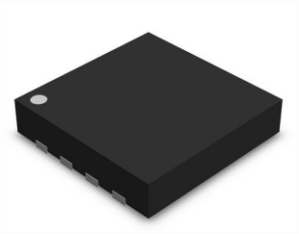
GP20N07D33

20V N-Channel MOSFET

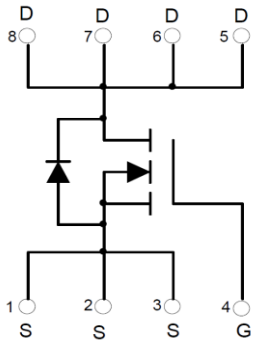
Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
20V	5.5mΩ@4.5V	25A
	6.0mΩ@4.0V	
	6.5mΩ@3.8V	
	7.0mΩ@3.1V	
	7.5mΩ@2.5V	

DFN3X3-8L



Schematic diagram



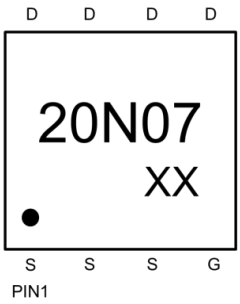
Feature

- High cell density trenched N-ch MOSFETs
- Super low gate charge
- Advanced high cell density Trench technology

Application

- Battery protection applications
- Load switch

Marking:



20N07 = Device code
XX = Date Code
Solid dot = Pin1 indicator

ABSOLUTE MAXIMUM RATINGS (T_A=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	±12	V
Continuous Drain Current	I_D[1)]	25	A
Pulsed Drain Current	I_{DM}[1), 2)]	75	A
Power Dissipation	P_D[3)]	3	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	42	℃/W
Junction Temperature	T_J	150	℃
Storage Temperature	T_{STG}	-55~ +150	℃

MOSFET ELECTRICAL CHARACTERISTICS (T_A=25℃ unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain-source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D =250μA	20			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} =16V,V_{GS} = 0V			-1	μA
Gate-body Leakage Current	I_{GSS}	V_{GS} =±12V, V_{DS} = 0V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$ 4)	V_{DS} =V_{GS}, I_D =250μA	0.4	0.7	1.0	V
Drain-source On-resistance	$R_{DS(on)}$ 4)	V_{GS} =4.5V, I_D =10A		5.5	7.0	mΩ
		V_{GS} =4.0V, I_D =10A		6.0	7.5	
		V_{GS} =3.8V, I_D =10A		6.5	8.0	
		V_{GS} =3.1V, I_D =10A		7.0	9.0	
		V_{GS} =2.5V, I_D =10A		7.5	10.0	
Dynamic characteristics(5)						
Input Capacitance	C_{iss}	V_{DS} =10V,V_{GS} =0V,f =1MHz		1500		pF
Output Capacitance	C_{oss}			260		
Reverse Transfer Capacitance	C_{rss}			240		
Switching Characteristics(5)						
Total Gate Charge	Q_g	V_{DS} =10V,V_{GS} =4.5V,I_D =8A		20		nC
Gate-source Charge	Q_{gs}			4		
Gate-drain Charge	Q_{gd}			9		
Turn-on Delay Time	$t_{d(on)}$	V_{GS}=10V,V_{DS}=10V, R_L=1.2Ω,R_{GEN}=3Ω		5		ns
Turn-on Rise Time	t_r			15		
Turn-off Delay Time	$t_{d(off)}$			70		
Turn-off Fall Time	t_f			22		
Diode Characteristics						
Continuous Source Current	I_S	V_G=V_D=0V , Force Current			25	A
Pulsed Source Current	I_{SM}				75	
Diode Forward Voltage	V_{SD} 4)	V_{GS}=0V , I_S=10A , T_A=25℃			1.2	V

Notes:

1.The data tested by surface mounted on a 1 inch2 FR-4 board with 2OZ c opper

2.Pulse Test:Pulse Width < 10us, Duty Cycle < 0.5%.

