

20V, 2mΩ, 120A, N-Channel

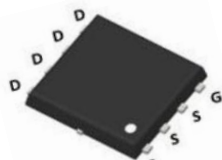
1.Features

- ◆ 20V MOSFET technology
- ◆ Low on-state resistance
- ◆ Fast switching
- ◆ $V_{gs} \pm 12V$

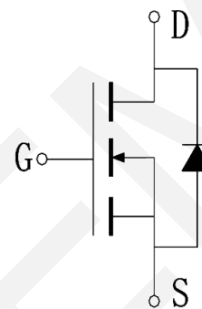
V_{DS}	$R_{DS(on)}$ Typ.	I_D Max.
20V	1.8mΩ @ 7.4V	120A
	2mΩ @ 4.5V	
	3.1mΩ @ 2.5V	

2.Applications

- ◆ Power Switching Application
- ◆ Load Switching



PDFN5x6
Pin Description



Schematic Diagram

3.Absolute Max Ratings at $T_a=25^\circ C$ (Note1)

Parameter	Symbol	Maximum	Units
Drain to Source Voltage	V_{DSS}	20	V
Gate to Source Voltage	V_{GSS}	± 12	V
Drain Current (DC)	I_D	120	A
Drain Current (Pulse), $PW \leq 300\mu s$	I_{DP}	243	A
Total Dissipation	P_D	83	W
Avalanche Energy, Single Pulsed	E_{AS}	506	mJ
Junction Temperature	T_j	150	$^\circ C$
Storage Temperature	T_{stg}	-55 to +150	$^\circ C$

Note 1: Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

4.Thermal Resistance Ratings

Parameter	Symbol	Value	Unit
Junction to case	$R_{\theta JC}$	1.8	$^\circ C/W$

Note 2: When mounted on 1 inch square copper board $t \leq 10sec$ The value in any given application depends on the user's specific board design.

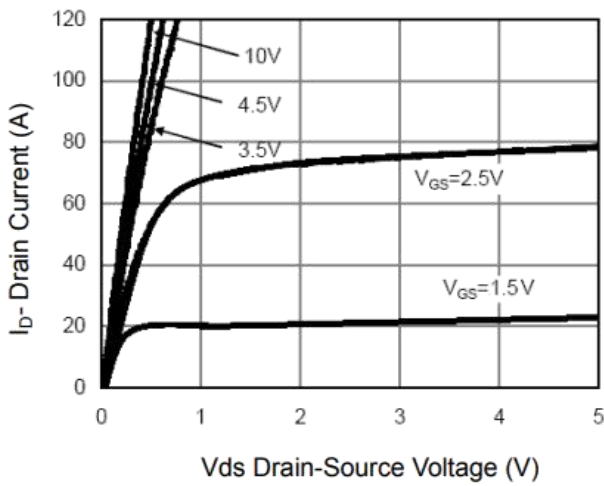
5. Electrical Characteristics at Ta=25°C (Note 3)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D = 250\mu A, V_{GS} = 0V$	20	22		V
Zero-Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 20V, V_{GS} = 0V$			1	μA
Gate to Source Leakage Current	I_{GSS1}	$V_{GS} = \pm 12V, V_{SS} = 0V$			± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_{DS}=250\mu A$	0.5	0.75	1.2	V
Static Drain to Source On-State Resistance	$R_{DS(on)}$	$I_D = 30A, V_{GS} = 7.4V$	-	1.8	2.5	m Ω
		$I_D = 20A, V_{GS} = 4.5V$	-	2	2.5	m Ω
		$I_D = 10A, V_{GS} = 2.5V$	-	3.1	4	m Ω
Forward Transconductance	G_{FS}	$I_D = 20A, V_{DS} = 5V$	20			S
Input Capacitance	C_{iss}	$V_{GS}=0V,$		2016		pF
Output Capacitance	C_{oss}	$V_{DS}=10V,$		391		pF
Reverse Transfer Capacitance	C_{rss}	Frequency=1.0MHz		130		pF
Turn-on Delay Time	$t_{d(on)}$	$V_{DD} = 10V, I_D = 20A,$ $V_{GS} = 10V,$ $R_{GEN} = 2.7\Omega$		6		ns
Rise Time	t_r			4		ns
Turn-off Delay Time	$t_{d(off)}$			31		ns
Fall Time	t_f			5		ns
Total Gate Charge	Q_g		$V_{DS} = 10V,$		15	
	Q_{gs}	$V_{GS} = 4.5V,$		3		nC
	Q_{gd}	$I_D = 20A$		4		nC
Diode Forward Voltage	V_{FSD}	$I_S = 30A, V_{GS} = 0$		0.8	1.2	V

