

MAIN CHARACTERISTICS

I_D	15A
V_{DS}	800V
$R_{DS(on)-typ}$ (@ $V_{GS}=18V$ $T_c=25^{\circ}C$)	154m Ω

Features

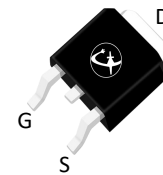
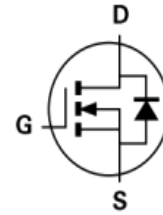
- High Speed Switching
- High Blocking Voltage with Low $R_{DS(on)}$
- Easy to Parallel
- Simple to Drive
- RoHS Compliant

Benefits

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

Application

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



TO-252

Product specification classification

Part Number	Package	Mode Name	Pack
LSC180M65D	TO-252	LSC180M65D	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_{GSmax}	-8/+22	V
Gate-Source Voltage, max. Transient Voltage (tp≤0.5μs, D<0.001)	V_{GSmax}	-8/+22	V
Recommended Operation Value	V_{GSop}	-4/+18	V
Continue Drain Current TC=25°C	I_D	15	A
Continue Drain Current TC=100°C		11	A
Pulsed Drain Current (Note1)	I_{DM}	30	A
Power Dissipation	P_D	48	W
Operating Temperature Range	T_J	-40 to +175	°C
Storage Temperature Range	T_{STG}	-40 to +150	°C
Thermal Resistance, Junction to Case	$R_{\theta JC}$	3.14	°C/W
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	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	$V_{GS} = 0\text{ V}, I_D = 100\mu\text{A}$	BV_{DSS}	800	-	-	V
Drain-Source Leakage Current	$V_{DS} = 800\text{ V}, V_{GS} = 0\text{ V}$	I_{DSS}	-	1	10	μA
Gate Leakage Current	$V_{GS} = 18\text{ V}, V_{DS} = 0\text{ V}$	I_{GSS}	-	-	250	nA
Gate-Source Threshold Voltage Tc=25°C	$V_{DS} = V_{GS}, I_D = 2.5\text{ mA}$	$V_{GS(th)}$	2	2.8	4	V
Gate-Source Threshold Voltage Tc=175°C			-	2	-	V
Drain-Source On-State Resistance	$V_{GS} = 15\text{ V}, I_D = 10\text{ A}$	$R_{DS(on)}$	-	200	290	mΩ
	$V_{GS} = 15\text{ V}, I_D = 10\text{ A}, T_J = 175^\circ\text{C}$		-	208	-	
	$V_{GS} = 18\text{ V}, I_D = 10\text{ A}$		-	154	208	
	$V_{GS} = 18\text{ V}, I_D = 10\text{ A}, T_J = 175^\circ\text{C}$		-	188	-	
Input Capacitance	$V_{GS} = 0\text{ V}, V_{DS} = 600\text{ V}, f = 1\text{ MHz}$	C_{iss}	-	308	-	pF
Output Capacitance		C_{oss}	-	32	-	pF
Reverse Transfer Capacitance		C_{rss}	-	4.2	-	pF
Coss Stored Energy		E_{oss}	-	5.3	-	pF
Total Gate Charge(Note2)	$I_D = 10\text{ A}, V_{DD} = 400\text{ V}, V_{GS} = -4/+18\text{ V}$	Q_G	-	14	-	nC
Gate to Source Charge(Note2)		Q_{GS}	-	2.8	-	nC
Gate to Drain Charge(Note2)		Q_{GD}	-	6.4	-	nC
Turn-on Delay Time(Note2)	$V_{DS} = 400\text{ V}, I_D = 10\text{ A}, V_{GS} = -4/+18\text{ V}, R_G = 2.5\text{ }\Omega, L = 200\mu\text{H}$	$t_{d(ON)}$	-	6	-	ns
Rise Time(Note2)		t_r	-	9	-	ns
Turn-Off Delay Time(Note2)		$t_{d(OFF)}$	-	8	-	ns
Fall Time(Note2)		t_f	-	11	-	ns
Turn-on Switching Energy		E_{on}	-	27	-	μJ
Turn-off Switching Energy		E_{off}	-	6	-	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	V _{GS} =-4V T _C =25°C	I _S	-	15	-	A
	V _{GS} =-4V T _C =100°C		-	8	-	A
Maximun Body-Diode Pulsed Current(Note2)		I _{SM}	-	-	30	A
Drain-Source Diode Forward Voltage	V _{GS} =-4V, I _{SD} =5A T _J =25°	V _{SD}	-	4	-	V
	V _{GS} =-4V, I _{SD} =5A T _J =175°		-	3.7	-	V
Reverse Recovery Time(Note2)	V _{GS} =-4V, I _{SD} =5A, V _R =400V, di/dt=1400A/μs, T _J =25°C	trr	-	12	-	ns
Reverse Recovery Charge(Note2)		Q _{rr}	-	62	-	nC
Peak Reverse Recovery Current		I _{rrm}	-	5	-	A

