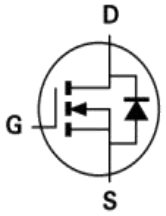
LSC800M65D

SiC N-Channel MOSFET

MAIN CHARACTERISTICS

I_D	7A
V_{DS}	800V
R_{DSON}-Typ （@VGS=15V Tc=25°C）	700mΩ



Features

- High Speed Switching
- High Blocking Voltage with Low RDS(on)
- Easy to Parallel
- Simple to Drive
- RoHS Compliant

TO-252

Benefits

- Increased Power Density
- Faster Operating Frequency
- Reduction of Heat Sink Requirement
- Higher Efficiency
- Reduced EMI

Application

- Power Factor Correction Modules
- Switch Mode Power Supplies
- DC-AC Inverters
- High Voltage DC/DC Converters

Package parameters

Part Number	Package	Mode Name	Pack
LSC800M65D	TO-252	LSC800M65D	Tape

Maximum Ratings at Tc=25°C unless otherwise specified

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	800	V
Gate-Source Voltage	V_{GS}	-18/+22	V
Gate-Source Voltage,max.Transient Voltage tp≤0.5μs,D<0.001	VGSmax	-18/+22	V
Recommended Operation Value	VGSop	-4/+18	V
Continue Drain Current TC=25℃	I_D	7	A
Continue Drain Current TC=100℃		5	A
Pulsed Drain Current (Note1)	I_{DM}	12	A
Power Dissipation TC=25℃	P_D	35	W
Power Dissipation TC=100℃		17	W
Operating Temperature Range	T_J	-40 to +175	°C
Storage Temperature Range	T_{STG}	-40 to +150	°C
Thermal Resistance, Junction to Case	$R_{\theta JC}$	4.3	°C/W
Thermal Resistance, Junction to	$R_{\theta JA}$	40	°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 V,I_D = 100μA	BV_{DSS}	800	-	-	V
Drain-Source Leakage Current	VDS = 800 V, VGS = 0 V	I_{DSS}	-	1	10	μA
Gate Leakage Current	V_{GS} = 18 V, V_{DS} = 0 V	I_{GSS}	-	-	250	nA
Gate-Source Threshold Voltage	V_{DS}=V_{GS} , I_D=1mA T_J=25℃	$V_{GS(th)}$	2	2.9	4	V
	V_{DS}=V_{GS} , I_D=1mA T_J=175℃		-	2.1	-	V
Drain-Source On-State Resistance	V_{GS} = 15 V, I_D = 3.3 A	$R_{DS(on)}$	-	700	864	mΩ
	V_{GS} = 15 V, I_D =3.3 A, T_J = 175℃		-	720	-	
	V_{GS} = 18 V, I_D = 3.3 A		-	490	637	
	V_{GS} = 18 V, I_D =3.3 A, T_J = 175℃		-	610	-	
Forward Transconductance	V_{DS}=20V, ID=3.3A	gfs		2.1		S
Input Capacitance	V_{GS} = 0 V, V_{DS} = 600 V, f = 1MHz	C_{iss}	-	116	-	pF
Output Capacitance		C_{oss}	-	18	-	pF
Reverse Transfer Capacitance		C_{rss}	-	2.8	-	pF
Coss Stored Energ		E_{OSS}	-	2.4	-	μJ
Internal Gate Resistance	f=1MHz	RG(int)	-	8.6	-	Ω
Total Gate Charge(Note2)	I_D = 3.3A, V_{DD} = 400 V, V_{GS} =4/18 V	Q_G	-	7	-	nC
Gate to Source Charge(Note2)		Q_{GS}	-	1.3	-	nC
Gate to Drain Charge(Note2)		Q_{GD}	-	4.2	-	nC
Turn-on Delay Time(Note2)	VDS = 400 V, ID = 3.3A, VGS = -4/18 V, RG = 2.5Ω, L=200μH, Tc=25°C	$t_{d(ON)}$	-	3	-	ns
Rise Time(Note2)		t_r	-	12	-	ns
Turn-Off Delay Time(Note2)		$t_{d(OFF)}$	-	9	-	ns
Fall Time(Note2)		t_f	-	18	-	ns
Turn-On Energy		Eon	-	24	-	μJ
Turn-Off Energy		Eoff	-	4	-	μJ

Electrical Characteristics at Tc=25°C unless otherwise specified

Parameter	Test Condition	Symbol	Min	Typ	Max	Unit
Turn-on Delay Time(Note2)	VDS = 400 V, ID = 3.3A, VGS = -4/18 V, RG = 2.5Ω, L=200μH, Tc=175°C	$t_{d(ON)}$	-	3	-	ns
Rise Time(Note2)		t_r	-	11	-	ns
Turn-Off Delay Time(Note2)		$t_{d(OFF)}$	-	10	-	ns
Fall Time(Note2)		t_f	-	19	-	ns
Turn-On Energy		Eon	-	22	-	μJ
Turn-Off Energy		Eoff	-	4	-	μJ

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

Parameter	Test Condition	Symbol	Min.	Typ.	Max.	Unit
Maximun Body-Diode Continuous Current	Tc=25°C	I_S	-	7	-	A
Maximun Body-Diode Continuous Current	Tc=175°C		-	3	-	A
Maximun Body-Diode Pulsed Current(Note2)		I_{SM}	-	–	13	A
Drain-Source Diode Forward Voltage	VGS=-4V, ISD=1.7A Tc=25°C	V_{SD}	-	4	-	V
	VGS=-4V, ISD=1.7A Tc=175°C		-	3.6	-	V
	VGS=-4V, ISD=3.3A Tc=25°C		-	4.5	-	V
	VGS=-4V, ISD=3.3A Tc=175°C		-	4	-	V
Reverse Recovery Time(Note2)	VGS=-4V, ISD=1.7A, VR=400V, di/dt=1990A/μs, Tj=25°C	trr	-	45	-	ns
Reverse Recovery Charge(Note2)		Qrr	-	54	-	nC
Peak Reverse Recovery Current		Irrm	-	2	-	A
Reverse Recovery Time(Note2)	VGS=-4V, ISD=1.7A, VR=400V, di/dt=1990A/μs, Tj=175°C	trr	-	48	-	ns
Reverse Recovery Charge(Note2)		Qrr	-	52	-	nC
Peak Reverse Recovery Current		Irrm	-	2.3	-	A

