

MAIN CHARACTERISTICS

I_D	50A
V_{DSS}	150V
$R_{DS(on)-typ}$ (@ $V_{GS}=10V$)	15.6mΩ

FEATURES

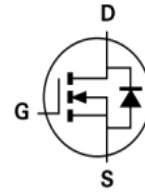
- Ultra-Low $R_{DS(ON)}$
- Low Gate Charge
- High Current Capability

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
LG50N15AG	PDFN5x6	LG50N15AG	Tape

Maximum Ratings at $T_c=25^{\circ}\text{C}$ unless otherwise specified

Characteristics	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	150	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	96	W
Single Pulse Avalanche Energy (Note1)	E_{AS}	135	mJ
Operating Temperature Range	T_J	150	$^{\circ}\text{C}$
Storage Temperature Range	T_{STG}	-55 to +150	$^{\circ}\text{C}$
Thermal Resistance, Junction to Case	$R_{\theta JC}$	1	$^{\circ}\text{C/W}$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	50	$^{\circ}\text{C/W}$

Note1:Pulse test: 300 μs pulse width, 2 % duty cycle

Electrical Characteristics at $T_c=25^{\circ}\text{C}$ unless otherwise specified

Characteristics	Test Condition	Symbol	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	$V_{GS} = 0\text{ V}, I_D = 250\text{ }\mu\text{A}$	BV_{DSS}	150	-	-	V
Drain-Source Leakage Current	$V_{DS} = 150\text{ V}, V_{GS} = 0\text{ V}$	I_{DSS}	-	-	1	μA
Gate Leakage Current	$V_{GS} = \pm 20\text{ V}, V_{DS} = 0\text{ V}$	I_{GSS}	-	-	± 100	nA
Gate-Source Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\text{ }\mu\text{A}$	$V_{GS(th)}$	2.2	-	4.2	V
Drain-Source On-State Resistance	$V_{GS} = 10\text{ V}, I_D = 20\text{ A}$	$R_{DS(on)}$	-	15.6	18.8	m Ω
Input Capacitance	$V_{GS} = 0\text{ V}, V_{DS} = 75\text{ V}, f = 1\text{ MHz}$	C_{iss}	-	2500	-	pF
Output Capacitance		C_{oss}	-	210	-	pF
Reverse Transfer Capacitance		C_{rss}	-	20	-	pF
Turn-on Delay Time(Note2)	$V_{GS}=10\text{ V}, V_{DD}=75\text{ V}, RG=6\text{ }\Omega, I_D=20\text{ A}$	$t_{d(ON)}$	-	7.1	-	ns
Rise Time(Note2)		t_r	-	8.4	-	ns
Turn-Off Delay Time(Note2)		$t_{d(OFF)}$	-	17	-	ns
Fall Time(Note2)		t_f	-	11	-	ns
Total Gate Charge(Note2)	$I_D = 20\text{ A}, V_{DD} = 75\text{ V}, V_{GS} = 10\text{ V}$	Q_G	-	23	-	nC
Gate to Source Charge(Note2)		Q_{GS}	-	7.7	-	nC
Gate to Drain Charge(Note2)		Q_{GD}	-	4.7	-	nC

Source-Drain Diode Characteristics at $T_a=25^{\circ}\text{C}$ unless otherwise specified

Characteristics	Test Condition	Symbol	Min.	Typ.	Max.	Unit
Maximun Body-Diode Continuous Current		I_S	-	-	50	A
Maximun Body-Diode Pulsed Current(Note2)		I_{SM}	-	-	200	A
Drain-Source Diode Forward Voltage	$I_{SD} = 20\text{ A}$	V_{SD}	-	-	1.2	V
Reverse Recovery Time(Note2)	$I_{SD} = 20\text{ A}, V_{GS} = 0\text{ V}, dI_F / dt = 100\text{ A}/\mu\text{s}$	t_{rr}	-	86	-	ns
Reverse Recovery Charge(Note2)		Q_{rr}	-	137	-	nC

