

N-Channel Enhancement Mode MOSFET

1. Product Information

1.1 Features

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

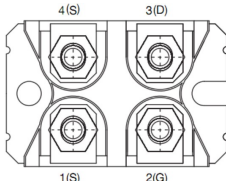
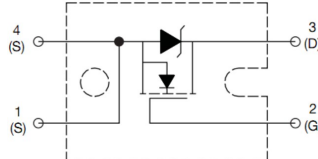
1.2 Applications

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

1.3 Quick reference

- ☒ $BV \geq 200 \text{ V}$
- ☒ $P_{\text{tot}} \leq 1090 \text{ W}$
- ☒ $I_D \leq 220 \text{ A}$
- ☒ $R_{\text{DS(ON)}} \leq 6.8 \text{ m}\Omega @ V_{\text{GS}} = 10 \text{ V}$

2. Pin Description

Pin	Description	Simplified Outline	Symbol
1,4	Source(S)	 Top View SOT227	
2	Gate(G)		
3	Drain(D)		

3. Limiting Values

Symbol	Parameter	Conditions	Min	Max	Unit
V _{DS}	Drain-Source Voltage	T _C = 25 °C	-	200	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	-	220	A
		T _C = 100 °C, V _{GS} = 10 V	-	81	A
I _{DM} ^{*,**}	Drain Current (Pulsed)	T _C = 25 °C, V _{GS} = 10 V	-	630	A
P _{tot}	Drain power dissipation	T _C = 25 °C	-	1090	W
T _{stg}	Storage Temperature		- 55	175	°C
T _J	Junction Temperature		-	175	°C
I _S	Continuous-Source Current	T _C = 25 °C	-	220	A
E _{AS} [*]	Single Pulsed Avalanche Energy	V _{DD} = 50 V , L= 1.0 mH	-	5	J
R _{θJC} [*]	Thermal Resistance- Junction to Case		-	0.15	°C /W