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

RATINGS AND CHARACTERISTIC CURVES

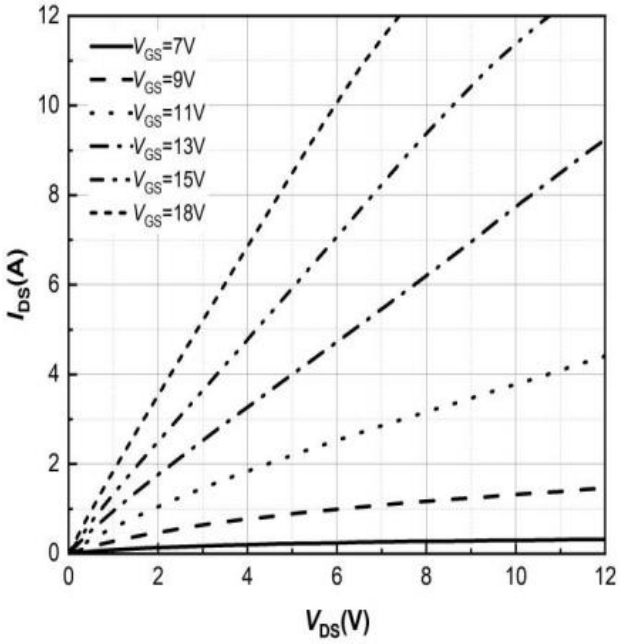


Figure 1. **Output Characteristics T_j=-40°C**

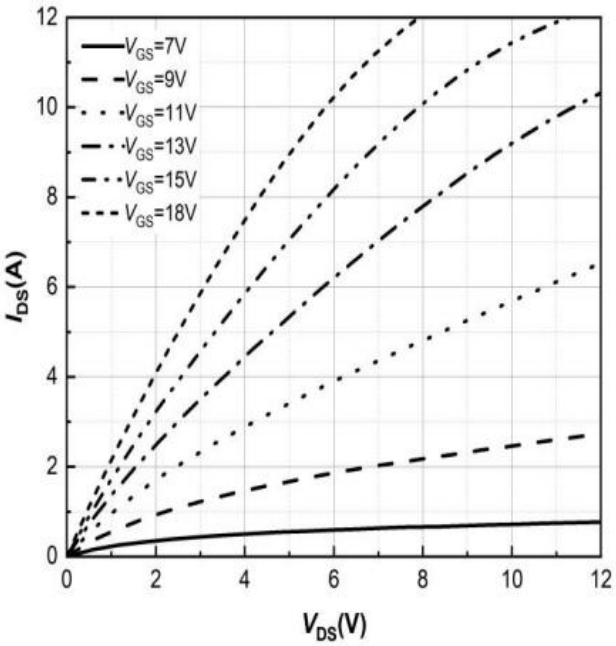


Figure 2. **Output Characteristics T_j=25°C**

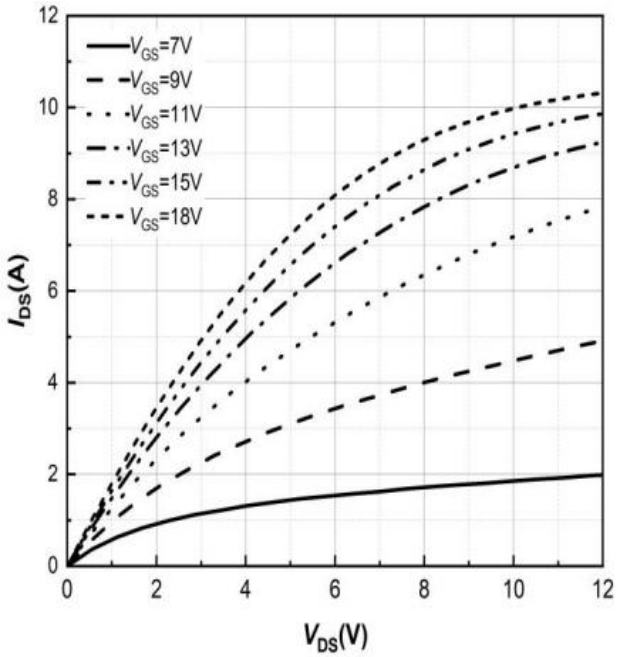


Figure 3. **Output Characteristics T_j=175°C**

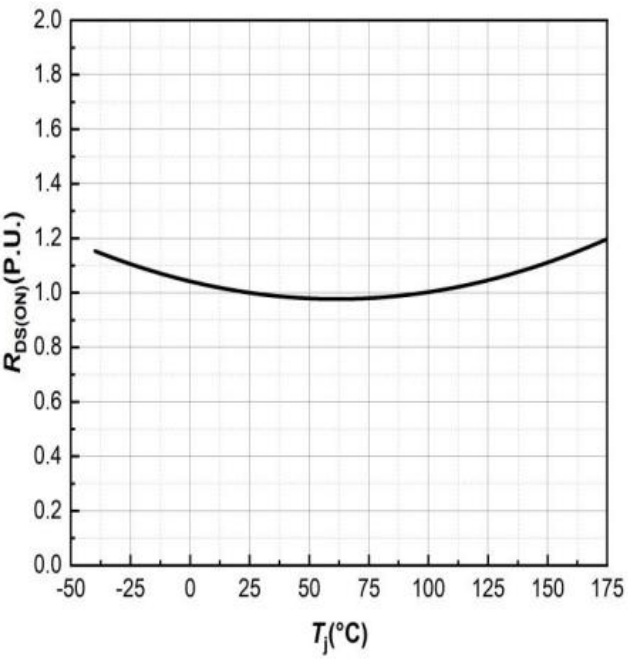


Figure 4. **Normalized On-Resistance vs. Temperature**

RATINGS AND CHARACTERISTIC CURVES

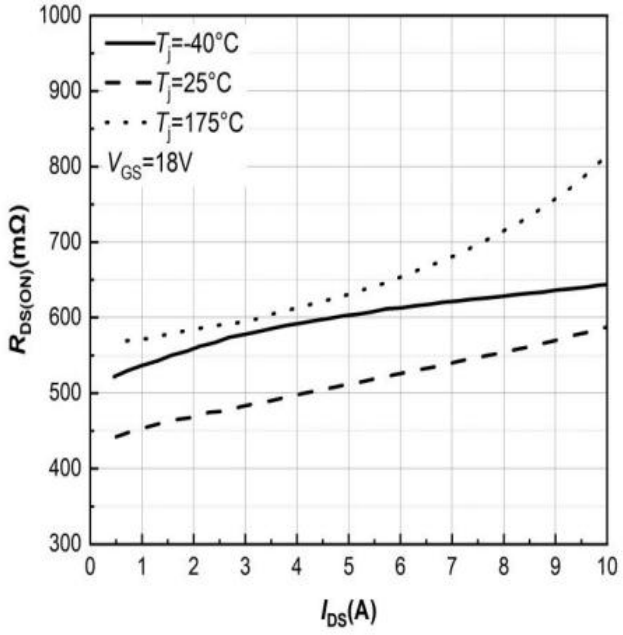