3.The power dissipation is limited by 150℃ junction temperature

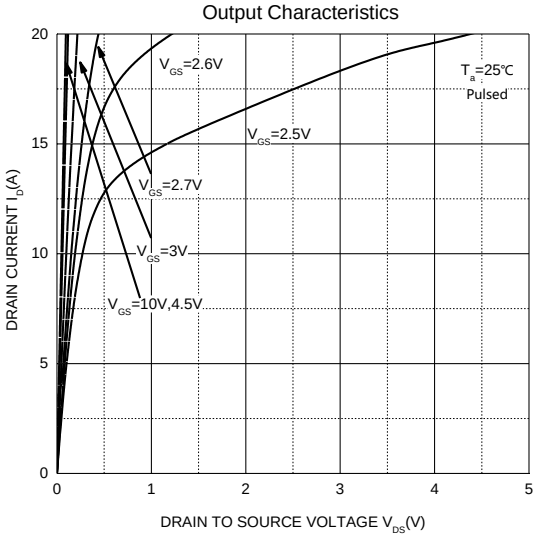
4.Pulse Test : Pulse width≤300μs, duty cycle≤0.5%.

5.Guaranteed by design, not subject to production testing.

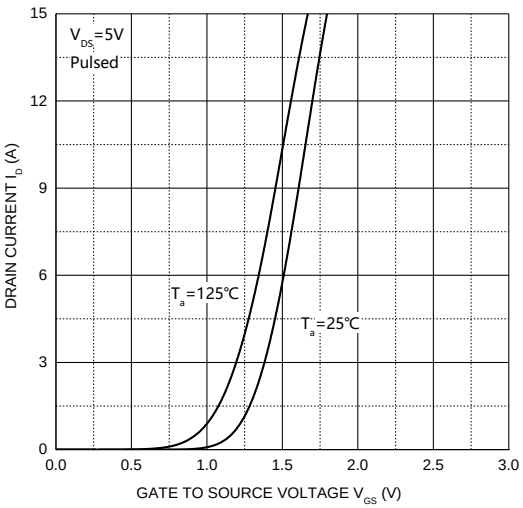
6.The data is theoretically the same as ID, in real applications , should be limited by total power dissip ation.

