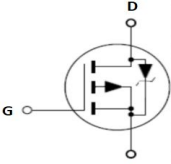


Features

- ◆ -30V, -34A, $R_{DS(ON)}$ (Typ.) = $6m\Omega$ @ $V_{GS} = -10V$
- ◆ Reliable and Rugged
- ◆ Fast Switching Speed
- ◆ Green Device Available
- ◆ 100% EAS Guaranteed

Application

- ◆ Notebook AC-in Load Switch
- ◆ Battery Protection Charge/Discharge

PDFN-3x3 (TOP view)	Symbol
	

Absolute Maximum Ratings $T_c = 25^\circ C$ unless otherwise noted

Symbol	Parameter	Rating	Unit
V_{DS}	Drain-Source Voltage	-30	V
V_{GS}	Gate-Source Voltage	± 20	
I_D	Drain Current-Continuous, $T_c = 25^\circ C$	-34	A
	Drain Current-Continuous, $T_c = 100^\circ C$	-32	
I_{DM}	Drain Current-Pulsed ^a	200	
E_{AS}	Avalanche Energy, Single pulse ^b	84	mJ
I_{AS}	Avalanche Current	-41	A
P_D	Maximum Power Dissipation @ $T_c = 25^\circ C$	30	W
T_{STG}	Store Temperature Range	-55 to 150	$^\circ C$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ C$

Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JC}$	Thermal Resistance Junction-Case Max	-	4.2	$^\circ C/W$
$R_{\theta JA}$	Thermal Resistance Junction-Ambient Max ^c	-	55	$^\circ C/W$

Electrical Characteristics $T_J = 25^\circ C$ unless otherwise noted

Off Characteristics

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS} = 0V, I_D = -250\mu A$	-30	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = -24V, V_{GS} = 0V$	-	-	-1	μA
I_{GSS}	Forward Gate Body Leakage Current	$V_{DS} = 0V, V_{GS} = \pm 20V$	-	-	± 100	nA

■ On Characteristics

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = -250\mu A$	-1.1	-1.5	-2.1	V
$R_{DS(on)}$	Static Drain-Source On-Resistance ^d	$V_{GS} = -10V, I_D = -20A$	-	6	7.4	mΩ
		$V_{GS} = -4.5V, I_D = -16A$	-	8.6	10.6	
gfs	Forward Transconductance	$V_{DS} = -5V, I_D = -20A$	-	70	-	S

■ Dynamic Characteristics

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
Ciss	Input Capacitance	$V_{DS} = -15V,$ $V_{GS} = 0V,$ $f = 1.0MHz$	-	3406	-	pF
Coss	Output Capacitance		-	369	-	
Crss	Reverse Transfer Capacitance		-	306	-	

■ On Characteristics

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
$t_{d(on)}$	Turn-On Delay Time	$V_{DS} = -15V, R_L = 0.75\Omega,$ $R_G = 3\Omega, V_{GS} = -10V$	-	11.3	-	ns
t_r	Turn-On Rise Time		-	71.3	-	
$t_{d(off)}$	Turn-Off Delay Time		-	95	-	
t_f	Turn-Off Fall Time		-	82	-	
Qg	Total Gate Charge	$V_{DS} = -15V, I_D = -20A,$ $V_{GS} = -10V$	-	69.8	-	nC
Qgs	Gate-Source Charge		-	13.6	-	
Qgd	Gate-Drain Charge		-	14	-	

■ Drain-Source Diode Characteristics

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	$V_G = V_D = 0V,$ Force Current	-	-	-34	A
V_{SD}	Drain-Source Diode Forward Voltage ^d	$V_{GS} = 0V, I_{SD} = -1A$	-	-	-1	V
t_{rr}	Reverse Recovery Time	$I_F = -20A,$ $di/dt = 100A/\mu s,$ $T_J = 25^\circ C$	-	15.2	-	ns
Q_{rr}	Reverse Recovery Charge		-	1.6	-	nC

Notes:

a: Max. current is limited by junction temperature.

b: The EAS data shows Max. Rating. The test condition is $V_{DD} = 50V, V_{GS} = 10V, L = 0.1mH, I_{AS} = 23A$.

c: Surface Mounted on 1in2 FR-4 board with 1oz.

d: Pulse test (pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$).

e: Guaranteed by design, not subject to production testing.

