



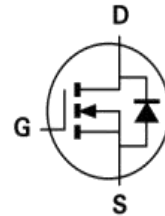
DONGGUAN NANJING ELECTRONICS LTD.,  
**TO-251/TO-252 Plastic-Encapsulate MOSFETS**

## LT30N06AD/U

N-Channel Enhancement Mode Power MOSFET

### MAIN CHARACTERISTICS

$I_D$	30A
$V_{DSS}$	60V
$R_{DS(ON)-typ}$ (@ $V_{GS}=10V$ )	23m $\Omega$



### FEATURES

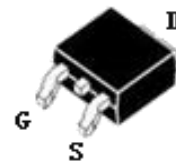
- Advanced Trench Technology
- Excellent RDS(ON) and Low Gate Charge

### APPLICATIONS

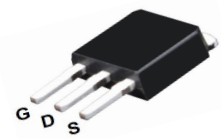
- Load Switch
- PWM Application
- Power Management

### 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



TO-252



TO-251

### Product specification classification

Part Number	Package	Mode Name	Pack
LT30N06AD	TO-252	LT30N06AD	Tape
LT30N06AU	TO-251	LT30N06AU	Tape

# LT30N06AD/U

## N-Channel Enhancement Mode Power MOSFET

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

Characteristics	Symbol	Value	Unit
		252	
Drain-Source Voltage	$V_{DS}$	60	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continue Drain Current	$I_D$	30	A
Pulsed Drain Current (Note1)	$I_{DM}$	74	A
Power Dissipation	$P_D$	50	W
Single Pulse Avalanche Energy (Note1)	$E_{AS}$	144	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	$R_{\theta JC}$	3	$^\circ\text{C/W}$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	100	$^\circ\text{C/W}$

Note1:Pulse test: 300  $\mu\text{s}$  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	$V_{GS} = 0\text{ V}, I_D = 250\ \mu\text{A}$	$BV_{DSS}$	60	-	-	V
Drain-Source Leakage Current	$V_{DS} = 60\text{ V}, V_{GS} = 0\text{ V}$	$I_{DSS}$	-	-	1	$\mu\text{A}$
Gate Leakage Current	$V_{GS} = \pm 20\text{ V}, V_{DS} = 0\text{ V}$	$I_{GSS}$	-	-	$\pm 100$	nA
Gate-Source Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\ \mu\text{A}$	$V_{GS(th)}$	1	-	2.5	V
Drain-Source On-State Resistance	$V_{GS} = 10\text{ V}, I_D = 15\text{ A}$	$R_{DS(on)}$	-	23	29	$\text{m}\Omega$
	$V_{GS} = 4.5\text{ V}, I_D = 10\text{ A}$		-	28	40	$\text{m}\Omega$
Forward Transconductance	$V_{DS} = 5\text{ V}, I_D = 20\text{ A}$	gfs	30	-	-	S
Input Capacitance	$V_{GS} = 0\text{ V}, V_{DS} = 30\text{ V}, f = 1\text{ MHz}$	$C_{iss}$	-	1905	-	pF
Output Capacitance		$C_{oss}$	-	132	-	pF
Reverse Transfer Capacitance		$C_{rss}$	-	94	-	pF
Turn-on Delay Time(Note2)	$V_{GS} = 10\text{ V}, V_{DS} = 30\text{ V}, R_G = 3\ \Omega$	$t_{d(ON)}$	-	5.2	-	ns
Rise Time(Note2)		$t_r$	-	2.5	-	ns
Turn-Off Delay Time(Note2)		$t_{d(OFF)}$	-	16	-	ns
Fall Time(Note2)		$t_f$	-	2.2	-	ns
Total Gate Charge(Note2)	$I_D = 20\text{ A}, V_{DS} = 30\text{ V}, V_{GS} = 10\text{ V}$	$Q_G$	-	31	-	nC
Gate to Source Charge(Note2)		$Q_{GS}$	-	4.4	-	nC
Gate to Drain Charge(Note2)		$Q_{GD}$	-	7.6	-	nC