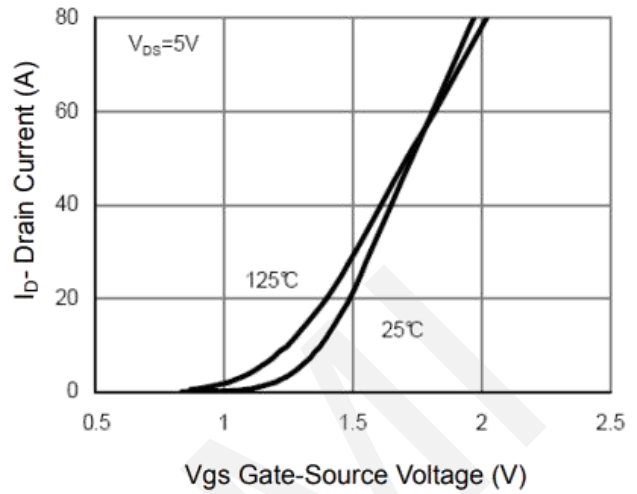
Note 3 : Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.



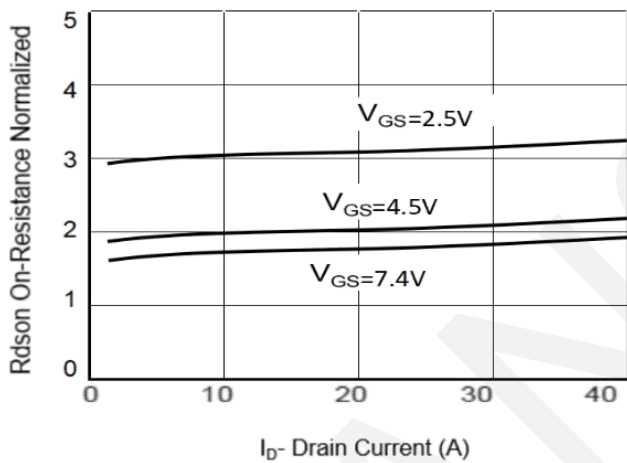
6. Typical electrical and thermal characteristics



