

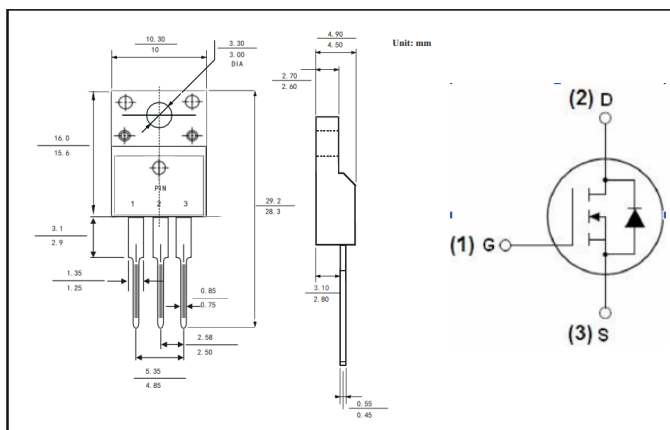
650V N-Channel Super-Junction MOSFET

Features

- Lower $R_{DS(on)}$
- Lower C_{rss}
- 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 (@ $T_C = 25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Value	Units
V_{DSS}	Drain-Source Voltage	650	V
I_D	Drain Current - Continuous ($T_C = 25^\circ\text{C}$)	11	A
	- Continuous ($T_C = 100^\circ\text{C}$)	7.9	A
I_{DM}	Drain Current - Pulsed (Note 1)	44	A
V_{GSS}	Gate-Source Voltage	± 30	V
E_{AS}	Single Pulsed Avalanche Energy	300	mJ
P_D	Power Dissipation ($T_C = 25^\circ\text{C}$)	83	W
$R_{\theta JC}$	Thermal Resistance, Junction to Case	1.50	$W/^\circ\text{C}$
T_J, T_{STG}	Operating and Storage Temperature Range	-55 to +150	$^\circ\text{C}$
T_L	Maximum lead temperature for soldering purposes, 1/8" from case for 5 seconds	300	$^\circ\text{C}$

* Drain current limited by maximum junction temperature.

650V N-Channel Super-Junction MOSFET

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
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Off Characteristics

BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS} = 0\text{ V}, I_D = 250\text{ }\mu\text{A}$	650	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = 650\text{ V}, V_{GS} = 0\text{ V}$	--	--	1	μA
		$V_{DS} = 520\text{ V}, T_C = 125^\circ\text{C}$	--	--	10	μA
I_{GSSF}	Gate-Body Leakage Current, Forward	$V_{GS} = 30\text{ V}, V_{DS} = 0\text{ V}$	--	--	1	μA
I_{GSSR}	Gate-Body Leakage Current, Reverse	$V_{GS} = -30\text{ V}, V_{DS} = 0\text{ V}$	--	--	-1	μA

On Characteristics

$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\text{ }\mu\text{A}$	2.0	3.0	4.0	V
$R_{DS(on)}$	Static Drain-Source On-Resistance	$V_{GS} = 10\text{ V}, I_D = 3.4\text{ A}$	--	341	360	m Ω

Dynamic Characteristics

C_{iss}	Input Capacitance	$V_{DS} = 25\text{ V}, V_{GS} = 0\text{ V},$ $f = 1.0\text{ MHz}$	--	780	-	pF
C_{oss}	Output Capacitance		--	597	-	pF
C_{rss}	Reverse Transfer Capacitance		--	17.4	-	pF

Switching Characteristics

$t_{d(on)}$	Turn-On Delay Time	$V_{GS} = 10\text{ V}, V_{DS} = 400\text{ V},$ $R_G = 25\Omega, I_D = 4\text{ A}$	--	16	--	ns
t_r	Turn-On Rise Time		--	35	--	ns
$t_{d(off)}$	Turn-Off Delay Time		--	75	--	ns
t_f	Turn-Off Fall Time		--	38	--	ns
Q_g	Total Gate Charge	$V_{DS} = 400\text{ V}, I_D = 4\text{ A},$ $V_{GS} = 10\text{ V}$	--	18.9	--	nC
Q_{gs}	Gate-Source Charge		--	2.54	--	nC
Q_{gd}	Gate-Drain Charge		--	6.09	--	nC