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

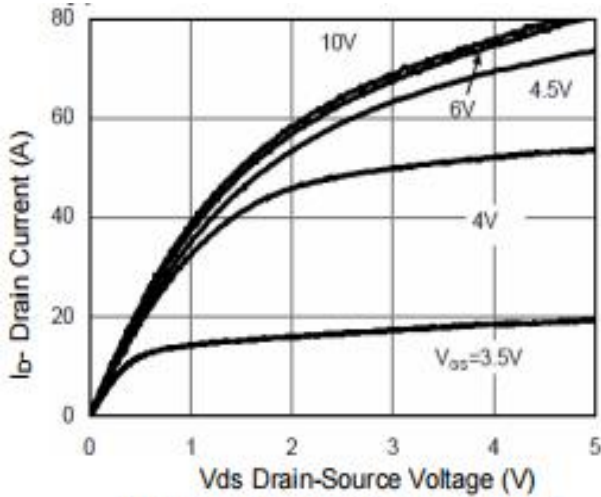
Characteristics	Test Condition	Symbol	Min.	Typ.	Max.	Unit
Maximun Body-Diode Continuous Current		$I_S$	-	-	30	A
Maximun Body-Diode Pulsed Current(Note2)		$I_{SM}$	-	-	74	A
Drain-Source Diode Forward Voltage	$I_{SD} = 30\text{ A}$	$V_{SD}$	-	-	1.2	V
Reverse Recovery Time(Note2)	$I_{SD} = 20\text{ A}, V_{GS} = 0\text{ V},$	trr	-	35	-	ns
Reverse Recovery Charge(Note2)	$dIF / dt = 100\text{ A}/\mu\text{s}$	Qrr	-	53	-	$\mu\text{C}$

