

N-Channel Enhancement Mode MOSFET

1. Product Information

1.1 Features

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

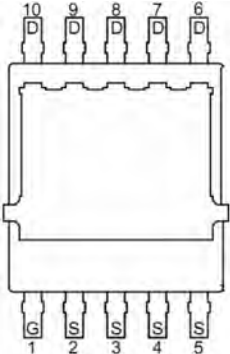
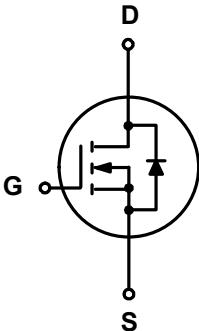
1.2 Applications

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

1.3 Quick reference

- ☑ $BV \geq 80 \text{ V}$
- ☑ $P_{tot} \leq 375 \text{ W}$
- ☑ $I_D \leq 300 \text{ A}$
- ☑ $R_{DS(ON)} \leq 1.5 \text{ m}\Omega @ V_{GS} = 10 \text{ V}$
- ☑ $R_{DS(ON)} \leq 2.2 \text{ m}\Omega @ V_{GS} = 6 \text{ V}$

2. Pin Description

Pin	Description	Simplified Outline	Symbol
2,3,4,5	Source	 Top View SSO10T	
1	Gate		
6,7,8,9,10,Tab	Drain		

3. Limiting Values

Symbol	Parameter	Conditions	Min	Max	Unit
V _{DS}	Drain-Source Voltage	T _C = 25 °C	-	80	V
V _{GS}	Gate-Source Voltage	T _C = 25 °C	-	± 20	V
I _D ^{*,***}	Drain Current	T _C = 25 °C, V _{GS} = 10 V	-	300	A
		T _C = 100 °C, V _{GS} = 10 V	-	229	A
I _{DM} ^{*,**}	Pulsed Source Current	T _C = 25 °C, V _{GS} = 10 V	-	1200	A
P _{tot} [*]	Total Power Dissipation	T _C = 25 °C	-	375	W
T _{stg}	Storage Temperature		- 55	175	°C
T _J	Junction Temperature		-	175	°C
I _S	Diode Forward Current	T _C = 25 °C	-	300	A
E _{AS} [*]	Single Pulsed Avalanche Energy	V _{DD} = 50 V , L = 1 mH	-	950	mJ
R _{θJA} [*]	Thermal Resistance- Junction to Ambient		-	57	°C / W
R _{θJC} [*]	Thermal Resistance- Junction to Case		-	0.4	

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
UP1R5N08LH	1R5N08H YWWXXX: Date Code

5. Ordering Code

Product Name	Package	Reel Size	Tape width	Quantity	Note
UP1R5N08LH	SSO10T			4500	

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	80	-	-	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} = 64 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} = 50 A	-	1.3	1.5	m Ω
		V _{GS} = 6 V, I _{DS} = 30 A	-	1.9	2.2	
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	-	54	-	nS
Q _{rr}	Reverse Recovery Charge		-	78	-	nC
Dynamic Characteristics ^b						
C _{iss}	Input Capacitance	V _{GS} = 0 V, V _{DS} = 40 V Frequency = 1 MHz	-	7971	-	pF
C _{oss}	Output Capacitance		-	1112	-	
C _{rss}	Reverse Transfer Capacitance		-	53	-	
t _{d(on)}	Turn-on Delay Time	V _{DS} =40 V, V _{GEN} = 10 V, R _G = 3.9 Ω, R _L = 0.8 Ω, I _{DS} = 50 A	-	24	-	nS
t _r	Turn-on Rise Time		-	57	-	
t _{d(off)}	Turn-off Delay Time		-	94	-	
t _f	Turn-off Fall Time		-	56	-	
Gate Charge Characteristics ^b						
Q _g	Total Gate Charge	V _{DS} = 40 V, V _{GS} = 10 V, I _{DS} = 50 A	-	141	-	nC
Q _{gs}	Gate-Source Charge		-	40	-	
Q _{gd}	Gate-Drain Charge		-	34	-	