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

RATINGS AND CHARACTERISTIC CURVES

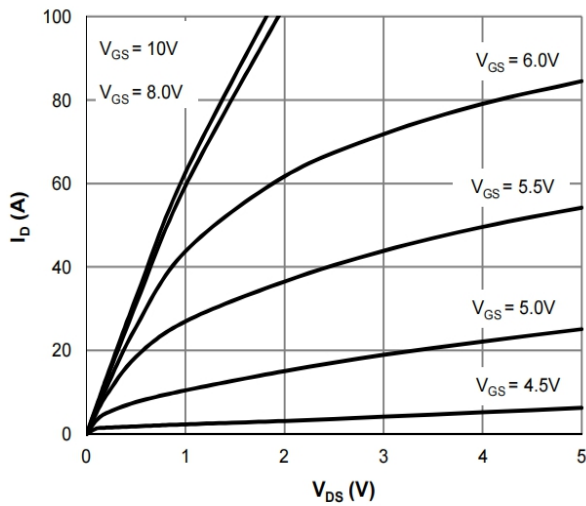


Figure 1: Saturation Characteristics

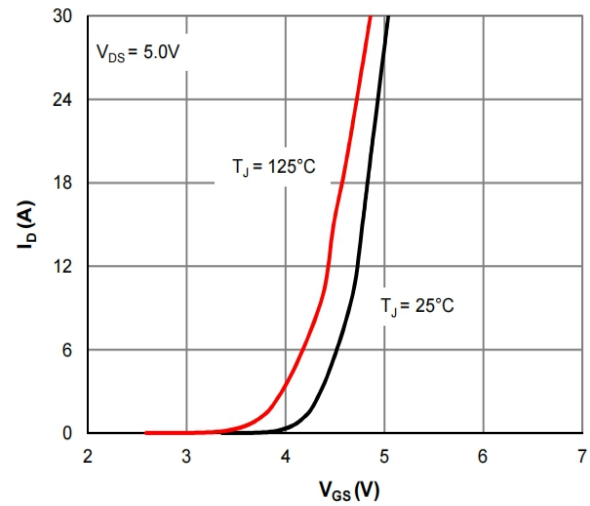


Figure 2: Transfer Characteristics

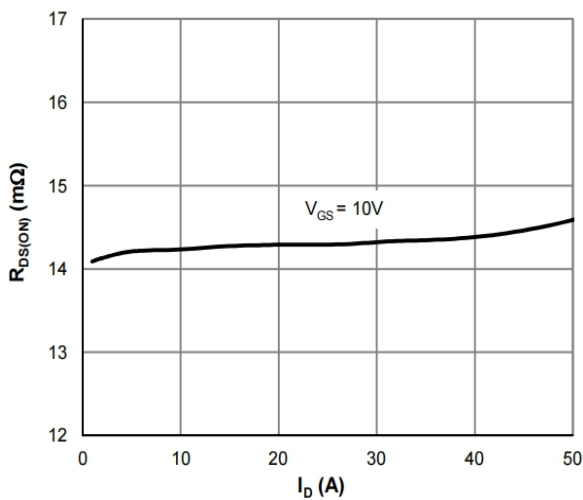


Figure 3: $R_{DS(ON)}$ vs. Drain Current

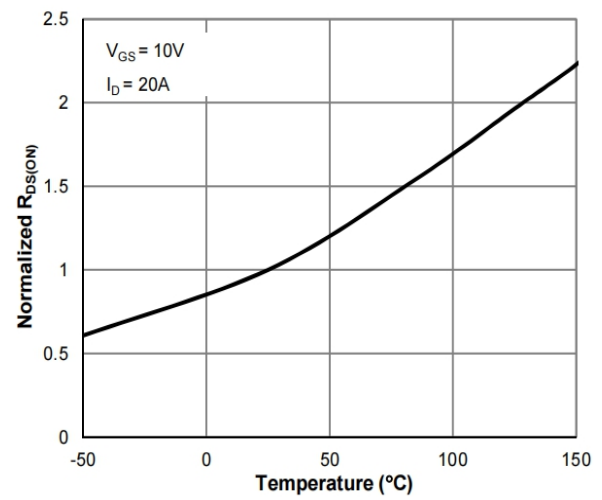