Drain-Source Diode Characteristics and Maximum Ratings

I_S	Maximum Continuous Drain-Source Diode Forward Current	--	--	11	A
I_{SM}	Maximum Pulsed Drain-Source Diode Forward Current	--	--	44	A
V_{SD}	Drain to Source Diode Forward Voltage, $V_{GS} = 0\text{ V}, I_{SD} = 3\text{ A}, T_J = 25^\circ\text{C}$	0.32	0.8	1.2	V
t_{rr}	Body Diode Reverse Recovery Time, $I_F = 3.4\text{ A}, dI/dt = 100\text{ A}/\mu\text{s}$	--	208	--	nS
Q_{rr}	Body Diode Reverse Recovery Charge, $I_F = 3.4\text{ A}, dI/dt = 100\text{ A}/\mu\text{s}$	--	1.7	--	nC

Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
2. EAS condition: $T_J = 25^\circ\text{C}, V_{DD} = 50\text{ V}, V_G = 10\text{ V}, R_G = 25\Omega, L = 0.5\text{ mH}$,
3. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 0.5\%$

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Electrical Characteristics Diagrams

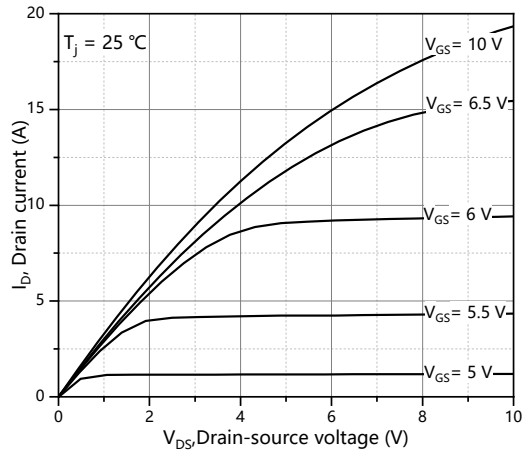


Figure 1. Typ. output characteristics

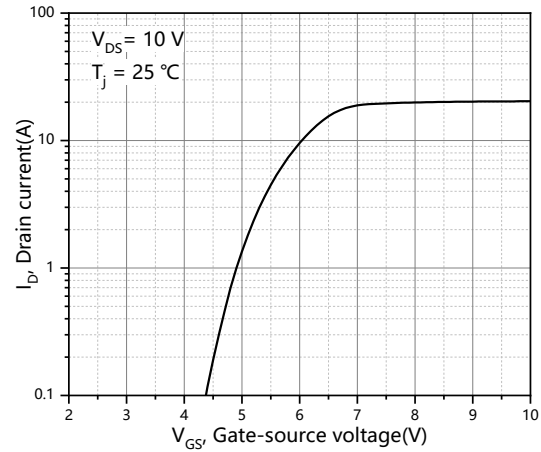


Figure 2. Typ. transfer characteristics

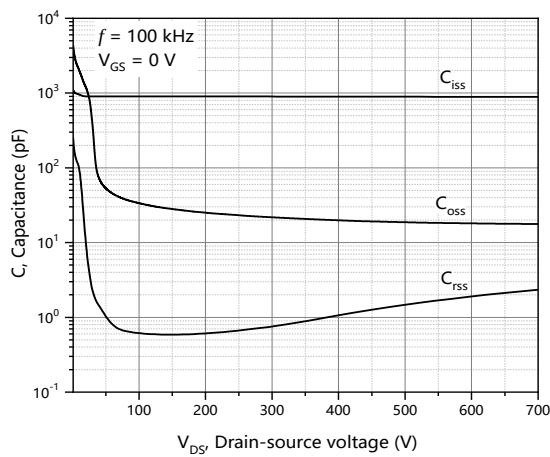


Figure 3. Typ. capacitances

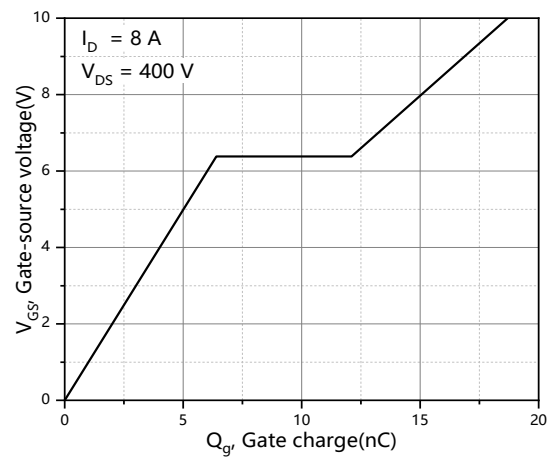


Figure 4. Typ. gate charge

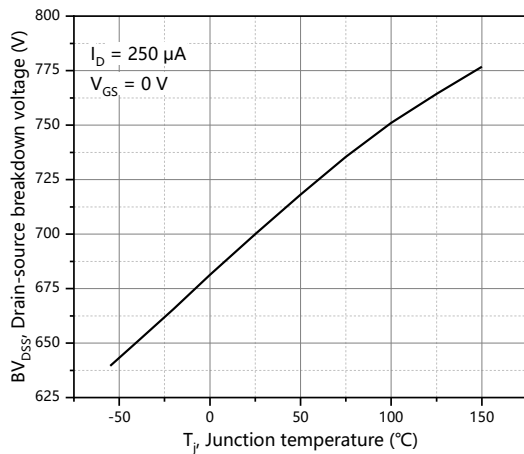


Figure 5. Drain-source breakdown voltage

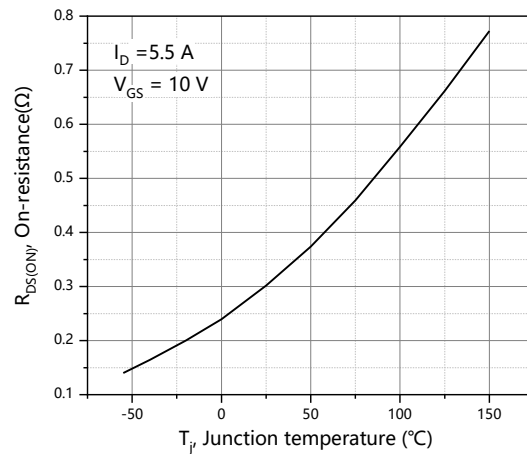


Figure 6. Drain-source on-state resistance

650V N-Channel Super-Junction MOSFET

