

**General Description**

The Si60N155F uses SGT technology to provide excellent  $R_{DS(ON)}$ , low gate charge and fast switching characteristics. This device is suitable for use as a wide variety of applications.

**Features**

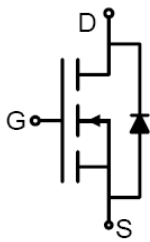
- Low Gate Charge
- 100% UIS Tested, 100% DVDS Tested
- High Power and current handling capability
- Lead free product is acquired

**Application**

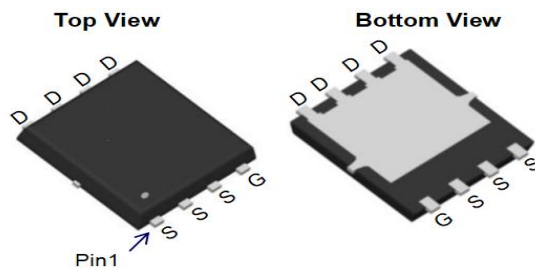
- DC/DC Converter
- Load Switching
- Power Management

**Key Performance Parameters**

Parameter	Value	Unit
$V_{DS}$	60	V
$R_{DS(ON\_TYP)}$	2.2	m $\Omega$
$I_D$	155	A
$Q_G$	62	nC



Schematic Diagram



PDFN5\*6-8L

**Package Marking and Ordering Information**

Device/Ordering Code	Marking	Package	Packing	Reel Size	Tape width	Quantity
Si60N155F	Si60N155F	PDFN5X6-8L	Tape	\	\	5000 Pcs

**Absolute Maximum Ratings ( $T_C=25^\circ\text{C}$  unless otherwise noted)**

Symbol	Parameter	Limit	Unit
$V_{DS}$	Drain-Source Voltage ( $V_{GS}=0V$ )	60	V
$V_{GS}$	Gate-Source Voltage ( $V_{DS}=0V$ )	$\pm 20$	V
$I_D$	Drain Current-Continuous( $T_C=25^\circ\text{C}$ )	155	A
	Drain Current-Continuous( $T_C=100^\circ\text{C}$ )	98	A
$I_{DM} \text{ (pluse)}$	Drain Current-Continuous@ Current-Pulsed (Note 1)	620	A
$P_D$	Maximum Power Dissipation( $T_C=25^\circ\text{C}$ )	108	W
	Maximum Power Dissipation( $T_C=100^\circ\text{C}$ )	43	W
$E_{AS}$	Avalanche energy (Note 2)	552	mJ
$T_J, T_{STG}$	Operating Junction and Storage Temperature Range	-55 To 150	$^\circ\text{C}$

**Thermal Characteristic**

Symbol	Parameter	Typ	Max	Unit
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case	/	1.16	$^\circ\text{C/W}$