Note2:Pulse test: 300  $\mu\text{s}$  pulse width, 2 % duty cycle

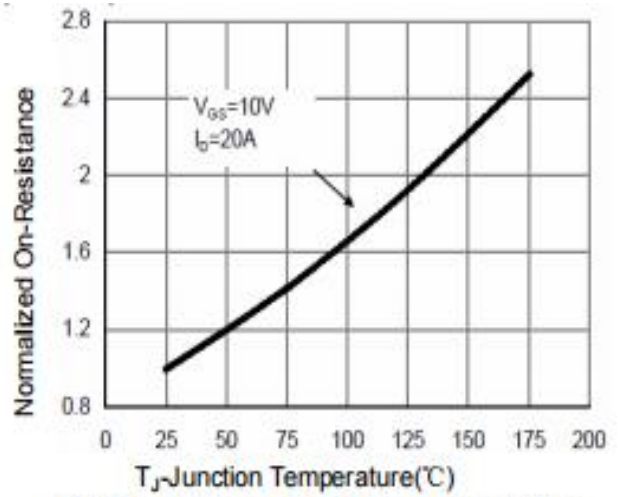
# LT30N06AD/U

## N-Channel Enhancement Mode Power MOSFET

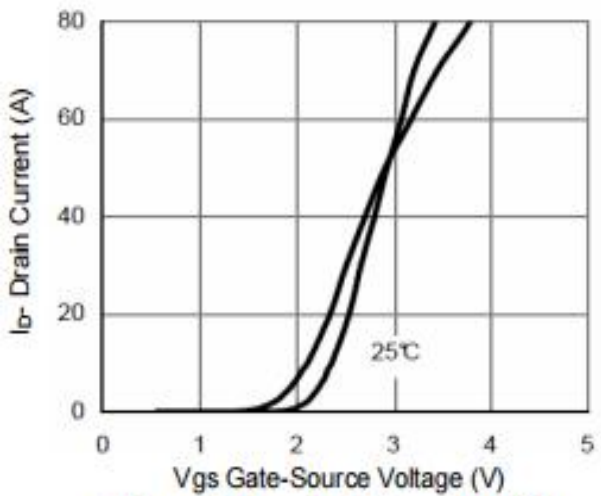
### RATINGS AND CHARACTERISTIC CURVES



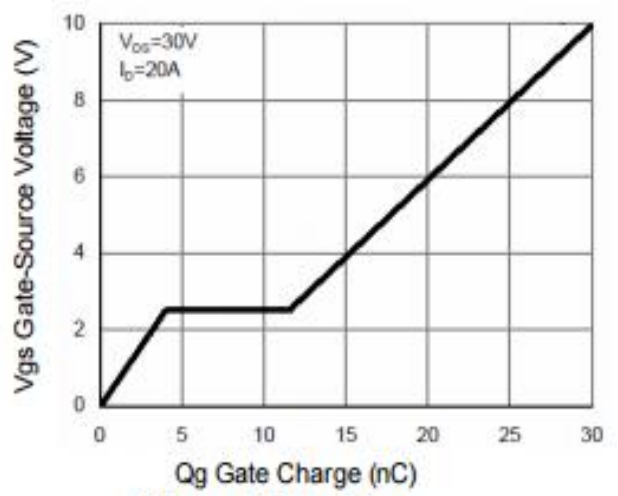
**Figure 1 Output Characteristics**



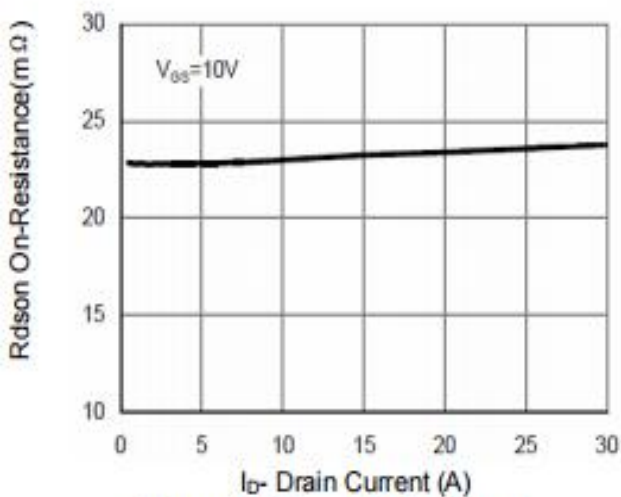
**Figure 4 Rdson-Junction Temperature**



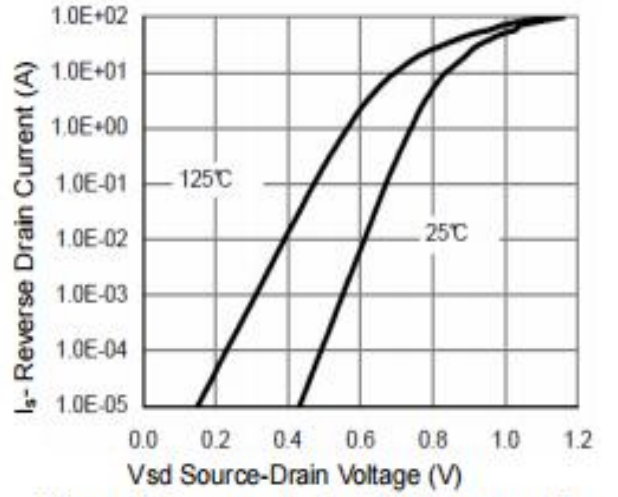
