

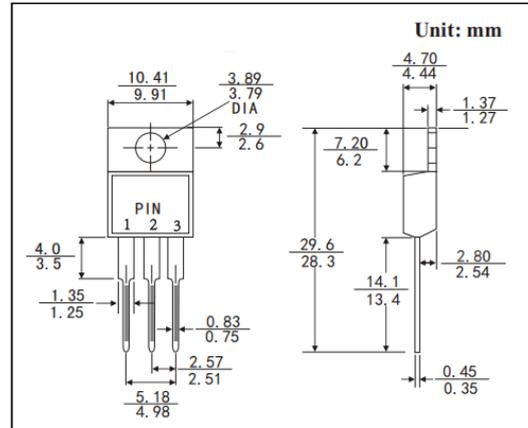
## 650V N-Channel Super-Junction MOSFET

### Features

- Lower RDS(on)
- Lower Crss
- Fast switching
- Improved dv/dt capability

### Applications

- LED/LCD/PDP TV and monitor Lighting
- Solar/Renewable/UPS-Micro Inverter System
- Charger + Adapter
- Power Supply



### Absolute Maximum Ratings (@T<sub>C</sub> = 25°C unless otherwise noted)

Symbol	Parameter	Value	Units
V <sub>DSS</sub>	Drain-Source Voltage	650	V
I <sub>D</sub>	Drain Current - Continuous (T <sub>C</sub> = 25°C)	11	A
	- Continuous (T <sub>C</sub> = 100°C)	7.9	A
I <sub>DM</sub>	Drain Current - Pulsed (Note 1)	44	A
V <sub>GSS</sub>	Gate-Source Voltage	±30	V
E <sub>AS</sub>	Single Pulsed Avalanche Energy	300	mJ
P <sub>D</sub>	Power Dissipation (T <sub>C</sub> = 25°C)	83	W
R <sub>θJC</sub>	Thermal Resistance, Junction to Case	1.50	W/°C
T <sub>J</sub> , T <sub>STG</sub>	Operating and Storage Temperature Range	-55 to +150	°C
T <sub>L</sub>	Maximum lead temperature for soldering purposes, 1/8" from case for 5 seconds	300	°C

\* Drain current limited by maximum junction temperature.

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Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
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### Off Characteristics

BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> = 0 V, I <sub>D</sub> = 250 μA	650	--	--	V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> = 650 V, V <sub>GS</sub> = 0 V	--	--	1	μA
		V <sub>DS</sub> = 520V, T <sub>C</sub> = 125°C	--	--	10	μA
I <sub>GSSF</sub>	Gate-Body Leakage Current, Forward	V <sub>GS</sub> = 30V, V <sub>DS</sub> = 0 V	--	--	1	μA
I <sub>GSSR</sub>	Gate-Body Leakage Current, Reverse	V <sub>GS</sub> = -30 V, V <sub>DS</sub> = 0 V	--	--	-1	μA

### On Characteristics

V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250 μA	2.0	3.0	4.0	V
R <sub>DS(on)</sub>	Static Drain-Source On-Resistance	V <sub>GS</sub> = 10 V, I <sub>D</sub> = 3.4A	--	341	360	mΩ

### Dynamic Characteristics

C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> = 25 V, V <sub>GS</sub> = 0 V, f = 1.0 MHz	--	780	-	pF
C <sub>oss</sub>	Output Capacitance		--	597	-	pF
C <sub>rss</sub>	Reverse Transfer Capacitance		--	17.4	-	pF
R <sub>g</sub>	Gate Resistance	V <sub>DS</sub> = 0V, V <sub>GS</sub> = 0 V, f = 1 MHz	--	4.9	-	Ω