**Electrical Characteristics ( $T_J=25^{\circ}\text{C}$  unless otherwise noted)**

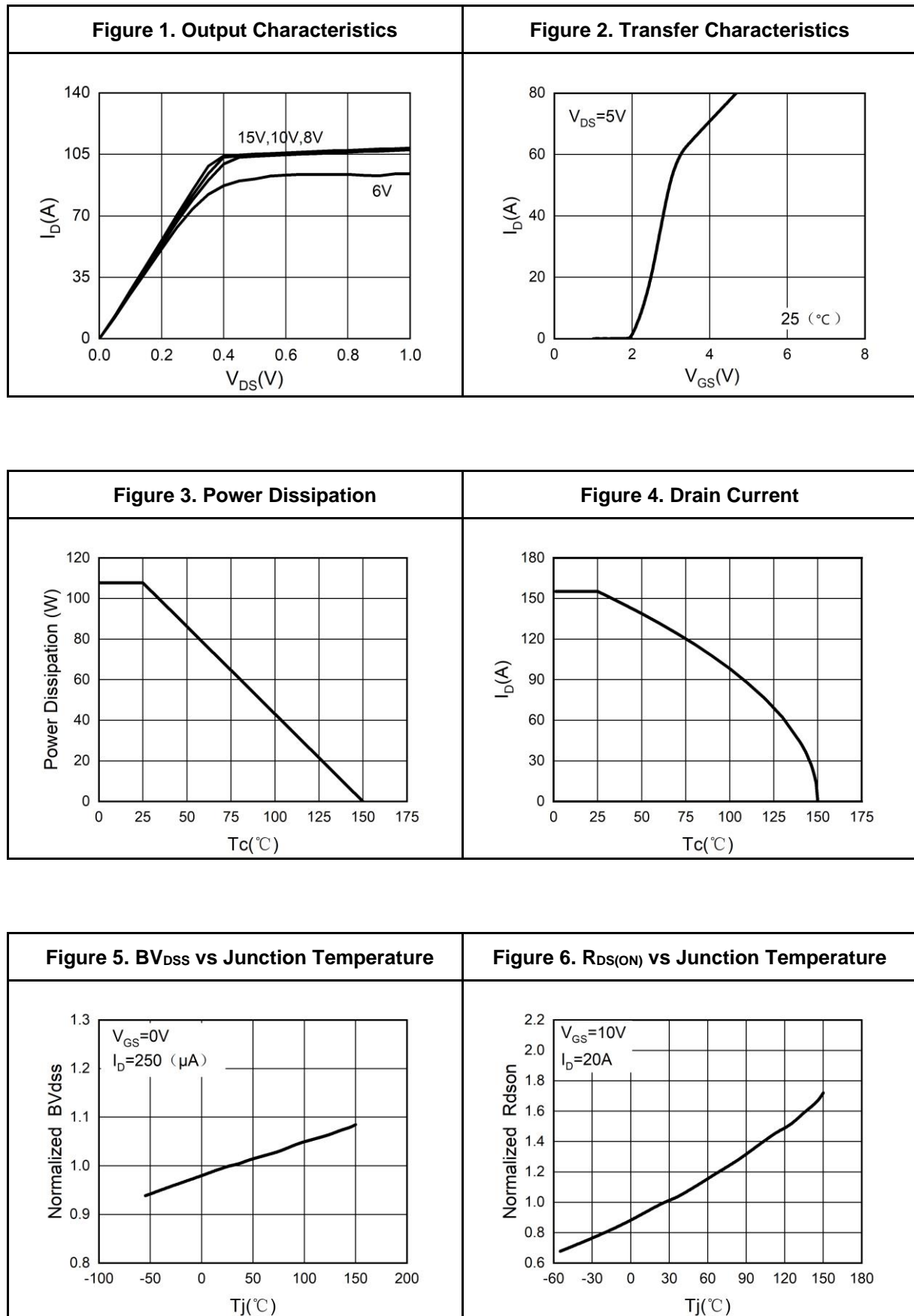
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>On/Off States</b>						
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V$ , $I_D=250\mu A$	60	68		V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS}=60V$ , $V_{GS}=0V$ , $T_J=25^{\circ}\text{C}$			1	$\mu A$
		$V_{DS}=60V$ , $V_{GS}=0V$ , $T_J=125^{\circ}\text{C}$			100	$\mu A$
$I_{GSS}$	Gate-Body Leakage Current	$V_{GS}=\pm 20V$ , $V_{DS}=0V$			$\pm 100$	nA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}$ , $I_D=250\mu A$	1.1		2.1	V
$g_{FS}$	Forward Transconductance	$V_{DS}=5V$ , $I_D=20A$		51		S
$R_{DS(ON)}$	Drain-Source On-State Resistance	$V_{GS}=10V$ , $I_D=20A$ , $T_J=25^{\circ}\text{C}$		2.2	2.6	m $\Omega$
$R_{DS(ON)}$	Drain-Source On-State Resistance	$V_{GS}=4.5V$ , $I_D=20A$ , $T_J=25^{\circ}\text{C}$		3	4	m $\Omega$
<b>Dynamic Characteristics</b>						
$C_{iss}$	Input Capacitance			3680		pF
$C_{oss}$	Output Capacitance	$V_{DS}=30V$ , $V_{GS}=0V$ , $f=1.0\text{MHz}$		1230		pF
$C_{rss}$	Reverse Transfer Capacitance			56		pF
$R_g$	Gate resistance	$V_{GS}=0V$ , $V_{DS}=0V$ , $f=1.0\text{MHz}$		0.74		$\Omega$
<b>Switching Parameters</b>						
$t_{d(on)}$	Turn-on Delay Time			10		nS
$t_r$	Turn-on Rise Time	$V_{GS}=10V$ , $V_{DS}=30V$ , $R_L=1.5\Omega$ , $R_{GEN}=6\Omega$		28		nS
$t_{d(off)}$	Turn-Off Delay Time			54		nS
$t_f$	Turn-Off Fall Time			30		nS
$Q_g$	Total Gate Charge			62		nC
$Q_{gs}$	Gate-Source Charge	$V_{GS}=10V$ , $V_{DS}=30V$ , $I_D=20A$		10		nC
$Q_{gd}$	Gate-Drain Charge			14		nC
<b>Source-Drain Diode Characteristics</b>						
$I_{SD}$	Source-Drain Current (Body Diode)				155	A
$V_{SD}$	Forward on Voltage (Note 3)	$V_{GS}=0V$ , $I_S=20A$			1.2	V
$t_{rr}$	Reverse Recovery Time	$I_F=20A$ , $dI/dt=100A/\mu s$		57		ns
$Q_{rr}$	Reverse Recovery Charge	$I_F=20A$ , $dI/dt=100A/\mu s$		70		nC

