Leading Circuit Protection
Products and Solutions

LX50N60AD/U
N- Channel Advanced Power MOSFET

FEATURES

- Fast Switching
- Low ON Resistance
- Low Gate Charge
- 100% Single Pulse avalanche energy Test

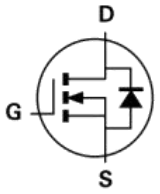
MAIN CHARACTERISTICS

ID	50A
VDSS	60V
RDSON-typ (@VGS=10V)	12mΩ

APPLICATIONS

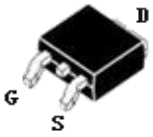
- Load Switch
- PWM Application
- Power management

PACKAGE



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℃ maximum,10s per JESD 22-B106



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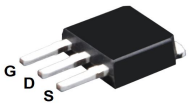

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Product specification classification

Part Number	Package	Mode Name	Pack
LX50N06AD	TO-252	LX50N06AD	Tape
LX50N06AU	TO-251	LX50N06AU	Tape

Maximum Ratings at T_C=25°C unless otherwise specified

Characteristics	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	60	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	75	W
Single Pulse Avalanche Energy (Note5)	E_{AS}	80	mJ
Operating Temperature Range	T_J	150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C
Thermal Resistance, Junction to Case(Note 2)	$R_{\theta JC}$	2	°C/W
Thermal Resistance, Junction to AmbientZ	$R_{\theta JA}$	62	°C/W

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

Electrical Characteristics at T_C=25°C unless otherwise specified

Characteristics	Test Condition	Symbol	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V_{GS} = 0 V,I_D = 250 μA	BV_{DSS}	60	-	-	V
Drain-Source Leakage Current	V_{DS} = 60V, V_{GS} = 0 V	I_{DSS}	-	-	1	μA
Gate Leakage Current	V_{GS} = ± 20 V, V_{DS} = 0 V	I_{GSS}	-	-	±100	nA
Gate-Source Threshold Voltage	V_{DS} = V_{GS} , I_D = 250 μA	$V_{GS(th)}$	1	-	2.5	V
Drain-Source On-State Resistance (Note 3)	V_{GS} = 10 V, I_D = 30A	$R_{DS(on)}$	-	12	17	mΩ
	V_{GS} = 4.5 V, I_D = 20A	$R_{DS(on)}$	-	16	25	mΩ
Input Capacitance	V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz	C_{iss}	-	2030	-	pF
Output Capacitance		C_{oss}	-	130	-	pF
Reverse Transfer Capacitance		C_{rss}	-	115	-	pF
Turn-on Delay Time	VDD=30V , VGS=10V , RG=1.8Ω , ID=30A	$t_{d(ON)}$	-	11	-	ns
Rise Time		t_r	-	79	-	ns
Turn-Off Delay Time		$t_{d(OFF)}$	-	33	-	ns
Fall Time		t_f	-	105	-	ns
Total Gate Charge	VDS=30V , VGS=10V , ID=30A	Q_G	-	45	-	nC
Gate to Source Charge		Q_{GS}	-	8	-	nC
Gate to Drain Charge		Q_{GD}	-	11	-	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 (Note 3)	I_{SD} = 30A	V_{SD}	-	-	1.2	V
Reverse Recovery Time	I_S = I_F, ISD=30A,V_{GS} = 0 V, dI / dt = 100 A/μs (Note3)	trr	-	14	-	ns
Reverse Recovery Charge		Qrr	-	10	-	μC