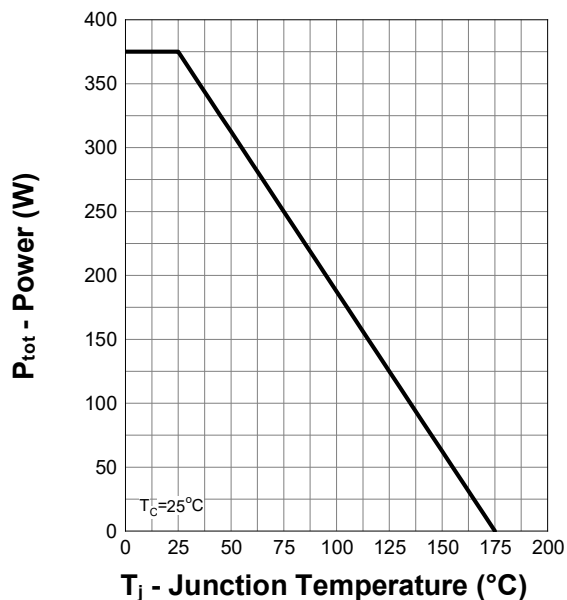
Notes :

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

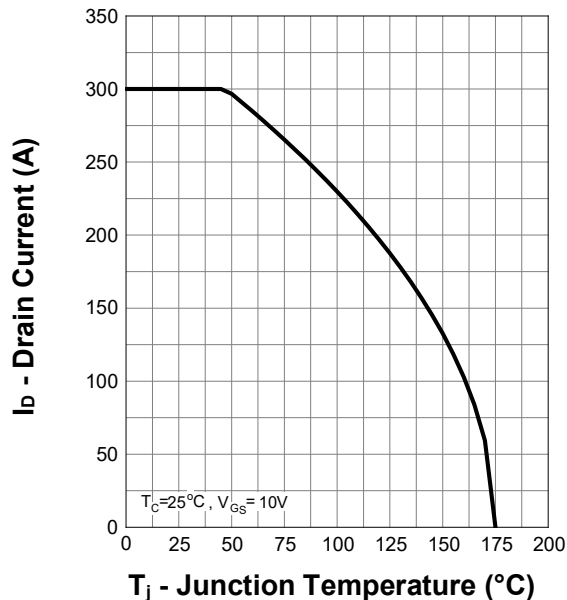
b : Guaranteed by design, not subject to production testing

