

MAIN CHARACTERISTICS

I_D	50A
V_{DSS}	100V
$R_{DS(on)-typ}$ (@ $V_{GS}=10V$)	14m Ω

FEATURES

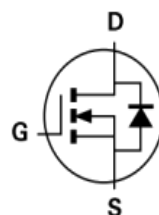
- Ultra-Low $R_{DS(ON)}$
- Low Gate Charge
- High Current Capability

APPLICATIONS

- Power Management in Telecom., Industrial Automation
- Motor Driving in Power Tool, E-vehicle, Robotics
- Current Switching in DC/DC&AC/DC(SR) Sub-systems

MECHANICAL DATA

- Case: Molded plastic
- Mounting Position: Any
- Molded Plastic: UL Flammability Classification Rating 94V-0
- Lead free in compliance with EU RoHS 2011/65/EU directive
- Solder bath temperature 275°C maximum, 10s per JESD 22-B106



PDFN5x6

Product specification classification

Part Number	Package	Mode Name	Pack
LG50N10AG	PDFN5x6	LG50N10AG	Tape

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	±20	V
Continue Drain Current	I_D	50	A
Pulsed Drain Current (Note1)	I_{DM}	200	A
Power Dissipation	P_D	82	W
Single Pulse Avalanche Energy (Note5)	E_{AS}	74	mJ
Operating Temperature Range	T_J	150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C
Thermal Resistance, Junction to Case(Note 2)	$R_{\theta JC}$	1.5	°C/W
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	39	°C/W

Electrical Characteristics at Tc=25°C unless otherwise specified

Characteristics	Test Condition	Symbol	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	$V_{GS} = 0 \text{ V}, I_D = 250 \mu\text{A}$	BV_{DSS}	100	-	-	V
Drain-Source Leakage Current	$V_{DS} = 100\text{V}, V_{GS} = 0 \text{ V}$	I_{DSS}	-	-	1	μA
	$V_{DS}=100\text{V}, T_c=125^\circ\text{C}$		-	-	100	μA
Gate Leakage Current	$V_{GS} = \pm 20 \text{ V}, V_{DS} = 0 \text{ V}$	I_{GSS}	-	-	±100	nA
Gate-Source Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250 \mu\text{A}$	$V_{GS(th)}$	1.2	-	2.2	V
Drain-Source On-State Resistance (Note 3)	$V_{GS} = 10 \text{ V}, I_D = 20\text{A}$	$R_{DS(on)}$	-	14	20	mΩ
	$V_{GS} = 4.5 \text{ V}, I_D = 15\text{A}$		-	18.6	25	mΩ
Input Capacitance	$V_{GS} = 0 \text{ V}, V_{DS} = 50 \text{ V}, f = 1\text{MHz}$	C_{iss}	-	1120	-	pF
Output Capacitance		C_{oss}	-	330	-	pF
Reverse Transfer Capacitance		C_{rss}	-	19.2	-	pF
Turn-on Delay Time	$V_{DS}=50\text{V}, I_D=20\text{A}$ $V_{GS}=10\text{V}, R_G=6.2\Omega$ (Note3,4)	$t_{d(ON)}$	-	7	-	ns
Rise Time		t_r	-	18	-	ns
Turn-Off Delay Time		$t_{d(OFF)}$	-	21	-	ns
Fall Time		t_f	-	9	-	ns
Total Gate Charge	$V_{DS}=50\text{V}, I_D=20\text{A},$ $V_{GS}=10\text{V}$ (Note3,4)	Q_G	-	19	-	nC
Gate to Source Charge		Q_{GS}	-	4	-	nC
Gate to Drain Charge		Q_{GD}	-	5	-	nC

Source-Drain Diode Characteristics at Ta=25°C unless otherwise specified

Characteristics	Test Condition	Symbol	Min.	Typ.	Max.	Unit
Maximun Body-Diode Continuous Current (Note 2)		I_S	-	-	50	A
Maximun Body-Diode Pulsed Current		I_{SM}	-	-	200	A
Drain-Source Diode Forward Voltage	$I_{SD} = 20 \text{ A}$	V_{SD}	-	-	1.2	V
Reverse Recovery Time	$I_S = I_F, I_{SD}=20\text{A}, V_{GS} = 0 \text{ V},$	t_{rr}	-	32	-	ns
Reverse Recovery Charge	$di / dt = 100 \text{ A}/\mu\text{s}$ (Note3)	Q_{rr}	-	32	-	μC