Notes 1.Repetitive Rating: Pulse width limited by maximum junction temperature.

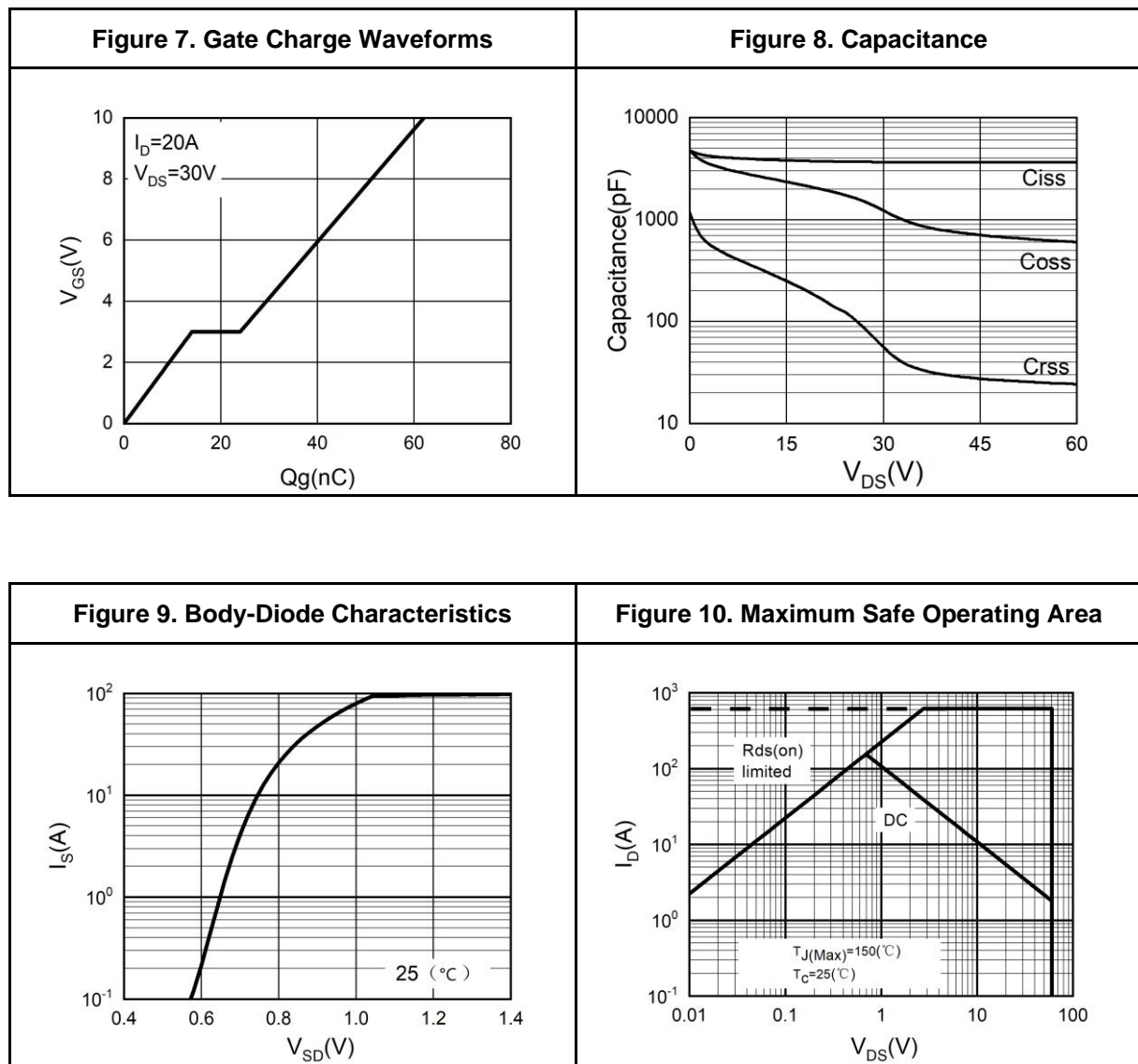
Notes 2.EAS condition:  $T_J=25^{\circ}\text{C}$ ,  $V_{DD}=40V$ ,  $V_G=10V$ ,  $R_g=25\Omega$ ,  $L=0.5\text{mH}$ .