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

RATINGS AND CHARACTERISTIC CURVES

Figure1: Output Characteristics

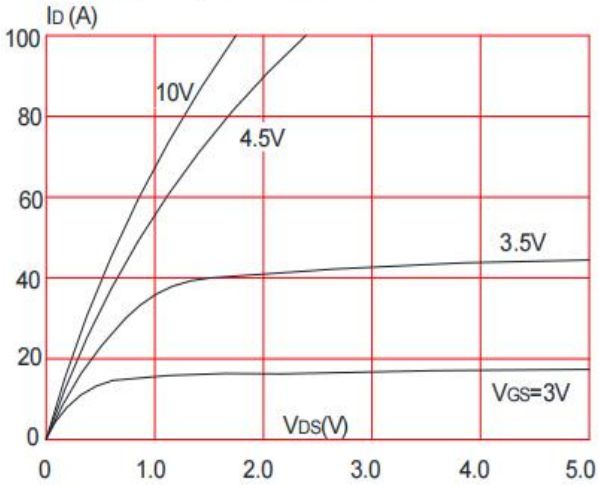


Figure 2: Typical Transfer Characteristics

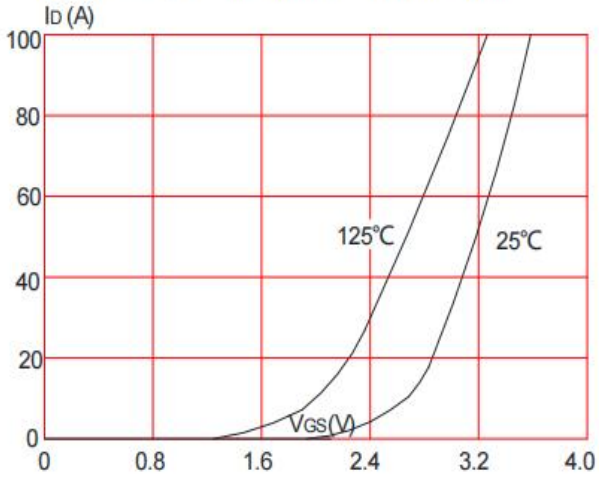


Figure 3: On-resistance vs. Drain Current

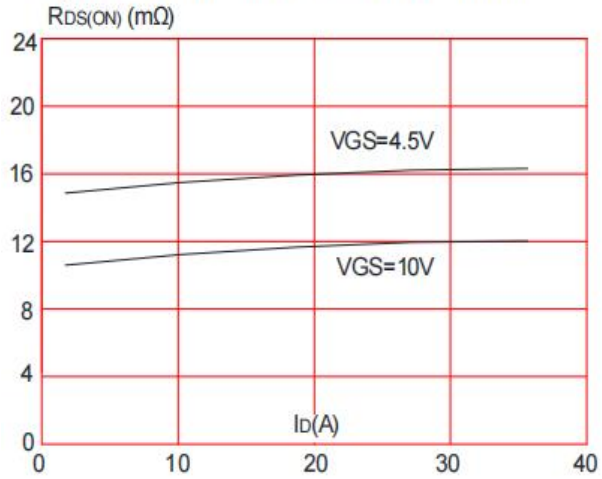


Figure 4: Body Diode Characteristics

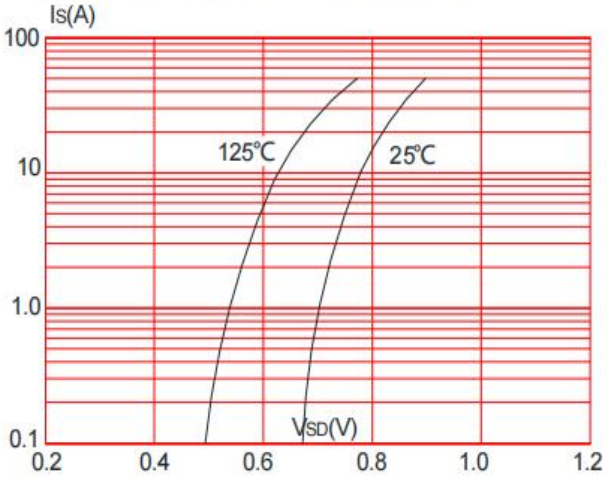


Figure 5: Gate Charge Characteristics

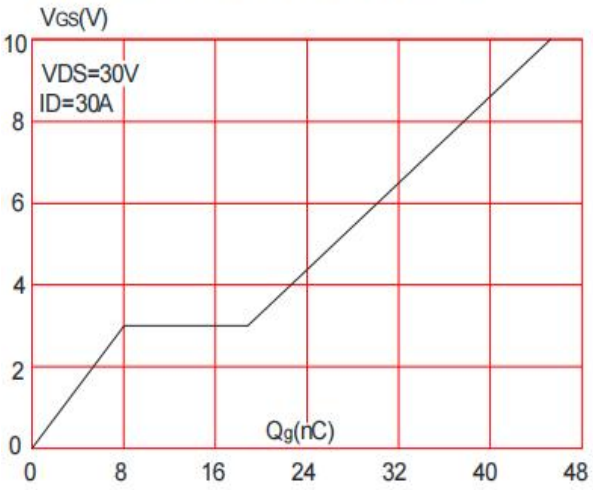
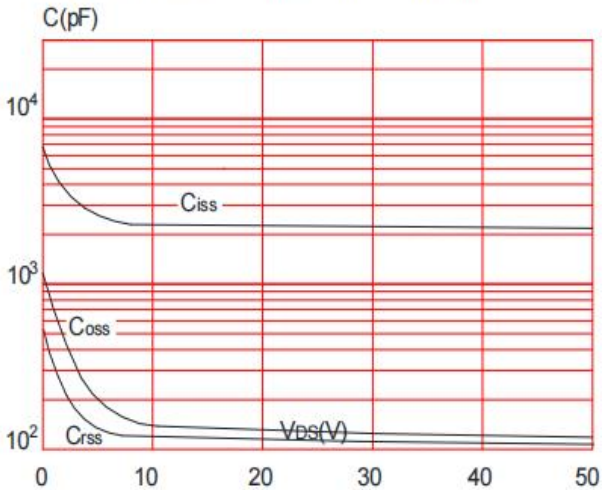