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

RATINGS AND CHARACTERISTIC CURVES

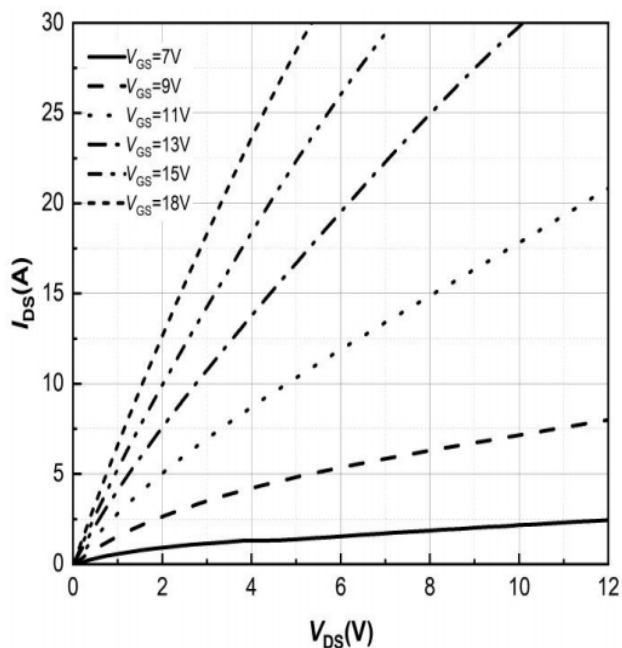


Figure 1. Output Characteristics
 $T_j = 25^\circ\text{C}$

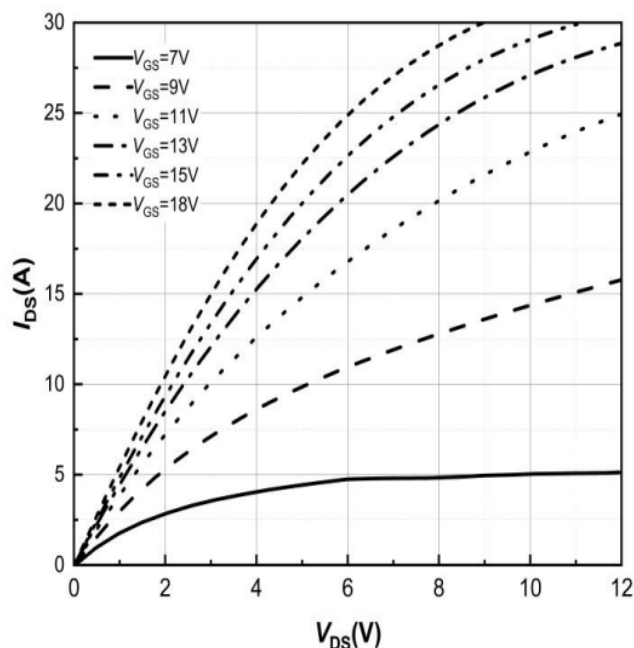


Figure 2. Output Characteristics
 $T_j = 175^\circ\text{C}$

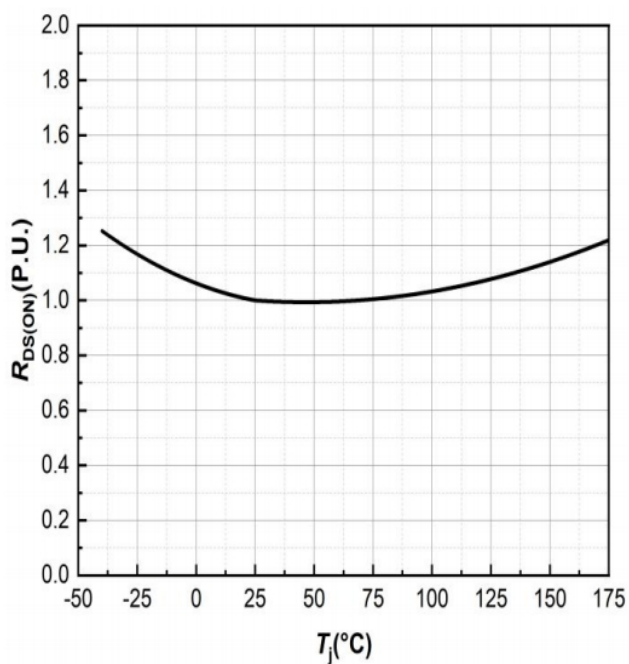


Figure 3. Normalized On-Resistance vs. Temperature

