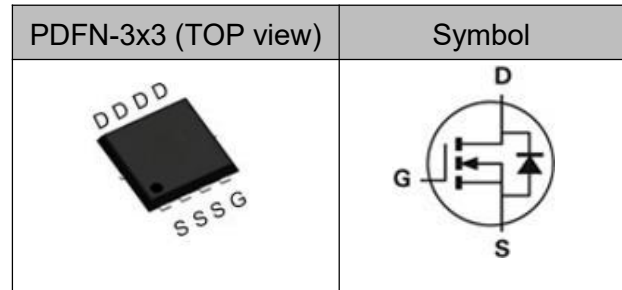


### Features

- ◆ 40V, 62A,  $R_{DS(ON)}(Typ.) = 4.4m\Omega @ V_{GS} = 10V$ .
- ◆ Reliable and Rugged
- ◆ Fast Switching Speed
- ◆ Green Device Available
- ◆ 100% EAS Guaranteed

### Application

- ◆ High Frequency Switching and Synchronous
- ◆ DC/DC Converter



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

Symbol	Parameter	Rating	Unit
$V_{DS}$	Drain-Source Voltage	40	V
$V_{GS}$	Gate-Source Voltage	$\pm 20$	
$I_D$	Drain Current-Continuous, $T_c = 25^\circ C$	62	A
	Drain Current-Continuous, $T_c = 100^\circ C$	39	
$I_{DM}$	Drain Current-Pulsed <sup>a</sup>	71	
$E_{AS}$	Avalanche Energy, Single pulse <sup>b</sup>	13	mJ
$I_{AS}$	Avalanche Current	16	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 <sup>c</sup>	-	60	$^\circ C/W$

### 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	$V_{GS} = 0V, I_D = 250\mu A$	40	-	-	V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS} = 32V, V_{GS} = 0V$	-	-	1	$\mu A$
$I_{GSS}$	Forward Gate Body Leakage Current	$V_{DS} = 0V, V_{GS} = \pm 20V$	-	-	$\pm 100$	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	-	2.2	V
$R_{DS(on)}$	Static Drain-Source On-Resistance <sup>d</sup>	$V_{GS} = 10V, I_D = 20A$	-	4.4	5.3	mΩ
		$V_{GS} = 4.5V, I_D = 10A$	-	6.2	8	
gfs	Forward Transconductance	$V_{DS} = 5V, I_D = 10A$	-	12	-	S

■ **Dynamic Characteristics**

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
$C_{iss}$	Input Capacitance	$V_{DS} = 20V,$ $V_{GS} = 0V,$ $f = 1.0MHz$	-	927	-	pF
$C_{oss}$	Output Capacitance		-	366	-	
$C_{rss}$	Reverse Transfer Capacitance		-	58	-	

■ **On Characteristics**

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
$t_{d(on)}$	Turn-On Delay Time	$V_{DS} = 25V, I_D = 1A,$ $R_G = 1\Omega, V_{GS} = 10V$	-	8.5	-	ns
$t_r$	Turn-On Rise Time		-	5.5	-	
$t_{d(off)}$	Turn-Off Delay Time		-	26.9	-	
$t_f$	Turn-Off Fall Time		-	40.5	-	
Qg	Total Gate Charge	$V_{DS} = 20V, I_D = 20A,$ $V_{GS} = 4.5V$	-	11.6	-	nC
Qg	Total Gate Charge	$V_{DS} = 20V, I_D = 20A,$ $V_{GS} = 10V$	-	21.7	-	
Qgs	Gate-Source Charge		-	3.2	-	
Qgd	Gate-Drain Charge		-	6	-	

