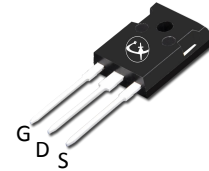
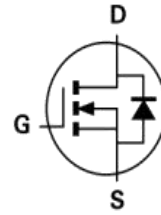


MAIN CHARACTERISTICS

I_D	150A
V_{DS}	1200V
$R_{DS(on)-typ}$ (@VGS=18V Tc=25°C)	13mΩ



TO-247

FEATURES

- High-Speed Switching
- Low switching losses
- High blocking voltage with low on-resistance
- Temperature-Independent Switching Behavior

APPLICATIONS

- PV string inverters
- Solar power optimizer
- Switch mode power supplies
- Online UPS/Industrial UPS
- High Voltage DC/DC Converters

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

Product specification classification

Part Number	Package	Mode Name	Pack
LSC013M120B	TO-247	LSC013M120B	Tube

Maximum Ratings at Tc=25°C unless otherwise specified

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	1200	V
Gate-Source Voltage	V_{GS}	-8/+22	V
Recommended Operation Value	V_{GSop}	-4/+18	V
Continue Drain Current T _c =25°C	I_D	150	A
Continue Drain Current T _c =100°C		106	
Pulsed Drain Current	I_{DM}	316	A
Power Dissipation	P_D	535	W
Operating Temperature Range	T_J	-55 to +175	°C
Storage Temperature Range	T_{STG}	-55 to +175	°C
Soldering Temperature	T_L	260	°C
Thermal Resistance, Junction to Case	$R_{\theta JC}$	0.28	°C/W
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	26.8	°C/W

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

Electrical Characteristics at Tc=25°C unless otherwise specified

Parameter	Test Condition	Symbol	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	$V_{GS} = 0 \text{ V}, I_D = 1 \text{ mA}$	BV_{DSS}	1200	-	-	V
Drain-Source Leakage Current	$V_{DS} = 1200 \text{ V}, V_{GS} = 0 \text{ V}$	I_{DSS}	-	-	100	μA
Gate Leakage Current	$V_{GS} = +18 \text{ V}, V_{DS} = 0 \text{ V}$	I_{GSS}	-	-	100	nA
	$V_{GS} = -4 \text{ V}, V_{DS} = 0 \text{ V}$		-	-	-100	nA
Gate-Source Threshold Voltage	$V_{DS} = V_{GS}, I_D = 28 \text{ mA}$	$V_{GS(th)}$	2	2.6	4	V
	$V_{DS} = V_{GS}, I_D = 28 \text{ mA}$ $T_J = 175^\circ\text{C}$		-	2	-	V
Drain-Source On-State Resistance	$V_{GS} = 15 \text{ V}, I_D = 100 \text{ A}$	$R_{DS(on)}$	-	17	28	mΩ
	$V_{GS} = 15 \text{ V}, I_D = 100 \text{ A},$ $T_J = 175^\circ\text{C}$		-	24	-	mΩ
	$V_{GS} = 18 \text{ V}, I_D = 100 \text{ A}$		-	13	20	mΩ
	$V_{GS} = 18 \text{ V}, I_D = 100 \text{ A},$ $T_J = 175^\circ\text{C}$		-	23	-	mΩ
Transconductance	$V_{DS}=20\text{V}, I_D=100\text{A}$	g_{fs}	-	58	-	S
	$V_{DS}=20\text{V}, I_D=100\text{A}, T_J=175^\circ\text{C}$		-	55	-	S
Internal Gate Resistance	$V_{AC}=25\text{mV}, f=1\text{MHz}$	R_G	-	9	-	Ω
Input Capacitance	$V_{DS}=1000\text{V}, V_{GS}=0\text{V}, T_J=25^\circ\text{C}, V_{AC}=25\text{mV}, f=100\text{KHz}$	C_{iss}	-	6522	-	pF
Output Capacitance		C_{oss}	-	300	-	pF
Reverse Transfer Capacitance		C_{rss}	-	17.7	-	pF
Coss Stored Energy		E_{oss}	-	175	-	μJ
Total Gate Charge(Note2)	$I_D = 100\text{A}, V_{DD} = 800\text{V},$ $V_{GS} = -4/+18 \text{ V}$	Q_G	-	250	-	nC
Gate to Source Charge(Note2)		Q_{GS}	-	89	-	nC
Gate to Drain Charge(Note2)		Q_{GD}	-	74	-	nC

Electrical Characteristics at Tc=25°C unless otherwise specified

Turn-on Switching Energy	VDS = 800 V, ID = 100A, VGS = -4/+18 V, RG = 2.4 Ω L=120μH	Eon	-	2869	-	μJ
Turn-off Switching Energy		Eoff	-	1959	-	μJ
Turn-on Delay Time(Note2)		td(ON)	-	56	-	ns
Rise Time(Note2)		tr	-	83	-	ns
Turn-Off Delay Time(Note2)		td(OFF)	-	95	-	ns
Fall Time(Note2)		tf	-	23	-	ns

Source-Drain Diode Characteristics at Ta=25°C unless otherwise specified

Parameter	Test Condition	Symbol	Min.	Typ.	Max.	Unit
Maximun Body-Diode Continuous Current		IS	-	-	150	A
Maximun Body-Diode Pulsed Current(Note2)		ISM	-	-	316	A
Drain-Source Diode Forward Voltage	VGS = -4 V, ISD = 50 A	VSD	-	3.4	-	V
	VGS = -4 V, ISD = 50 A, Tj=175°C		-	3	-	V
Reverse Recovery Time(Note2)	ISD = 100 A, VR = 800 V, dIF / dt = 3000 A/μs	trr	-	52	-	ns
Reverse Recovery Charge(Note2)		Qrr	-	2211	-	nC
Peak Reverse Recovery Current		Irrm	-	69	-	A