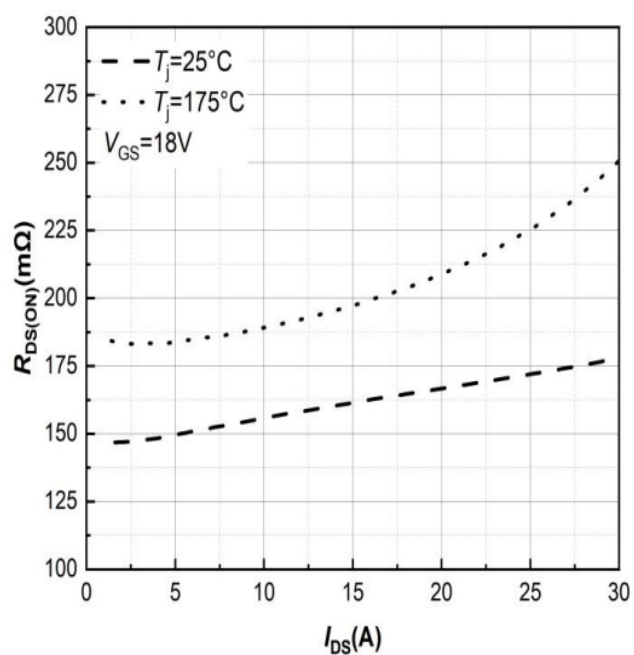


Figure 4. On-Resistance vs. Drain Current For Various Temperatures

RATINGS AND CHARACTERISTIC CURVES

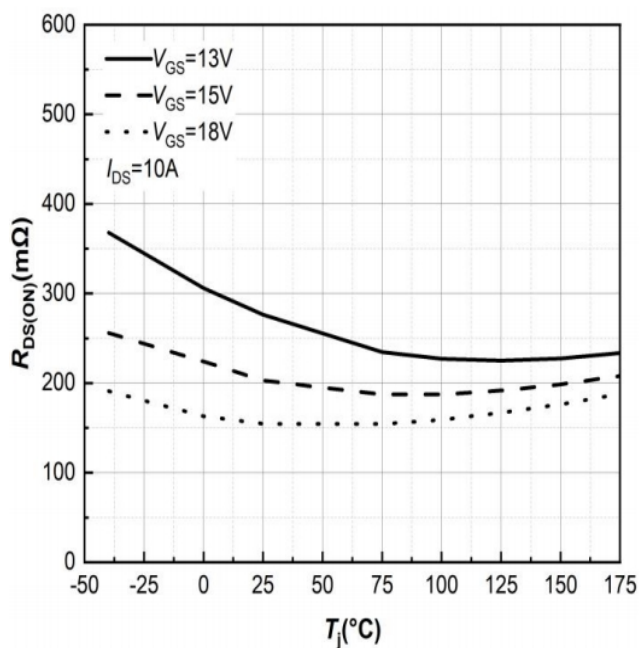


Figure 5. On-Resistance vs. Temperature For Various Gate Voltage

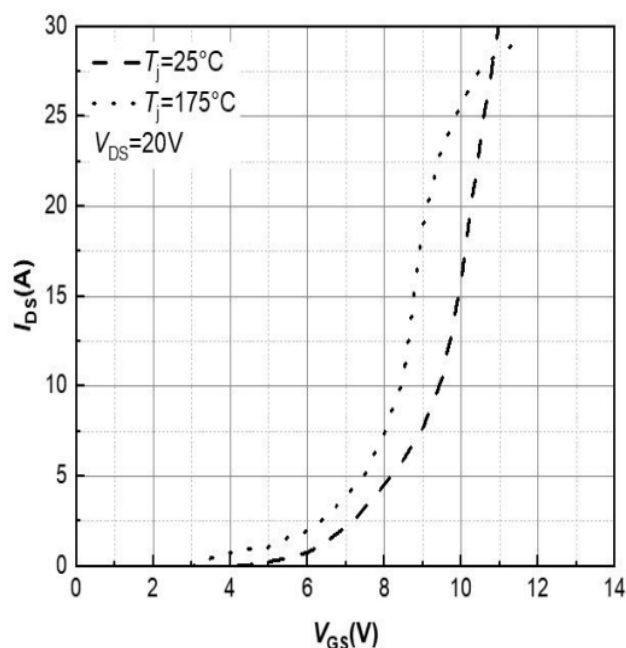


Figure 6. Transfer Characteristic for Various Junction Temperatures