7. Typical Characteristics

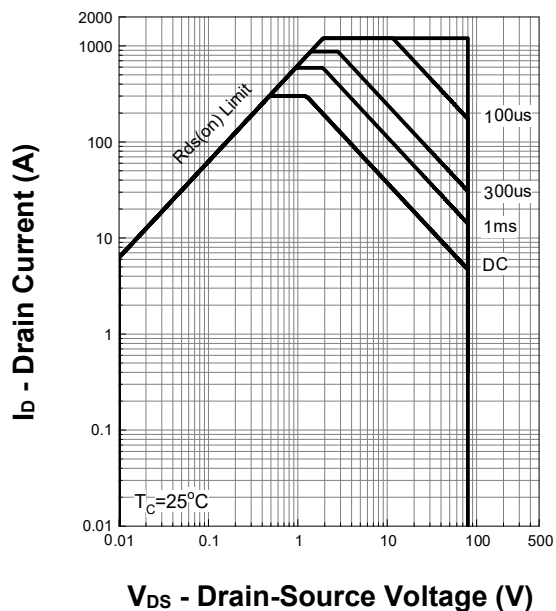
Power Capability



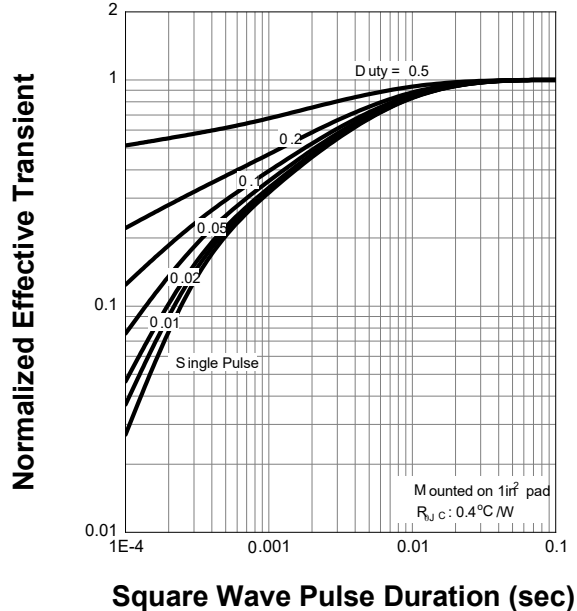
Current Capability



Safe Operating Area

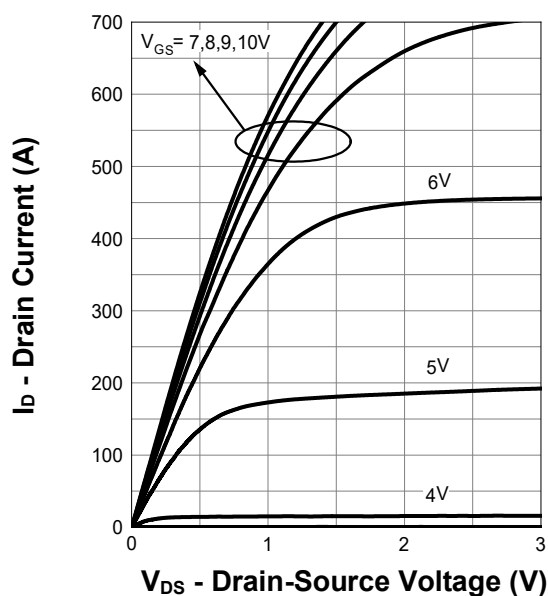


Transient Thermal Impedance

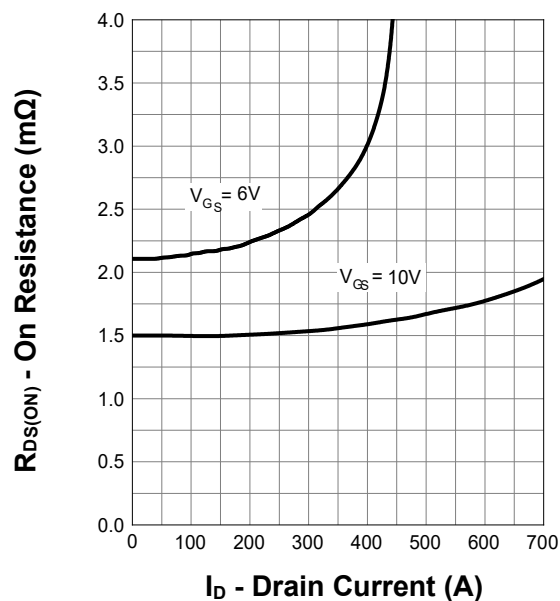


7. Typical Characteristics (cont.)