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
US06N20T7	

5. Ordering Code

Product Name	Package	Reel Size	Tape width	Quantity	Note
US06N20T7	SOT227			-	

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

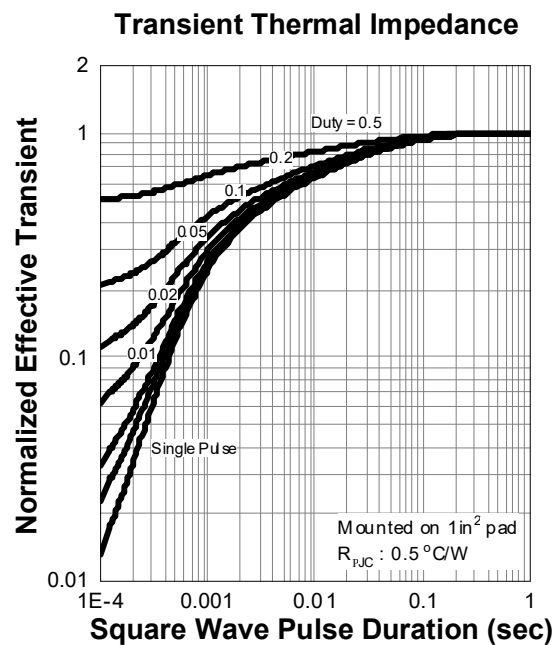
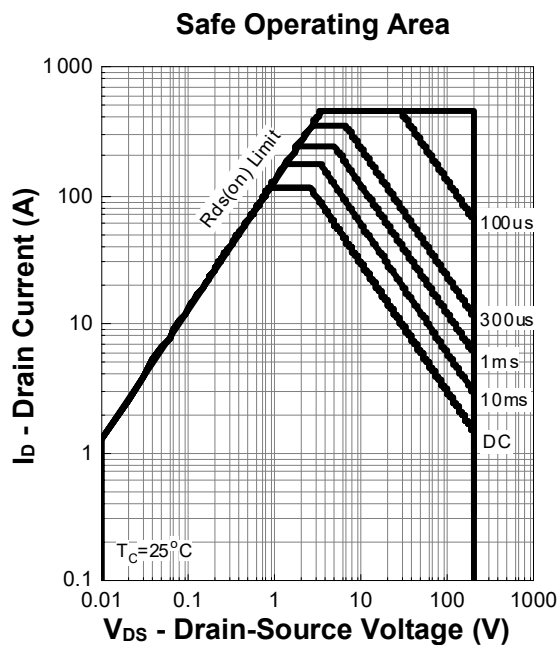
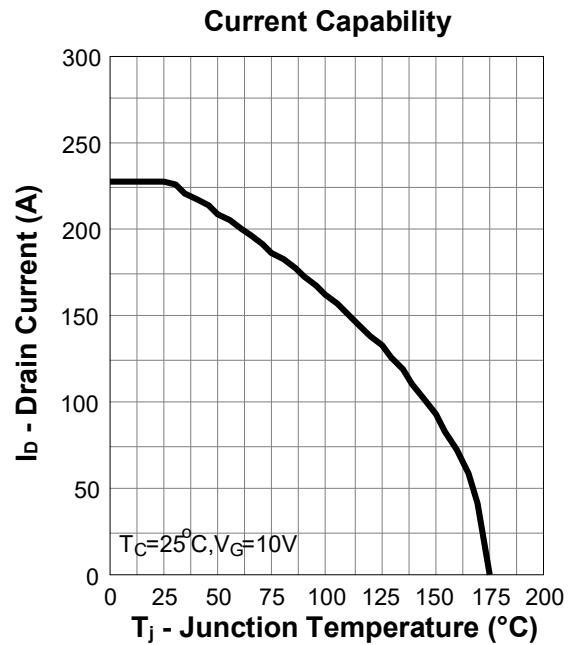
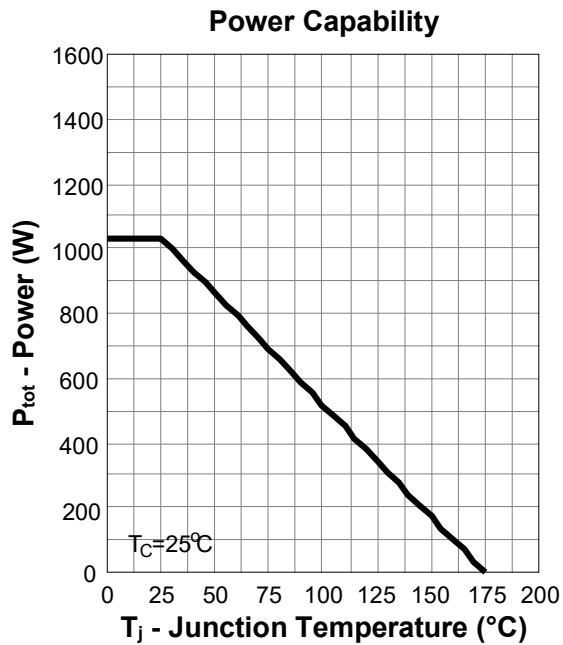
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} = 0 V, I _{DS} = 250 μA	200	-	-	V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _{DS} = 250 μA	3	-	5	V
I _{DSS}	Drain Leakage Current	V _{DS} = 200 V, V _{GS} = 0 V	-	-	1	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} = 50 A	-	5.8	6.8	m Ω
Diode Characteristics						
V _{SD} ^a	Diode Forward Voltage	I _{SD} = 50 A, V _{GS} = 0 V	-	-	1.3	V
Dynamic Characteristics ^b						
C _{iss}	Input Capacitance	V _{GS} = 0 V, V _{DS} = 100 V Frequency = 1 MHz	-	21400	-	pF
C _{oss}	Output Capacitance		-	1780	-	
C _{rss}	Reverse Transfer Capacitance		-	840	-	
t _{d(on)}	Turn-on Delay Time	V _{DS} = 100 V, V _{GEN} = 10 V, R _G = 3.9 Ω, R _L = 2 Ω, I _{DS} = 50 A	-	86	-	nS
t _r	Turn-on Rise Time		-	335	-	
t _{d(off)}	Turn-off Delay Time		-	246	-	
t _f	Turn-off Fall Time		-	175	-	
Gate Charge Characteristics ^b						
Q _g	Total Gate Charge	V _{DS} = 100 V, V _{GS} = 10 V, I _{DS} = 50 A	-	527	-	nC
Q _{gs}	Gate-Source Charge		-	155	-	
Q _{gd}	Gate-Drain Charge		-	172	-	

Notes :