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

RATINGS AND CHARACTERISTIC CURVES

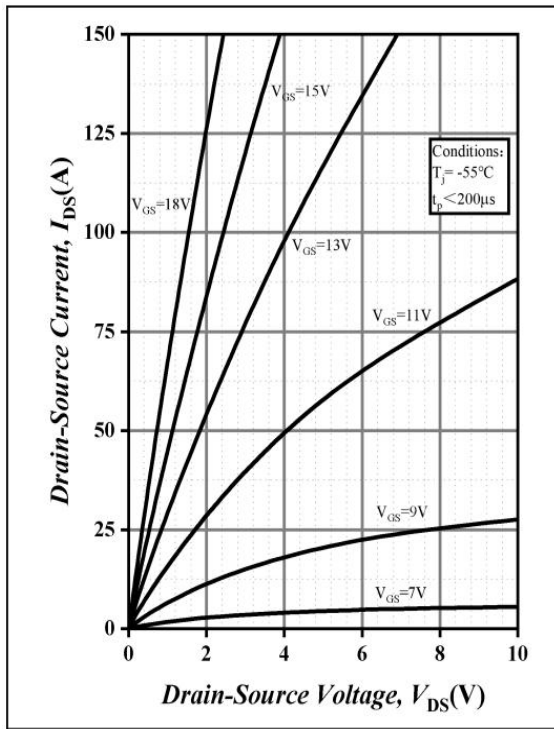


Figure 1. Output Characteristic $T_j = -55^\circ\text{C}$

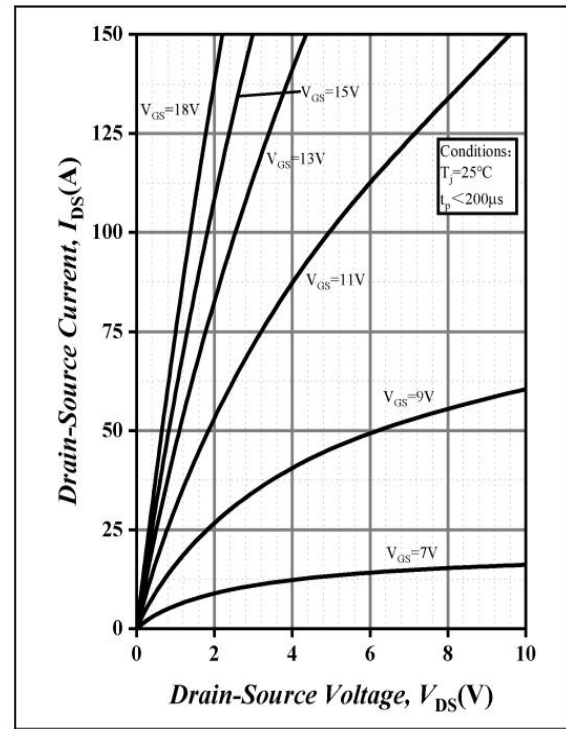


Figure 2. Output Characteristic $T_j = 25^\circ\text{C}$

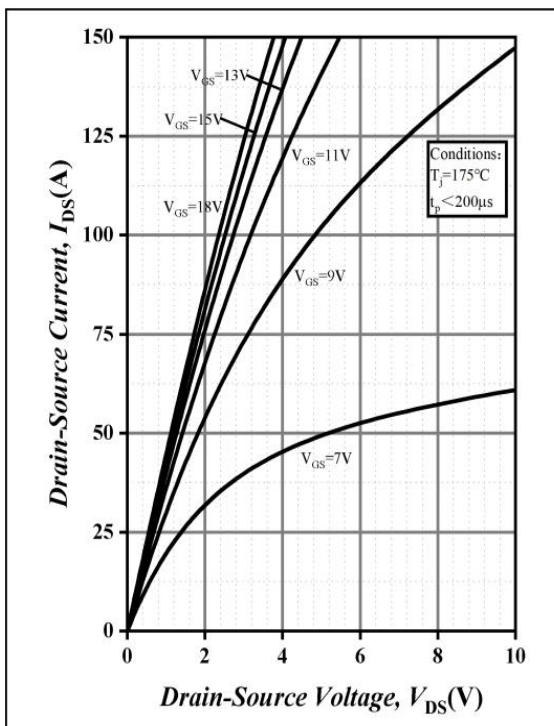


Figure 3. Output Characteristic $T_j = 175^\circ\text{C}$

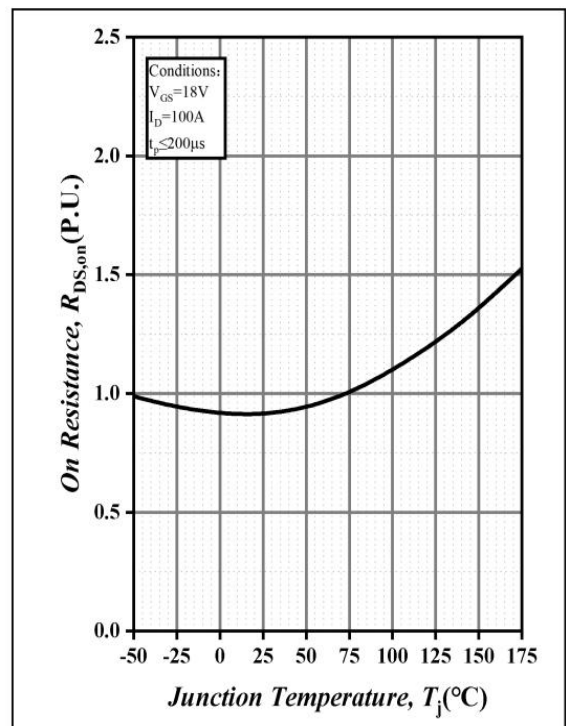


Figure 4. Normalized On-Resistance vs. Temperature