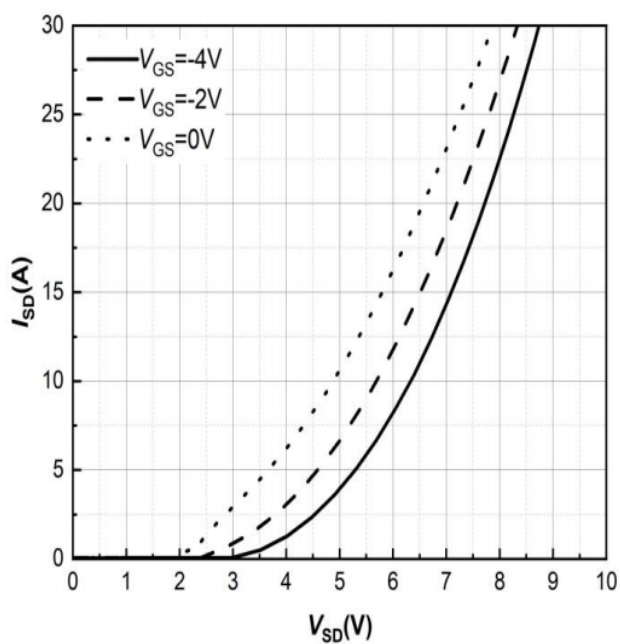


Figure 7. Body Diode Characteristic $T_J=25^{\circ}\text{C}$

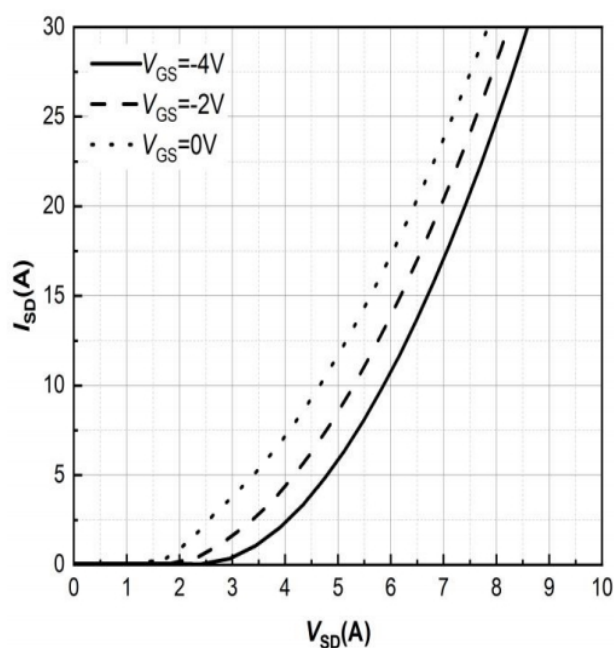


Figure 8. Body Diode Characteristic $T_J=175^{\circ}\text{C}$

RATINGS AND CHARACTERISTIC CURVES

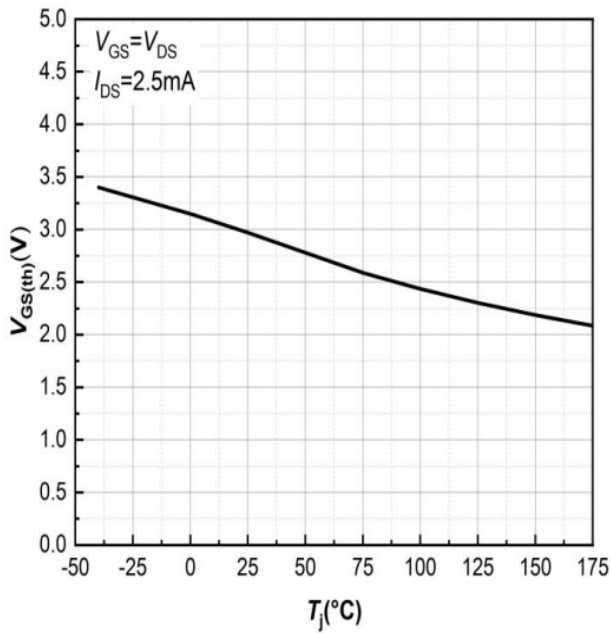


Figure 9. Threshold Voltage vs. Temperature