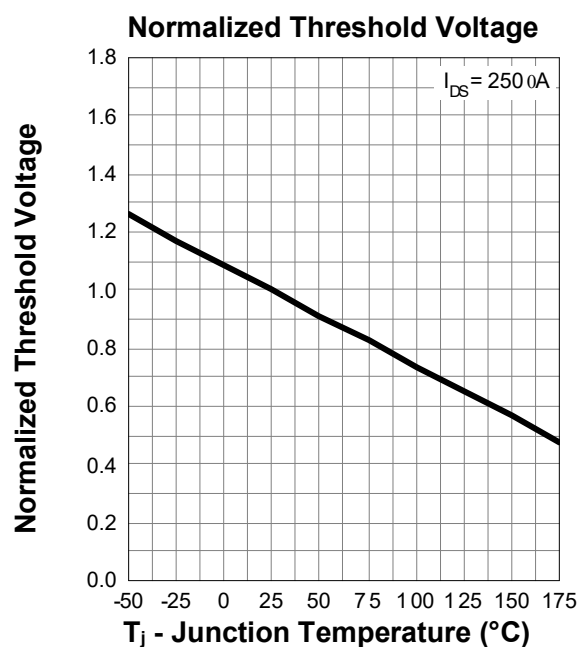
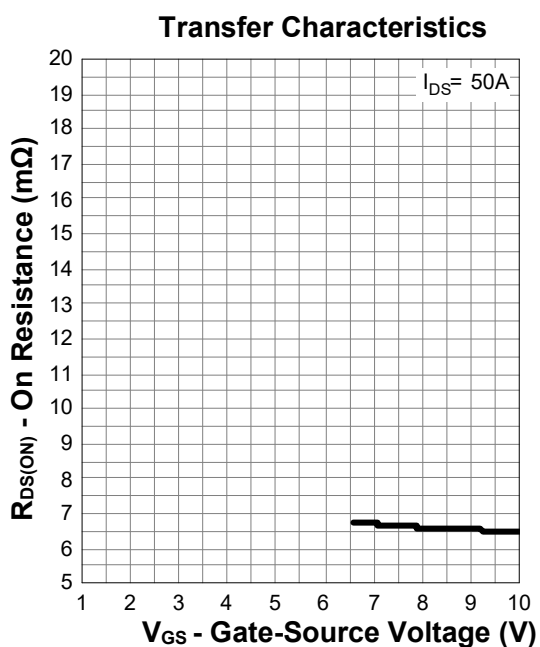
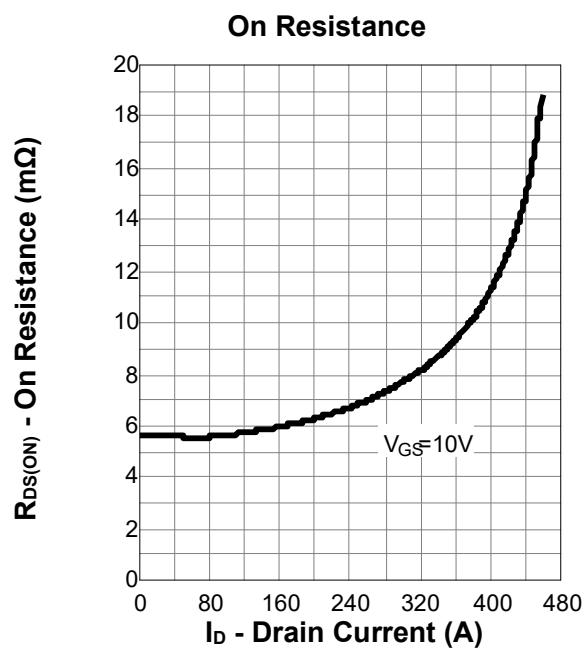
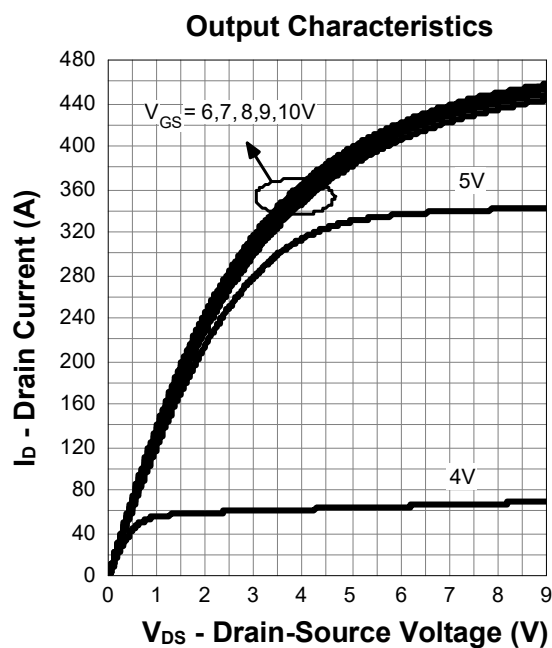
a : Pulse test ; pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$