### Switching Characteristics

t <sub>d(on)</sub>	Turn-On Delay Time	V <sub>GS</sub> = 10 V, V <sub>DS</sub> = 400 V, R <sub>G</sub> = 25Ω, I <sub>D</sub> = 4A	--	16	--	ns
t <sub>r</sub>	Turn-On Rise Time		--	35	--	ns
t <sub>d(off)</sub>	Turn-Off Delay Time		--	75	--	ns
t <sub>f</sub>	Turn-Off Fall Time		--	38	--	ns
Q <sub>g</sub>	Total Gate Charge	V <sub>DS</sub> = 400 V, I <sub>D</sub> = 4A, V <sub>GS</sub> = 10V	--	18.9	--	nC
Q <sub>gs</sub>	Gate-Source Charge		--	2.54	--	nC
Q <sub>gd</sub>	Gate-Drain Charge		--	6.09	--	nC

### Drain-Source Diode Characteristics and Maximum Ratings

I <sub>S</sub>	Maximum Continuous Drain-Source Diode Forward Current	--	--	11	A
I <sub>SM</sub>	Maximum Pulsed Drain-Source Diode Forward Current	--	--	44	A
V <sub>SD</sub>	Drain to Source Diode Forward Voltage, V <sub>GS</sub> = 0V, I <sub>SD</sub> = 3A, T <sub>J</sub> = 25°C	0.32	0.8	1.2	V
t <sub>rr</sub>	Body Diode Reverse Recovery Time, I <sub>F</sub> = 3.4A, dI/dt = 100A/μs	--	208	--	nS
Q <sub>rr</sub>	Body Diode Reverse Recovery Charge, I <sub>F</sub> = 3.4A, dI/dt = 100A/μs	--	1.7	--	nC

#### Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
2. EAS condition: T<sub>J</sub> = 25°C, V<sub>DD</sub> = 50V, V<sub>G</sub> = 10V, R<sub>G</sub> = 25Ω, L = 0.5mH,
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 0.5%

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## Electrical Characteristics Diagrams