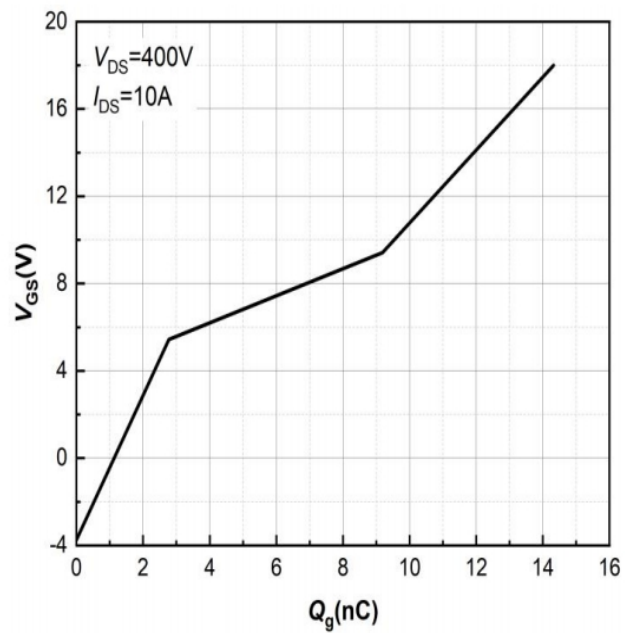


Figure 10. Gate Charge Characteristics

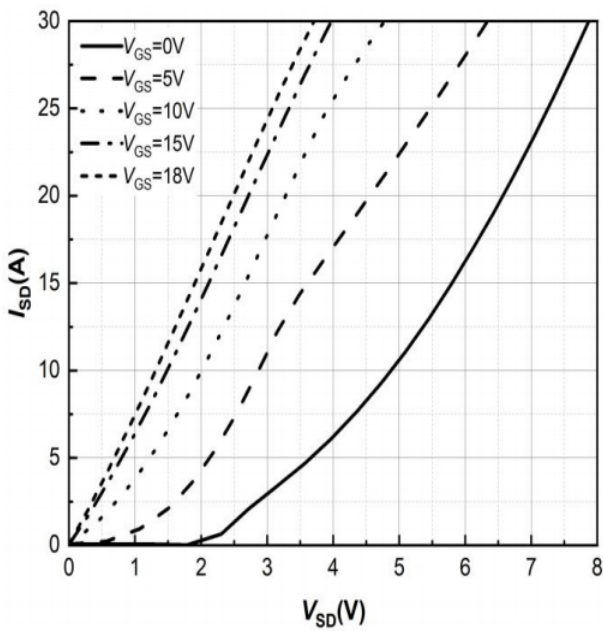


Figure 11. 3rd Quadrant Characteristic
 $T_J=25^{\circ}\text{C}$

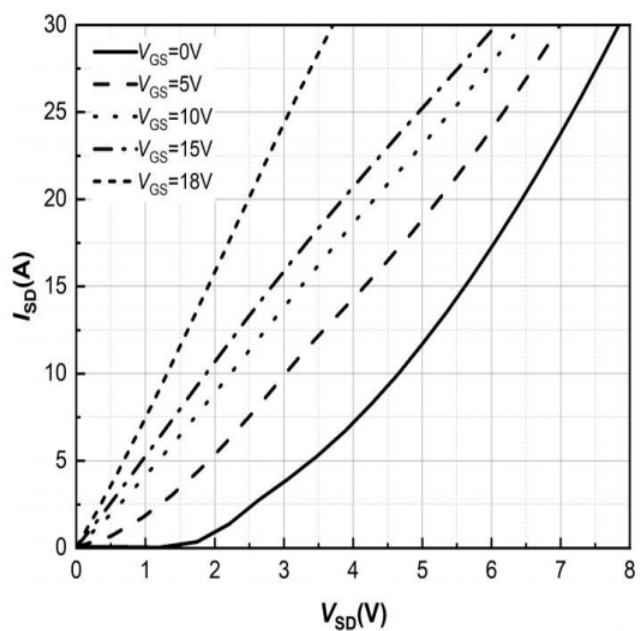


Figure 12. 3rd Quadrant Characteristic
 $T_J=175^{\circ}\text{C}$

RATINGS AND CHARACTERISTIC CURVES

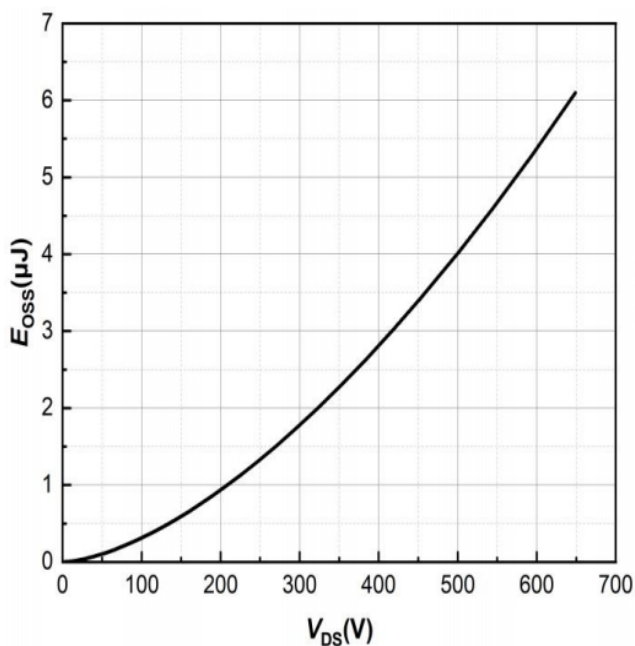