RATINGS AND CHARACTERISTIC CURVES

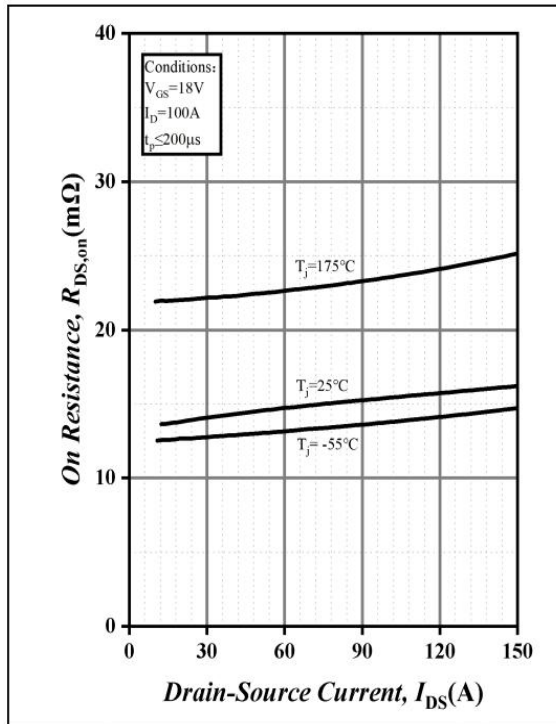


Figure 5. On-Resistance vs. Drain Current for Various Temperature

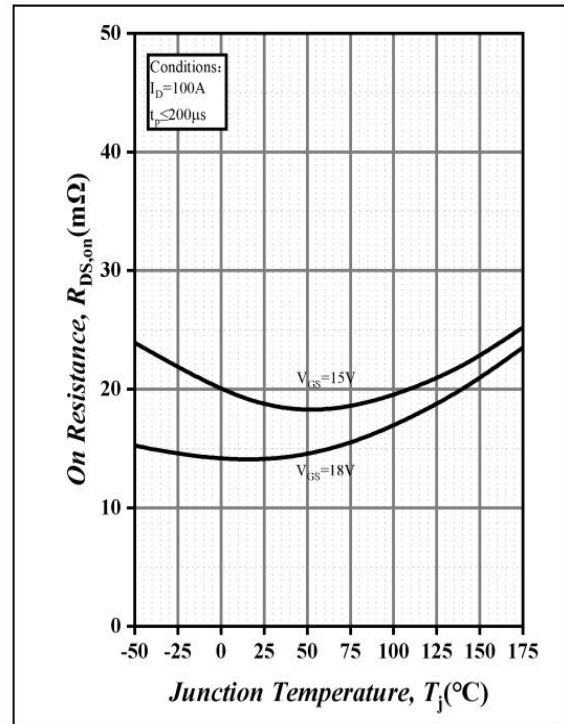


Figure 6. On-Resistance vs. Temperature for Various Gate Voltage

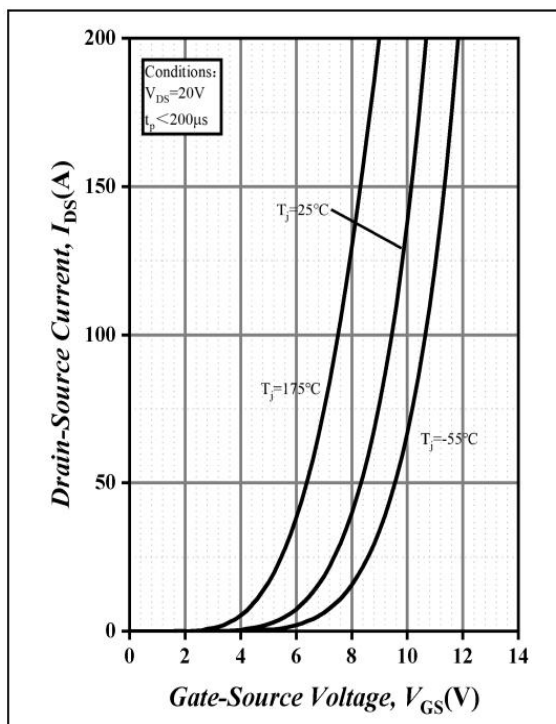


Figure 7. Transfer Characteristic for Various Junction Temperature

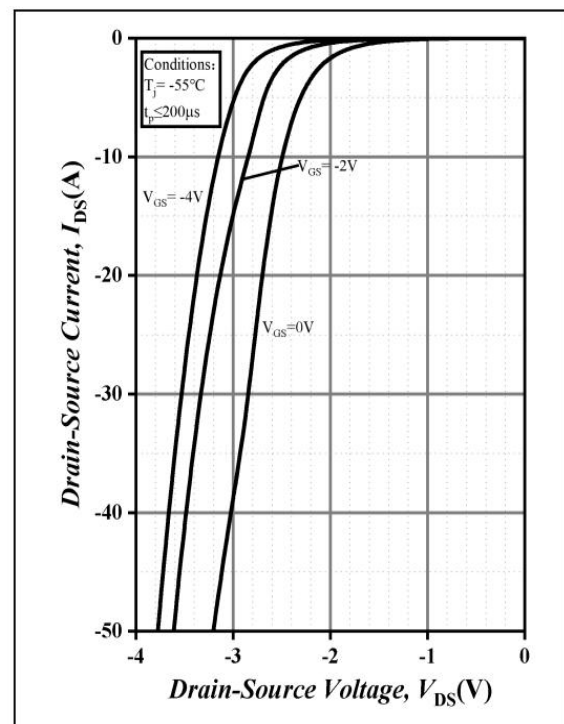


Figure 8. Body Diode Characteristic $T_j = -55^\circ\text{C}$

RATINGS AND CHARACTERISTIC CURVES