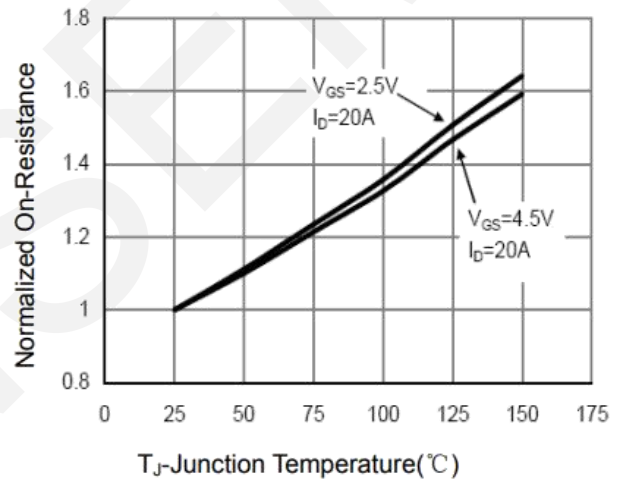
Output Characteristics



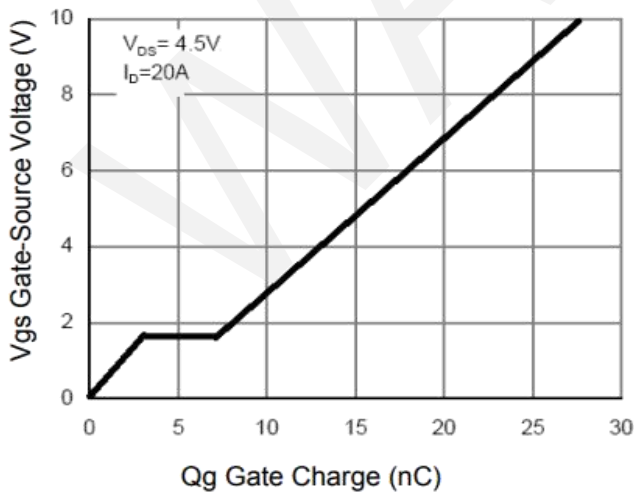
Transfer Characteristics



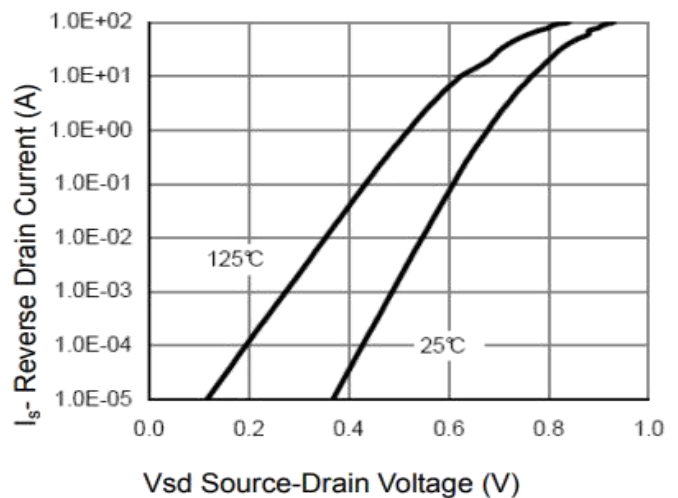
Rdson-Drain Current



