

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
-20V	9mΩ@-4.5V	-45A
	12mΩ@-2.5V	

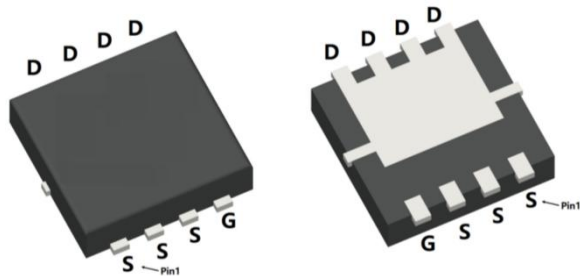
Feature

- Fast switching speed
- Low On-Resistance

Application

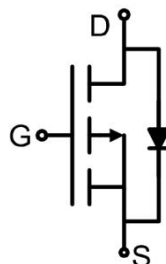
- DC-DC Converters
- Power Management

Package

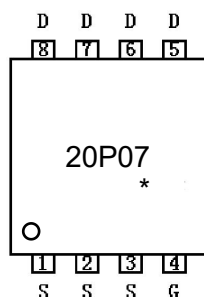


PDFN3*3-8L

Circuit diagram



Marking



Absolute maximum ratings ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	± 12	V
Continuous Drain Current ($T_C=25^{\circ}\text{C}$)	I_D	-45	A
Continuous Drain Current ($T_C=100^{\circ}\text{C}$)	$I_D (100^{\circ}\text{C})$	-30	A
Pulsed Drain Current	I_{DM}	-160	A
Single Pulse Avalanche Energy ¹⁾	E_{AS}	72	mJ
Power Dissipation	P_D	38	W
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	3.3	$^{\circ}\text{C/W}$
Junction Temperature	T_J	150	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	-55 ~ +150	$^{\circ}\text{C}$

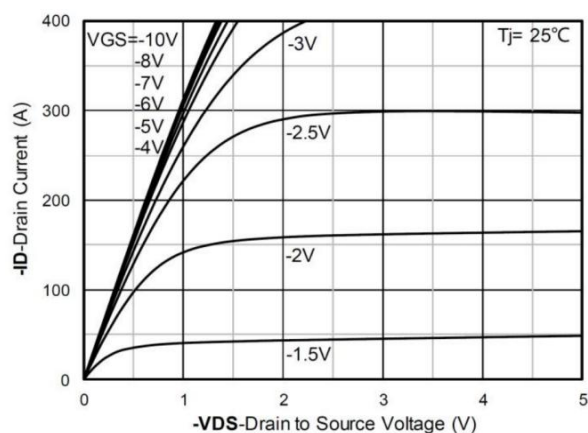
Electrical characteristics ($T_A=25^{\circ}\text{C}$, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-20			V
Zero gate voltage drain current	I_{DSS}	$V_{DS}=-16V, V_{GS}=0V, T_J=25^{\circ}C$			-1	μA
Gate-body leakage current	I_{GSS}	$V_{GS}=\pm 12V, V_{DS}=0V$			± 100	nA
Gate threshold voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-0.4	-0.65	-1.0	V
Drain-source on-resistance	$R_{DS(on)}$	$V_{GS}=-4.5V, I_D=-15A$		6.6	9	m Ω
		$V_{GS}=-2.5V, I_D=-12A$		8	12	
Dynamic characteristics ²⁾						
Input Capacitance	C_{iss}	$V_{DS}=-10V, V_{GS}=0V, f=1MHz$		4600		pF
Output Capacitance	C_{oss}			460		
Reverse Transfer Capacitance	C_{rss}			459		
Total Gate Charge	Q_g	$V_{DS}=-10V, V_{GS}=-4.5V, I_D=-10A$		46		nC
Gate-Source Charge	Q_{gs}			7.3		
Gate-Drain Charge	Q_{gd}			10		
Turn-on delay time	$t_{d(on)}$	$V_{DD}=-10V, V_{GS}=-10V, I_D=-10A, R_G=3\Omega$		8		nS
Turn-on rise time	t_r			59		
Turn-off delay time	$t_{d(off)}$			111		
Turn-off fall time	t_f			43		
Source-Drain Diode characteristics						
Diode Forward Current	I_S				-45	A
Diode Forward voltage	V_{SD}	$V_{GS}=0V, I_S=-1A, T_J=25^{\circ}C$			-1.2	V
Reverse Recovery Time	t_{rr}	$I_S=-15A, di/dt=100A/\mu s, T_J=25^{\circ}C$		24		nS
Reverse Recovery Charge	Q_{rr}			13		nC