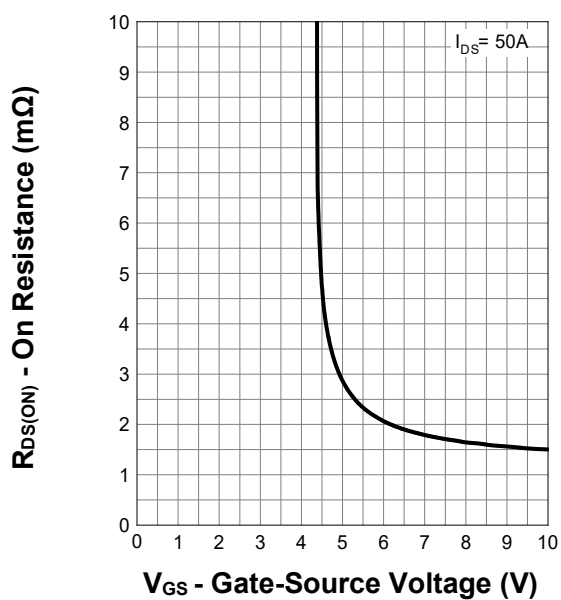
Output Characteristics



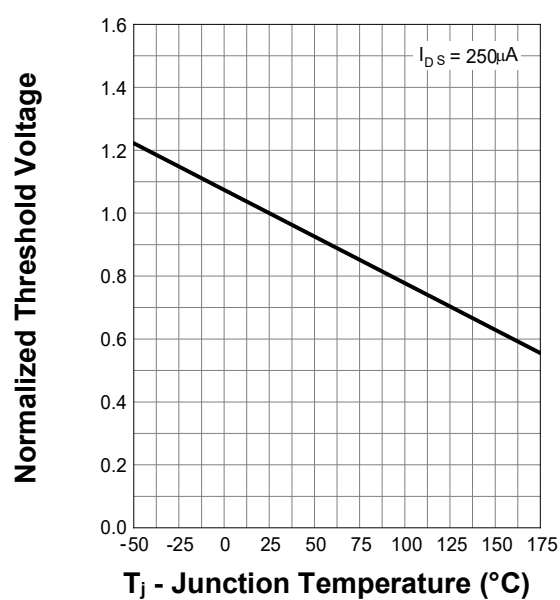
On Resistance



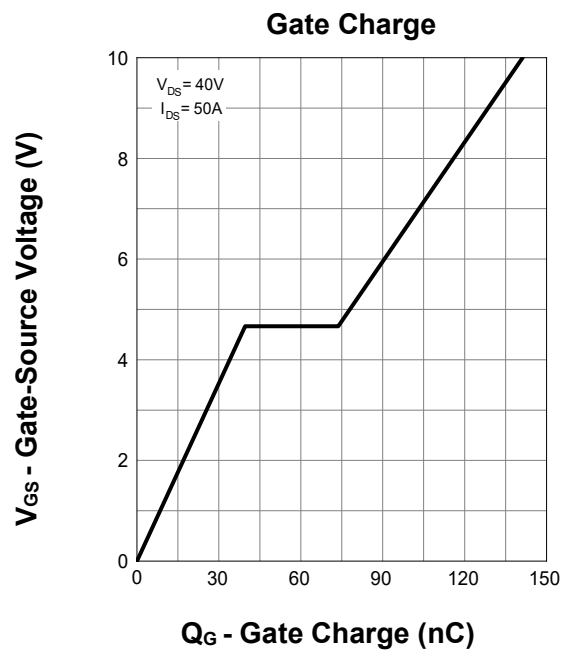
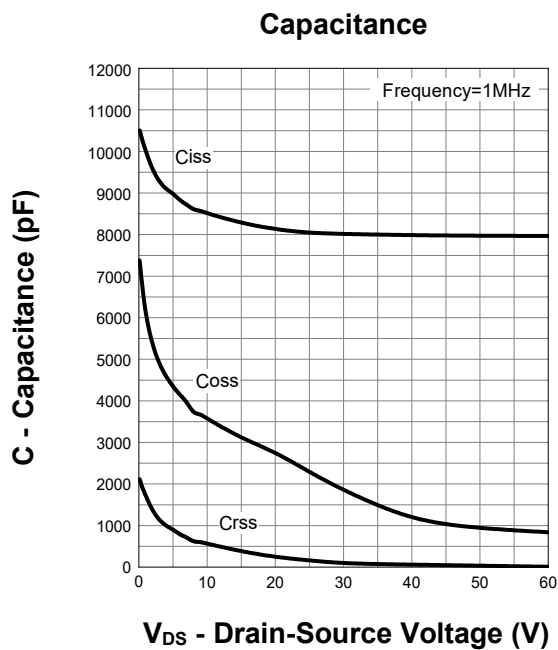
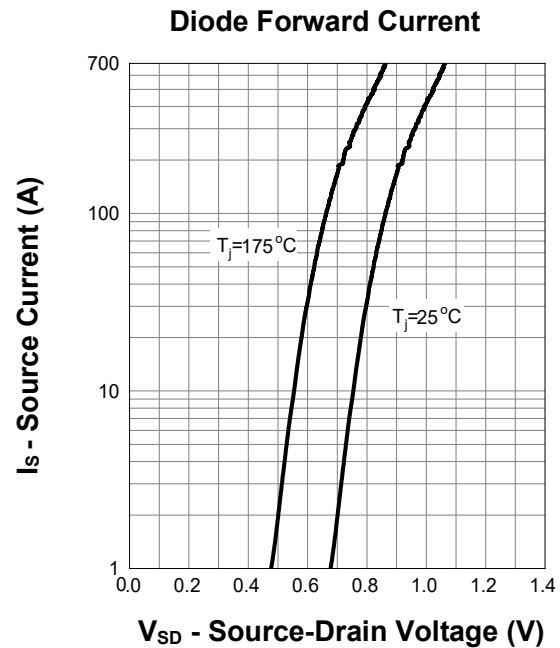
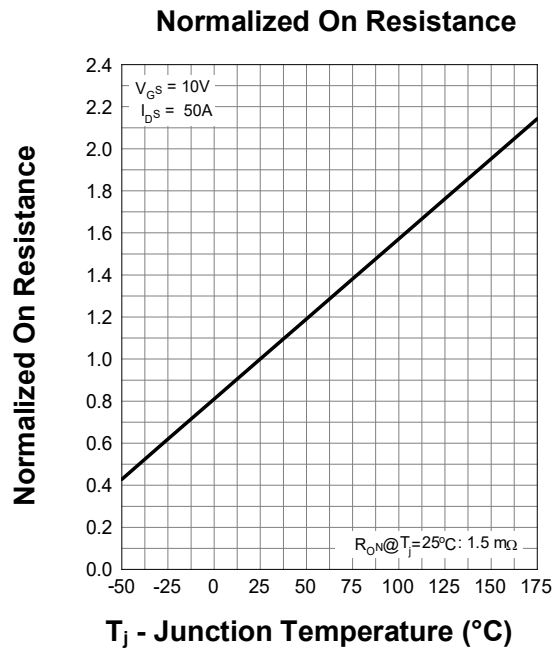
Transfer Characteristics