Typical Characteristics

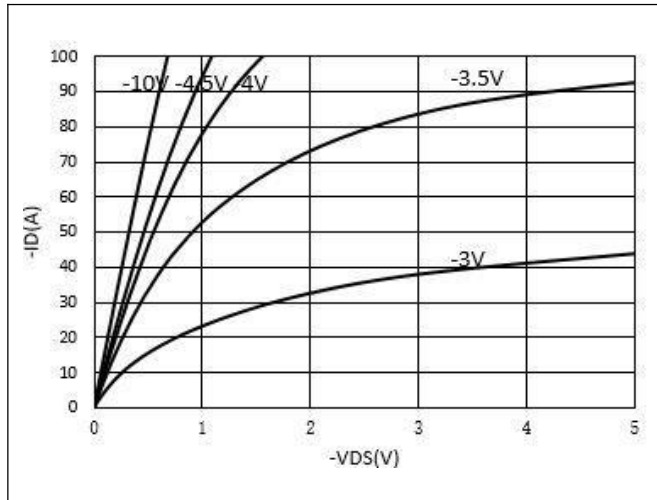


Figure 1. Output Characteristics

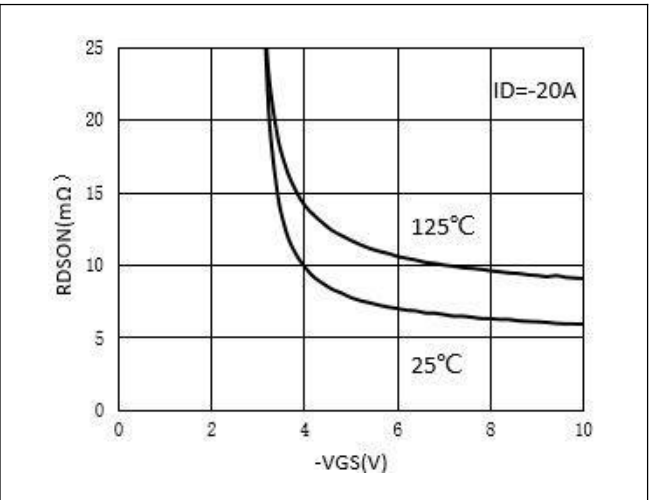


Figure 2. On-Resistance vs. V_{GS}

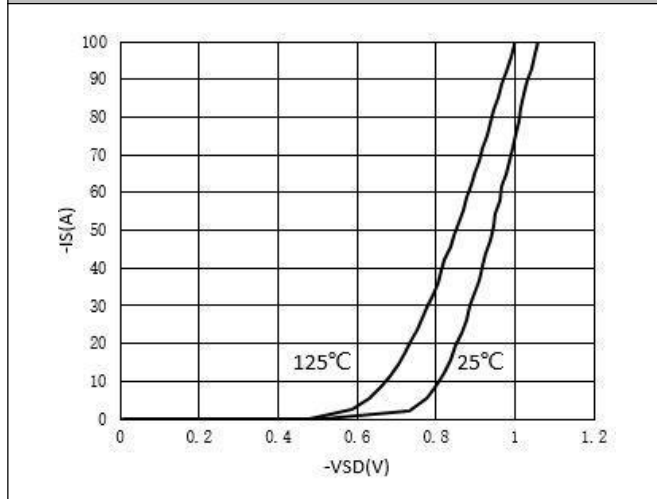


Figure 3. Source-Drain Diode Forward

