	7.42
E	9.68	10.08
E1	7.70	8.30
e	1.27 BSC	
e1	7.62 BSC	
L	1.78	2.79
L1	-	1.60
L2	-	1.78
L3	0.25 BSD	
H	14.61	15.88