Figure 5. **On-Resistance vs. Drain Current For Various Temperatures**

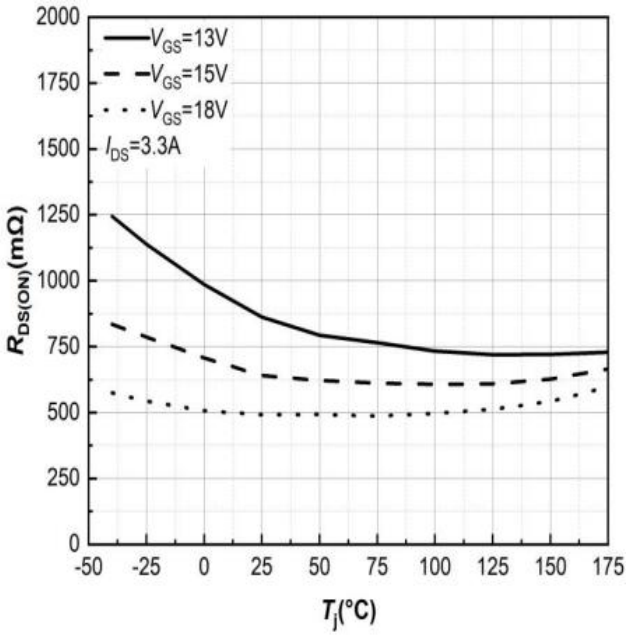


Figure 6. **On-Resistance vs. Temperature For Various Gate Voltage**

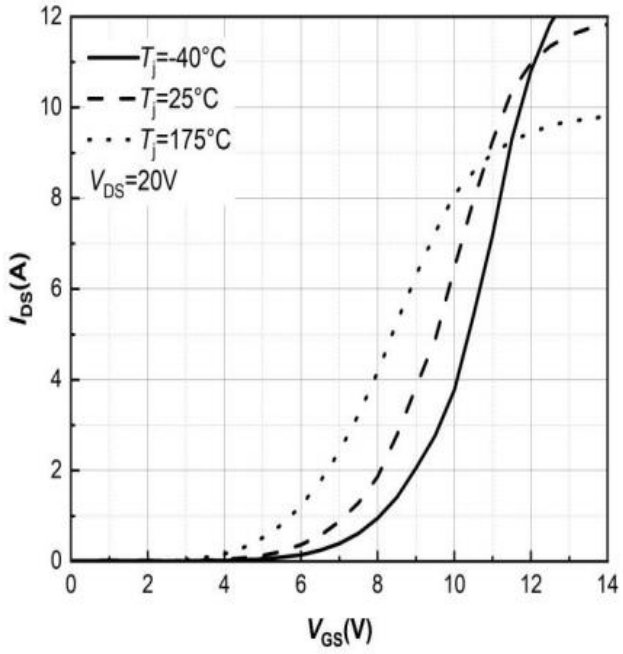


Figure 7. **Transfer Characteristic for Various Junction Temperatures**

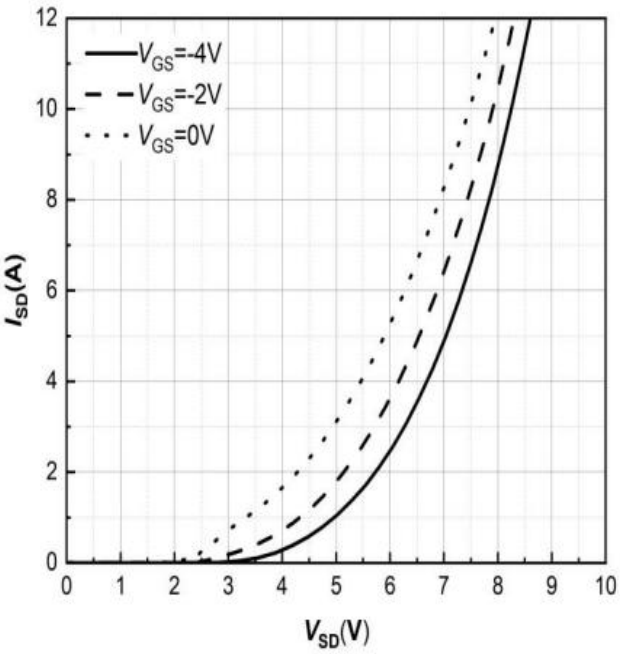


Figure 8. **Body Diode Characteristic T_j=-40°C**

RATINGS AND CHARACTERISTIC CURVES

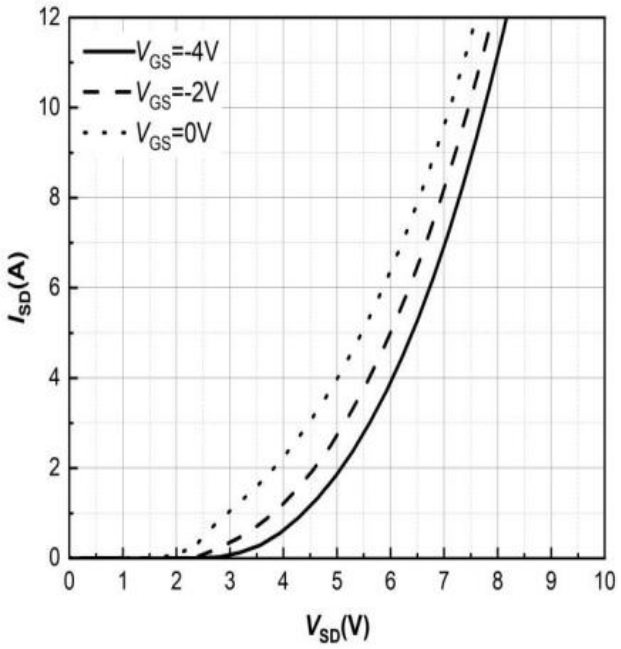


Figure 9. **Body Diode Characteristic T_j=25°C**