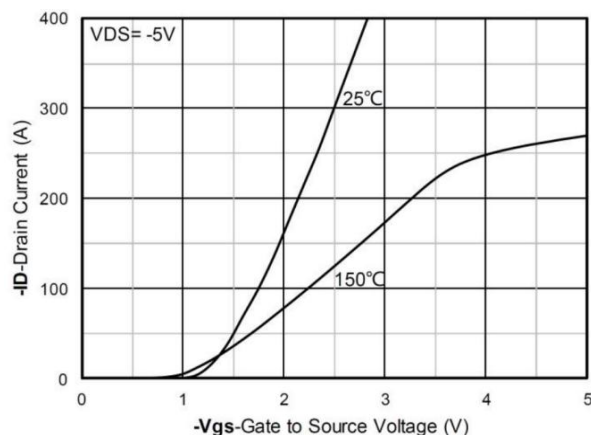
Notes:

- 1) The EAS test condition is $V_{DD}=-10\text{V}, V_G=-10\text{V}, L=0.5\text{mH}, R_G=25\Omega$
- 2) Guaranteed by design, not subject to production testing.

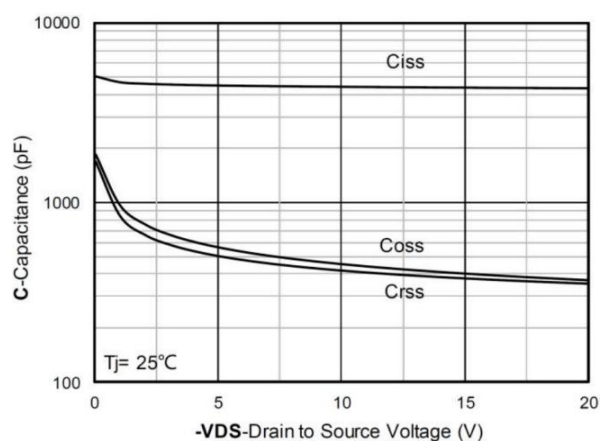
Typical Characteristics



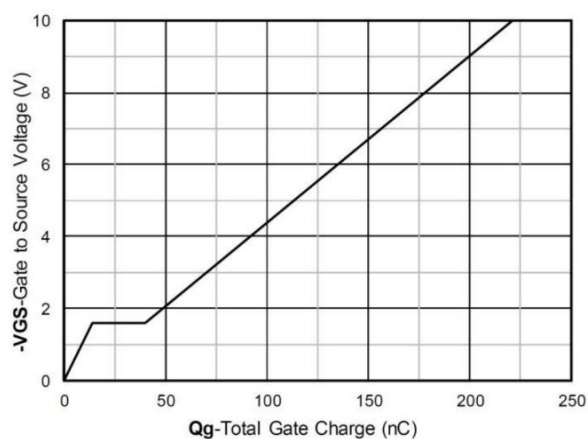
Output Characteristics



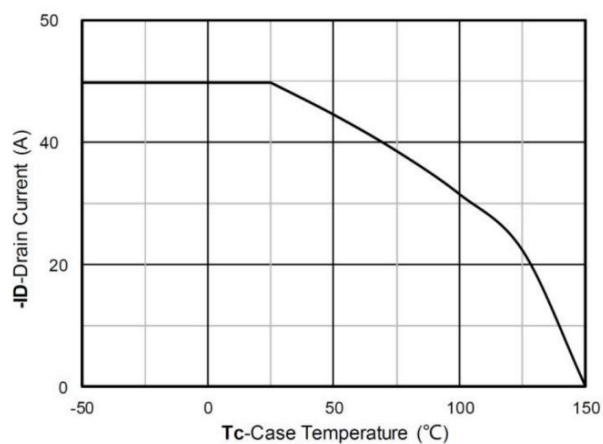
Transfer Characteristics



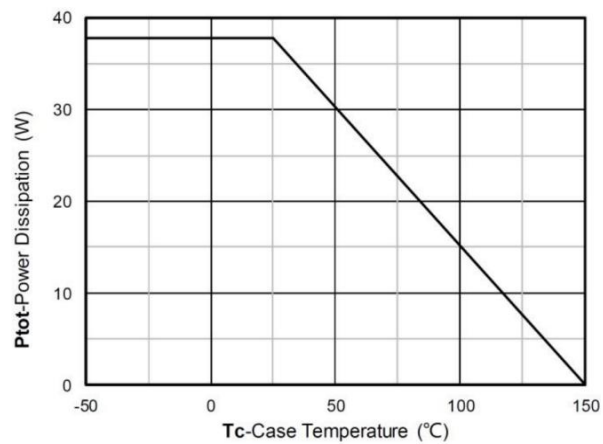
Capacitance Characteristics



Gate Charge