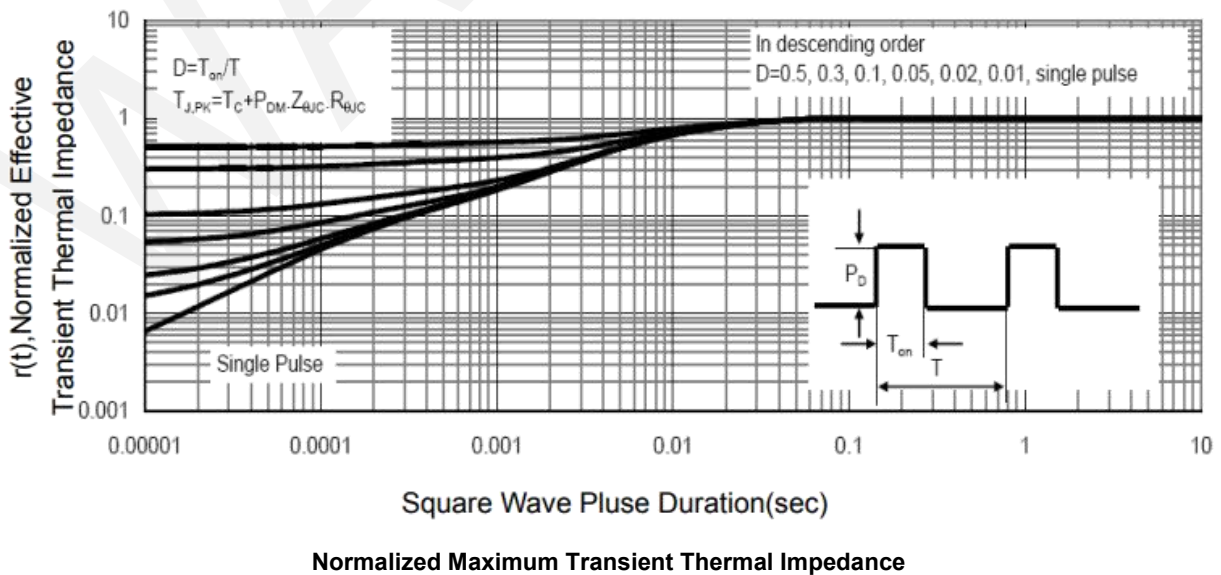
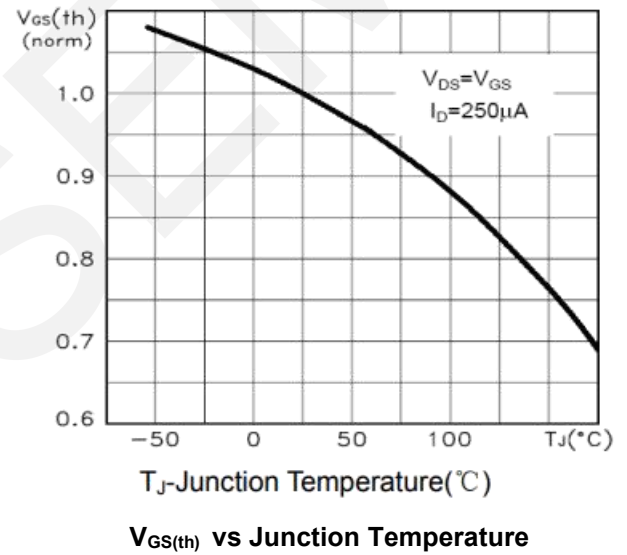
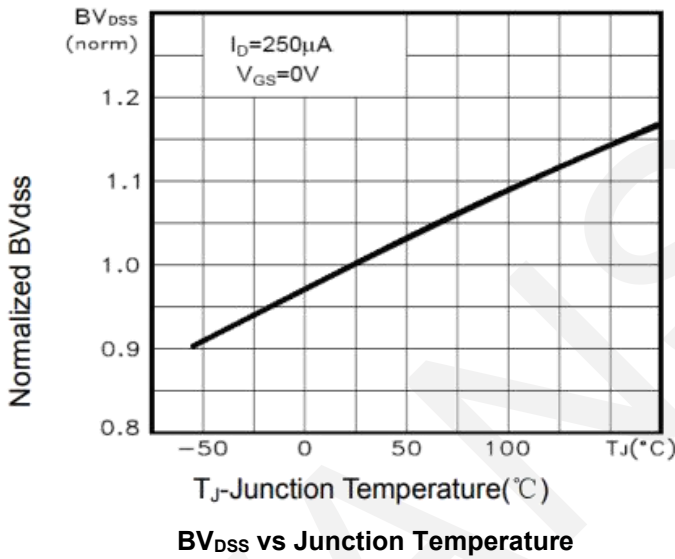
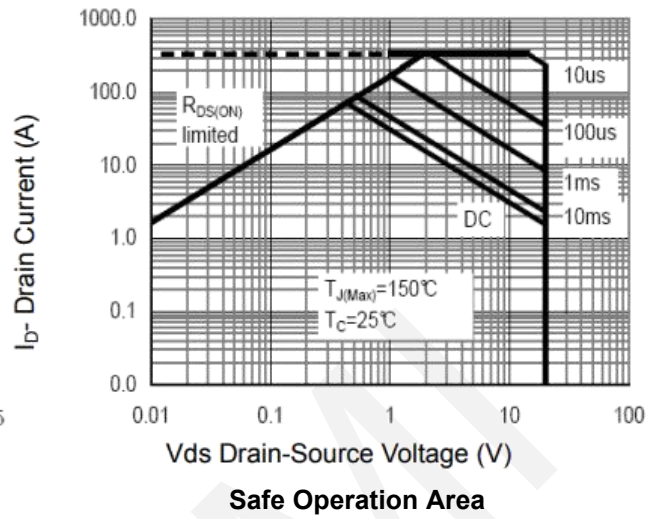
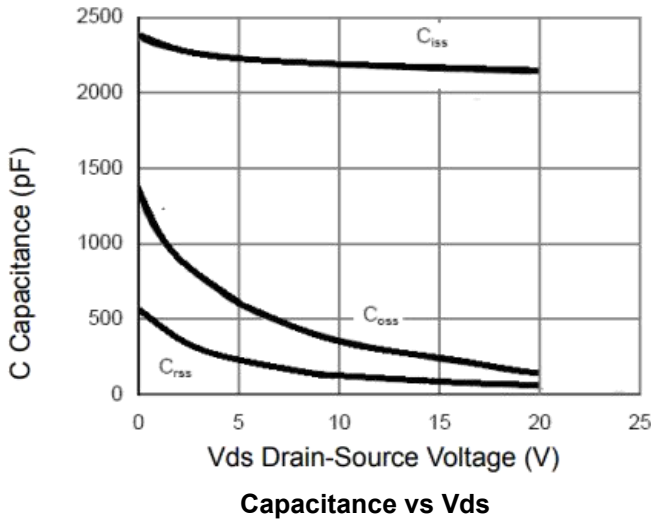
Rdson-Junction Temperature