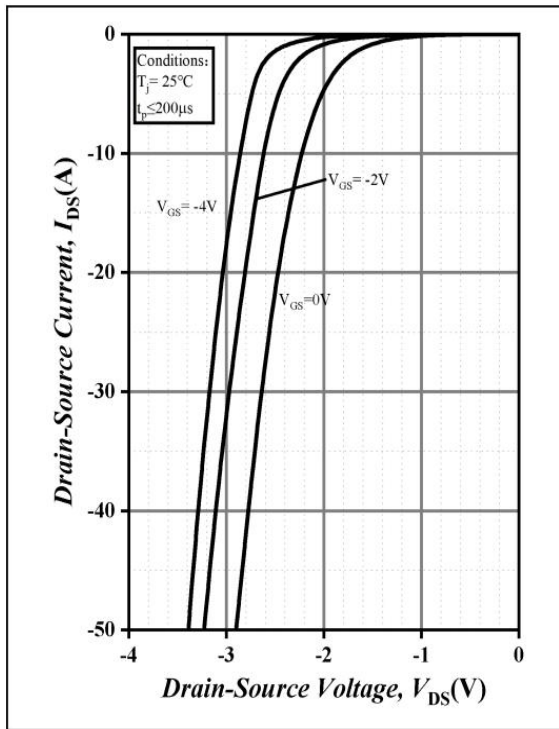


Figure 9. Body Diode Characteristic $T_j = 25^\circ\text{C}$

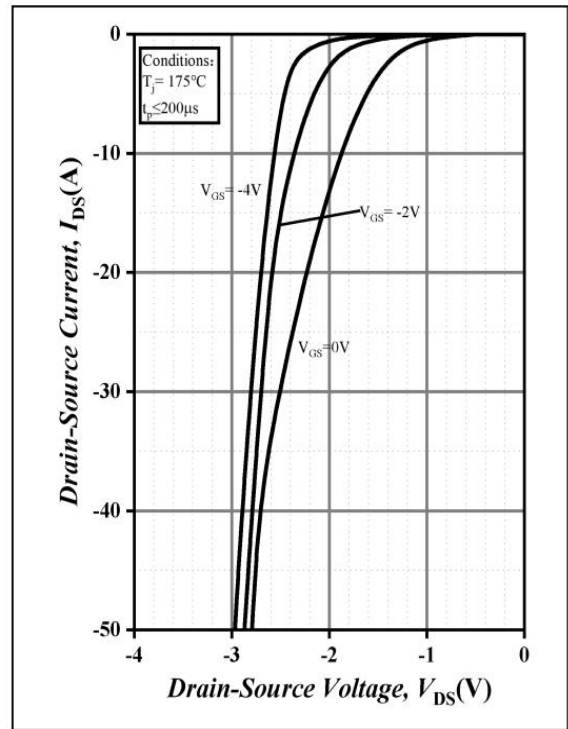


Figure 10. Body Diode Characteristic $T_j = 175^\circ\text{C}$

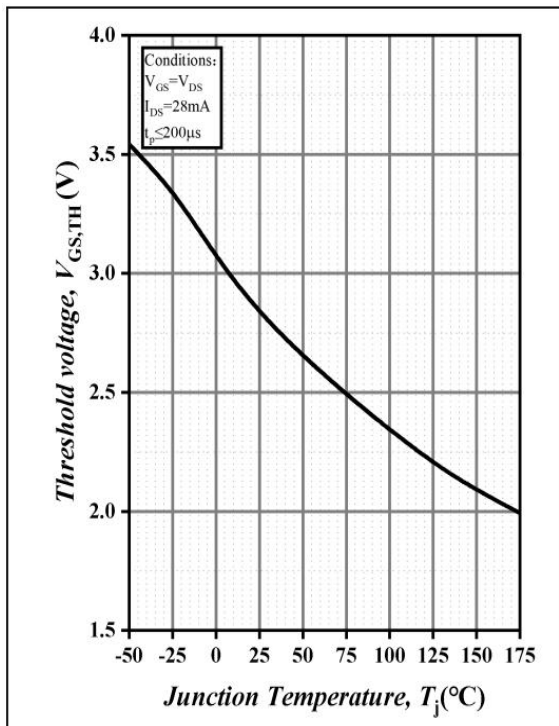


Figure 11. Threshold Voltage vs. Temperature

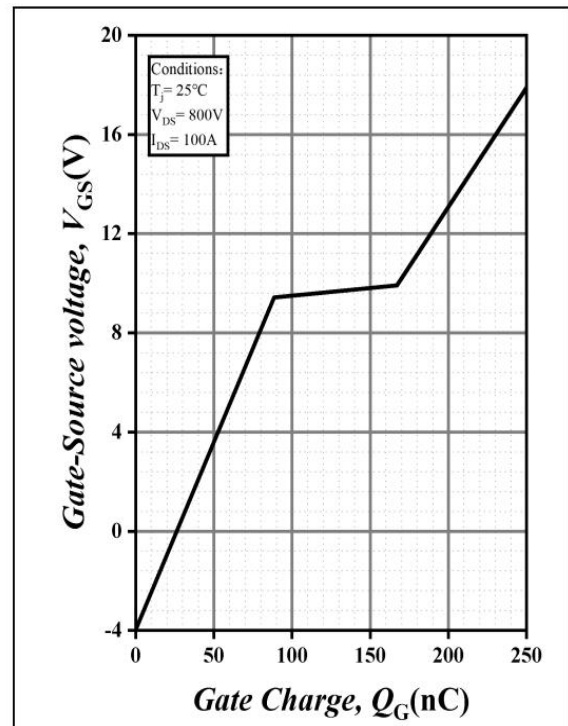


Figure 12. Gate Charge Characteristic

RATINGS AND CHARACTERISTIC CURVES

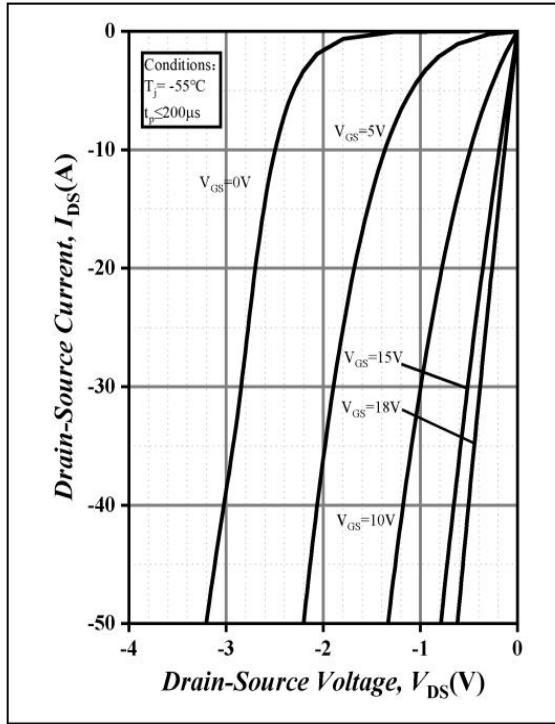