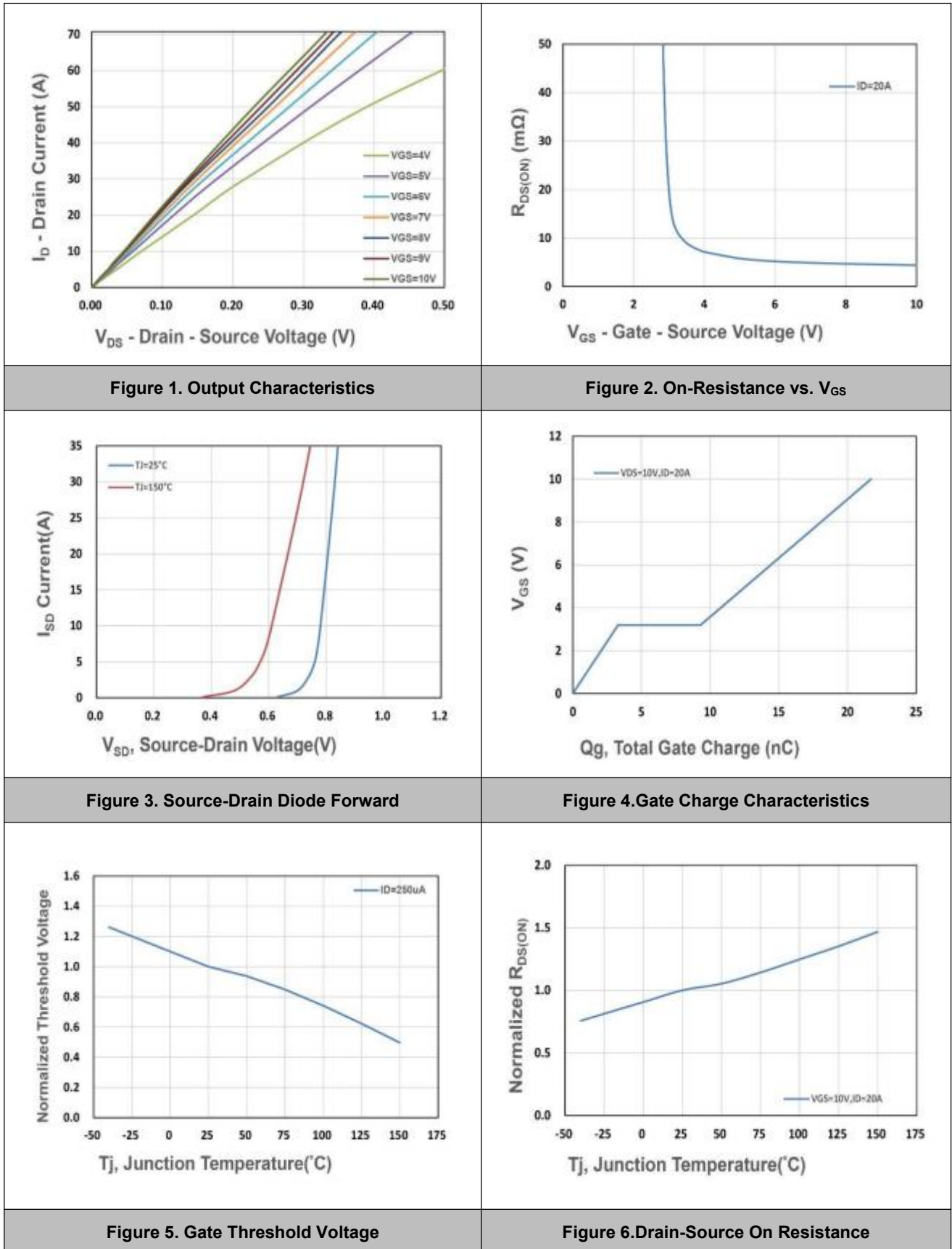
■ **Drain-Source Diode Characteristics**

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
$R_G$	Gate Resistance	$V_{DS} = V_{GS} = 0V,$ Freq.=1MHz	-	2.3	-	Ω
$V_{SD}$	Drain-Source Diode Forward Voltage <sup>d</sup>	$V_{GS} = 0V, I_{SD} = 10A$	-	0.75	1.1	V
$t_{rr}$	Reverse Recovery Time	$I_F = 10A, V_R = 20V$ $di/dt = 100A/\mu s,$ $T_J = 25^\circ C$	-	29.5	-	ns
$Q_{rr}$	Reverse Recovery Charge		-	14.1	-	nC