Figure 4: $R_{DS(ON)}$ vs. Junction Temperature

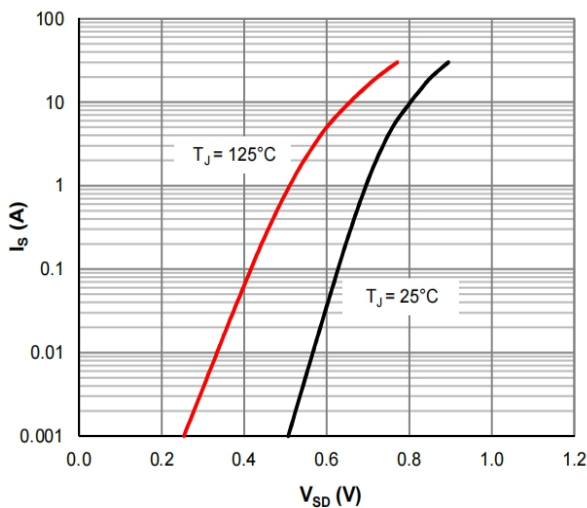


Figure 5: Body-Diode Characteristics

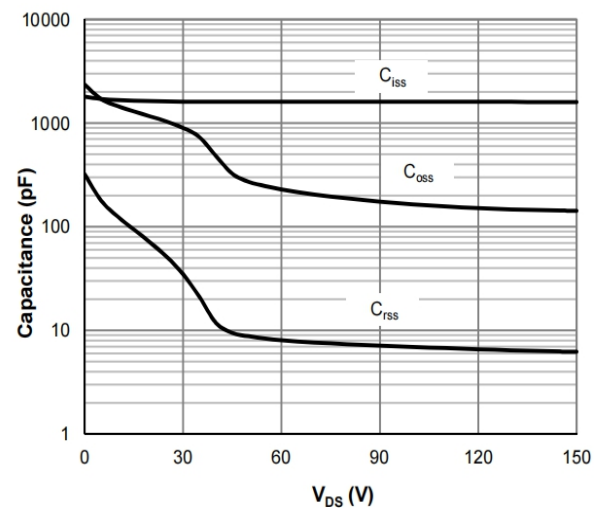


Figure 6: Capacitance Characteristics

RATINGS AND CHARACTERISTIC CURVES

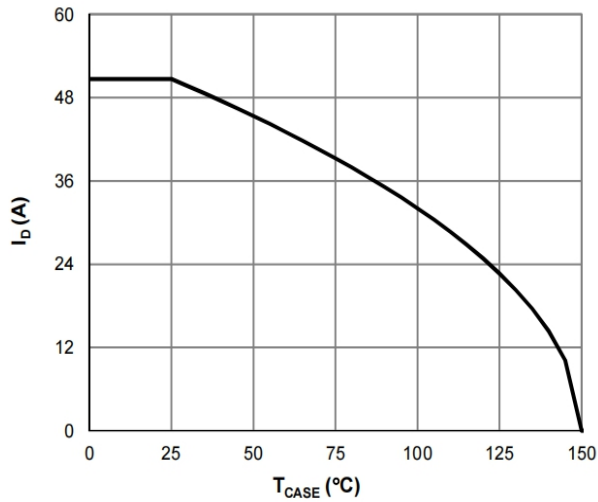


Figure 7: Current De-rating

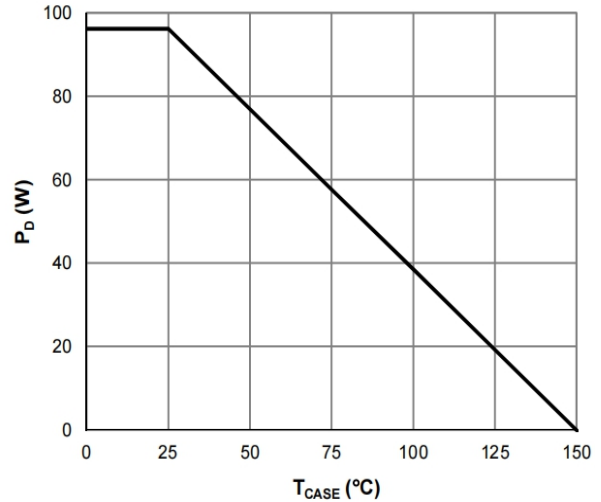


Figure 8: Power De-rating

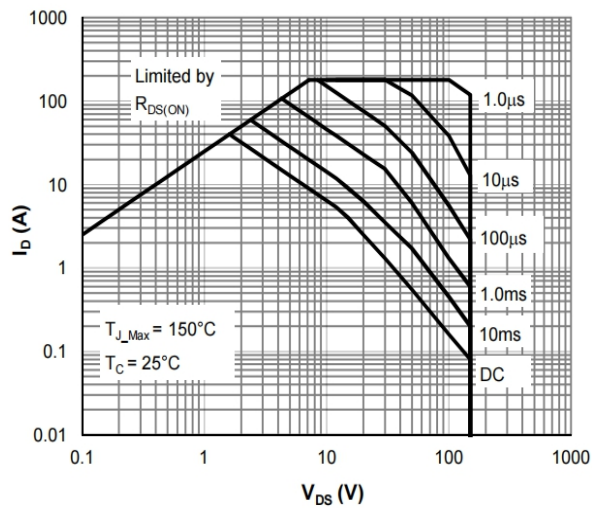