Figure 13. 3rd Quadrant Characteristic $T_j = -55^\circ\text{C}$

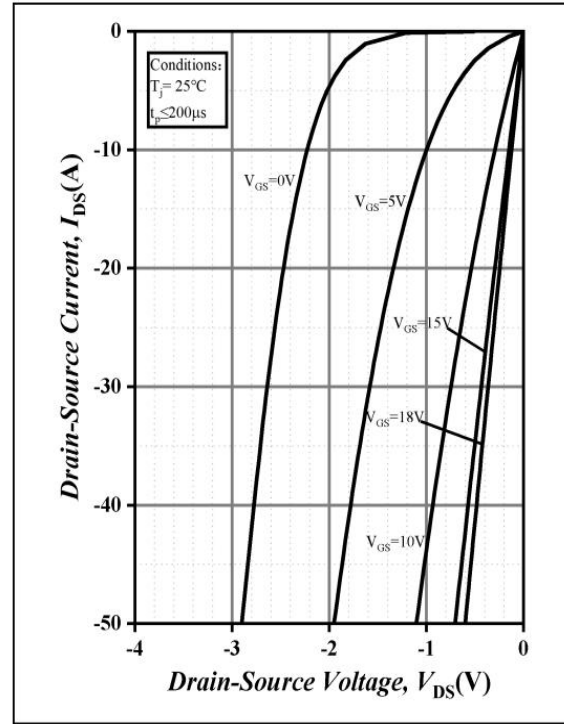


Figure 14. 3rd Quadrant Characteristic $T_j = 25^\circ\text{C}$

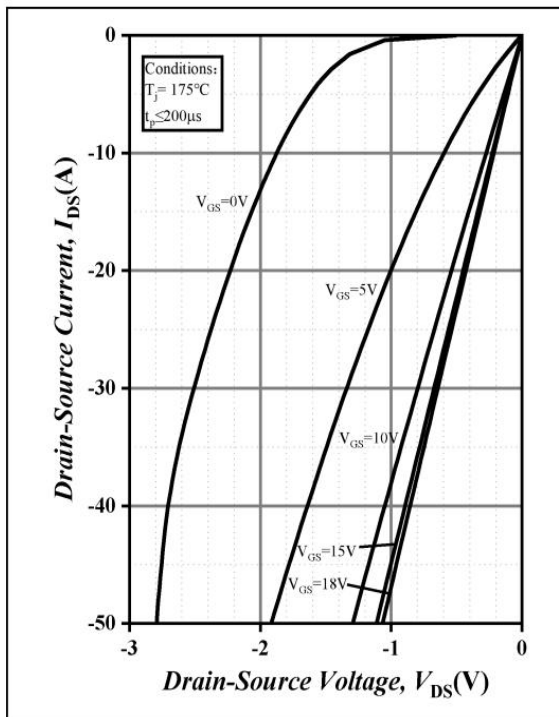


Figure 15. 3rd Quadrant Characteristic $T_j = 175^\circ\text{C}$

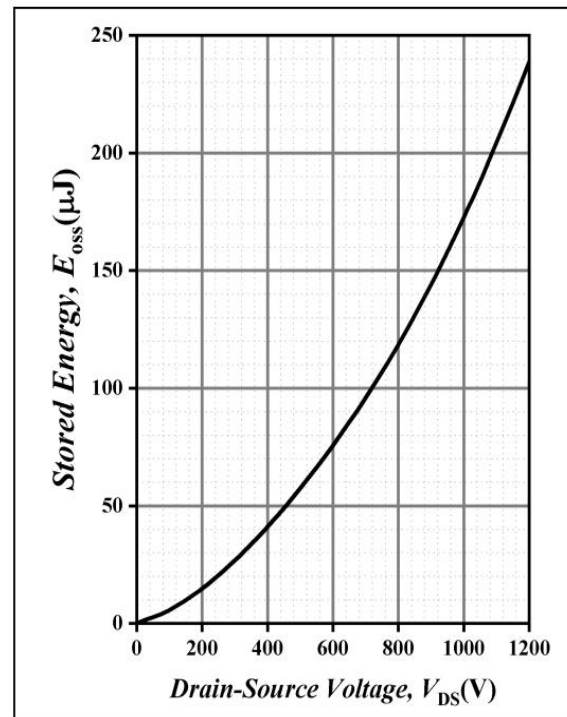


Figure 16. Output Capacitor Stored Energy

RATINGS AND CHARACTERISTIC CURVES

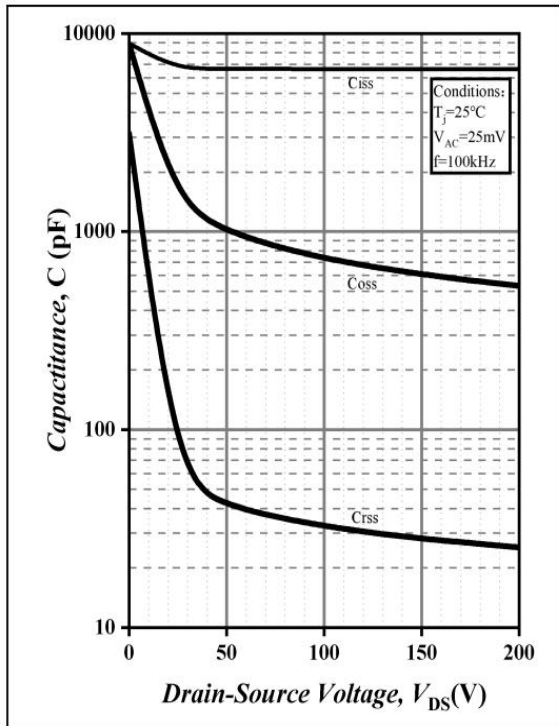


Figure 17. Capacitance vs. Drain-Source Voltage(0 - 200V)