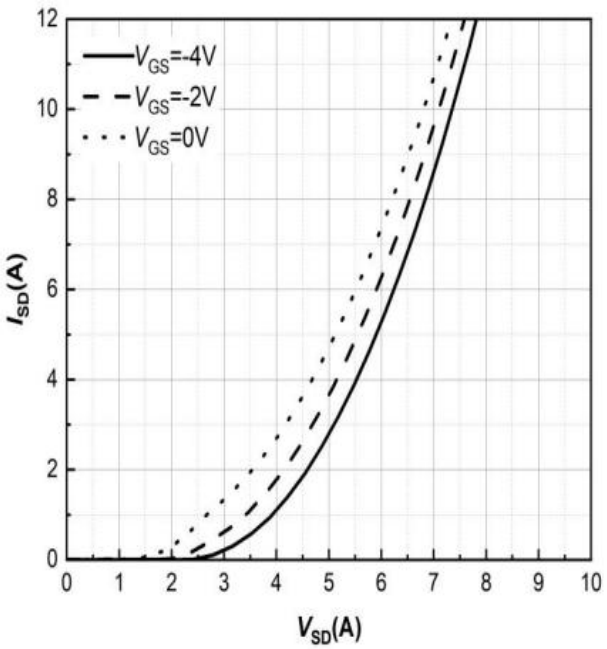


Figure 10. **Body Diode Characteristic T_j=175°C**

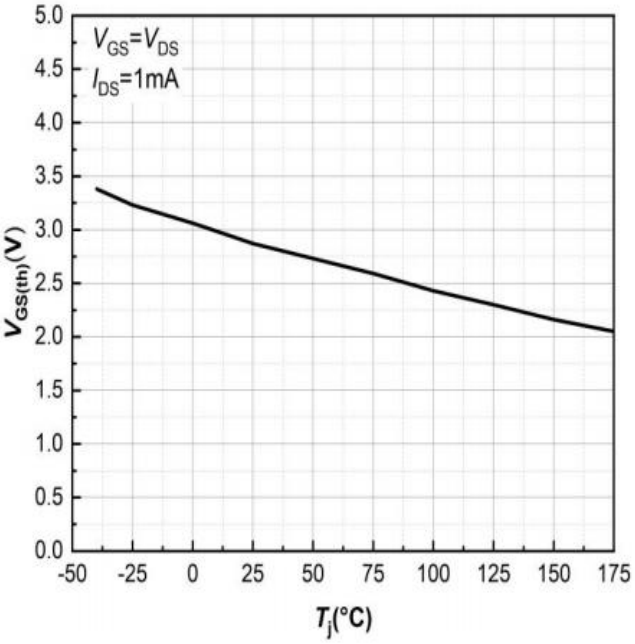


Figure 11. **Threshold Voltage vs. Temperature**

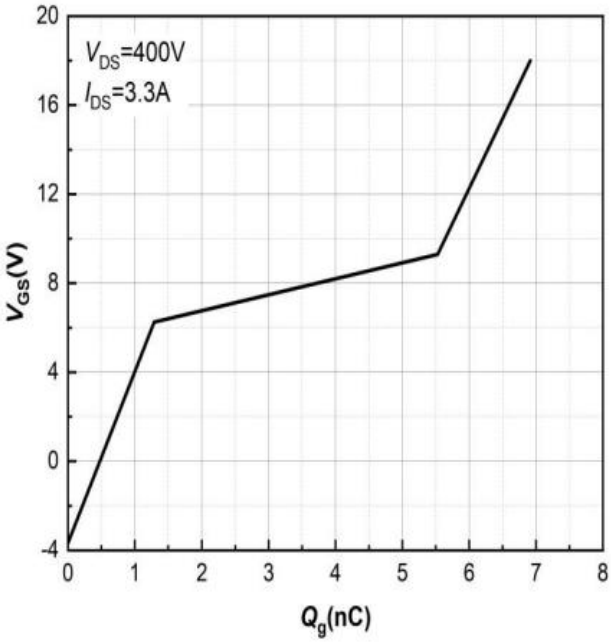


Figure 12. **Gate Charge Characteristics**

RATINGS AND CHARACTERISTIC CURVES

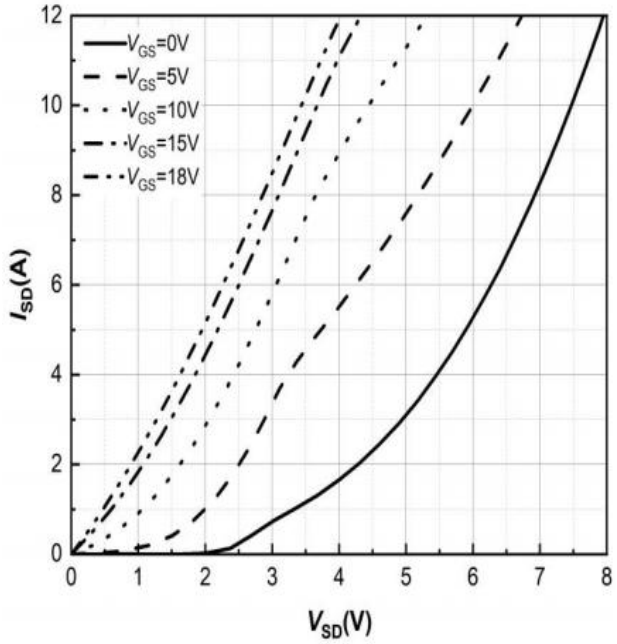


Figure 13. **3rd Quadrant Characteristic T_j=-40°C**

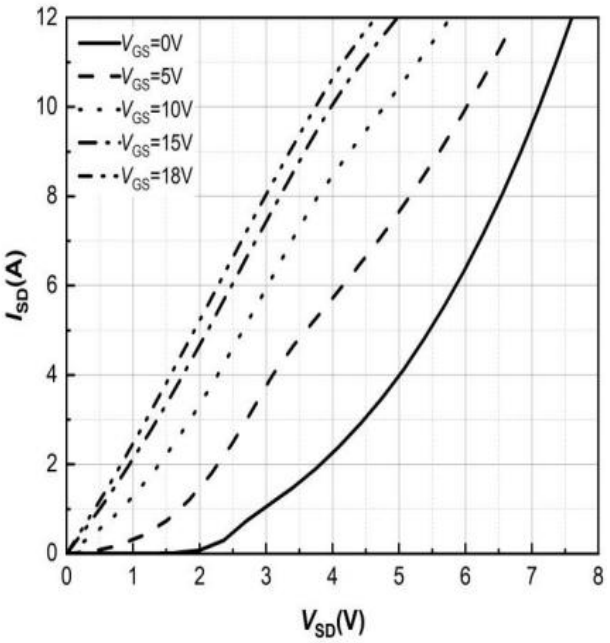


Figure 14. **3rd Quadrant Characteristic T_j=25°C**

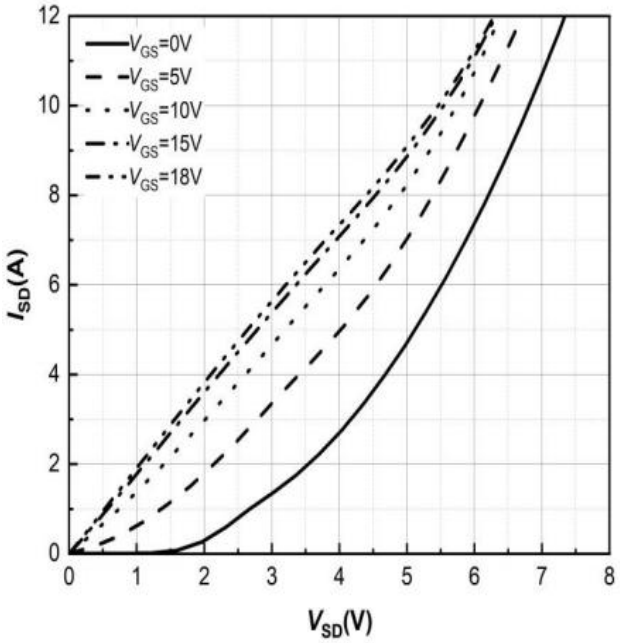