Gate Charge

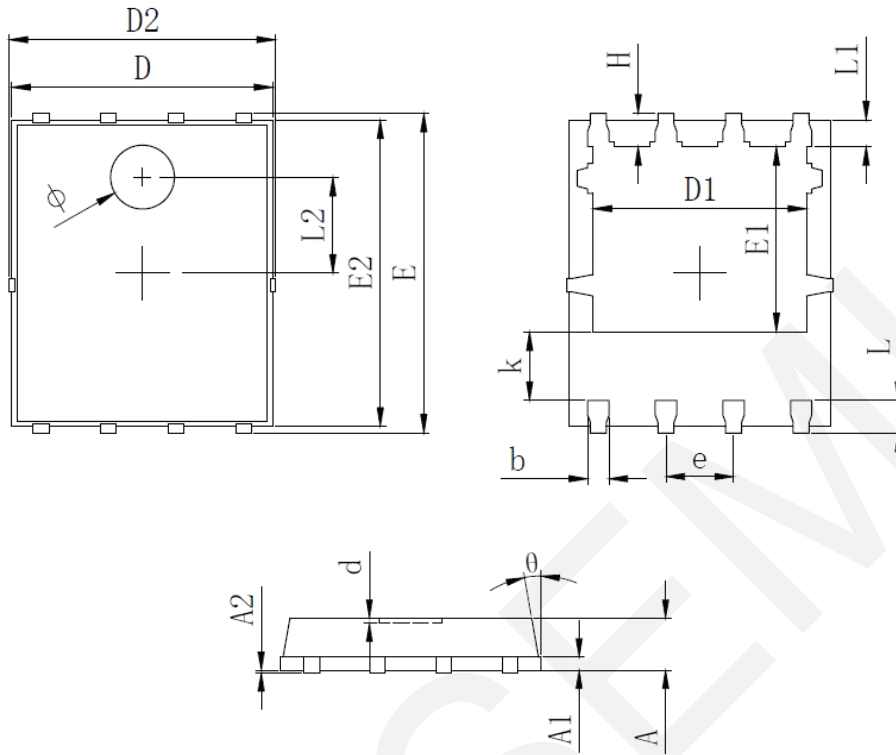


Source-Drain Diode Forward





7.Package Dimensions



SYMBOL	MILLIMETER		
	MIN	Typ.	MAX
A	0.900	1.000	1.100
A1	0.254 REF.		
A2	0~0.05		
D	4.824	4.900	4.976
D1	3.910	4.010	4.110
D2	4.924	5.000	5.076
E	5.924	6.000	6.076
E1	3.375	3.475	3.575
E2	5.674	5.750	5.826
b	0.350	0.400	0.450
e	1.270 TYP.		
L	0.534	0.610	0.686
L1	0.424	0.500	0.576
L2	1.800 REF.		
k	1.190	1.290	1.390
H	0.549	0.625	0.701
theta	8°	10°	12°
phi	1.100	1.200	1.300
d			0.100

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