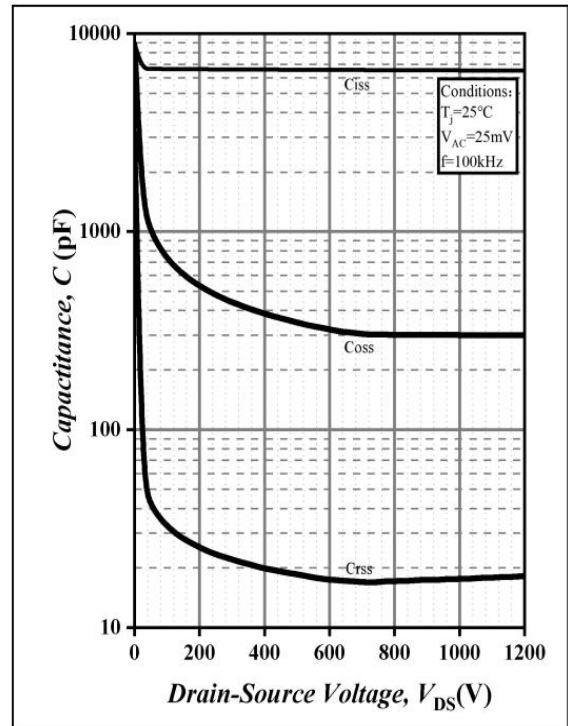


Figure 18. Capacitance vs. Drain-Source Voltage(0 - 1200V)

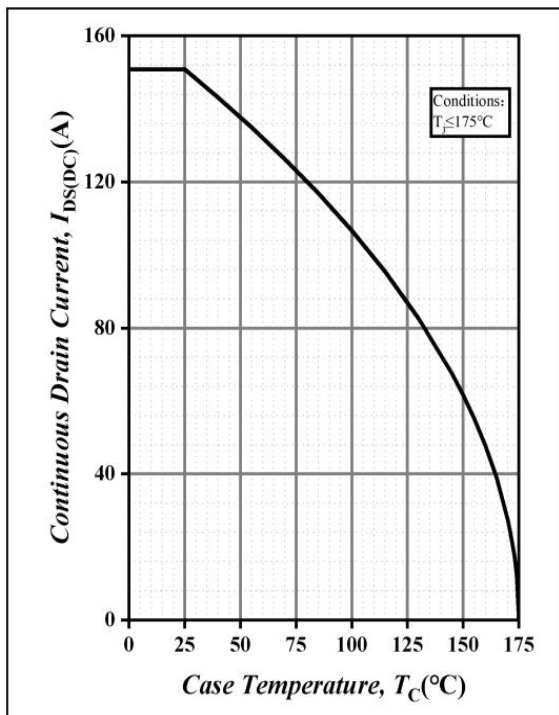


Figure 19. Continuous Drain Current Derating vs. Case Temperature

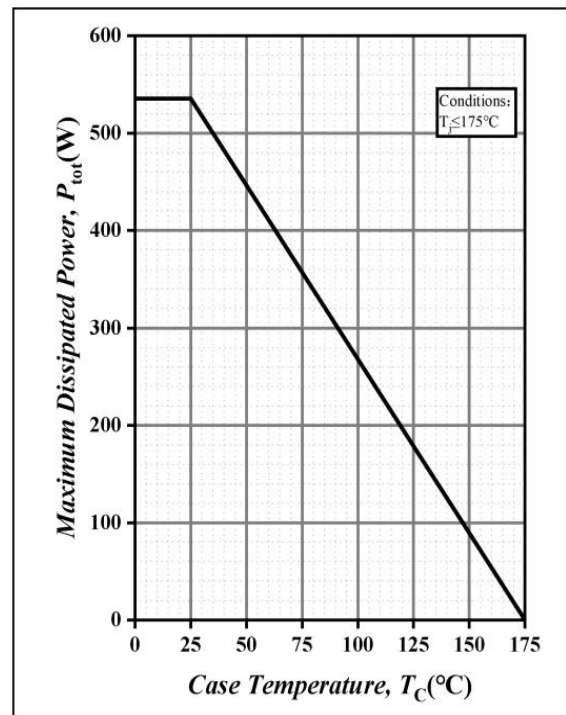


Figure 20. Maximum Power Dissipation Derating vs. Case Temperature

RATINGS AND CHARACTERISTIC CURVES

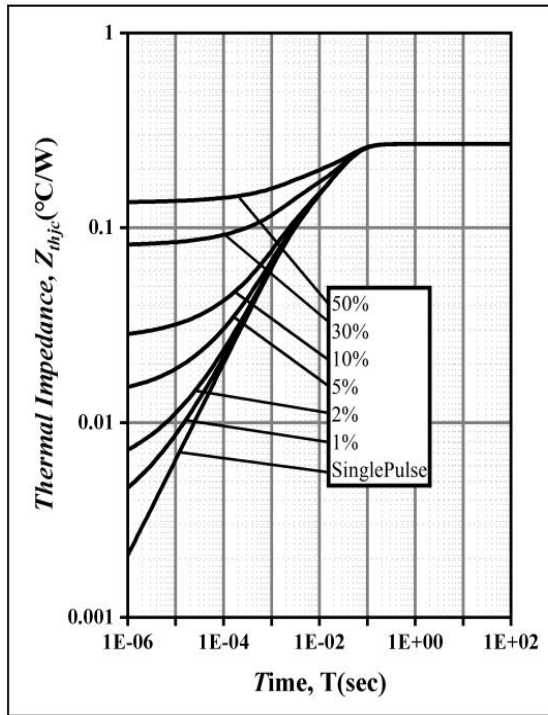


Figure 21. Transient Thermal Impedance (Junction - Case)