Figure 15. **3rd Quadrant Characteristic T_j=175°C**

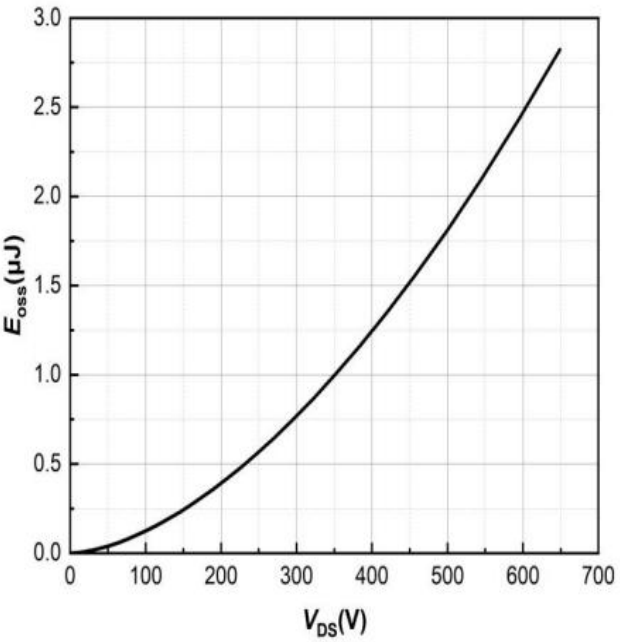


Figure 16. **Output Capacitor Stored Energy**

RATINGS AND CHARACTERISTIC CURVES

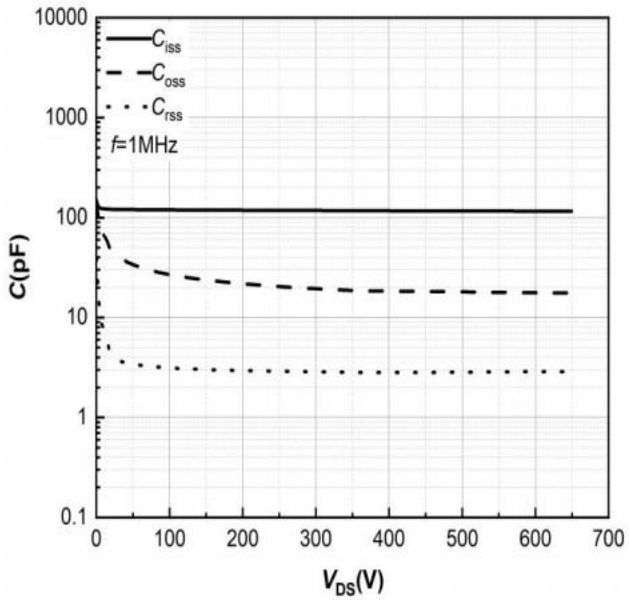


Figure 17. **Capacitances vs. Drain-Source**

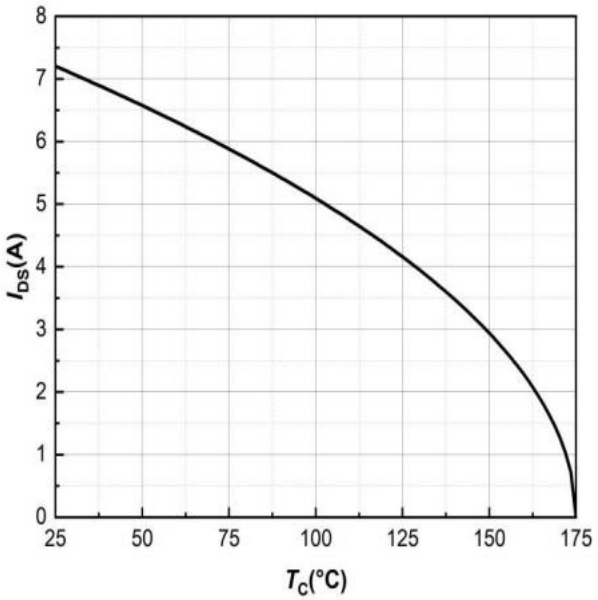


Figure 18. **Continuous Drain Current Derating vs. Case Temperature**

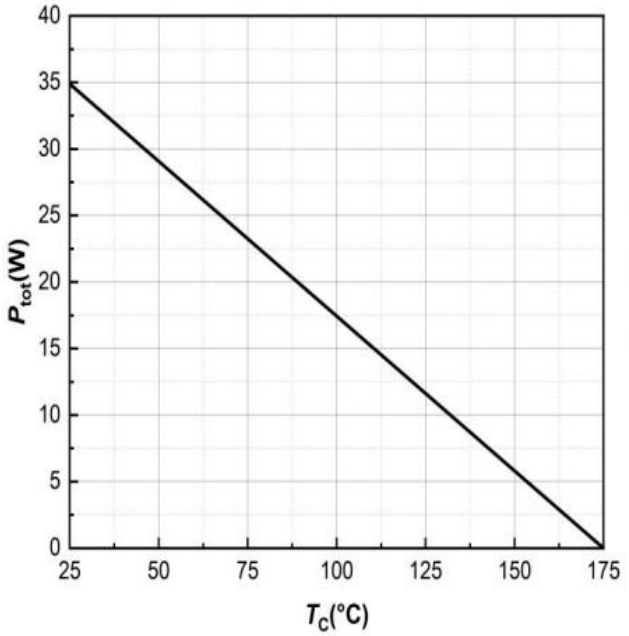


Figure 19. **Maximum Power Dissipation Derating vs. Case Temperature**

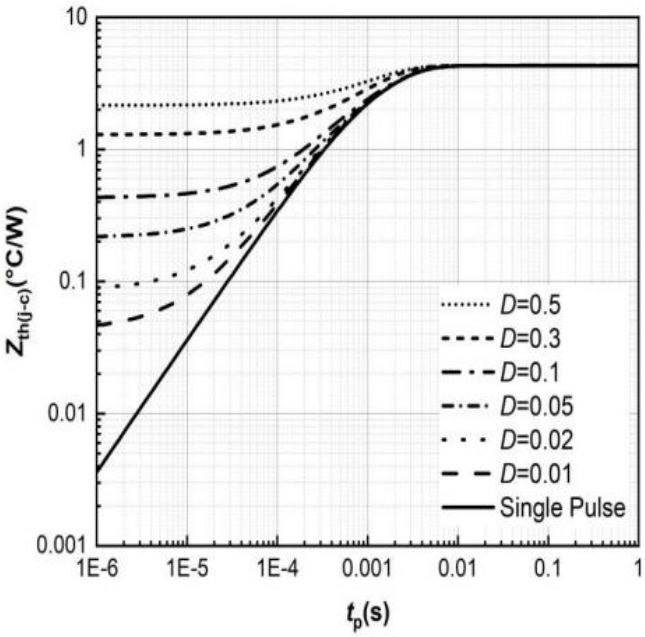