Figure 13. Output Capacitor Stored Energy

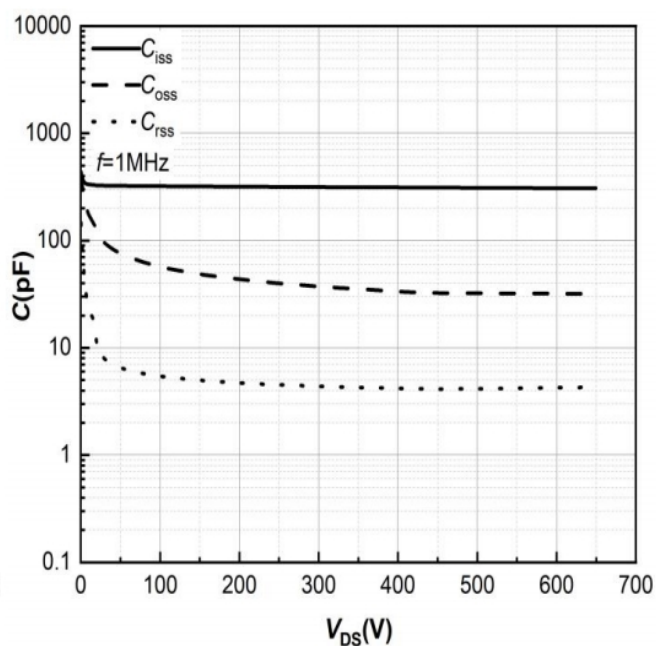


Figure 14. Capacitances vs. Drain-Source

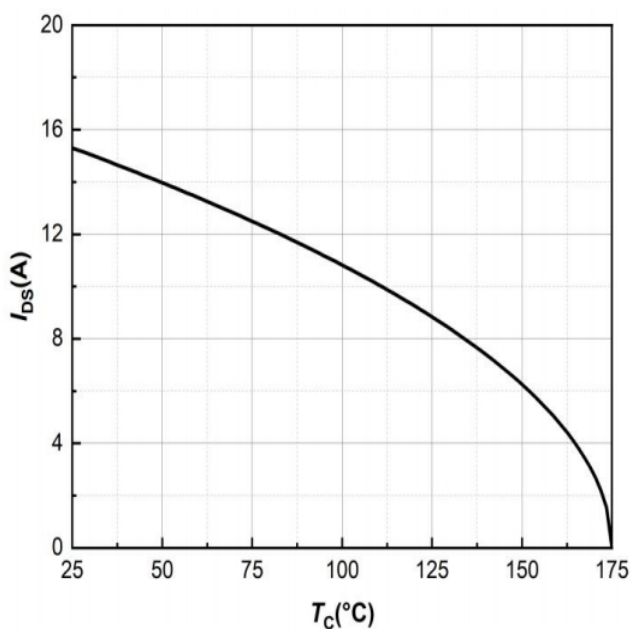


Figure 15. Continuous Drain Current Derating vs. Case Temperature

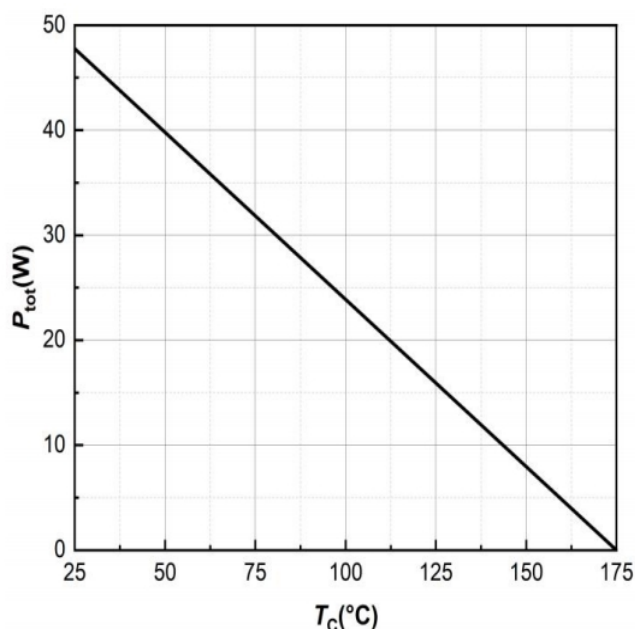


Figure 16. Maximum Power Dissipation Derating vs. Case Temperature

RATINGS AND CHARACTERISTIC CURVES