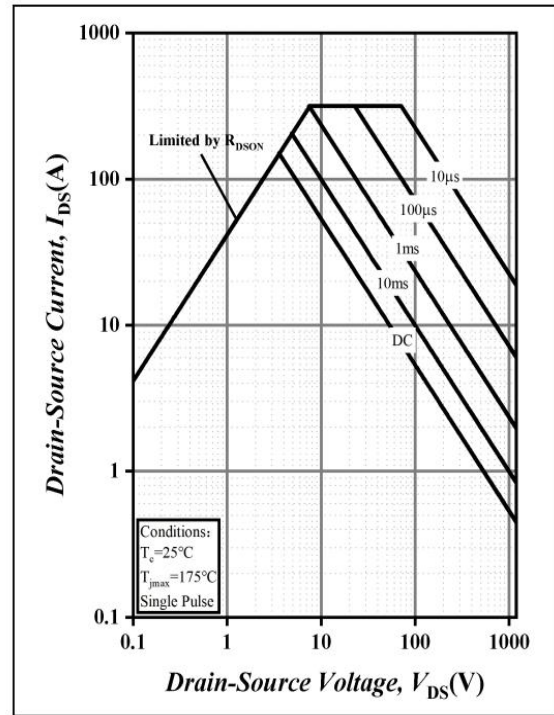


Figure 22. Safe Operation Area

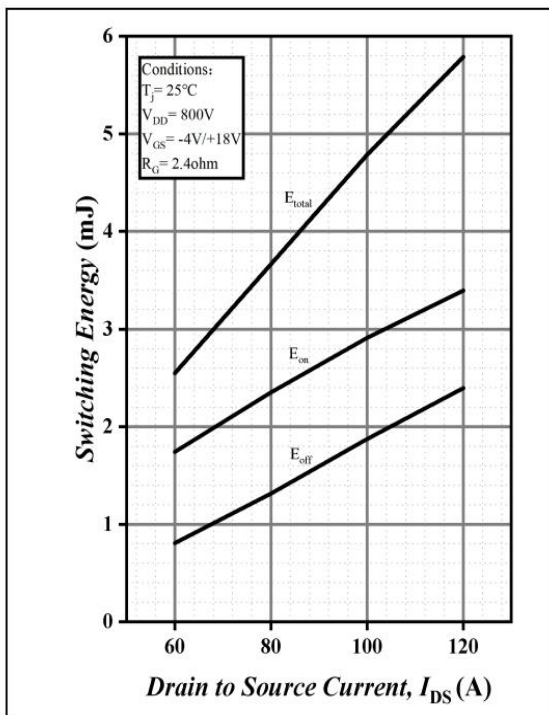


Figure 23. Clamped Inductive Switching Energy vs. Drain Current($V_{DD}=800V$)

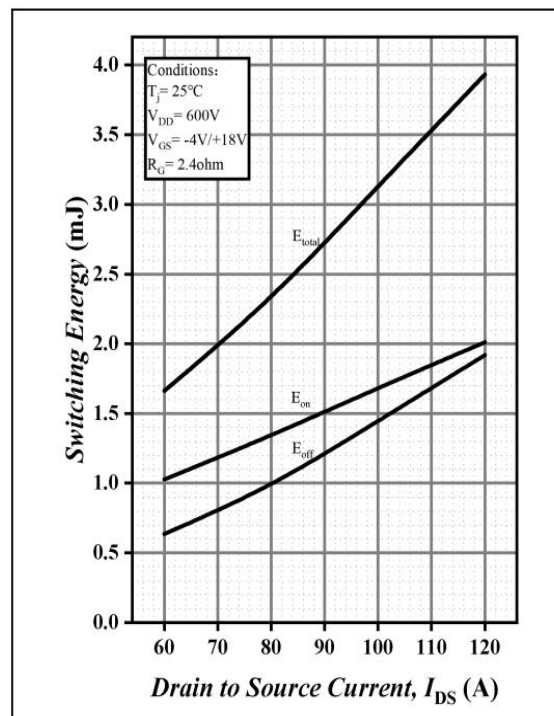


Figure 24. Clamped Inductive Switching Energy vs. Drain Current($V_{DD}=600V$)