Figure 20. **Transient Thermal Impedance**

RATINGS AND CHARACTERISTIC CURVES

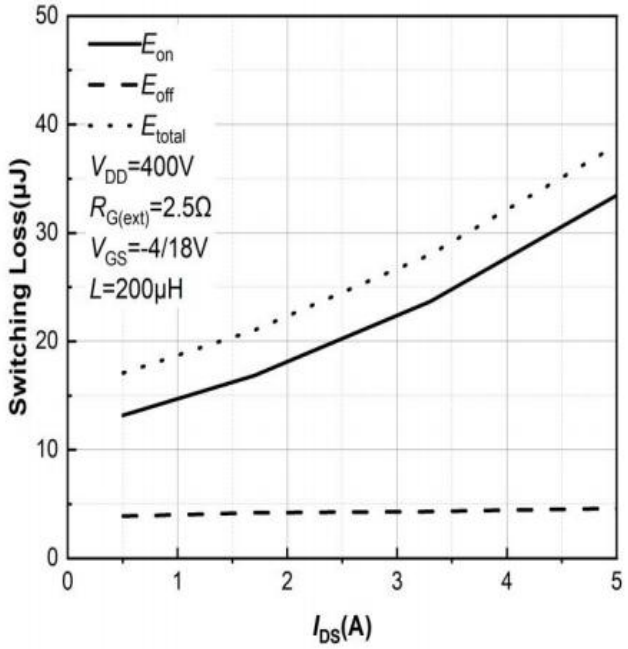


Figure 21. **Clamped Inductive Switching Energy vs. Drain Current T_j=25°C**

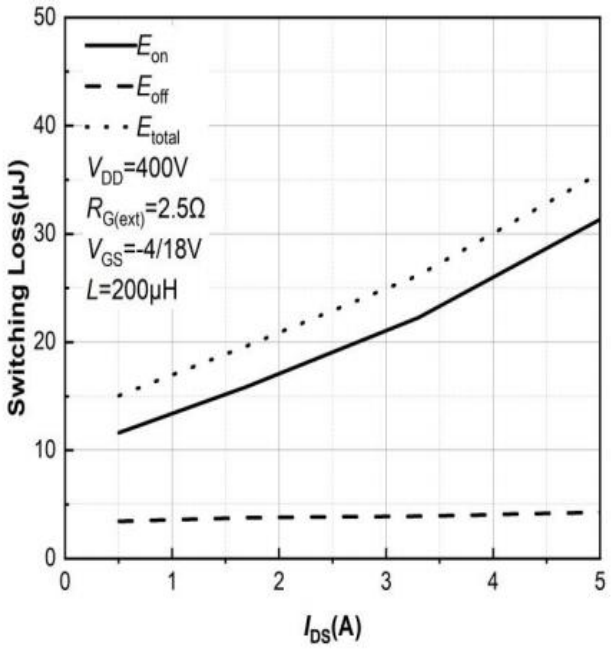


Figure 22. **Clamped Inductive Switching Energy vs. Drain Current T_j=175°C**

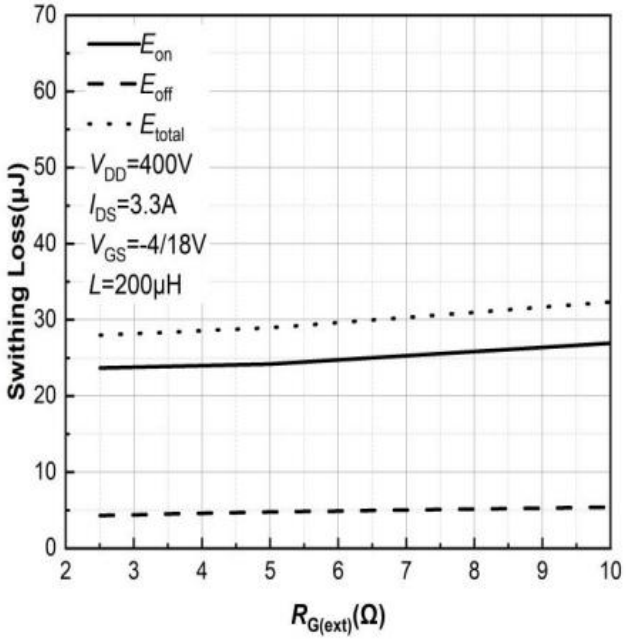


Figure 23. **Clamped Inductive Switching Energy vs. $R_{G(ext)}$ T_j=25°C**

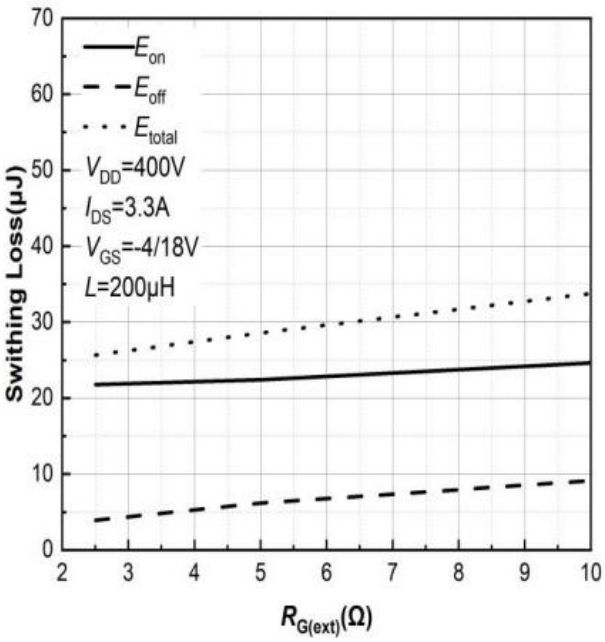


Figure 24. **Clamped Inductive Switching Energy vs. $R_{G(ext)}$ T_j=175°C**