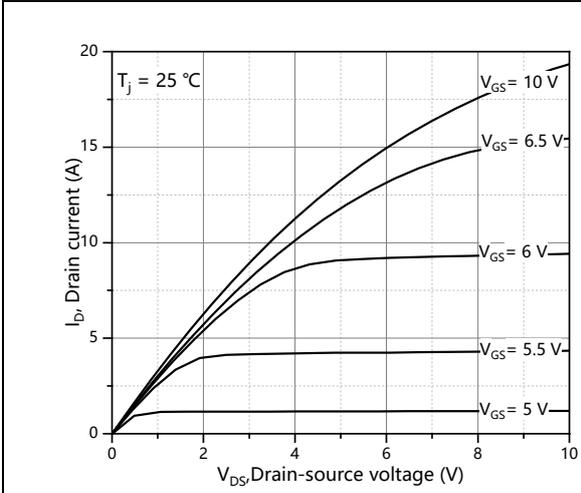


Figure 1. Typ. output characteristics

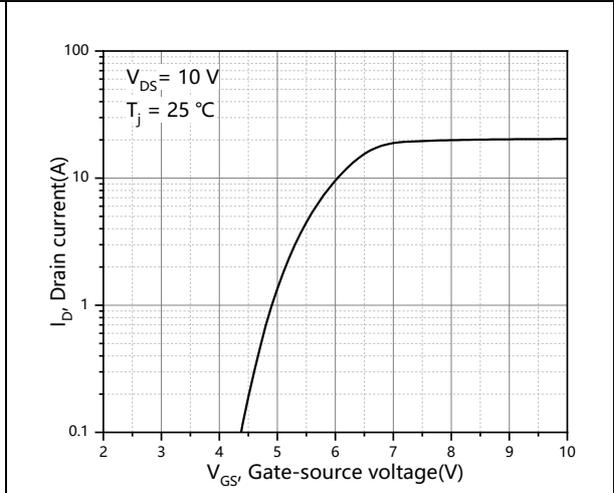


Figure 2. Typ. transfer characteristics

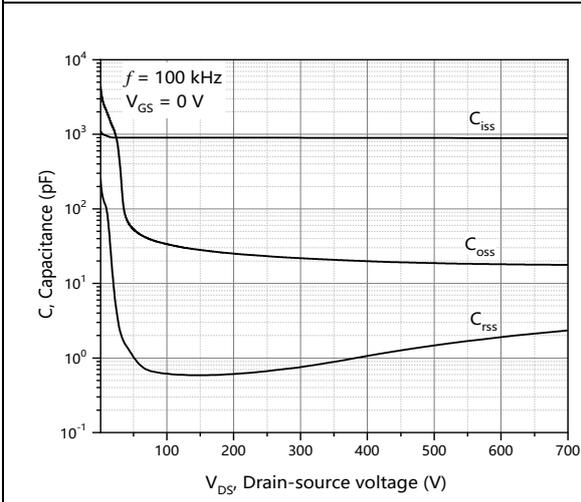


Figure 3. Typ. capacitances

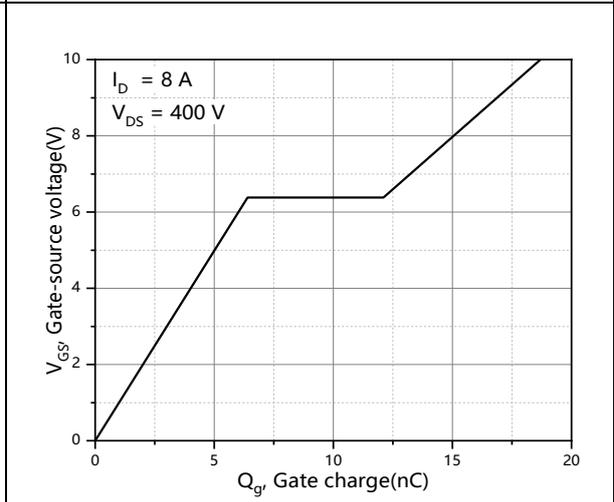


Figure 4. Typ. gate charge

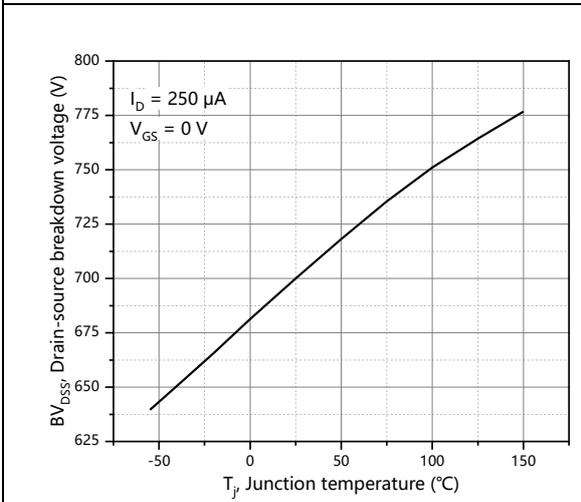