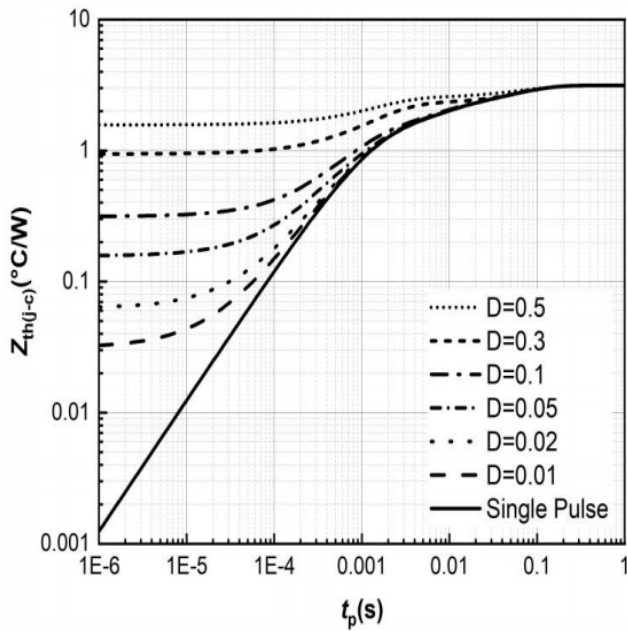


Figure 17. Transient Thermal Impedance

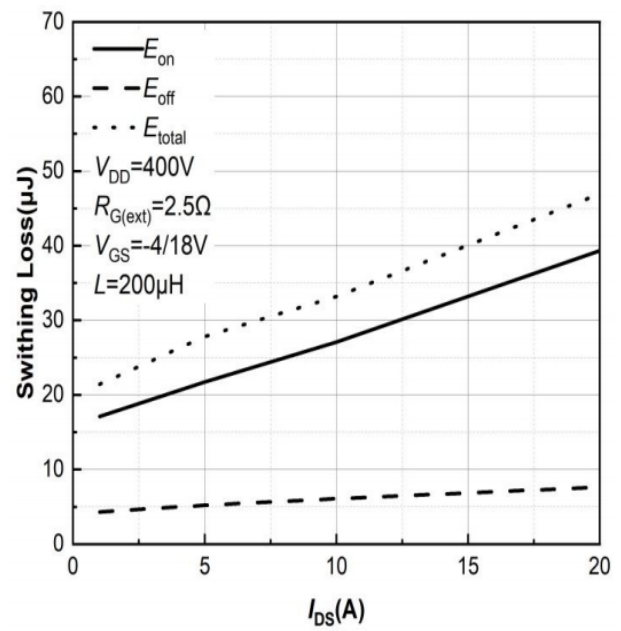


Figure 18. Clamped Inductive Switching Energy vs. Drain Current
 $T_j = 25^\circ\text{C}$

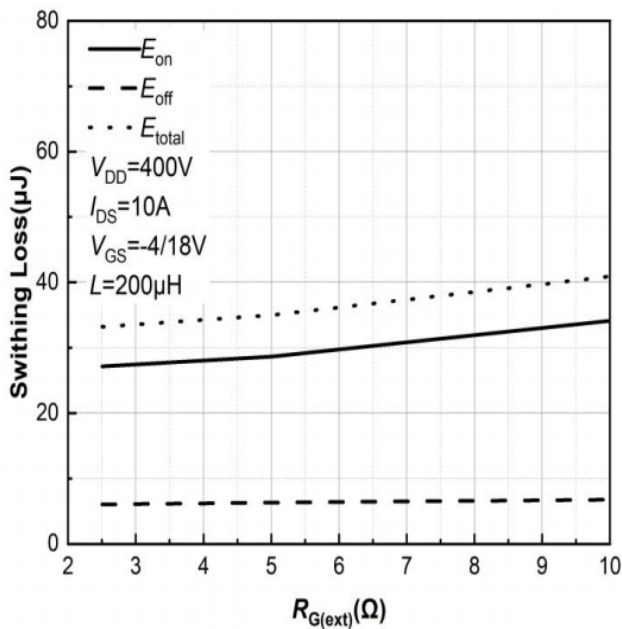


Figure 19. Clamped Inductive Switching Energy vs. $R_{G(\text{ext})}$
 $T_j = 25^\circ\text{C}$