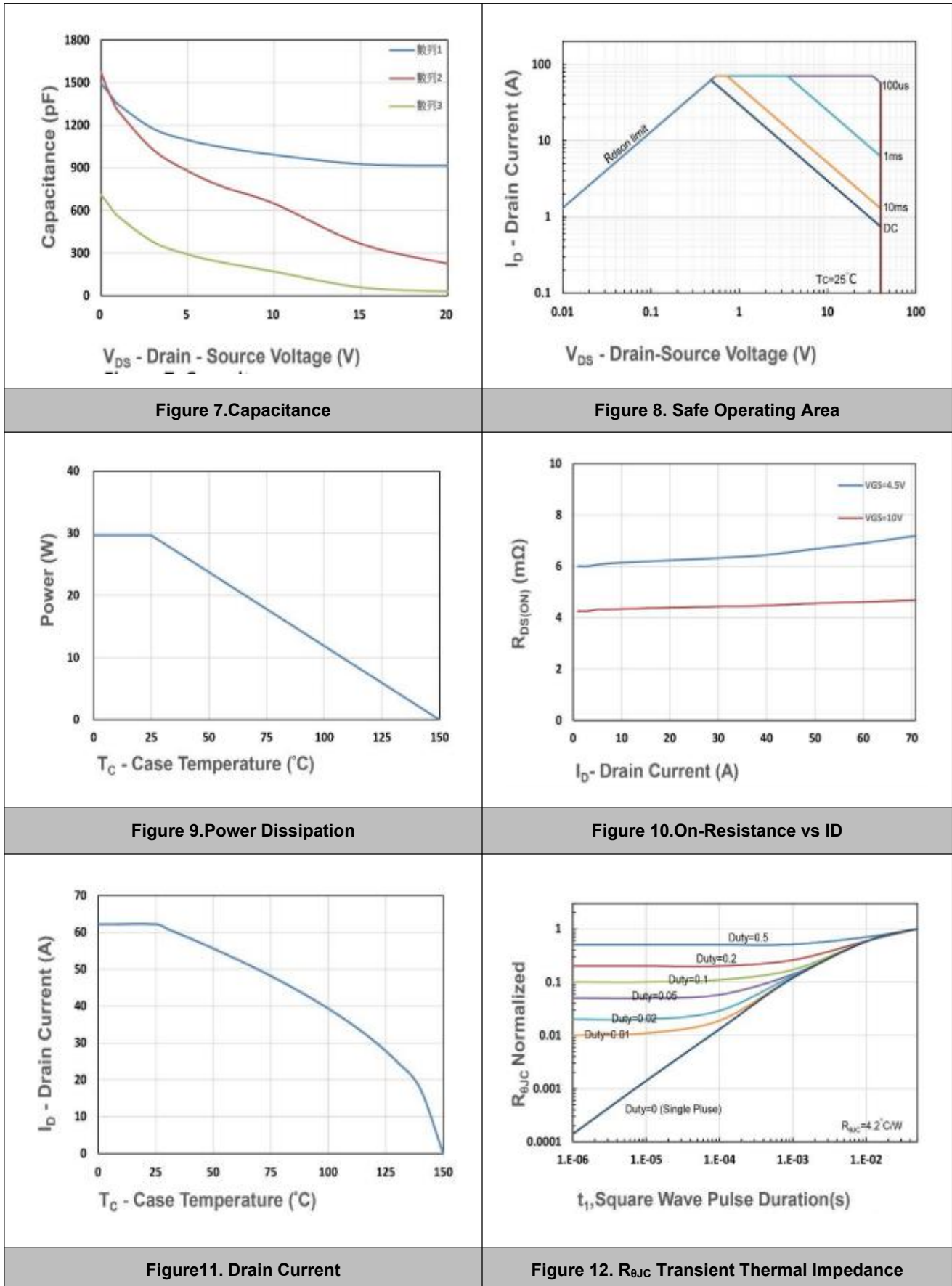
Notes:

- 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



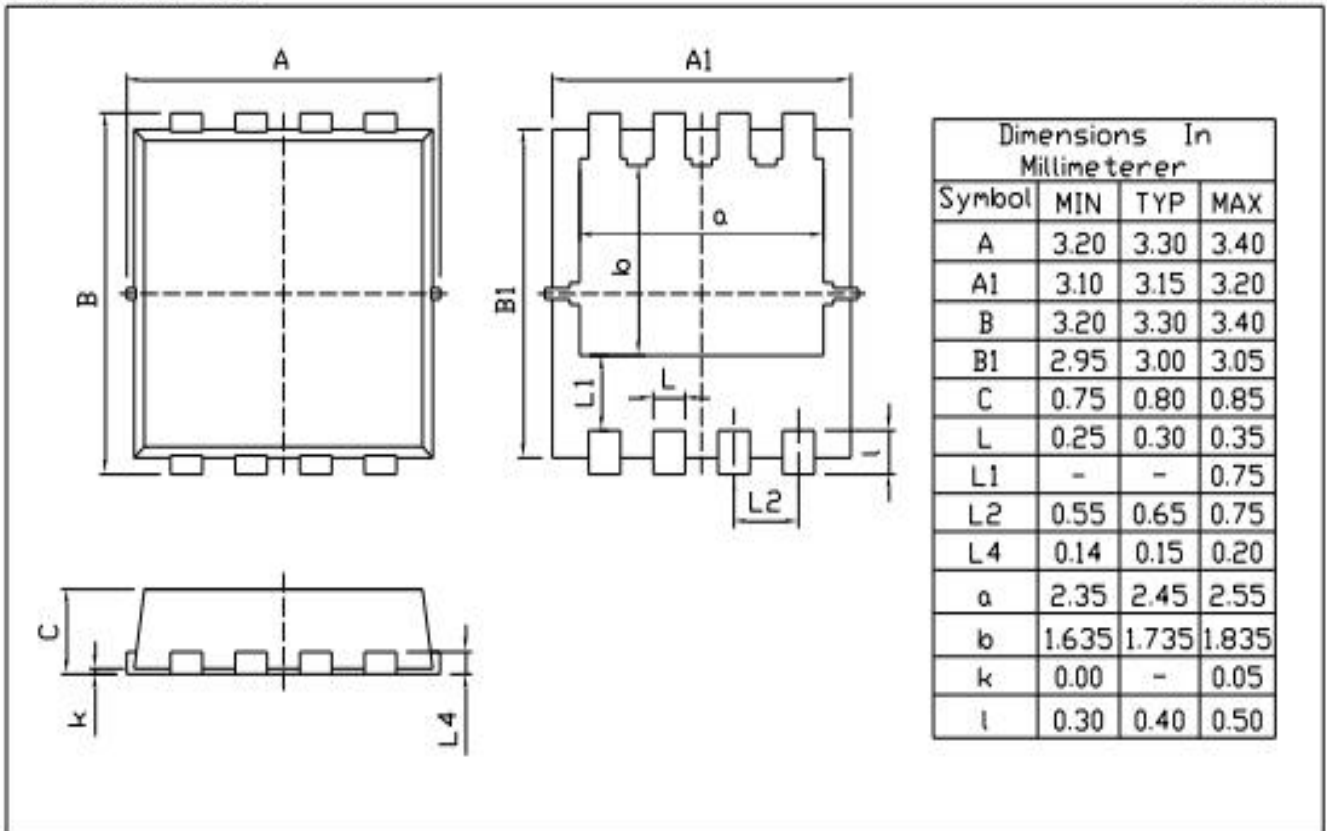
### Typical Characteristics



### ■ Package Information

PDFN3X3A-8L

Unit:mm



Rev.00 202011