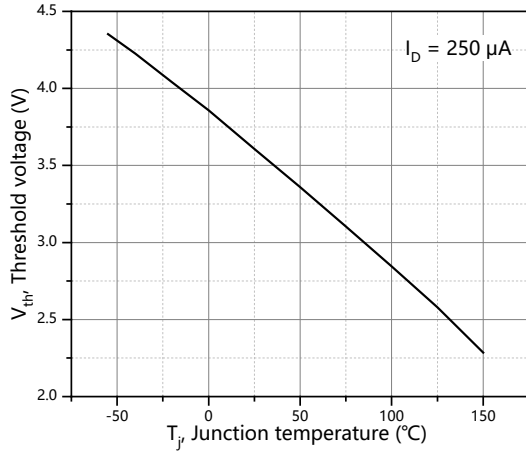


Figure 7. Threshold voltage

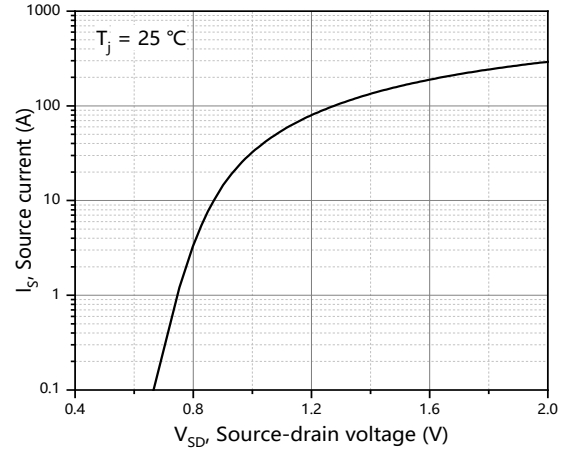


Figure 8. Forward characteristic of body diode

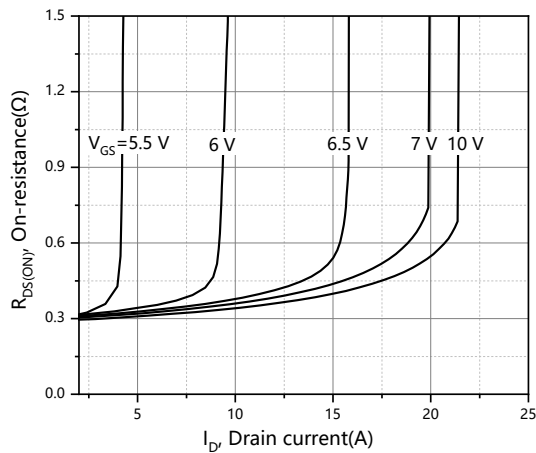


Figure 9. Drain-source on-state resistance

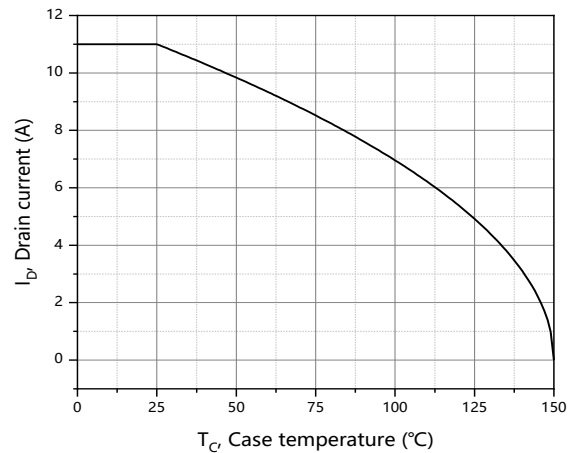


Figure 10. Drain current

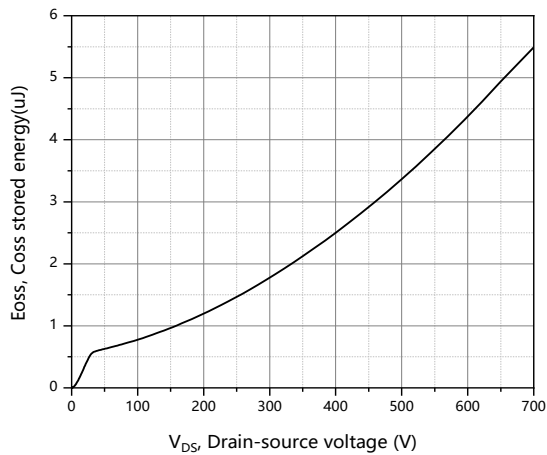


Figure 11. Typ. Coss stored energy

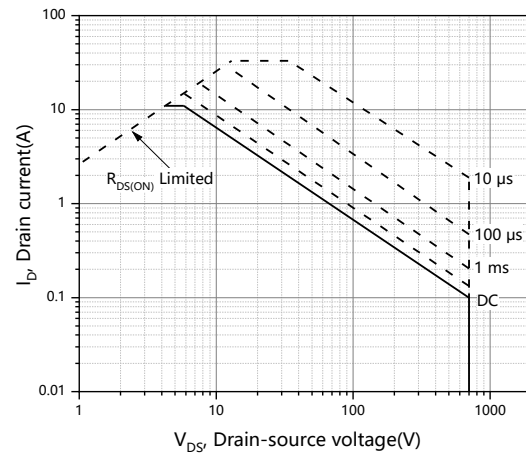
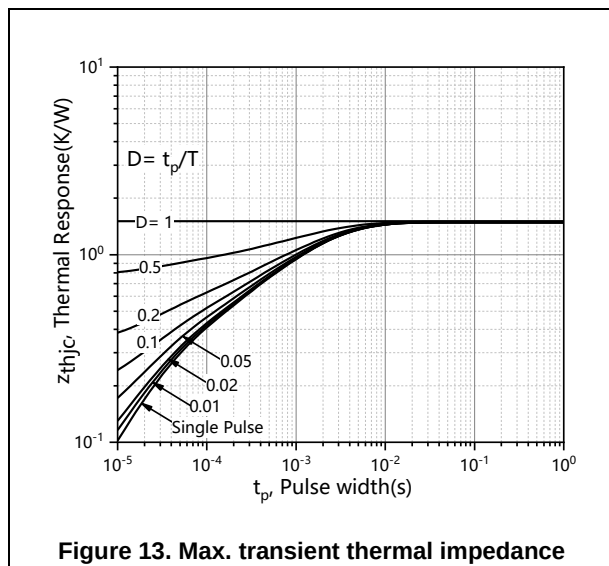


Figure 12. Safe operation area $T_c=25\text{ }^{\circ}\text{C}$

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Marking

Part Number	Marking
LJ65R360F	65R360F

Packing Information

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