Normalized Threshold Voltage

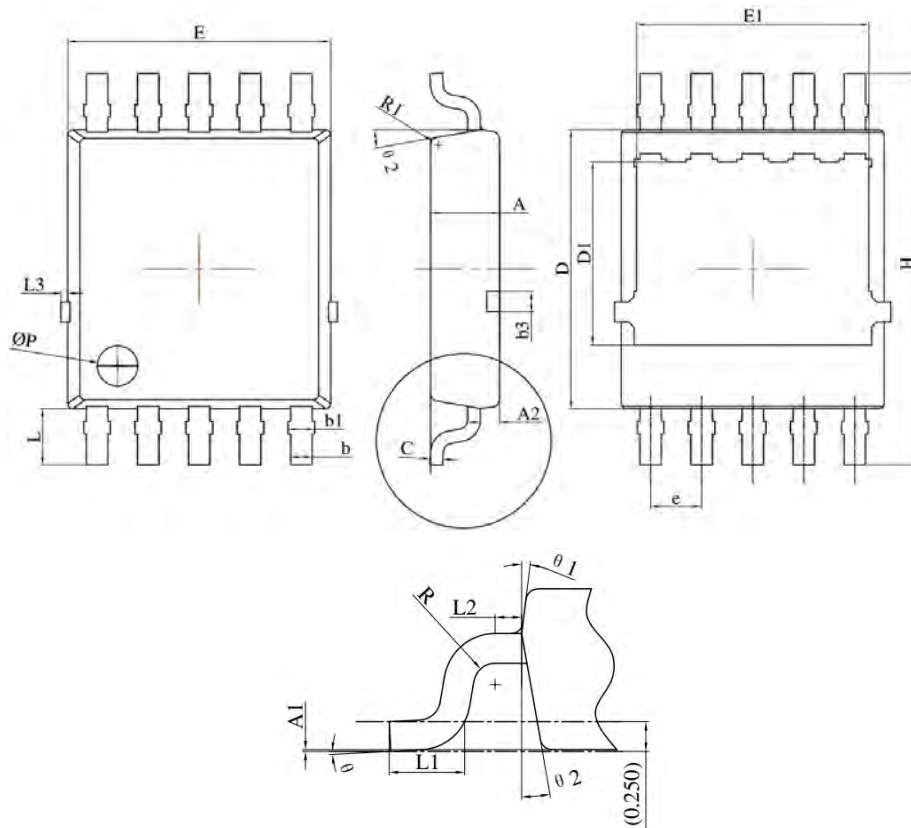


7. Typical Characteristics (cont.)



8. Package Dimensions

SSO10T Package



Symbol	Dimensions In Millimeters		
	MIN	NOR	MAX
A	1.250	1.350	1.450
A1	0.000	0.015	0.100
A2	0.275	0.375	0.475
b	0.320	0.420	0.520
b1	0.370	0.520	0.670
c	0.200	0.250	0.300
D	5.330	5.480	5.630
D1	3.450	3.600	3.750
E	5.050	5.150	5.250
E1	4.300	4.550	4.800
e	1.000bsc		
H	7.480	7.680	7.880
L	0.950	1.100	1.250

Symbol	Dimensions In Millimeters		
	MIN	NOR	MAX
L1	0.500	0.650	0.800
L2	0.160	0.260	0.360
L3	0	-	0.150
P	0.650	0.800	0.950
R	0.100	0.180	0.280
R1	0.100	0.150	0.250
θ	0°	2°	6°
θ 1	5°	7°	9°
θ 2	8°	10°	12°