Figure 5. Drain-source breakdown voltage

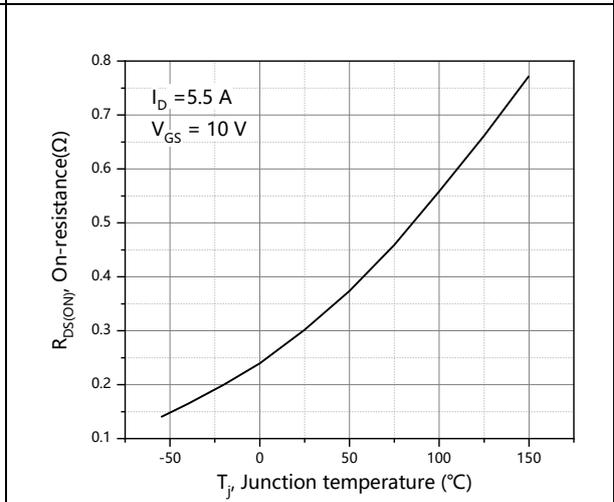
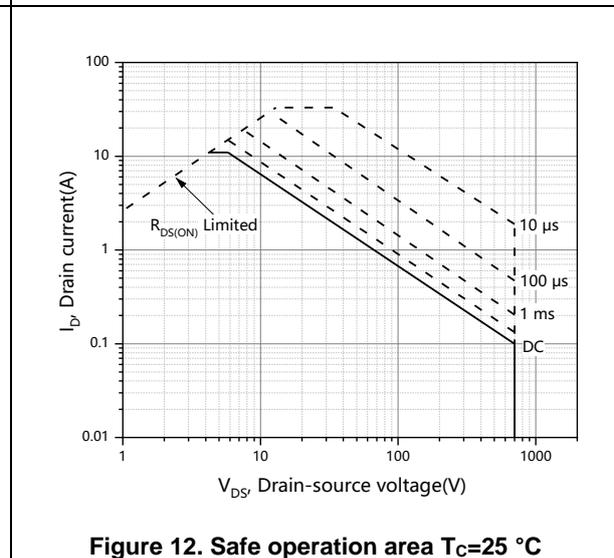
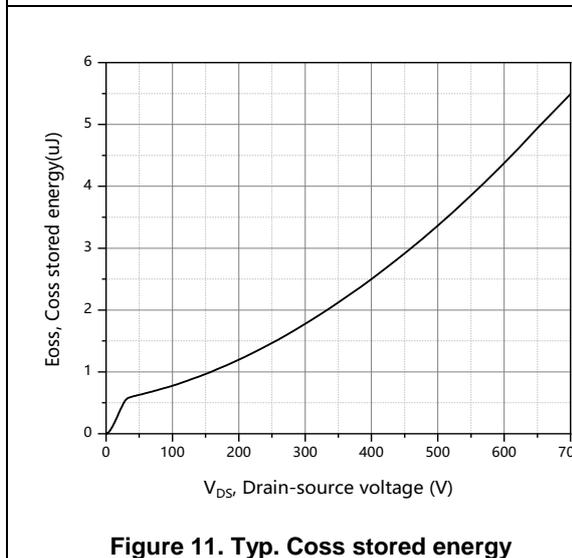
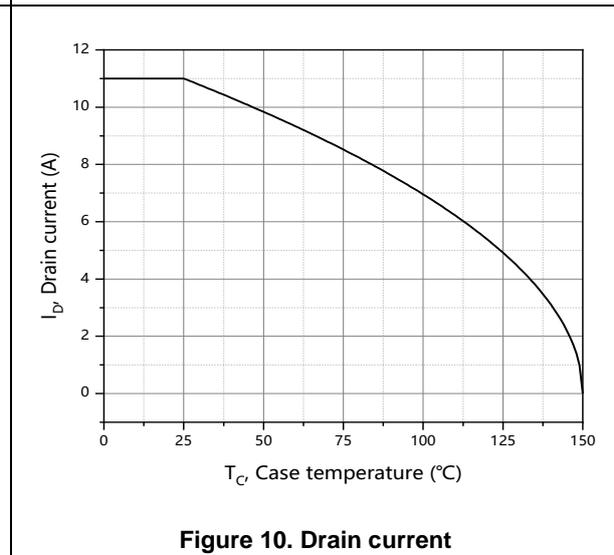
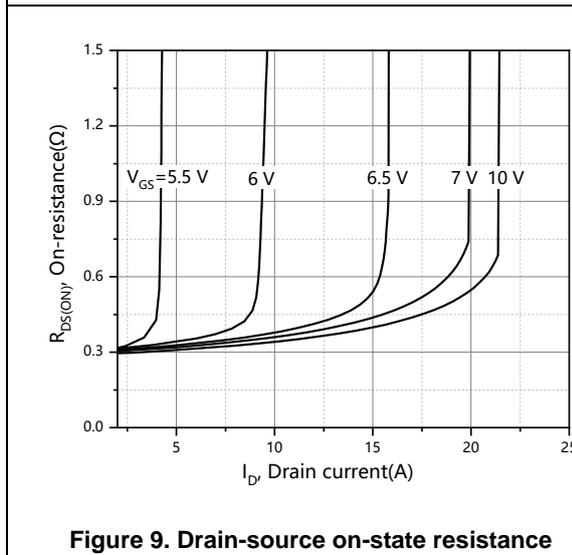
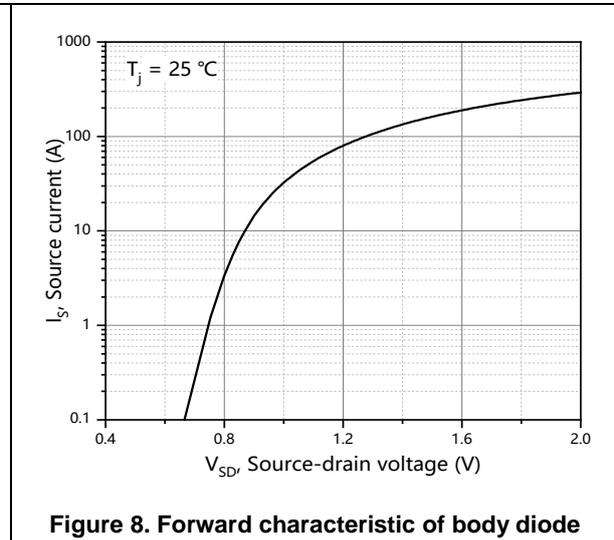
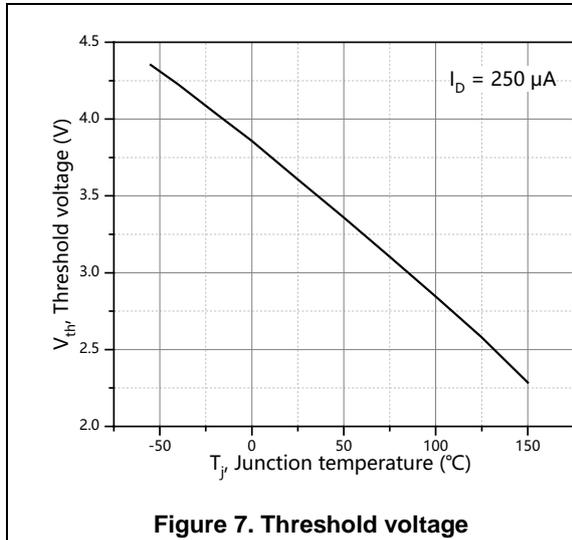