Note2:Pulse test: 300 μs pulse width, 2 % duty cycle

RATINGS AND CHARACTERISTIC CURVES

Figure 1: Power De-rating

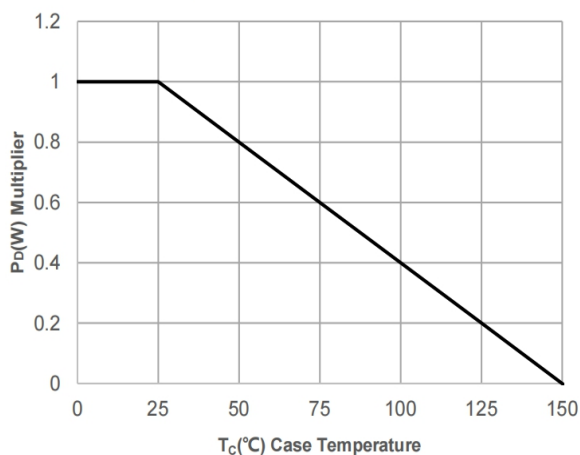


Figure 2: Current De-rating

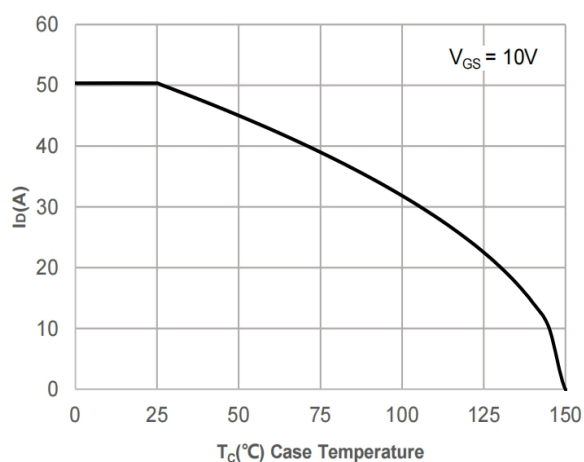


Figure 3: Normalized Maximum Transient Thermal Impedance

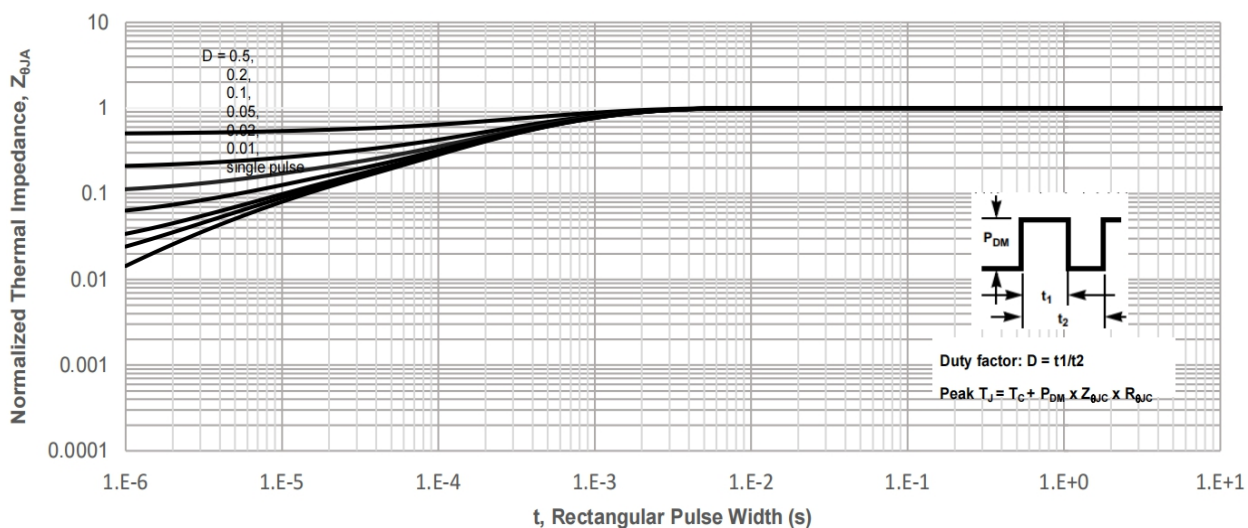
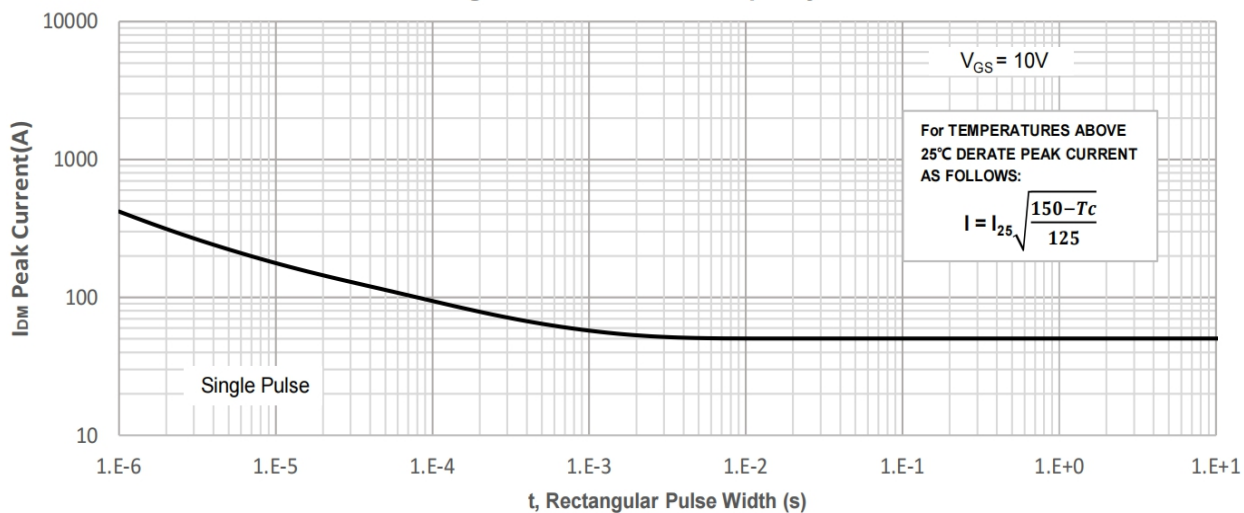