Notes 3.Repetitive Rating: Pulse width limited by maximum junction temperature.

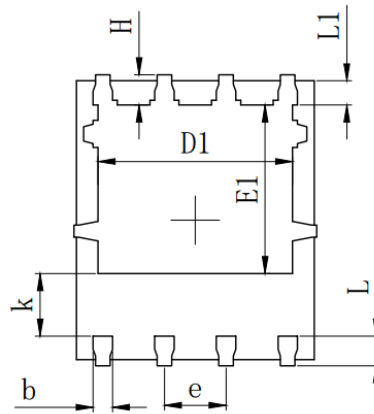
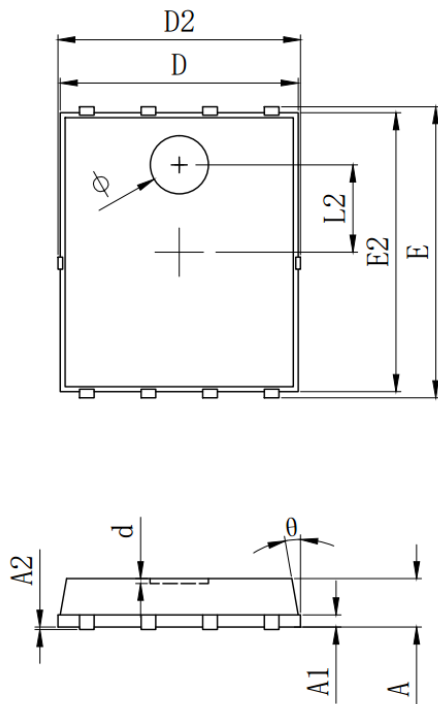
## Typical Electrical And Thermal Characteristics (Curves)



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## PDFN5X6 Package Information



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
θ	8°	10°	12°
Φ	1.100	1.200	1.300
d			0.100

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H	0.549	0.625	0.701
θ	8°	10°	12°
Φ	1.100	1.200	1.300
d			0.100

**Attention**

This product described in this document can not be used in life support devices or systems, aircraft's control systems, and other applications whose failure can be reasonably expected to result in serious physical and/or material damage, apart from that when an application agreement is signed between customer and N X W

The performances and characteristics of this product in the independent testing state are displayed in this document. N X W can't guarantee of the performances and characteristics of this described product that mounted in the customer's products or equipments as same as that in the independent testing state. So the customer should evaluate and test devices mounted in the customer's products or equipments.

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