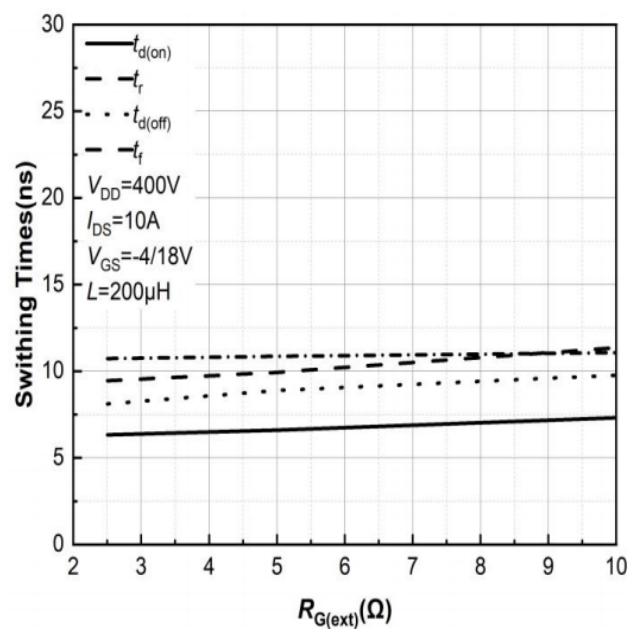


Figure 20. Switching Times vs. $R_{G(\text{ext})}$
 $T_j = 25^\circ\text{C}$

RATINGS AND CHARACTERISTIC CURVES

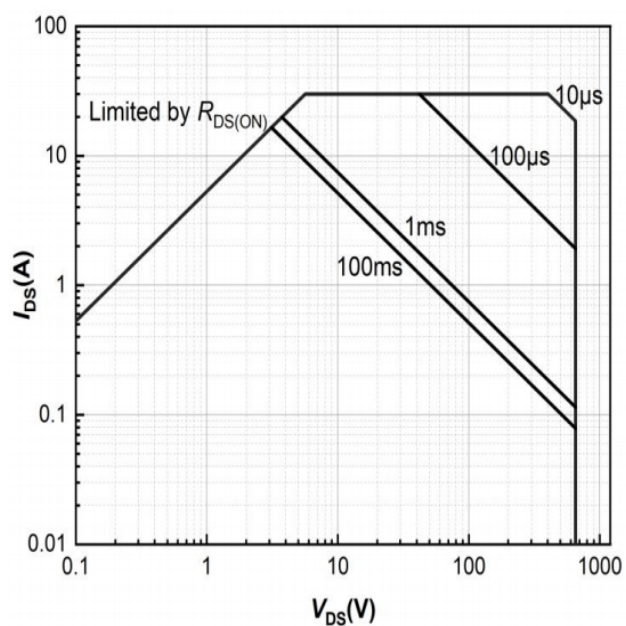
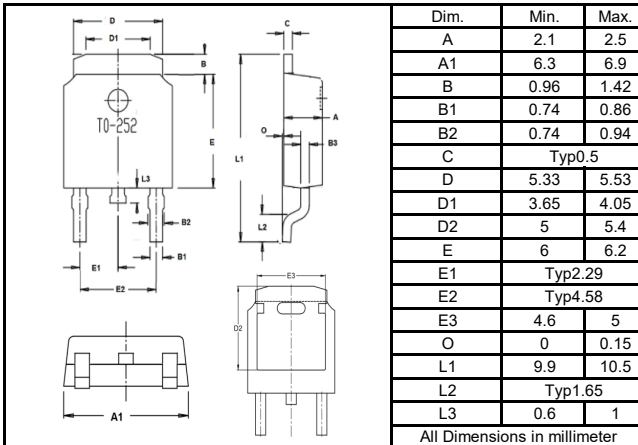


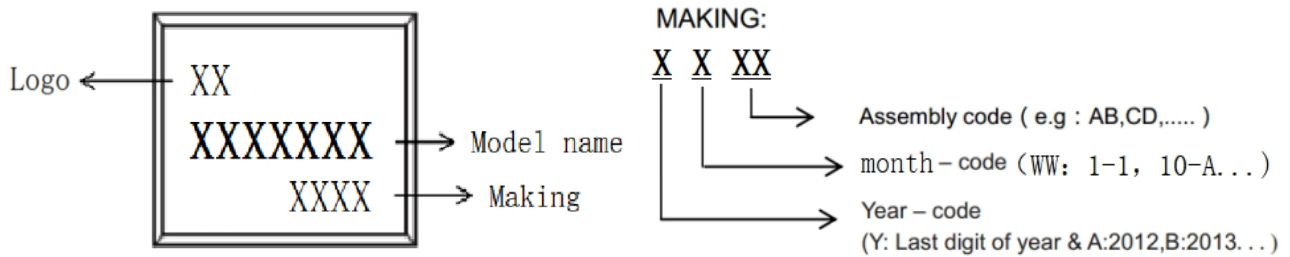
Figure 21. **Safe Operating Area**

Package Outline Dimensions millimeters

TO-252



Marking on the body



packing instruction

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



LSC180M65D

SiC N-Channel MOSFET

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
1.0	First version	2025/8/30