Figure 4: Peak Current Capacity



RATINGS AND CHARACTERISTIC CURVES

Figure 5: Output Characteristics

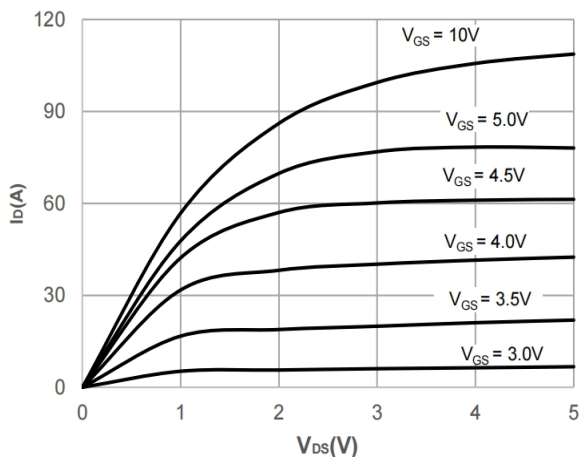


Figure 6: Typical Transfer Characteristics

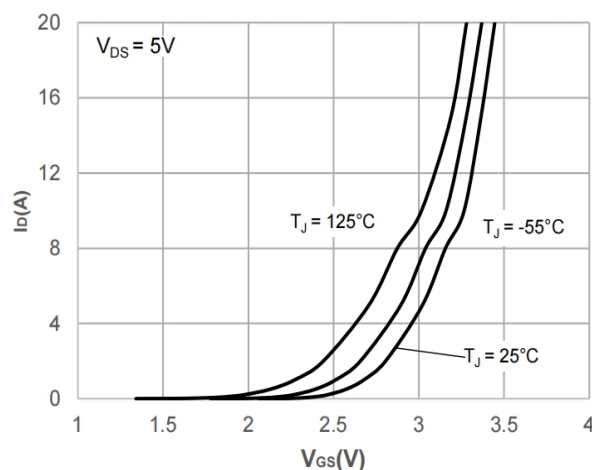


Figure 7: On-resistance vs. Drain Current

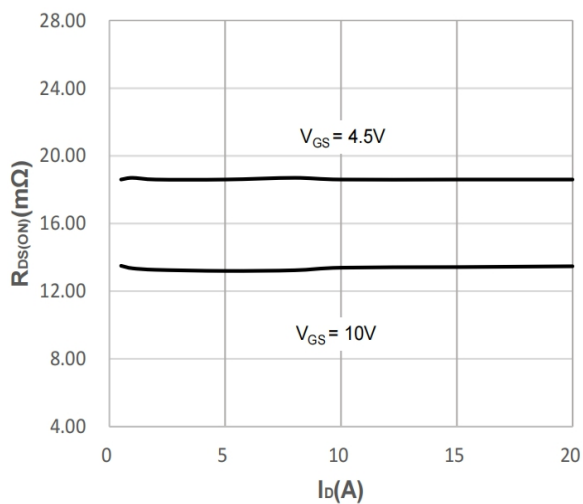


Figure 8: Body Diode Characteristics

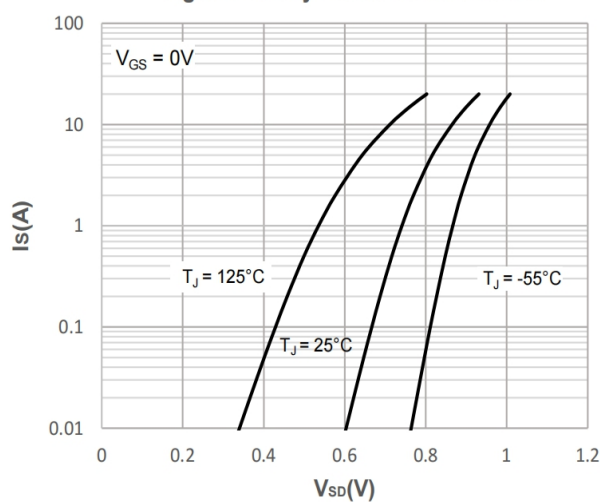


Figure 9: Gate Charge Characteristics

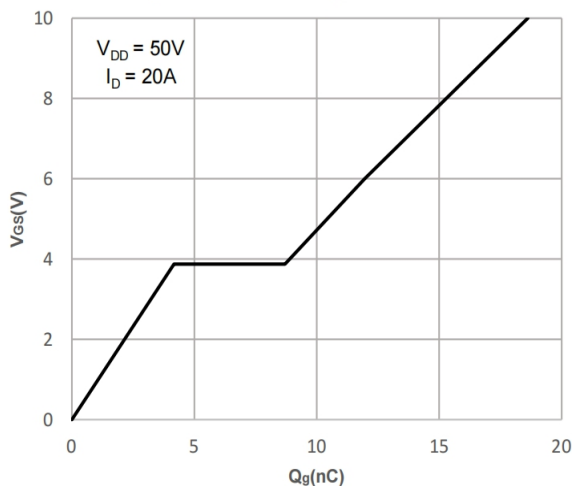
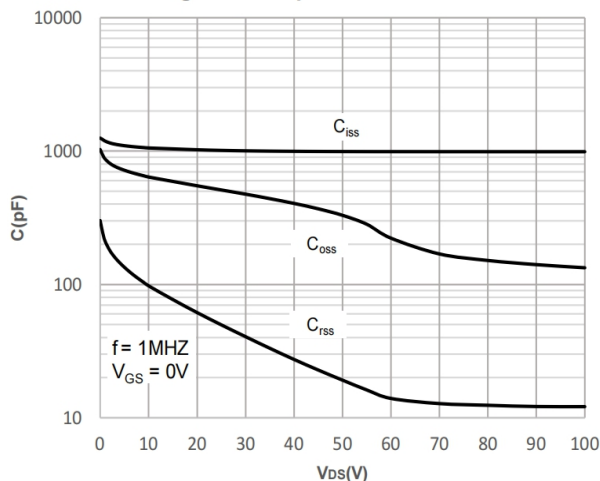