Figure 6: Capacitance Characteristics



RATINGS AND CHARACTERISTIC CURVES

Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

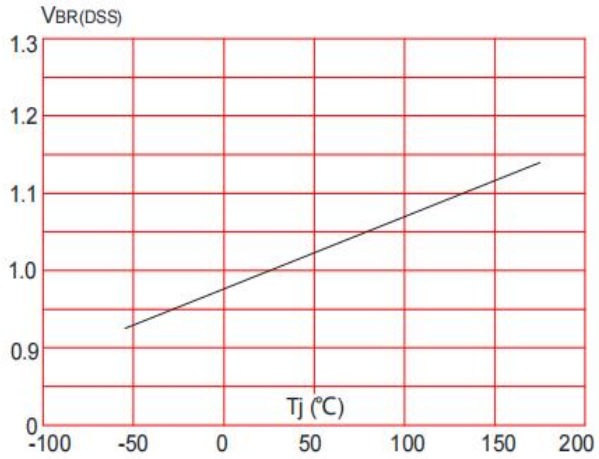


Figure 8: Normalized on Resistance vs. Junction Temperature

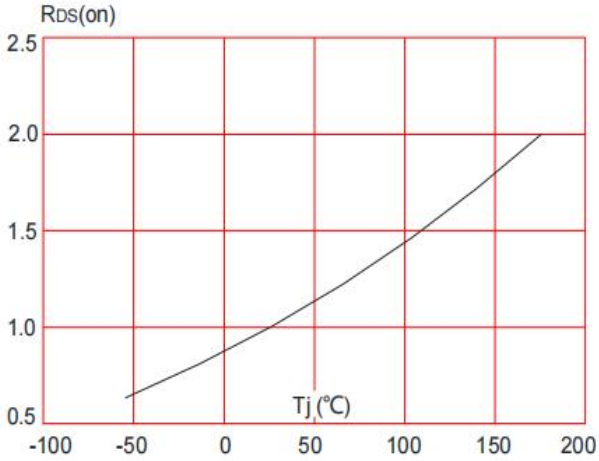


Figure 9: Maximum Safe Operating Area

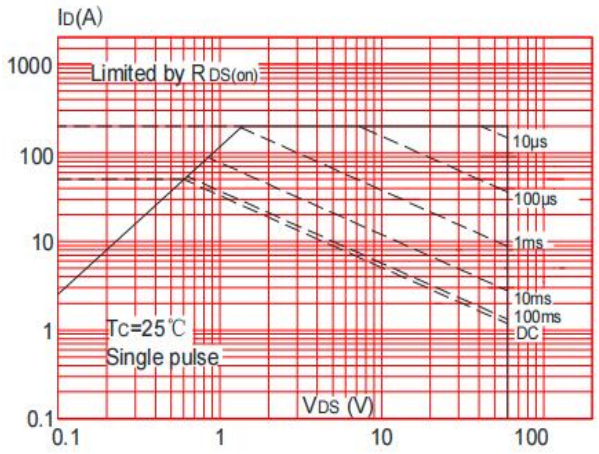


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

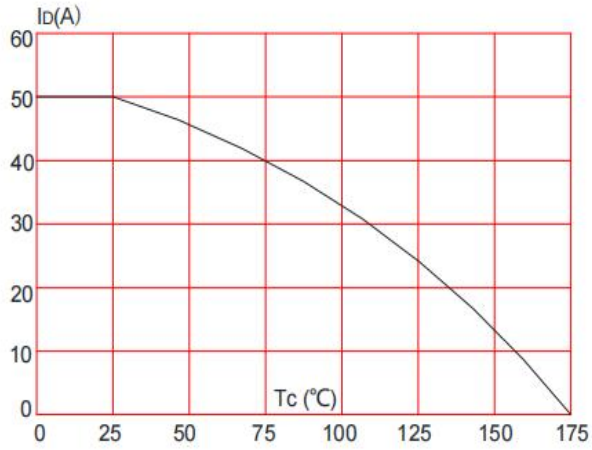
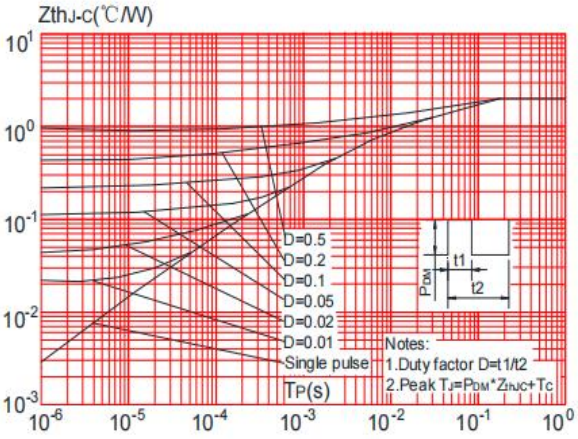


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case



Package Outline Dimensions millimeters