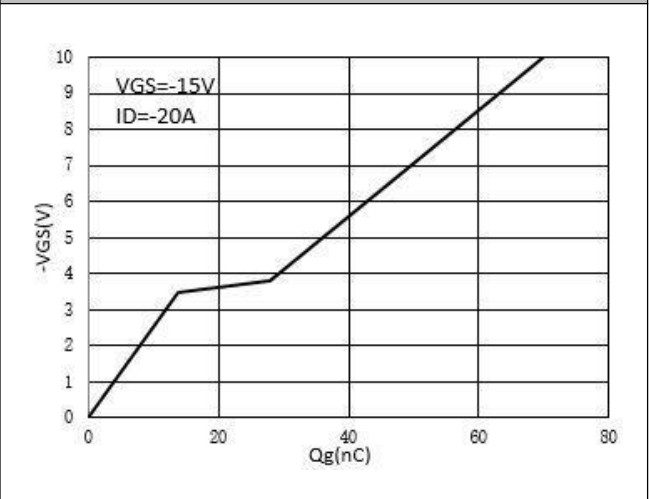


Figure 4. Gate Charge Characteristics

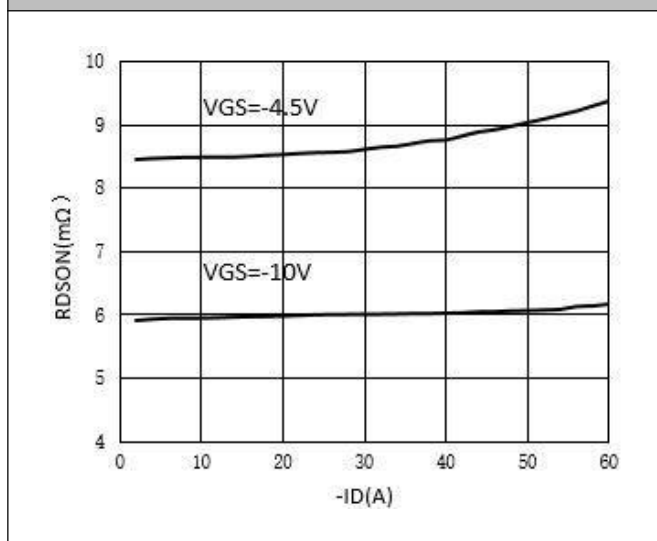


Figure 5. On-Resistance vs. Drain Current and Gate Voltage

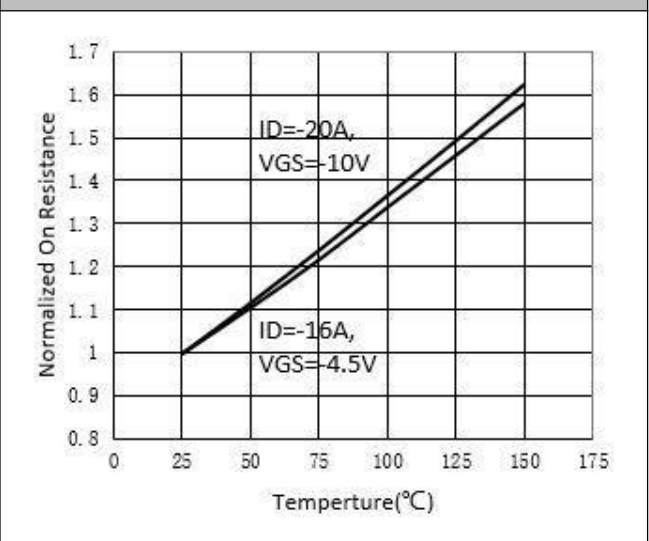


Figure 6. Drain-Source On Resistance

Typical Characteristics