**Figure 2 Transfer Characteristics**



**Figure 5 Gate Charge**



**Figure 3 Rdson- Drain Current**



**Figure 6 Source-Drain Diode Forward**

# LT30N06AD/U

## N-Channel Enhancement Mode Power MOSFET

### RATINGS AND CHARACTERISTIC CURVES

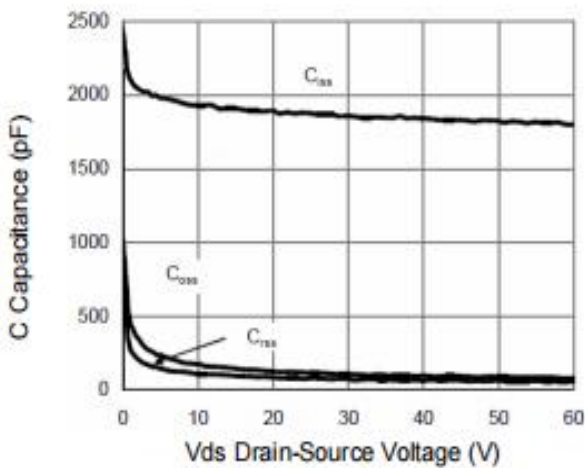


Figure 7 Capacitance vs Vds

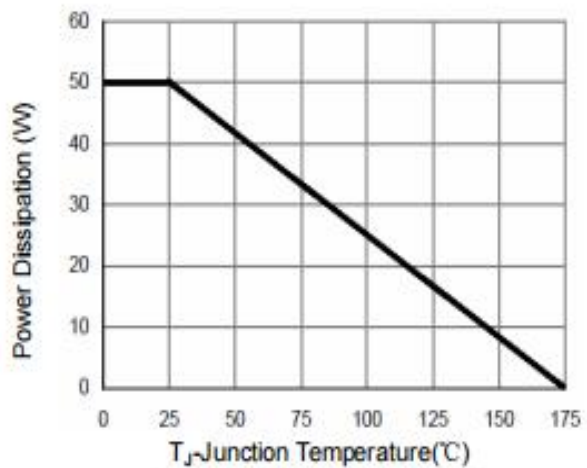


Figure 9 Power De-rating

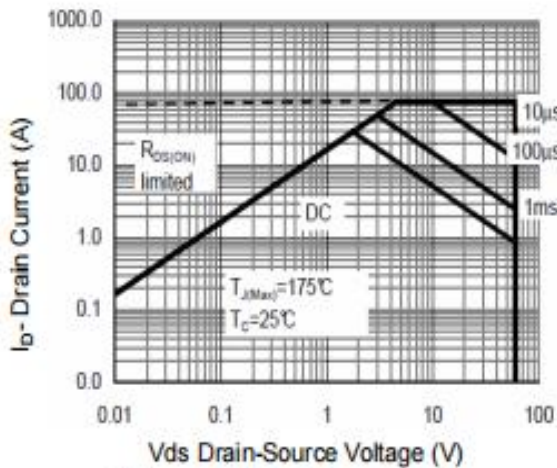


Figure 8 Safe Operation Area

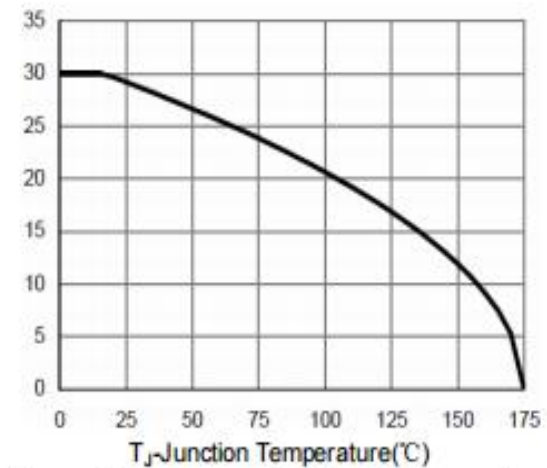


Figure 10  $V_{GS(th)}$  vs Junction Temperature

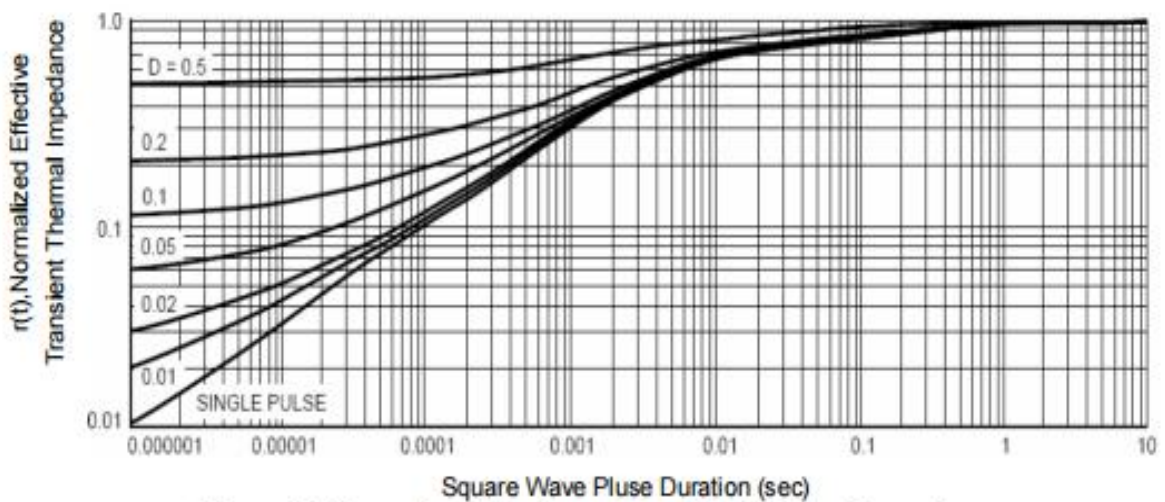