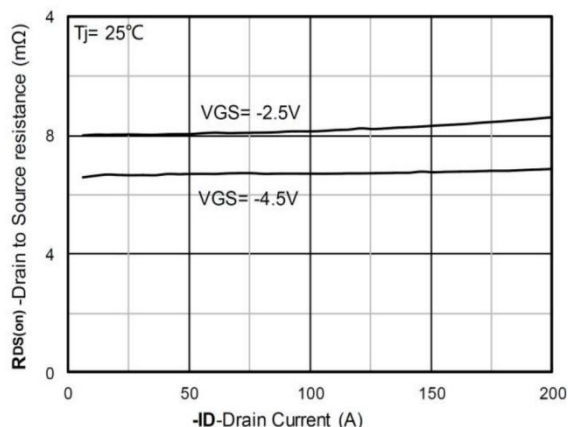


Current dissipation

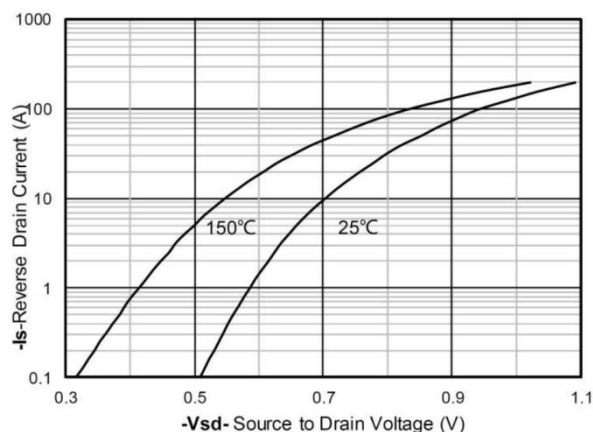


Power dissipation

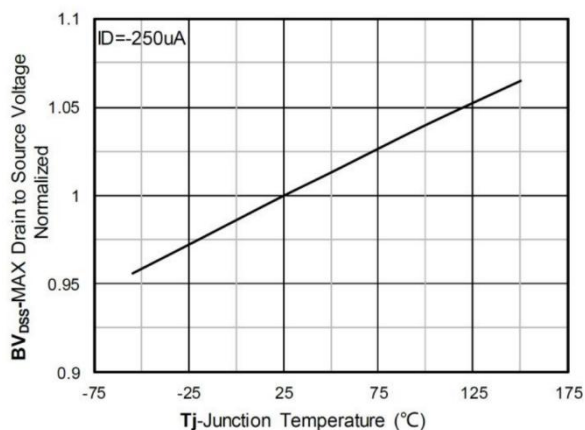
Typical Characteristics



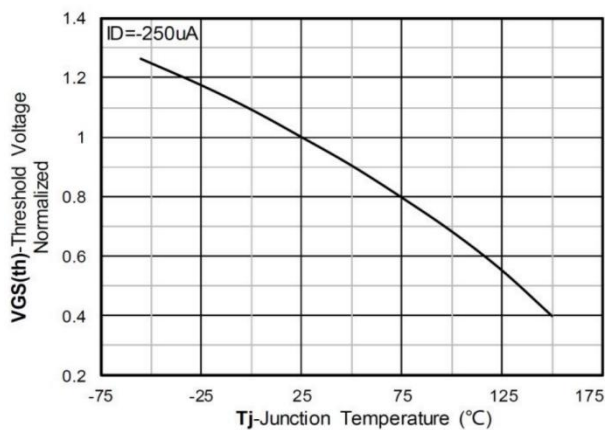
RDS(on) VS Drain Current



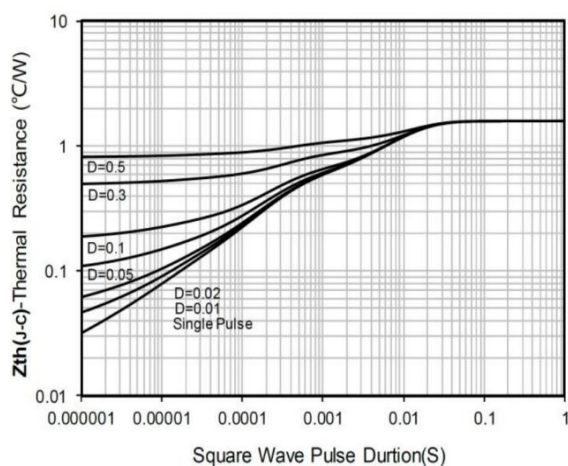
Forward characteristics of reverse diode



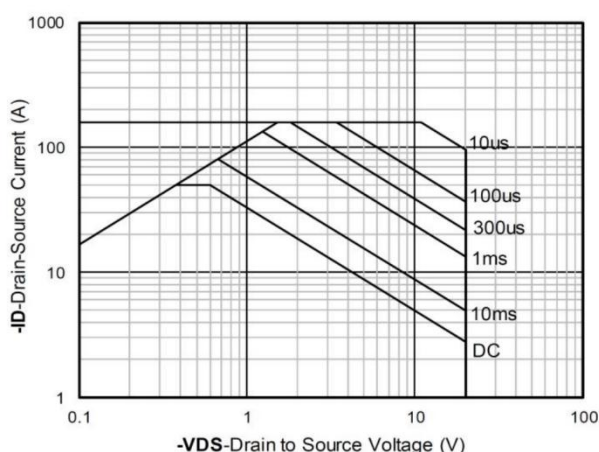
Normalized breakdown voltage



Normalized Threshold voltage

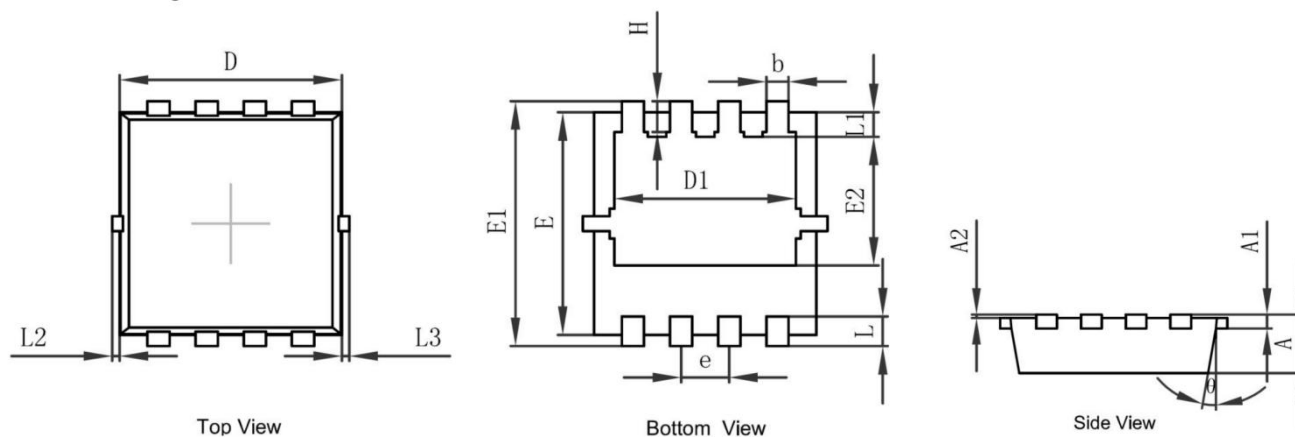


Maximum Transient Thermal Impedance



Safe Operation Area

PDFN3*3-8L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.650	0.850	0.026	0.033
A1	0.152 REF.		0.006 REF.	
A2	0.000	0.050	0.000	0.002
D	2.900	3.100	0.114	0.122
D1	2.300	2.600	0.091	0.102
E	2.900	3.100	0.114	0.122
E1	3.150	3.450	0.124	0.136
E2	1.535	1.935	0.060	0.076
b	0.200	0.400	0.008	0.016
e	0.550	0.750	0.022	0.030
L	0.300	0.500	0.012	0.020
L1	0.180	0.480	0.007	0.019
L2	0.000	0.100	0.000	0.004
L3	0.000	0.100	0.000	0.004
H	0.315	0.515	0.012	0.020
θ	9°	13°	9°	13°