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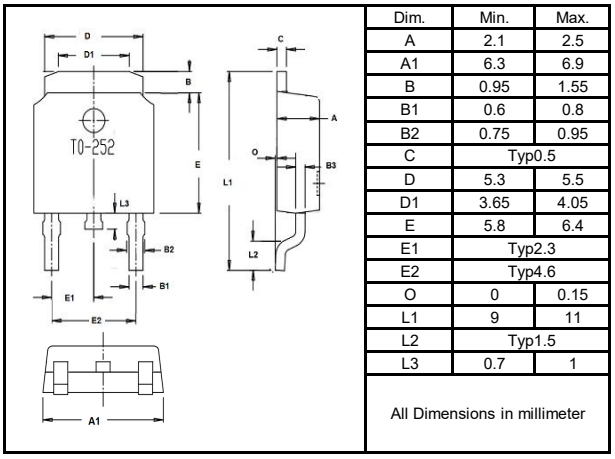

Dim.	Min.	Max.
A	2.1	2.5
A1	6.3	6.9
B	0.95	1.55
B1	0.6	0.8
B2	0.75	0.95
C	Typ0.5	
D	5.3	5.5
D1	3.65	4.05
E	5.8	6.4
E1	Typ2.3	
E2	Typ4.6	
O	0	0.15
L1	9	11
L2	Typ1.5	
L3	0.7	1

All Dimensions in millimeter

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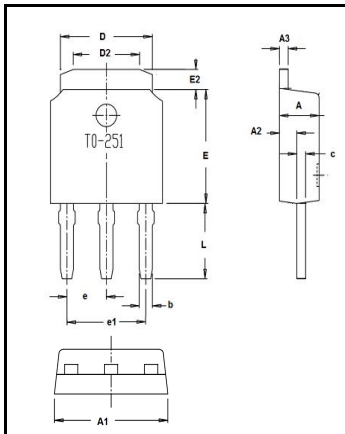

Dim.	Min.	Max.
A	2.1	2.5
A1	6.3	6.9
A2	0.9	1.1
A3	Typ0.5	
b	0.6	0.8
c	0.4	0.5
D	5.3	5.5
D2	3.65	4.05
E	5.8	6.4
E2	0.9	1.4
e	Typ2.29	
e1	Typ4.58	
L	3.7	4.3

All Dimensions in millimeter