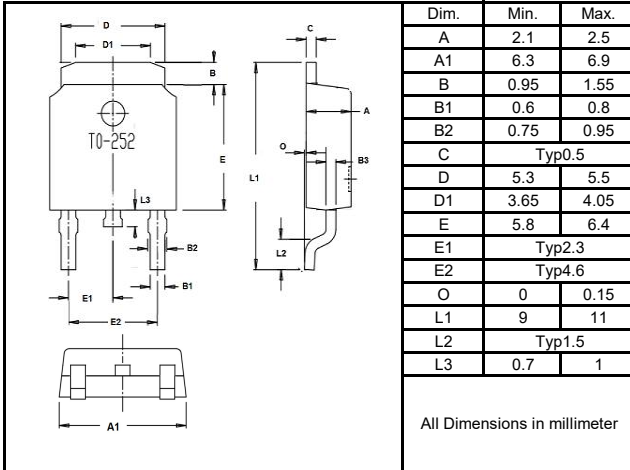
Figure 11 Normalized Maximum Transient Thermal Impedance

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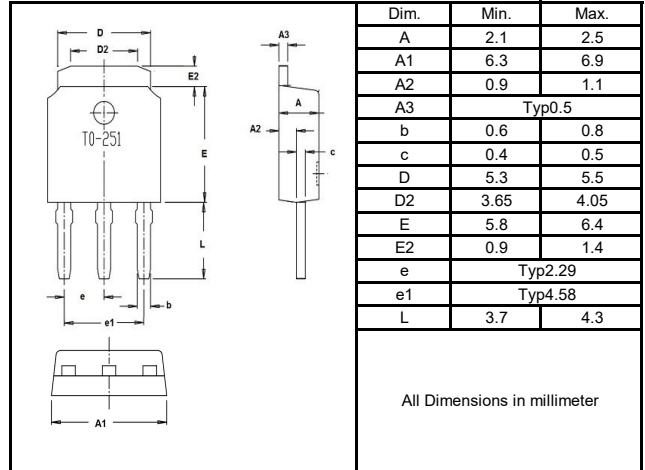
## N-Channel Enhancement Mode Power MOSFET

### Package Outline Dimensions millimeters

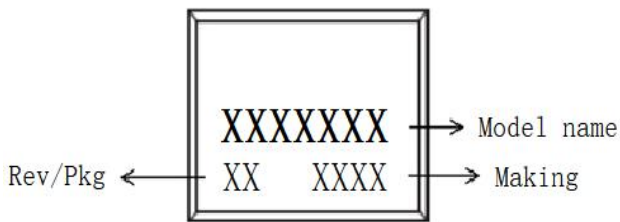
T0-252



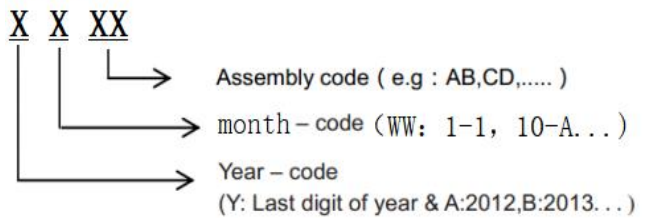
T0-251



### Marking on the body



#### MAKING:



### packing instruction

PKG	最小包装	内盒	外箱
T0-252			
	2500pcs/盘	5000pcs/盒	25000pcs/箱
T0-251			
	80pcs/管	4000pcs/盒	24000pcs/箱