RATINGS AND CHARACTERISTIC CURVES

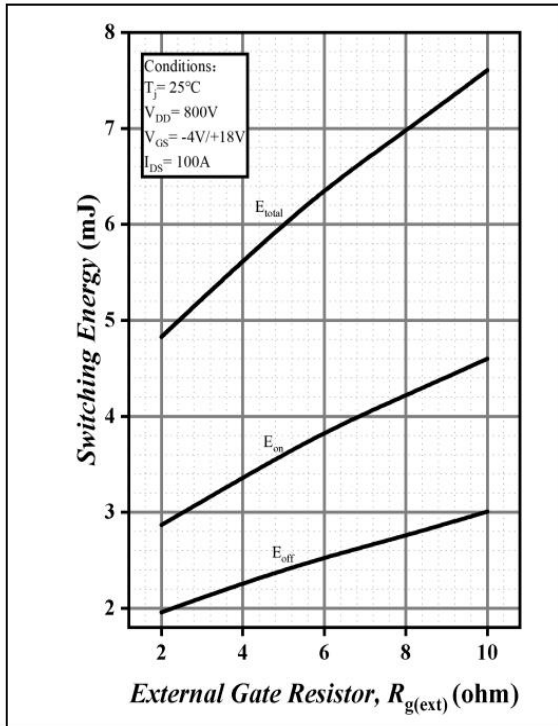


Figure 25. Clamped Inductive Switching Energy vs. $R_{g(ext)}$

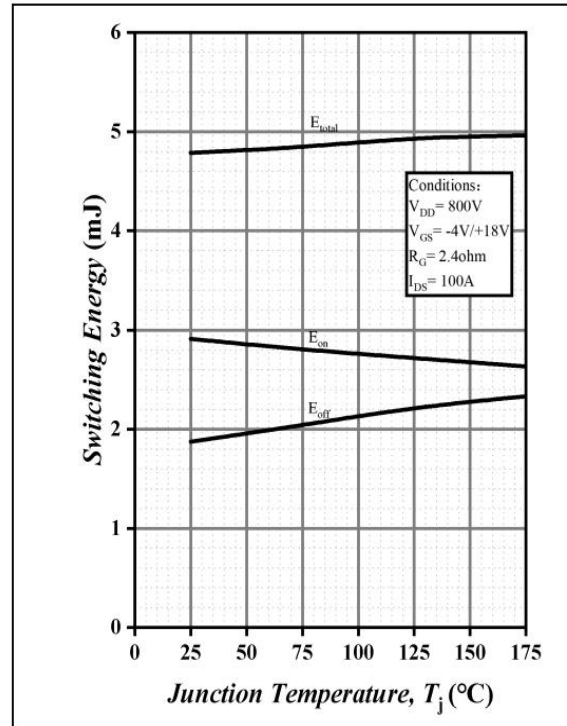


Figure 26. Clamped Inductive Switching Energy vs. Temperature

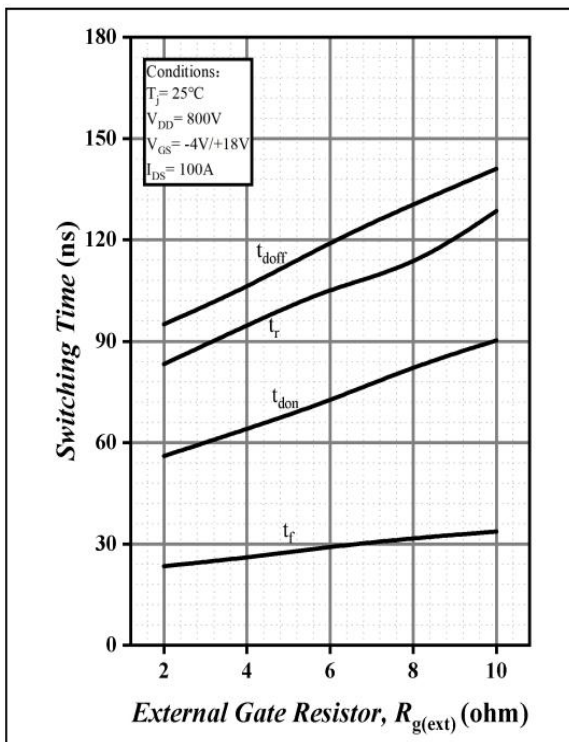
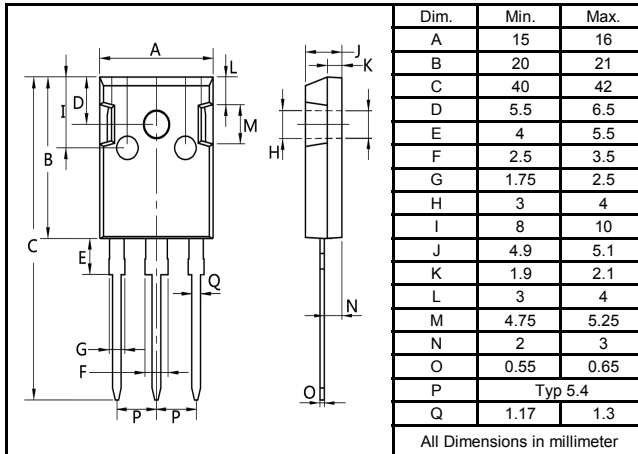


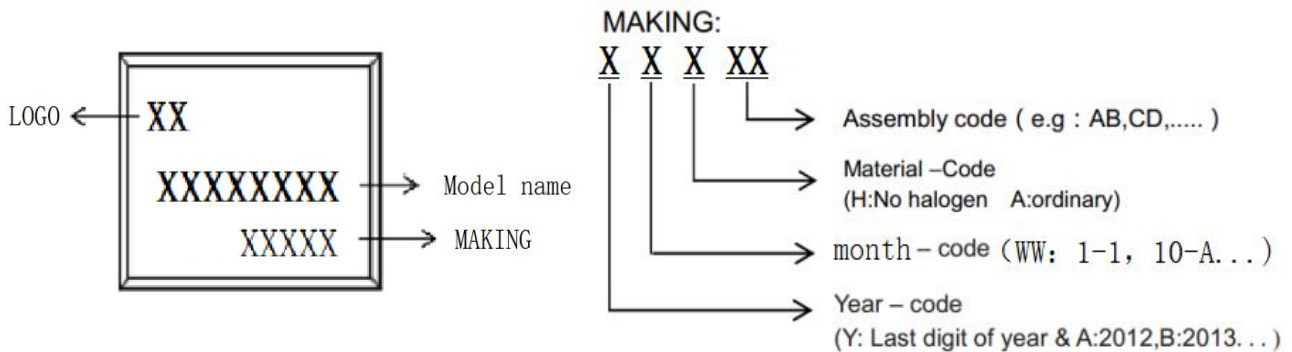
Figure 27. Switching Times vs. $R_{g(ext)}$

Package Outline Dimensions millimeters

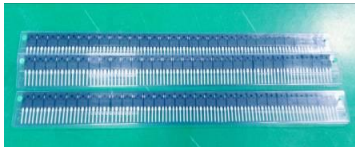
T0-247



Marking on the body



packing instruction

PKG	Minimal Package	Mini Box	Box
T0-247			
	30pcs/pdpe	600pcs/box	3000pcs/box

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.

<http://www.lxmicro.com>

Revision History

Rev	Changes	Date
2.0	First version	2026/5/27