Figure 10: Capacitance Characteristics



RATINGS AND CHARACTERISTIC CURVES

Figure 11: Normalized Breakdown voltage vs. Junction Temperature

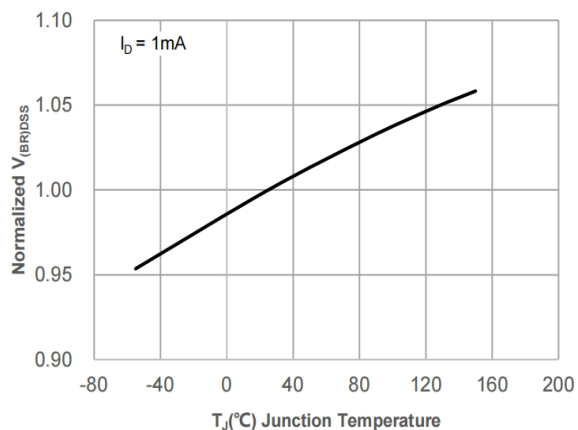


Figure 12: Normalized on Resistance vs. Junction Temperature

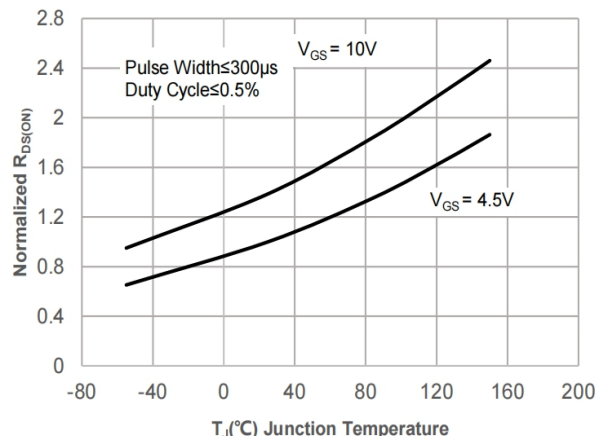


Figure 13: Normalized Threshold Voltage vs. Junction Temperature

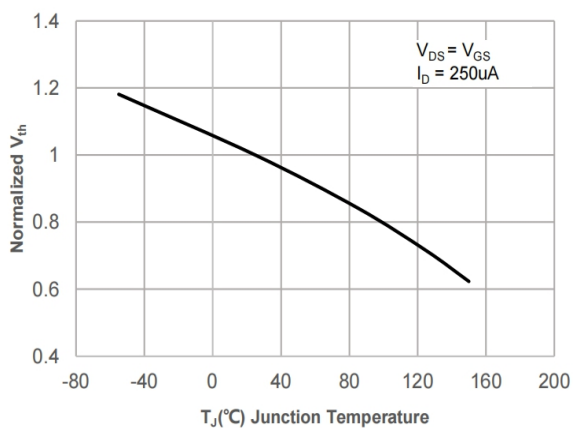


Figure 14: $R_{DS(ON)}$ vs. V_{GS}

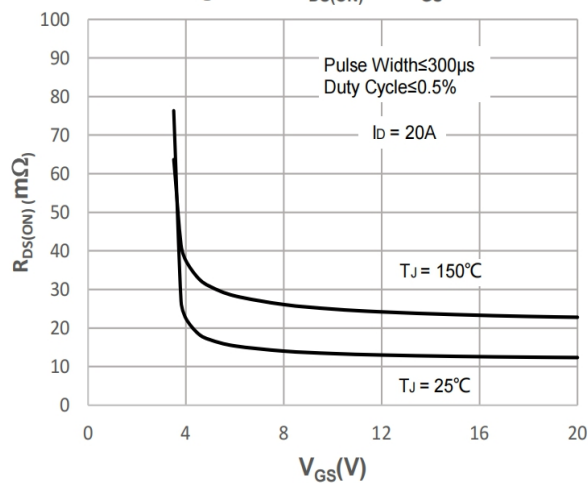
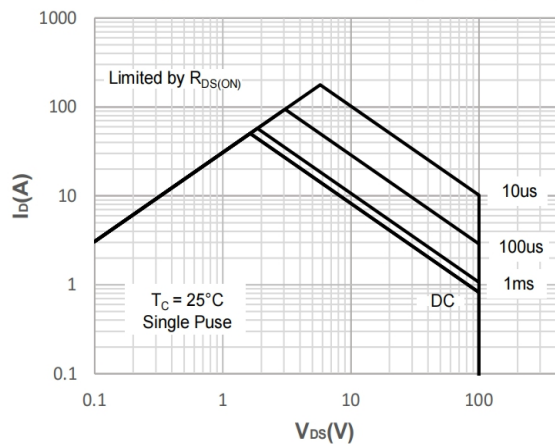
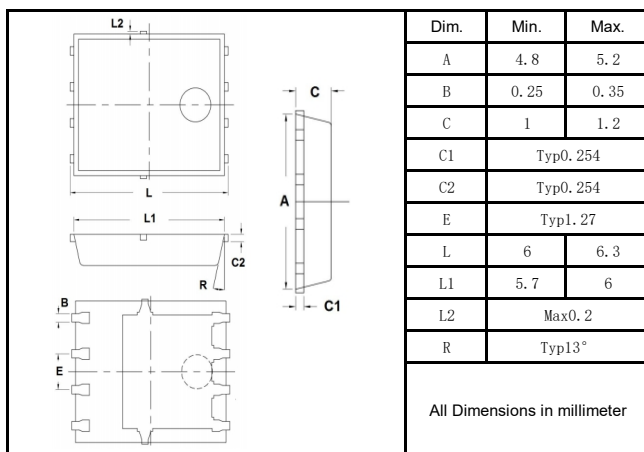


Figure 15: Maximum Safe Operating Area

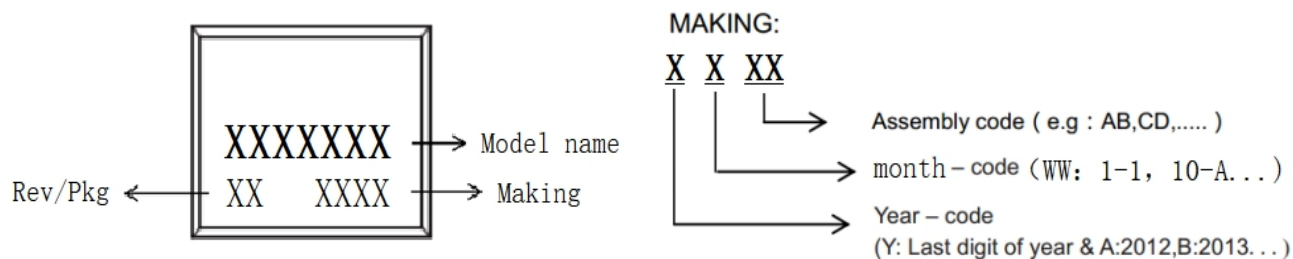


Package Outline Dimensions millimeters

PDFN5*6



Marking on the body



packing instruction

PKG	最小包装	内盒	外箱
PDFN5x6			
	5000pcs/盘	10000pcs/盒	50000pcs/箱

Notice

All product, product specifications and data are subject to change without notice to improve. The right to explain is owned by LINGXUN electronics company.

Confirm that operation temperature is within the specified range described in the product specification. Avoid applying power exceeding normal rated

power; exceeding the power rating under steady-state loading condition may negatively affect product performance and reliability.

LINGXUN electronics shall not be in any way responsible or liable for failure induced under deviant condition from what is defined in this document.