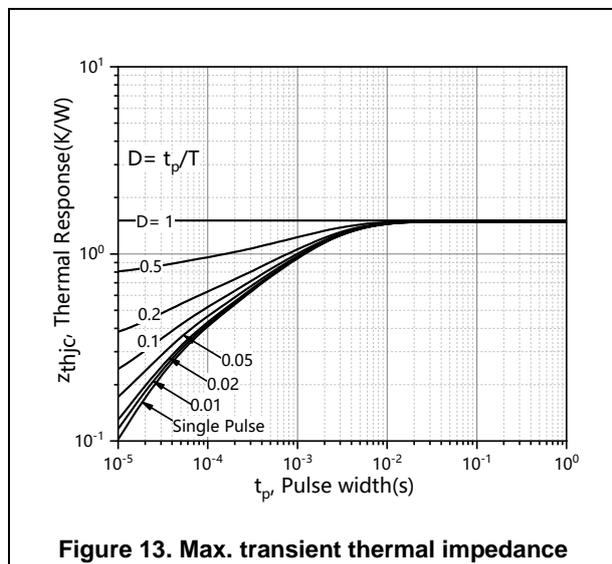


Figure 6. Drain-source on-state resistance

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### Marking

Part Number	Marking
LJ65R360P	65R360P

### Packing Information

Package	Tube (mm)	QTY/Tube (Kpcs)	Box Size (mm)	QTY/Box (Kpcs)	Carton Size (mm)	QTY/Carton (Kpcs)
TO-220	535*32.8*7	0.05	560*162*37	1.0	575*210*185	5.0