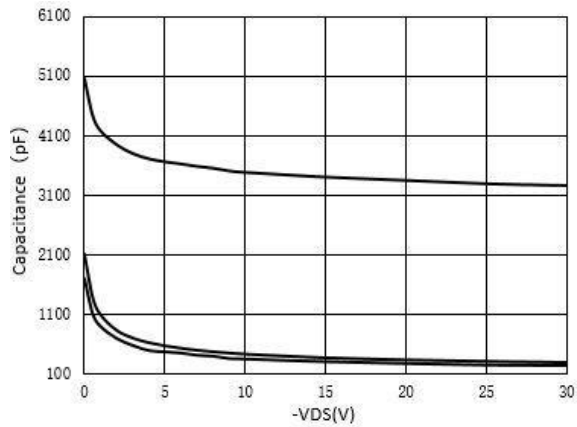


Figure 7. Capacitance

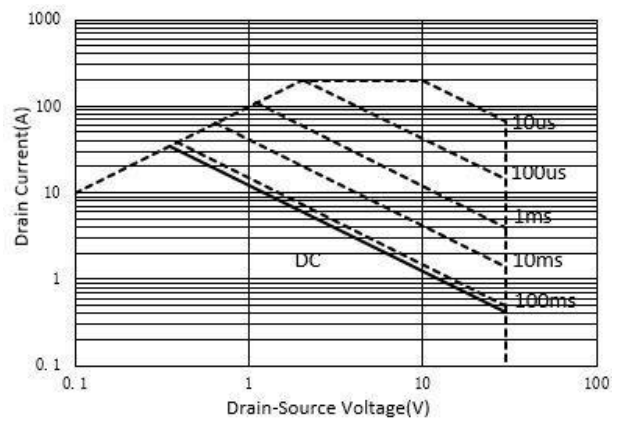


Figure 8. Maximum Forward Biased Safe Operating Area

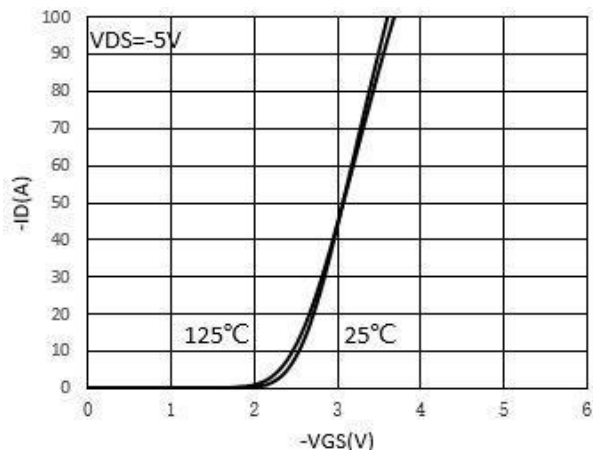


Figure 9. Transfer Characteristics

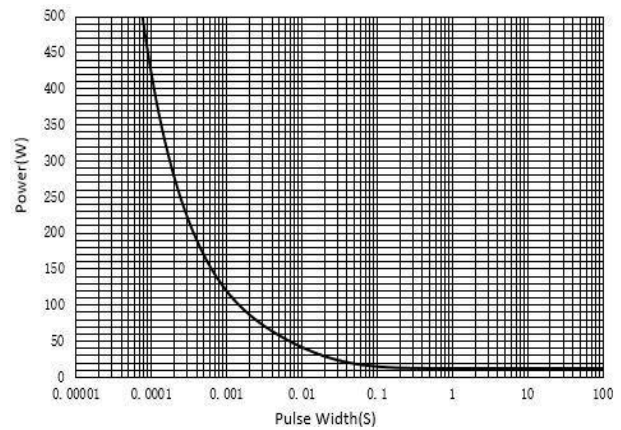