Figure 9: Maximum Safe Operating Area

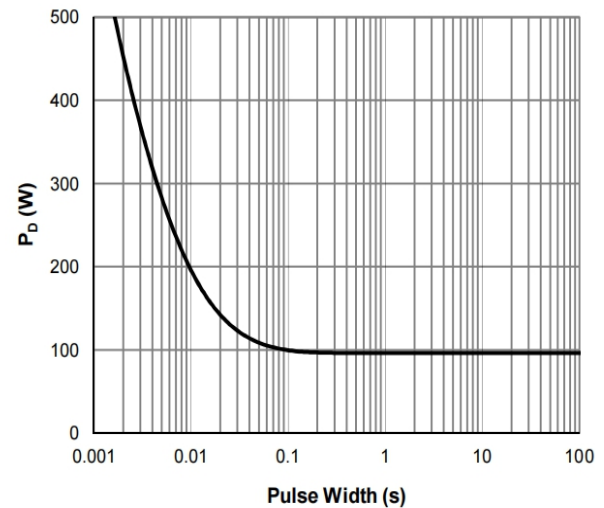


Figure 10: Single Pulse Power Rating, Junction-to-Case

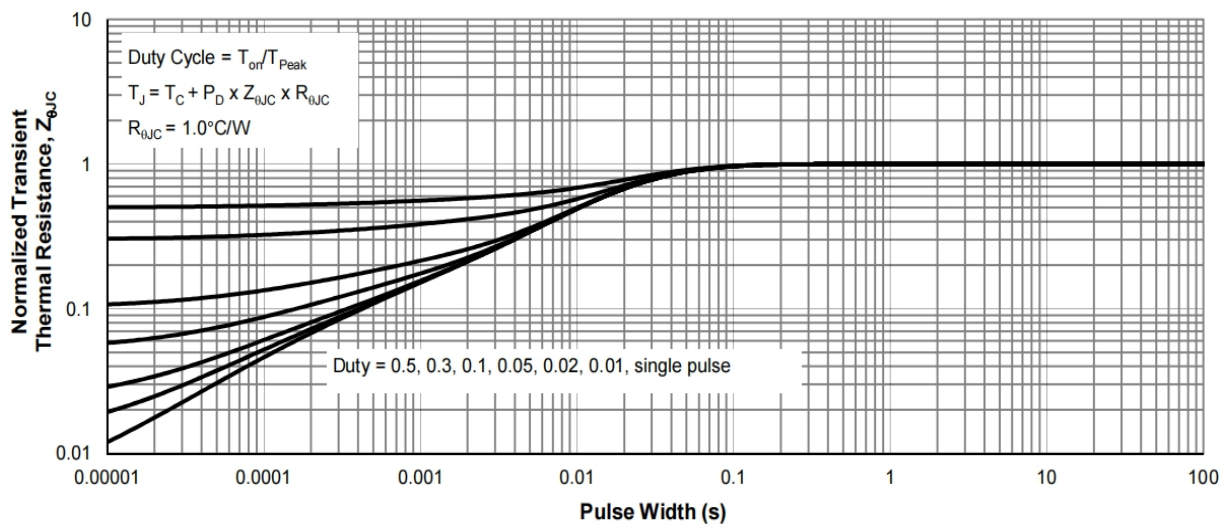
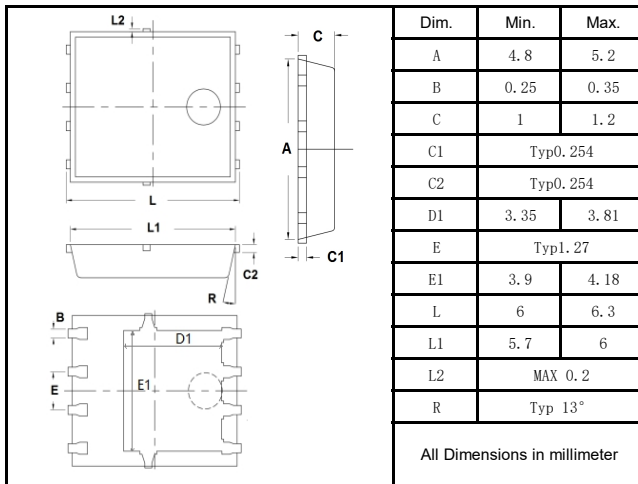


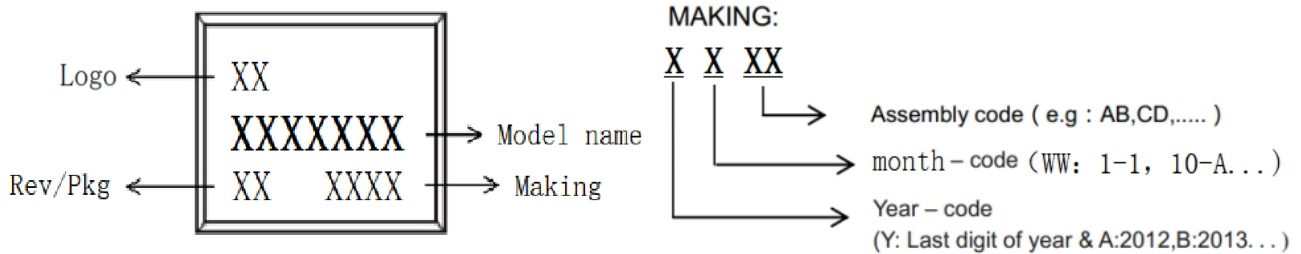
Figure 11: Normalized Maximum Transient Thermal Impedance

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