RATINGS AND CHARACTERISTIC CURVES

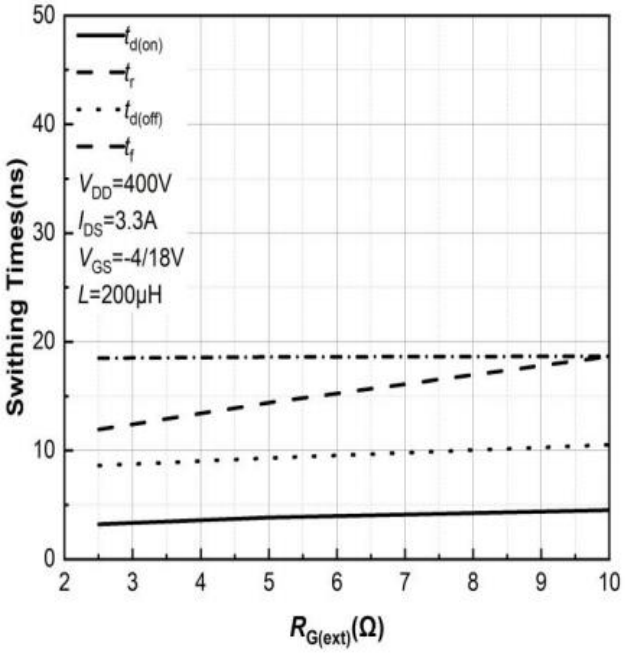


Figure 25. **Switching Times vs. $R_{G(ext)}$ T_j=25°C**

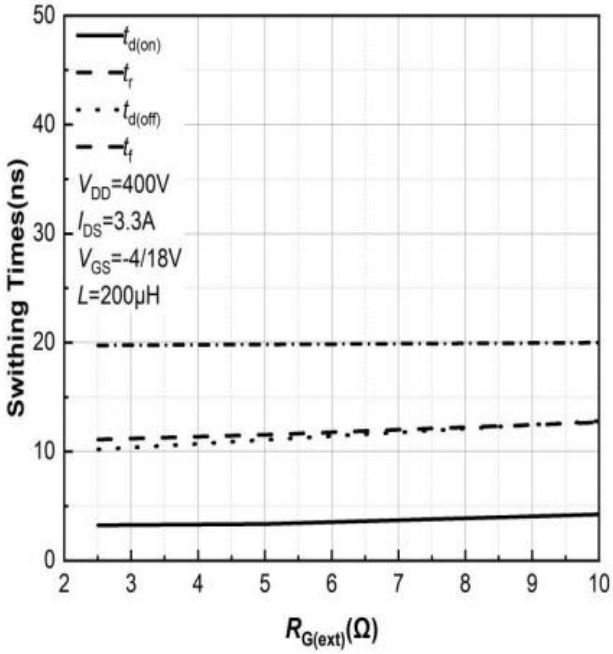


Figure 26. **Switching Times vs. $R_{G(ext)}$ T_j=175°C**

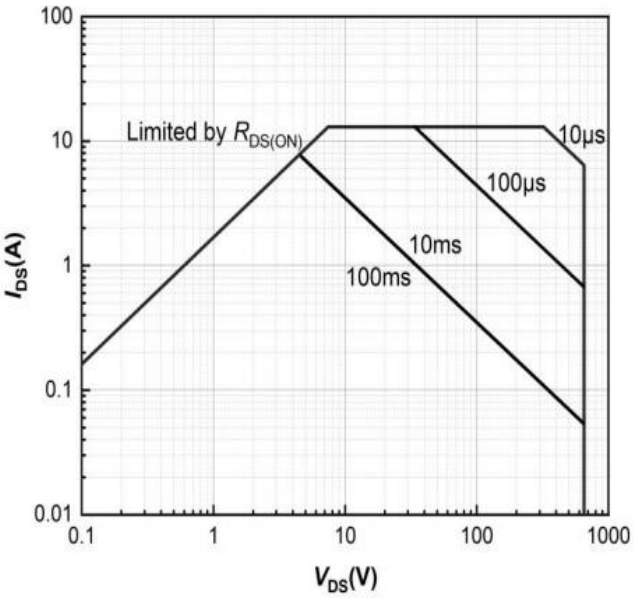
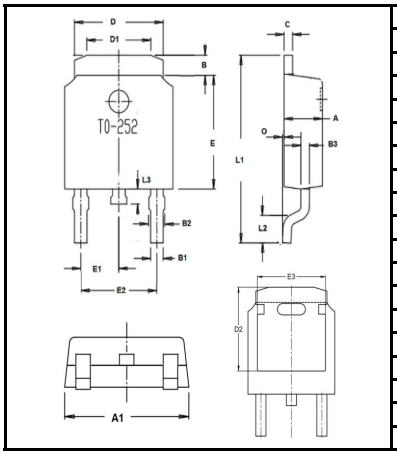


Figure 27. **Safe Operating Area**

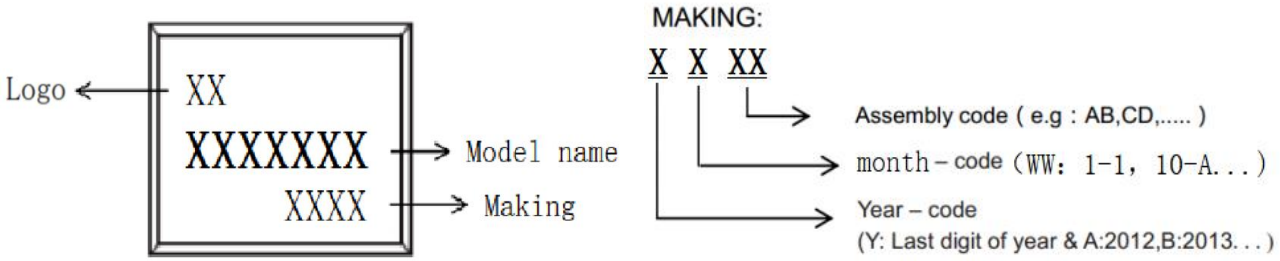
Package Outline Dimensions millimeters

TO-252



Dim.	Min.	Max.
A	2.1	2.5
A1	6.3	6.9
B	0.96	1.42
B1	0.74	0.86
B2	0.74	0.94
C	Typ0.5	
D	5.33	5.53
D1	3.65	4.05
D2	5	5.4
E	6	6.2
E1	Typ2.29	
E2	Typ4.58	
E3	4.6	5
O	0	0.15
L1	9.9	10.5
L2	Typ1.65	
L3	0.6	1
All Dimensions in millimeter		

Marking on the body



packing instruction

PKG	Minimal Package	Box	Carton
TO-252			
	2500pcs/disk	5000pcs/box	25000pcs/carton

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 poer exceeding normal rated

poer; 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.

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Revision History

Rev	Changes	Date
1.0	First version	2025/12/26