Figure 10: Single Pulse Power Rating Junction-to-Case

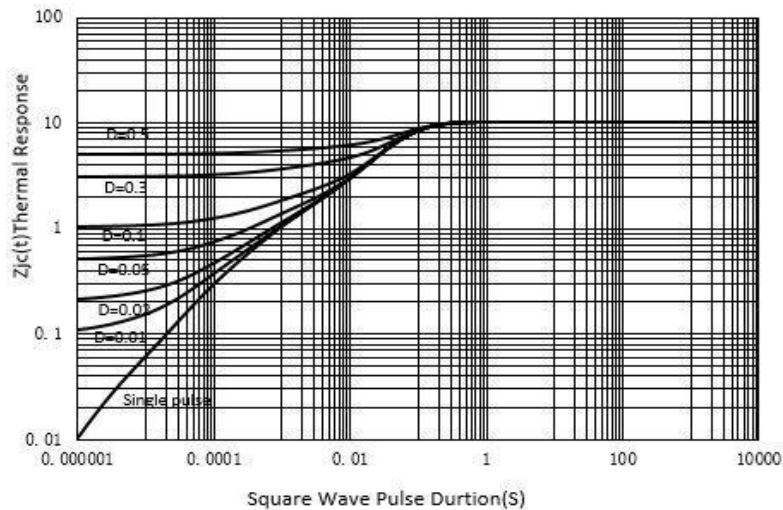
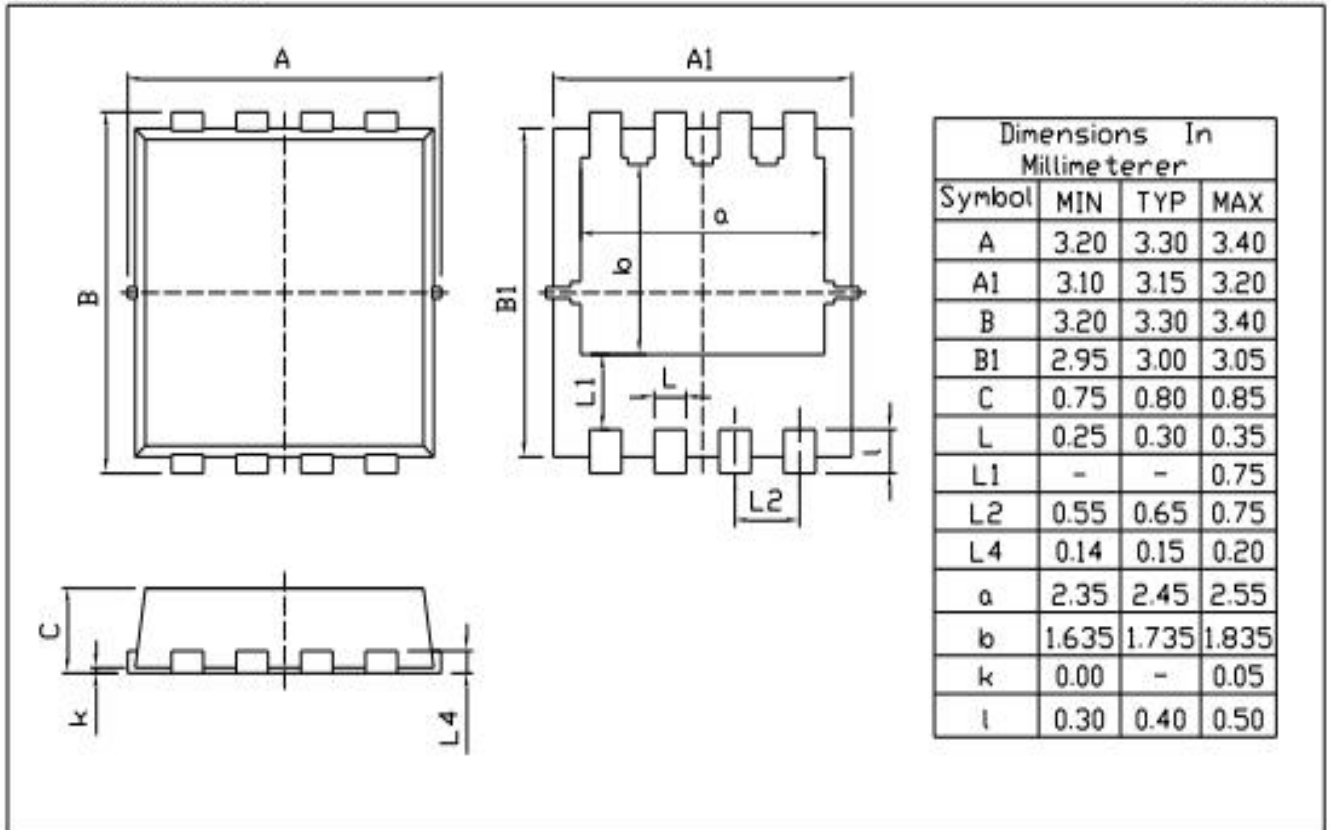


Figure11. Normalized Maximum Transient Thermal Impedance

Package Information

PDFN3X3A-8L

Unit:mm



Rev.00 202011