Typical Electrical and Thermal Characteristics

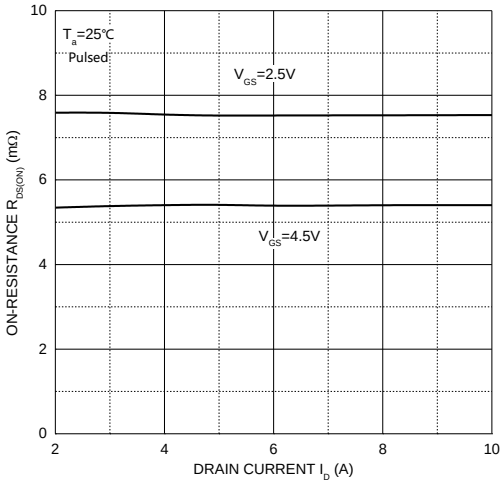
Output Characteristics



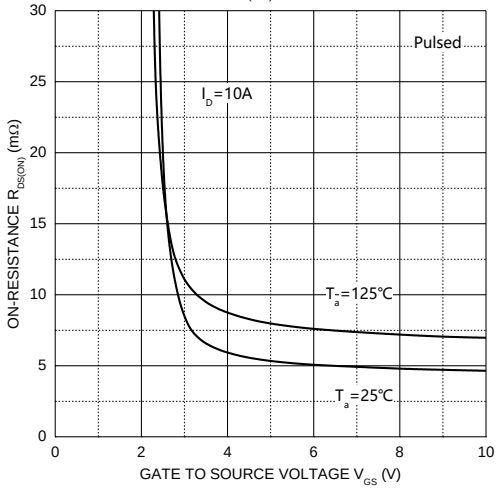
Transfer Characteristics



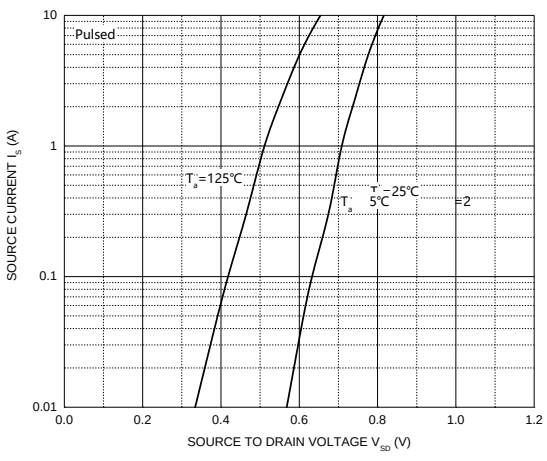
$R_{DS(ON)}$ – I_D



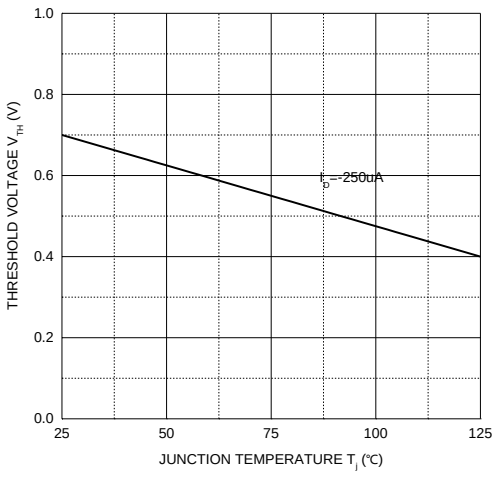
$R_{DS(ON)}$ - V_{GS}



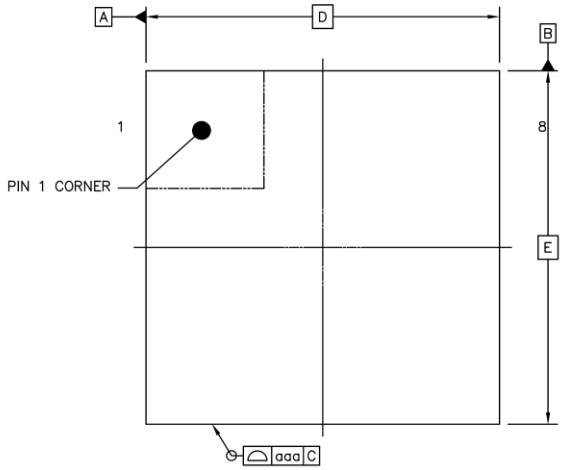
I_S - V_{SD}



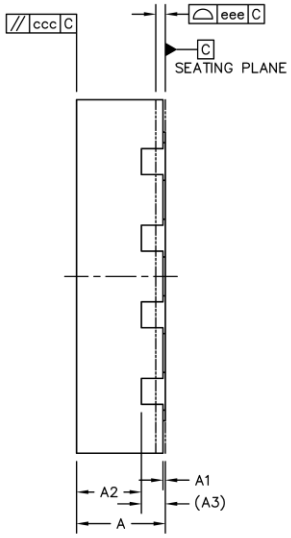
Threshold Voltage



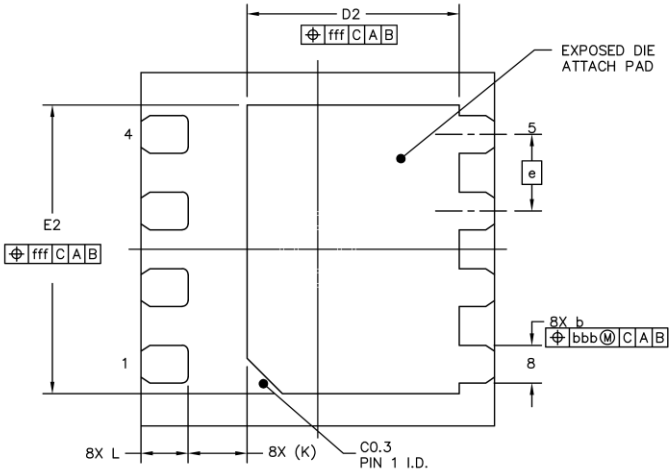
DFN3X3-8L Package Information



TOP VIEW



SIDE VIEW



BOTTOM VIEW

DFN3X3-8L Package Information

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.700	0.800	0.028	0.031
A1	0.000	0.050	0.000	0.002
A2	0.550TYP		0.022TYP	
A3	0.203REF		0.008REF	
b	0.270	0.370	0.011	0.015
D	3.000BSC		0.118BSC	
E	3.000BSC		0.118BSC	
e	0.650BSC		0.026BSC	
D2	1.700	1.900	0.067	0.075
E2	2.350	2.550	0.093	0.100
L	0.300	0.500	0.012	0.020
K	0.500REF		0.020REF	
aaa	0.100TYP		0.004TYP	
ccc	0.100TYP		0.004TYP	
eee	0.080TYP		0.003TYP	
bbb	0.100TYP		0.004TYP	
fff	0.100TYP		0.004TYP	