b : Guaranteed by design, not subject to production testing

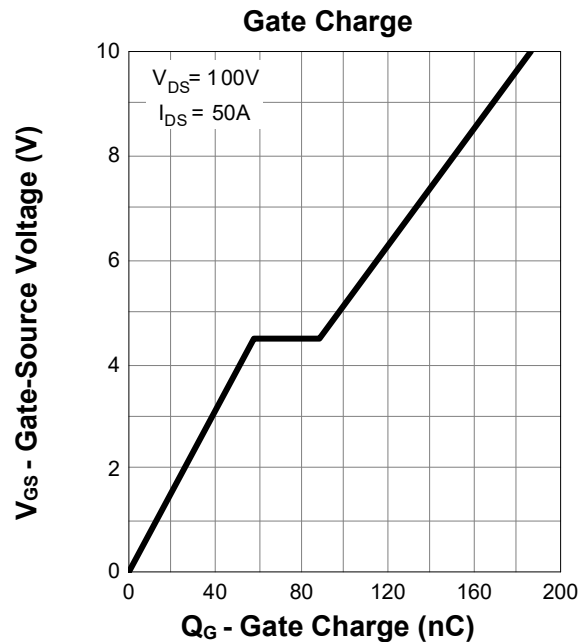
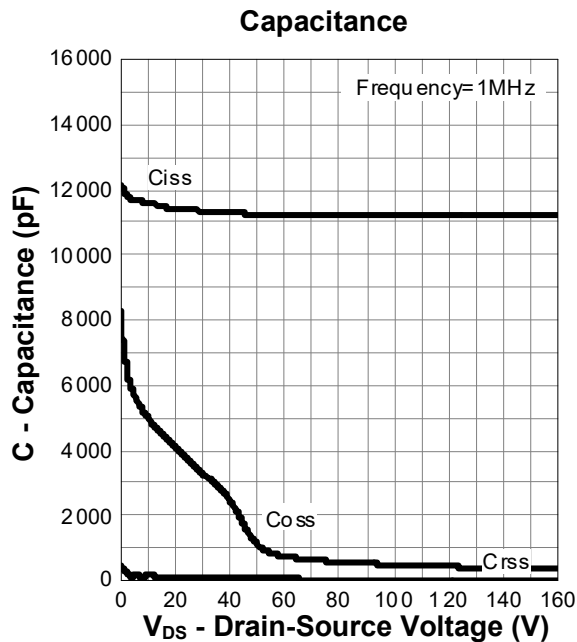
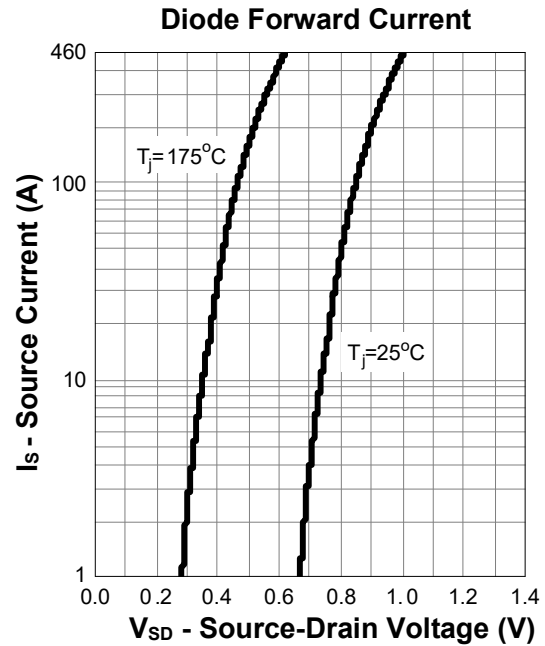
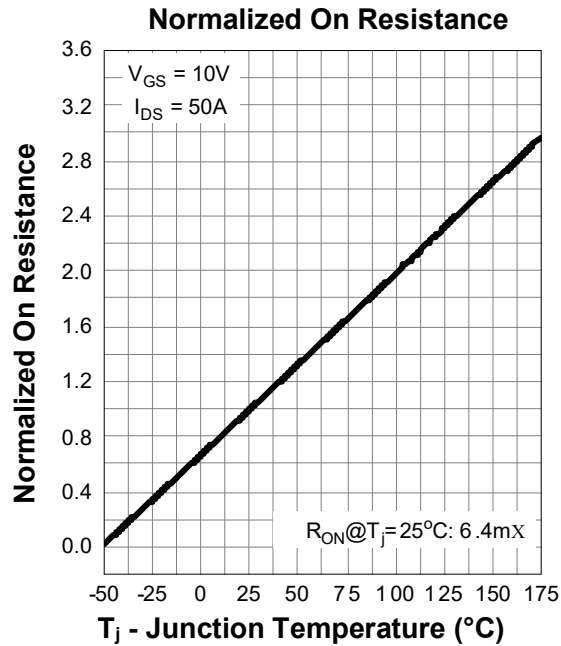
7. Typical Characteristics



7. Typical Characteristics (cont.)



7. Typical Characteristics (cont.)



8. Package Dimensions

SOT227 Package

